THE

HISTORY

OF THE

ROYAL SOCIETY of LONDON,

FOR IMPROVING OF

NATURAL KNOWLEDGE,

FROM ITS FIRST RISE.

IN WHICH

The moſt conſiderable of thoſe Papers communicated to the SOCIETY, which have hitherto not been publiſhed, are inſerted in their proper order,

AS A SUPPLEMENT TO

THE PHILOSOPHICAL TRANSACTIONS.

By THOMAS BIRCH, D.D.

SECRETARY to the ROYAL SOCIETY.

VOL. II.

Talem intelligo PHILOSOPHIAM NATURALEM, *quæ non abeat in fumos ſpeculationum ſubtilium aut ſublimium, ſed quæ efficaciter operetur ad ſublevanda vitæ humanæ incommoda.* BACON de Augm. Scient. L. ii. c. 2.

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MDCC LVI.

THE HISTORY OF THE ROYAL SOCIETY of LONDON, FOR IMPROVING OF NATURAL KNOWLEDGE, FROM ITS FIRST RISE.

JANUARY 4, 166$\frac{4}{5}$. Sir WILLIAM PORTMAN, and Sir WINSTONE CHURCHILL, were admitted.

There were read three accounts concerning the comet, one from the earl of Sandwich, another from Leige, and the third from Monſieur HUYGENS, in a letter of his to Sir ROBERT MORAY, dated 2 January 1664-5[a]. Which accounts were recommended to the preſident, that he might compare them with the other accounts communicated before, and reduce them all into one perfect relation.

Mr. HOOKE ſhewed the way of applying a thermometer to a weather-cock, by ſealing up ſpirit of wine in a glaſs cane, with two pretty large heads, one of which was filled with ſpirit of wine, as was alſo the intermediate ſtem; the other not quite full, a ſpace of air being left to give liberty for the expanding liquor. The cane thus filled was poiſed in the manner of the beam of a balance, and the operation of the heat and cold on it was, that heat expanding the liquor, made it paſs through the ſtem out of the ball perfectly full, into the ball, wherein was left a ſpace of air; ſo that heat made the air-ball deſcend, and cold on the contrary, condenſing the liquor made it paſs out of the air-ball into the full ball, and ſo made that to deſcend.

[a] Letter-Book, vol. i. p. 229.

It was moved to conſider, whether this inſtrument were ſenſible and nice enough.

Mr. BOYLE mentioned, that his *Experimental Hiſtory of Cold* was printing [b], and that at the next meeting he would preſent the ſociety with about twenty heads concerning cold and congelation, to chooſe out of them experiments for trial in this froſty ſeaſon. His offer was accepted; and it was deſired, that in the mean time thoſe, who could, between that and the next meeting, make any experiments of cold, would make uſe of this weather, eſpecially Dr. MERRET and Mr. HOOKE; the latter of whom was ordered particularly to prepare a thermometer, that might ſerve for a ſtandard of heat and cold, by obſerving the degree of cold, which juſt freezes common diſtilled water, and by marking thereupon the expanſion of the liquor in the thermometer.

Mr. BOYLE mentioned, that he had been making ſome experiments of congelation upon both animal and vegetable ſubſtances, to diſcover the placing of the alimental juices in them, and many things concerning the texture of bodies and mortifications. He related particularly of carrots, that being frozen, and cut tranſverſely, the little particles of ice in them were found to lie orderly from the center to the circumference, but cut lengthwiſe, they lie more confuſedly. He was deſired to proſecute theſe experiments, and then to give them in writing.

Mr. HOOKE made an experiment tending to ſhew, as he conceived, that air is the univerſal diſſolvent of all ſulphureous bodies, and that this diſſolution is fire; adding, that this was done by a nitrous ſubſtance inherent and mixt with the air. The experiment was, that he took a live coal, and put it under a glaſs veſſel; whereupon the coal, after a very little time, went out; but then being taken out, and expoſed to the free air, recovered its burning.

It being objected, that it was the agitation of the air driving the igneous particles into the combuſtible body, which made it burn and conſume; Mr. HOOKE anſwered, that experiment would ſhew, that a burning body, though agitated, would be extinguiſhed, if it had not a free acceſs of freſh air. He added, that a combuſtible ſubſtance, kept red-hot, even in a fire as hot as to melt copper, would not waſte, but as ſoon as freſh air was admitted, burnt away and conſumed.

An experiment was mentioned, to ſhew, that a burning coal wanting freſh air would keep intire; but brought into new air would fall in pieces.

Mr. BOYLE moved, that a pair of ſtrong bellows being taken, and the clack ſtopt, and the noſe made faſt with cement to a receiver, into which a burning coal is conveyed, a wind ſhould be made, by forcing the bellows to and fro, to ſee, whether it would make the coal burn.

It was ordered, that theſe experiments ſhould be made ready for the next meeting.

[b] It was publiſhed in 1665, in 8vo.

Dr.

Dr. GODDARD ſuggeſted the making of the Lord BACON's experiment of incloſing a piece of wood into a cylindrical box of iron, putting it into a hot fire, and keeping it there for a good while, to ſee what will become of it. He was deſired to give the operator directions to make this experiment.

Mr. FRANCIS WILLUGHBY being come home from his travels [c], and preſent, was deſired to communicate his philoſophical obſervations made abroad. He produced a printed cut repreſenting SATURN and JUPITER, and what CAMPANI had lately obſerved in them by the means of his new glaſſes, wrought by a turn-tool without a mold, viz. that July 30 *h.* 2 ½ *noctis*, he had ſeen in one of the black belts of JUPITER two blacker ſpots, moving therein, which Signior CASSINI had firſt given him notice of, conceiving them to be the ſhadows of the Satellites, which he had ſeen come out of the weſtern diſk of the planet.

Mr. WILLUGHBY was deſired to communicate to the ſociety, at the next meeting, the other obſervations and collections, which he had made in his travels.

Mr. HOOKE mentioned, that he had ſeen on the 19th of May 1664, about nine at night, a ſmall ſpot in the biggeſt of the three black belts of JUPITER; and that obſerving it from time to time, he found, that within two hours after, the ſaid ſpot had moved from eaſt to weſt, about half the length of the diameter of JUPITER.

It was ordered, that the ſociety be ſummoned againſt the Wedneſday following, for the election of Mr. HOOKE as curator by office to the ſociety, who was by the preſident recommended from the council to the ſociety.

January 11, at the meeting of the COUNCIL were preſent,

The lord viſcount BROUNCKER, preſid[t]
Sir ROBERT MORAY
Sir WILLIAM PETTY
Mr. SLINGESBY
Mr. COLWALL
Mr. HILL
Mr. HENSHAW
Mr. PALMER
Sir PAUL NEILE
Mr. AERSKINE
Dr. WILKINS
Dr. GODDARD
Dr. CROUNE
Dr. BALLE
Mr. OLDENBURG.

It was ordered, that Mr. SPRAT be ſent to by the ſecretary, to meet at Dr. WILKINS's houſe on the Monday following, to conſider of certain papers to be inſerted in the Hiſtory of the Society.

At the meeting of the SOCIETY on the ſame day,

[c] His relation of his travels through a great part of Spain, whither he went in September 1664, is printed at the end of that of Mr. RAY, London 1673, in 8vo.

The charter-book of the ſociety was produced, wherein his Majeſty, on the 9th of January, had written himſelf CHARLES R. FOUNDER, and his Highneſs the duke of York JAMES, Fellow; the duke of Albemarle alſo having entered his name at the ſame time. The preſident was deſired to kiſs his Majeſty's hand for this honour.

Sir ROBERT MORAY produced a couple of copper-ſtones brought out of Nova Scotia, and given him by Sir THOMAS KILLEGREW, both which ſeemed to have pure copper upon them, yet without any veins appearing in the ſtones. Dr. WHISTLER mentioned, that what ſeemed to be good copper, might be but a fluor, which would all fly away in the fire. Dr. CROUNE had leave to give a piece of it to a friend of his, ſkilful in the extracting of metals, to ſee what he could extract out of it. Mr. SLINGESBY and Col. LONG were alſo permitted to take each of them a piece of this ſtone, and to try the like.

Mr. HOOKE made three experiments, conceived by him to confirm his formerly propoſed hypotheſis about fire. The one was with a pipe having ſulphur in it, ſealed up hermetically, which, tho' made red-hot, yet burned not, but as ſoon as the air was admitted, burned away. The other was, that charcoal put into a pipe, and heated red-hot, did not at all conſume or burn. The third was, that charcoal put into a crucible, covered with ſand, was kept in a very great heat for about two hours, and being taken out after it had been ſuffered to ſtand to cool, was found ſcarce ſenſibly diminiſhed.

It being objected, that the air in the veſſels being ſuperonerated with the ſteam of the wood was the cauſe of the not burning; it was anſwered by Mr. HOOKE, that an experiment ſhould be made, to ſhew, that though the air were not thus ſuperonerated, yet the burning ſubſtance would go out, upon the account of wanting freſh air; and that this would be done by drawing the air out of the veſſel, and making thereby the ſmoke fall down.

He propoſed an experiment to be made at the next meeting by blowing forcibly with a certain contrivance the air included in a box, upon the coals, without making the coals burn.

Mr. HOOKE was elected curator, by office, to the ſociety, and that for perpetuity, with a ſalary of 30 l. a year *pro tempore*.

Sir ROBERT MORAY acquainted the ſociety with the relation, which he had received from Major HOLMES, concerning the two pendulum watches [d] recommended to him to try them in his late voyage to Guinea; the ſum whereof was [e], that in his return homewards, being obliged to ſail from Cape Corſo upon the coaſt of Guinea, weſtward ſome 500 or 600 leagues, to get the wind, he afterwards ſteered his courſe north-eaſt for 400 or 500 leagues; and then water beginning to fail to the three ſhips in his company, and this want obliging him to think of a place to re-

[d] Invented by Monſ. HUYGENS, and fitted to go to ſea by the earl of Kincardin, Phil. Tranſ. n° i. p. 14.

[e] Ibid. p. 13, 14.

freſh,

freſh, he called the maſters and pilots together, to compare their accounts about the place where they were; which being done, it was found, that one of the pilots was 80 leagues, another 100, and the third 120 leagues farther weſtward than Major HOLMES, who conſidering his reckoning, made by the pendulum-watches, found himſelf to be not above 30 leagues from the iſle of Fuego, one of the iſlands of Cape Verde. Whereupon the three pilots coming, in their calculation, nearer to one another than to that of Major HOLMES, deſired to go to the Barbados, to water there; to which Major HOLMES replied, that finding himſelf ſo near to Fuego by his watches, which he had no reaſon to miſtruſt, he deſired, that they would follow him, and ſteer their courſe thither; wherein having prevailed, he fell the very next day about noon upon the very iſland, which he had mentioned.

Sir ROBERT MORAY added, that Major HOLMES had promiſed to give to the ſociety a full and punctual account hereof in writing.

Mr. BOYLE brought in ſome printed copies of a part of his *Experimental Hiſtory of Cold*, with a deſire, that they might be recommended to the peruſal of ſome of the ſociety, to collect from thence ſuch experiments, as are there propoſed and wiſhed to be made, or ſuch as were by him made but imperfectly. The preſident took one of them, and delivered the reſt to Dr. GODDARD, Dr. MERRET, Dr. WHISTLER, Dr. BALLE, and Mr. HOOKE, upon condition to anſwer the end, for which they were preſented by the author.

Dr. MERRET related, that the froſt of this ſeaſon had been ſomewhat extraordinary, ſince it had produced effects not ordinary in this climate, by freezing whole bottles of white wine, rheniſh wine, and claret, as alſo ſack in ſmall glaſs canes, and likewiſe a little part, as big as a ſilver half-penny, of the ſolution of *Sal Gemmæ* at the bottom. It being inquired by Mr. BOYLE, whether this laſt might not be a coagulation rather than a congelation, it was anſwered by Dr. MERRET, that, as far as he could judge, it was a right congelation. It being inquired by the biſhop of Exeter, whether there might not be a greater degree of cold, when it does not freeze, or when the thermometer is moſt ſenſible of it, than when it does freeze; Mr. BOYLE ſuggeſted the following experiment;

Take a thermometer, and obſerve what degree it ſtands at, when the water juſt begins to freeze; and then ſee, whether at any time it falls lower, and the water freezes not.

Sir ROBERT MORAY mentioned, that the King had made an experiment of cold, with three glaſſes filled with ſweet water, uſed for waſhing, one glaſs bigger than the other, taken out of a trunk by the King's barber, and freezing, after they had a very little while been opened, firſt at the top, and then with ſhootings of ice to the bottom, and ſo congealing together.

Mr. HOOKE produced his thermometrical ſtandard for heat and cold, and gave an account how it had been made, viz. after the manner deſcribed. This was looked upon, though not exact, yet better than the other ways hitherto uſed.

The

Mr. OLDENBURG produced two printed papers, one ſent him from France, intitled *Le Journal des Scavans*, lately begun to be publiſhed [f] at Paris, containing ſuch matters as paſs in the commonwealth of learning. Notice was particularly taken of the account contained in this Journal [g] concerning Signior GIUSEPPE CAMPANI's book of his new optic glaſſes [h] made by a turn without a mold, and the new diſcoveries made thereby in JUPITER and its Satellites. The other paper came from a phyſician at Hamburgh, named JOHN DANIEL MAJOR, incloſed in a letter to the ſecretary, concerning the invention of injecting liquors into the veins of animals, which the author pretends to have been lighted upon by himſelf before he knew what had been done in England concerning it. The author having, with great reſpect to the ſociety, deſired the favour of their communicating to him what experiments had been made in England by means of this invention; it was ordered, that the ſecretary ſhould thank him for his civilities, and acquaint him, that one of their members having made a conſiderable number of experiments of that kind, intended to publiſh them ſoon.

Dr. WILKINS produced a letter written to him from Dr. POPE, dated at Venice Sept. 2, 1664, about the mines of mercury in Friuli, viz. how the mines are ordered; how this mineral is digged, of what colour, hardneſs, and weight it is; how it is got out of the ore; what engines are uſed; and what accidents befal the labourers, &c. The ſame letter contained likewiſe a deſcription of the contrivance of blowing the fire in the braſs works of Tivoli, where the water blows the fire, not by moving the bellows, but by making wind. It was ordered, that this letter be entered in the letter-book [i]; and that Mr. HOOKE conſider of the engine mentioned in it to produce air by the fall of water.

January 18, at a meeting of the COUNCIL were preſent,

The lord viſcount BROUNCKER, preſid[t]	Dr. CLARKE
The lord biſhop of Exeter	Mr. HENSHAW
Sir ROBERT MORAY	Mr. PALMER
Sir PAUL NEILE	Mr. COLWALL
Mr. AERSKINE	Mr. HILL
Dr. WILKINS	Dr. BALLE
Dr. GODDARD	Mr. OLDENBURG.

Dr. WILKINS made a report from the committee appointed December 21, 1664, to conſider of certain papers to be inſerted in the Hiſtory of the Society, viz. that the committee had met, and looked over a number of papers, as appeared by a liſt; and that they had thought good, that ſuch papers might be referred to the reſpective authors thereof, to review them before they were printed, ſeeing they were to be publiſhed with their names prefixed thereunto.

[f] The firſt was publiſhed on Monday 5 Jan. 1664, N. S.

[g] P. 11. *Edit. Amſterdam*, 1679.

[h] Printed at Rome in 12mo, under the title of *Raggnaglio di nuove Oſſervationi da* GIUSEPPE CAMPANI.

[i] Vol. i. p. 139. It is printed in the Philoſ. Tranſact. n° ii. p. 21, for April 1665.

ſt

It was ordered, that ſuch papers, according to the ſaid liſt, be referred and reviewed, and then delivered to Mr. SPRAT to inſert them; and before they were printed, to preſent them to the peruſal of the preſident: And

That Mr. HILL take care of having drawn out of the general liſt of the propoſers of candidates the names of every ſuch propoſer, together with the names of thoſe who were thus reſpectively propoſed by them; in order that the perſons propoſed might be minded of their payments by their propoſers.

Mr. HOOKE having made a propoſition of giving the diſcovery of the longitude, as he had conceived it, to the ſociety, it was ordered, that he ſhould chooſe ſuch perſons to commit this buſineſs to, as he thought good, and make the experiment; that by ſuch perſons choſen, the council might be ſatisfied of the truth and practicableneſs of his invention, and proceed accordingly to take out a patent for him.

It was ordered, that Dr. WILKINS meet the firſt time (at leaſt) with the committee for improving the Engliſh tongue; and that particularly he intimate to them the way of proceeding in that committee, according to the ſenſe of the council, viz. chiefly to improve the philoſophy of the language: And

That the printing of Mr. HORROX's papers be conſidered at the next meeting of the council.

At the meeting of the SOCIETY on the ſame day,

The duke of ALBEMARLE, propoſed by the preſident, was elected honorary member: And

The lord viſcount STAFFORD, propoſed by Sir PAUL NEILE, was elected.

Dr. POWER's letter, concerning his obſervations of the comet, was read.

Dr. WALLIS's letter, concerning the comet [k], and his extracts out of Mr. HORROX's letters, were read.

Dr. PELL ſuggeſting, that there would be an eclipſe of the moon on the Saturday following, it was deſired, that as many of the ſociety, as had conveniency, would obſerve it.

There was made an experiment to ſhew, that it was not the agitation of the burning body, that continued it burning. There was put a chafing-diſh with kindled coals in it into a glaſs covered, and having been a little while in it, they went out, nor would any agitation of the chafing-diſh revive them.

Then there was included a chafing-diſh, with burning coals, into a long ſquare wooden box, with a pair of bellows (according to Mr. BOYLE's former ſuggeſtion)

[k] Dated at Oxford, December 24, 1664, Letter-Book, vol. i. p. 218.

that were ſo fitted within, as to blow the air upon the coals: and after the bellows had been exerciſed 10 or 12 minutes, the coals went out, nor could they be revived by any blowing of the included air upon them; but as ſoon as freſh air was admitted, and the bellows plied, the coals recovered their burning.

The preſident deſired, that theſe experiments having anſwered what had been ſaid for the agitation of the air as neceſſary to burning, an experiment might be made to ſhew, that it was not the filling of the pores of the air with exhalations, and the rendering it thereby unable to receive more of them, that made it go out.

Sir ROBERT MORAY inquired, whether the compreſſion of the air might not cauſe the extinction of the fire? and he ſuggeſted an experiment to be made in the compreſſing engine, by putting a flaming or a glowing body into it, and by crowding a good quantity of air upon it, to ſee the effect thereof upon ſuch bodies.

Mr. HOOKE was of opinion, that as air much rarefied, wherein the parts are enlarged, was found to make burning bodies go out, ſo condenſed air would keep them longer alive.

Mr. BOYLE ſuggeſted theſe experiments: 1. After the air will ſuffer coals to burn no longer, to try to kindle, or to reduce to ſmoke, combuſtible matter, by caſting in the ſun-beams with a large burning-glaſs; and among other combuſtibles, to be ſure to try the experiment with finely powdered coals of the ſame kind with thoſe that went out, to prevent objections. And when the ſun-beams cannot be thrown in, then to let fall a red-hot iron (kept ſuſpended till the juſt time, that the coals are gone out) upon the materials, from which the ſmoke is to be raiſed. 3. To diſtil finely beaten charcoal with a very ſtrong naked fire, to ſee what it will afford, and ſo to be inſtructed of the truth of what is affirmed by ſome, that ſuch coals will afford no more ſteams.

Mr. HOOKE deſired, that ſome experiments might be ſuggeſted, that were thought not ſolvable by the hypotheſis of fire propoſed by him.

Sir ROBERT MORAY moved, that Mr. BOYLE, who had long ſince conſidered this ſubject of fire, and flame, and heat, might give the ſociety his thoughts thereof. Upon which Mr. BOYLE ſaid, that four or five years before he had made the conſideration of this ſubject a part of his buſineſs, but did not know, whether his preſent ſtudies of other matters would give him leave to review what he had then written.

Sir ROBERT MORAY mentioned, that he had recommended to Mr. BOYLE to try by ſeveral ways, as by diſtilling and boiling, what could be extracted out of Scots coal, himſelf having ſeen a kind of bituminous and pitchy ſubſtance drawn out of them.

Mr. BOYLE propoſed a way to ſeparate the ſalt out of ſea-water, by freezing it; viz. to put ſea-water in broad pans to be frozen, and to take off from time to

time the ice; which being thawed by itſelf, and hydroſtatically compared with the weight of an equal bulk of the remaining brine, would ſhew by the difference of weight, how much is gained by this experiment.

Sir ROBERT MORAY produced a diſcourſe concerning coffee, written by Dr. GODDARD at the King's command; which was read, and the author deſired to leave a copy of it with the ſociety.

Dr. MERRET moved, that torrefied peaſe might be diſtilled, to ſee what they would afford.

Mr. BOYLE mentioned, that he had been informed, that the much drinking of coffee produced the palſy.

The biſhop of Exeter ſeconded him, and ſaid, that himſelf had found it diſpoſe to paralytical effects; which however he thought were cauſed only in hot conſtitutions, by binding.

Mr. GRAUNT affirmed, that he knew two gentlemen, great drinkers of coffee, very paralytical.

Dr. WHISTLER ſuggeſted, that it might be inquired, whether the ſame perſons took much tobacco.

January 25, at the meeting of the COUNCIL were preſent,

Dr. WILKINS, vice-preſident	Dr. CLARKE
Sir ROBERT MORAY	Mr. COLWALL
Sir PAUL NEILE	Dr. CROUNE
Sir WILLIAM PETTY	Dr. BALLE
Mr. AERSKINE	Mr. GRAUNT
Mr. PALMER	Mr. OLDENBURG.

It was reſolved, that the buſineſs of procuring benefactors, and the manner of well managing the ſame, ſhould now be begun to be ſeriouſly conſidered of.

At the meeting of the SOCIETY on the ſame day,

The lord viſcount STAFFORD was admitted.

FREDERICK ALBERT duke of Brunſwick was preſent at the meeting, and ſubſcribed himſelf fellow of the ſociety.

It was ordered, that Mr. HOOKE bring in his obſervations of the late eclipſe of the moon on the 21ſt inſtant: And

That he peruſe Mr. STREET's appendix to his *Aſtronomia Caroline*, and give an account of it to the ſociety.

The perſons, to whom were recommended pieces of the copper-ſtone, brought in at the meeting of the 11th inſtant by Sir ROBERT MORAY, to whom it had been ſent out of Nova Scotia, being called on for an account of what they had done with it, it was ſaid by Sir ROBERT MORAY, that Mr. SLINGESBY had extracted good copper out of it; but Col. LONG and Dr. CROUNE, who were the two other perſons, that had taken pieces of this ſtone, were not yet ready with their account.

The experiment of including a chafing-diſh, with burning coals, in a wooden box, and of blowing, with bellows, the internal air upon them, was repeated with the like ſucceſs as formerly.

In order to ſee, whether the compreſſion of the air cauſed the extinction of fire, there was put a lamp into the condenſing engine; and a great quantity of air being crowded into it, it was found, that the lamp burnt in that compreſſed air about 15 minutes; whereas in the uncompreſſed air in the ſame engine, it burnt not above 3 minutes.

It was ordered, that at the next meeting an experiment ſhould be made, of filling a veſſel with ſmoke, to ſee, whether a candle put into it would burn as long therein, as it would do in the ſame air without ſmoke.

It was likewiſe ordered, that a fuſee ſhould, againſt the next meeting, be prepared of ſalt-petre and coal, to ſee how long it would continue burning in a cloſe veſſel.

Dr. ENT ſuggeſted, that ſome animal and a burning candle might be included together in a cloſe glaſs-veſſel, to ſee, whether they would live one as long as the other.

The experiments ſuggeſted at the preceding meeting by Mr. BOYLE were recommended, two of them to the curator of the ſociety, and the third to Dr. GODDARD.

Mr. NEILE ſuggeſted, that it might be tried, whether air conſiderably compreſſed contributes to freezing.

Dr. CLARKE related, that making a decoction of ſeveral bitter roots, as ſcorzonera, ariſtolochia, gentian, carduus benedictus, &c. in froſty weather, he found the next morning, that the ice formed at the top of the decoction had loſt all the bitter taſte, which the liquor had before; but that what remained liquid under the ice, was very bitter; and that the tincture was ſeen towards the bottom.

It was ordered, that if the weather ſerved, there ſhould be more experiments made of this kind, to ſee whether liquors, that have imbibed bitter and ſalt qualities, will loſe them by freezing.

The operator produced two glaſs-bottles with ſmall beer, both drawn out of the ſame veſſel, that had been in part frozen. The one being of the beer, that remained unfrozen, was high-coloured and ſtrong; the other drawn out of the ſame veſſel, after the beer was thawed, pale and very flat.

There was read a letter from Dr. WALLIS to Mr. OLDENBURG, dated at Oxford January 21, 166$\frac{4}{5}$[1], containing ſeveral obſervations of his upon the comet, and upon Mr. HEVELIUS's and Mr. HORROX's hypotheſes concerning the nature of comets in general.

In this letter the doctor obſerves, that the hypotheſis concerning the motion of comets, which Mr. HEVELIUS ſeemed to look upon as firſt diſcovered by himſelf, was only that, which others before him had conjectured; viz. that the true way of a comet is a ſtrait line, which being a tangent to a circle is at the point of contact neareſt to us; and as it is farther from that point, ſeems to move ſlower, and appears leſs. "The apparent motion, *adds* Dr. WALLIS, will be eſtimated "according to a line of tangents. What variation it hath from ſuch a poſition, "may ariſe from the earth's change of place. How far the calculation he [Mr. "HEVELIUS] gives, or the obſervations of this comet's motion appear to juſtify "that hypotheſis, I have not yet taken time to examine. But ſince conjectures "about ſuch hypotheſes be now ſtirring, I thought it not amiſs to revive that of "Mr. HORROX, which I find among his papers. In ſome of his letters to Mr. "CRABTREE, he intimates his conjecture of their iſſuing forth of the body of the "ſun by a ſtrait line. Afterward, upon examining the motion of ſome comets, "he addeth to that of their coming from the ſun's body ſome curvity of motion "ariſing from it. At length he ſeems to have pitched on ſuch an hypotheſis, as "the figure incloſed repreſents, making it iſſue out of the ſun's body, and by an "elliptical figure (or near it) to return thither again; according to which he hath "traced the motion of that in *anno* 1577, (according to TYCHO's obſervations, as "I ſuppoſe.) But this paper being his own hand, and (for ought I ſee) all that "is remaining concerning this hypotheſis, I deſire, that it be carefully preſerved. "I can paſs no judgment of the hypotheſis concerning the truth of it; but, if it "anſwer obſervation, it is very ingenious."

February 1, Dr. MERRET produced ſome white mucilaginous ſubſtance, like that which is called ſtar-fall, with ſome little black ſpots intermixed like eggs; which evidently came out of a frog's belly, that had been killed by a crow, having one of its legs torn off, and a little hole made in her belly, out of which the matter iſſued.

[1] Letter-Book, vol. i. p. 220.

He produced likewiſe the ſeeds of a fungus, which had been looked on in the microſcope, and appeared uniform ſeeds. Dr. MERRET and Mr. HOWARD were deſired to make trial of theſe ſeeds by ſowing them.

Dr. WREN produced ſome obſervations of the comet, with a theory.

The preſident communicated a letter from the earl of Sandwich containing ſome obſervations of the comet, which were referred to Dr. WREN and Mr. HOOKE.

Col. THOMAS BLOUNT of Greenwich was propoſed candidate by Dr. WILKINS.

A box was produced by Mr. GRAUNT of a very light, ſoft conſiſtence, like the finer part of cork.

An experiment was tried with a burning lamp, placed in the condenſing engine, and ſuffered to continue in the ordinary air included in the receiver uncondenſed, for three minutes. The lamp being then taken out, was, after the ſatiated air of the receiver had been blown out, put in again, and cloſed up, and new air being continually forced in, the lamp, upon ſuch forcing in of the air, was found to continue burning 17 minutes; and about a minute after the pumping ceaſed, the lamp went out, having continued burning after its incloſure 18 minutes.

Mr. BOYLE moved, that ſpirit of wine might be tried, whether it would burn in the exhauſted receiver.

February 8, the experiment of burning charcoal in a cloſe receiver was again tried, which continued fired not above one minute and a half.

The like experiment was tried with a bird put into the receiver, together with a chafing-diſh of coals, upon the extinction of which, about the ſame time, the bird alſo began to die, but being let out into the open air, recovered.

An experiment was made of trying to kindle fine powder of charcoal, put into a cloſe glaſs receiver, with a large ſquare piece of iron heated red-hot, and let down upon it, within the receiver, according to Mr. BOYLE's late ſuggeſtion. After a ſmall chafing diſh of coals had been ſuffered to burn and go out in the ſaid receiver, it was found, that the red-hot iron lay on the top of the charcoal-powder, without kindling or firing of the powder at all; till by opening the cover of the receiver, and thereby admitting the external air, it began to kindle all about the iron, and to ſmoke and burn apace.

Mr. BAGNALL produced a bag-full of *lapis amiantus* or *aſbeſtos*. He was deſired to procure more of it, in order to the making of paper, which he promiſed to endeavour; and Mr. HILL was deſired to take care of making this paper, when the ſtones were procured.

EDWARD earl of Clarendon, lord high chancellor, being put to the ballot, was unanimouſly elected. Col. BLOUNT was likewiſe elected and admitted. Mr.

SAMUEL PEPYS, esq; was proposed candidate by Mr. POVEY.

Some observations concerning the comet from Monsieur BEAUFORT, brought in by Sir ROBERT MORAY, were by order delivered to Mr. HOOKE, and to be communicated to Dr. WREN.

Dr. WILKINS was desired, upon the reading of a letter from Dr. WALLIS, to speak to Dr. WORTHINGTON, to procure what papers he could of Mr. CRABTREE, especially, if it might be, his Diary of Observations.

Another letter was read by Mr. OLDENBURG from RICHARD REED, esq; signifying his sending a parcel of red-streak grafts.

A pipe red-hot, and lying in a chafing-dish, being blown through, did not emit any visible flame, but burnt a paper held close to it.

A letter was read by Capt. GRAUNT from Sir ANDREW KING, accompanying a present to the society of two load-stones, and three several kinds of earth.

Dr. HOARE produced a white body, brought from the Alps, said to be petrified snow; which Mr. HOOKE was desired to view in the microscope.

He produced likewise the body of a frog, when the flesh was turned into a mucilage; and a ball of hair taken out of the stomach of a cow.

February 15, PHILIP CARTERET, esq; eldest son of Sir GEORGE CARTERET, was proposed candidate by Dr. CLARKE. And

Mr. PEPYS was unanimously elected, and admitted.

Dr. CHARLTON produced a fowl, called the true merganser, with a description of it in Latin, which was ordered to be filled up.

He likewise reported, that he took out the trachea of the said fowl, which being an extraordinary diver, he found in it a receptacle for air, about the entrance into the lungs, in a triangular form, with small muscular fibres about it.

Dr. CLARKE observed, that he had found something like this in drakes, but could never see any in ducks.

A letter to the president from Monsieur BOREEL was read, containing an account of a very strange cure of a wound in the lungs; which was ordered to be entered into the Letter-Book [m], and was as follows:

[m] Vol. i. p. 234.

[a] My

" My Lord, London, Jan. 27, 166$\frac{5}{6}$.

" TO obey your commands, I have ſet down in writing, the relation of an " extraordinary cure performed by Monſieur SUIF in Paris; and I humbly " beg your lordſhip's pardon for the ill terms and expreſſions it is in, I being " born a ſtranger to this tongue, and a very backward apprentice in it.

" Monſieur de BOTAQUET, a gentleman born in Normandy, was a captain in " the ſervice of the United Provinces. He did fight a duel at Delft in Holland, " and was run in his breaſt at the right ſide. When he received the wound, he " fell down, ſo that his party thought him dead, and fled immediately. The " chirurgeons in Holland did what their ſkill afforded, and did afterwards ſhut " up the wound, ſo that the patient did go abroad to his functions. But ſome " good while after this, he did grow very weak; the fleſh of his body waſted away " viſibly every day, ſo that the phyſicians and chirurgeons in Holland could ſay " nothing to it, and his friends did adviſe him to go to Paris, which place did af- " ford very extraordinary cures; which the patient did, and addreſſed himſelf to " Monſieur SUIF, a renowned chirurgeon living in the reign of King LEWIS XIII. " who being exactly informed of the circumſtances of the accident, and the reme- " dies formerly applied to the wound, told the gentleman, he would undertake " to cure him, if he would exactly obſerve what he ſhould preſcribe; but withal, " that he could not undertake to cure him, except the ſaid patient would undergo " to endure at ſixteen ſeveral times, at every time, as much pain as a man ſuffers, " that is broke alive upon the wheel: That his life was loſt ſurely, except he did " undergo this; and it being a thing worth the patient's conſideration, he, the " ſaid chirurgeon, did give him an hour's time to conſider of it. In the mean " time he went to viſit another wounded patient. When he returned, the ſaid " Monſieur de BOTAQUET declared his reſolution to undergo the torment. Where- " upon Monſieur SUIF took him into his houſe, did apply ſome preparatory upon " the place, where the ſword formerly entered, and after two days made a ſquare " opening in the right ſide of his breaſt, of that bigneſs, that he could conve- " niently put in his hand, cutting two ribs, and ſinged the bones immediately " after the cutting. After which, the ſaid chirurgeon finding the patient's lungs " in the worſt condition by putrefaction corrupted, pulled them toward the ſaid " opening, and did cut off with ſcizzars all that was corrupted, inſomuch that he " took off the greateſt part of the lungs, for the ſword had hurt the lungs very " near in the higheſt and thickeſt place, and all, that was under the wound, was " corrupted: Which being done, and having applied to the lungs ſuch things he " thought fit, he left the patient till the next day, at which time he handled " the ſaid lungs with his hands, as if it had been any exterior limb of the body, " and ſo continued for thirteen days, at which time the inward parts did grow ſo " ſenſible, that the patient did declare it impoſſible for him to endure it any longer, " and was reſolved rather to die than to ſuffer the ſaid torment longer; but was " perſuaded by his friends, divines, and the ſaid Monſieur SUIF, to endure the " operation.

" The

" The ſixteen days being paſt, the chirurgeon did not touch the inwards any " more, and the opening in his ſide was ſhut up, which required ſome time, and " the patient did conſtantly wear a piece of ſilver plate upon that place.

" The ſaid patient was afterwards in good health, lived as he had done before, " fed hard: his humour was the ſame as formerly, being of a continual merry " diſpoſition. He did all his functions in his place, and had no inconveniency " of this accident, except, that he was ſomething ſhort-winded, which neverthe- " leſs did not hinder him in performing any of his actions. He lived ſome ten " years, or thereabouts, after this cure, and died of a fever; but I could never " hear, that this cure was ſuſpected to have any ways occaſioned his death.

" There are many gentlemen at the Hague, and elſewhere, that can witneſs this; " and I myſelf have for many years frequented his company, and had the above- " mentioned particulars from the patient's own mouth.

" And ſo I reſt

" Your lordſhip's moſt humble and obedient ſervant,

" BOREEL."

Mr. HOOKE made an experiment with charcoal incloſed in a glaſs, to which nitre being put, and the hole ſuddenly ſtopt again, the fire revived, though no freſh air could get in.

Mr. BOYLE affirmed, that gun-powder burns very well in a receiver, out of which the air has been extracted.

He likewiſe affirmed, that tin mixed with nitre, and Mr. HOOKE added, that filings of iron mixed with it, would kindle it. It was ordered, that the experiments ſhould be made.

A quantity of *yeſſo* or *gypſum*, ſent by Sir ANDREW KING out of Spain, was produced.

Col. BLOUNT reported, that the glaſs-houſes give over working in ſummer-time. The reaſon of which was doubtful, whether becauſe the workmen could not bear it, or that the fire was not ſufficient. He added, that the workmen were, to his knowledge, deſirous to continue working.

It was ordered, that Mr. HOOKE make trial with a flaming body, and a body heated without flame, whether the heat and flame are preſerved beſt in hot or cold air.

Mr. HOOKE made an experiment of gun-powder burning without air.

It

It was ordered, that a ſealed weather-glaſs be made of thicker glaſs, to be incloſed in the compreſſing-engine, to ſee, whether any alteration would be made in the liquor.

Mr. BOYLE produced a letter containing a relation of a monſtrous calf, which was ordered to be regiſtered [a].

Mr. WILLIAMSON communicated two obſervations of the late comet, made at Madrid.

Sir ROBERT MORAY moved, that Mr. HOOKE's lecture might be perfected and printed; which was aſſented to.

Kindled charcoal incloſed in a receiver, without exhauſting the air, went out in one minute; and upon the experiment's being repeated, it continued 1′. 20″.

Dr. WILKINS moved, that Dr. CHARLTON be put in mind of his obligation to bring in the anatomy of fowls and fiſhes.

It was ordered, that a body be procured the next ſeſſions, and that Dr. CHARLTON endeavour to get a meeting of ſome phyſicians of the ſociety, in order to conſider of experiments and inquiries:

That Sir Edward HARLEY, Mr. HAAK, Col. BLOUNT, and Dr. PELL, be added to the committee of agriculture, and Col. BLOUNT to the mechanical committee: And

That Mr. HOOKE's experiment of the reſiſtance of air paſſing into ſmall holes, be tried.

February 22, Mr. PHILIP CARTERET was elected.

The duke of Brunſwick ſent, by one of his gentlemen, two cuts of the late comet, as it was ſeen at Augſburg and Nuremberg, in Germany; as alſo a cut of a ſtrange ſea-monſter taken upon the coaſt of China; all which he deſired might be returned to him.

There was tried an experiment with a common ſealed weather-glaſs placed in the condenſing-engine, with a gage in it; and the air being conſiderably compreſſed, the liquor in the thermometer was not found to riſe ſenſibly.

Another experiment was made to try what ſtrength was requiſite to force the air into the bores of ſmall pipes filled with water; or how much of the preſſure of the air is taken off by its ingreſs into ſmaller and ſmaller holes; and it was found, that the ſmaller holes required the greater force to drive in the air, and to force out the water.

[a] It does not appear in the Regiſter, but is printed in the Philoſ. Tranſ. n° i. p. 10.

There was alſo made an experiment with nitre, put in an earthen crucible upon the fire; and ſulphur being caſt on the top of it, it gave a very bright vivid flame.

The preſident opened a packet addreſſed to the ſociety, containing a printed diſcourſe of Monſieur de SORBIERE upon the late comet, with a Latin letter from him to the ſociety dated at Paris, February 13, 166⅔, N. S. *. The letter being read, Mr. OLDENBURG was deſired to peruſe the diſcourſe, and give an account thereof to the ſociety at their next meeting; after which the council would conſider what return to make to the author.

Sir ROBERT MORAY produced the picture of a certain Indian plant, called Niſſy, ſent him by Sir PHILIBERTO VERNATTI from Batavia in Java, from whom Sir ROBERT was deſired to procure a deſcription of the qualities of this plant.

Mr. OLDENBURG produced an account ſent from Italy concerning the effect of the new optic glaſſes of CAMPANI tried upon ſeveral characters. He was deſired to tranſlate it into Engliſh againſt the next meeting, and the preſident, Sir ROBERT MORAY, and Mr. HOOKE to think upon a fit place to make the like obſervations in, with glaſſes made in England of about the ſame length with thoſe of CAMPANI.

Mr. HOOKE gave an account of a dog, that died, after the ſpleen had been taken out; affirming, that he had ſeen a kind of glandule grown on to a piece of the ſpleen, that was left; and that the liver and cawl were altogether putrefied.

It was ordered, that another dog ſhould be thus cut by Dr. CHARLTON, at a convenient ſeaſon; as alſo, that Dr. CLARKE ſhould be deſired to join with Dr. CHARLTON in cutting out the ſpleen of another dog, without tying up the veſſels.

Mr. BOYLE propoſed theſe following experiments; 1. To put an iron crucible into a receiver of his pneumatic engine, and, as ſoon as the receiver is well exhauſted, to caſt flower of brimſtone upon it, to ſee whether it will flame. 2. To try how the ſpirit of wine burns in the ſame engine. 3. To try, whether bodies reſolved by the fire in veſſels, exhauſted of air, will yield the ſame ſubſtances, to wit, oil, ſalts, ſpirits, and phlegm, as to number and qualities, as they do in thoſe ordinary veſſels, wherein what is not filled by the body to be diſtilled is taken up by air. This he propoſed might be tried by a ſolid piece of competently heated ſilver, or with iron ſuſpended in an exhauſted receiver, wherein bodies of a looſe texture, and eaſily reſolvable (as cork, wax, camphire, amber, &c.) may be nimbly applied. This he conceived to be the rather worth trying, becauſe it appeared from common ſoot, that there may be great odds, upon the account of the air, between bodies reſolved in different ways; ſince vegetables, reduced in the open air to ſoot, yield a conſiderable quantity of a volatile ſalt, like that of hartſhorn and other animal ſubſtances, whereas in common diſtillations he had not yet found them to yield one grain of any ſuch ſalt.

* Letter-Book, vol. i. p. 239.

Mr. HOOKE produced a new ſmall quadrant contrived by himſelf, to make, by the means thereof, both celeſtial and terreſtrial obſervations with more exactneſs than by the largeſt inſtruments, that had been hitherto publicly known. This quadrant was only of 17 inches radius, being by the contrivance of a ſmall roller, that moved upon the limb of it, made ſo accurate, that each degree was actually diſtinguiſhed into 60 minutes, each of which minutes being about one third of an inch long, was actually divided into ſix parts, denoting every 10 ſeconds in a minute. The ſights were likewiſe ſo contrived, though but ſhort, as to be no leſs curious in diſtinguiſhing the parts of a minute in the viſible object. The perpendicular alſo of the quadrant was ſo contrived, that, though it exceeded not much three feet in length, yet it could be adjuſted, by the means of an index, ſo exactly, as if it were 60 feet long.

March 1, at the meeting of the COUNCIL were preſent

The lord viſcount BROUNCKER, preſid[t]
Sir ROBERT MORAY
Sir PAUL NEILE
Mr. AERSKINE
Dr. WILKINS
Dr. CLARKE
Mr. PALMER
Mr. COLWALL
Mr. OLDENBURG.

It was ordered, that four or five hundred tickets be printed for demanding the arrears of the fellows of the ſociety, leaving blanks for the time and the reſpective ſums: And

That the *Philoſophical Tranſactions*, to be compoſed by Mr. OLDENBURG, be printed the firſt Monday of every month, if he have ſufficient matter for it; and that that tract be licenſed by the council of the ſociety, being firſt reviewed by ſome of the members of the ſame; and that the preſident be deſired now to licenſe the firſt papers thereof, being written in four ſheets in folio, to be printed by JOHN MARTYN and JAMES ALLESTRY, printers to the ſociety [p].

At the meeting of the SOCIETY on the ſame day,

[p] The firſt number of the *Philoſophical Tranſactions* is dated Monday March 6, 166⅘, and contains 16 pages in 4to. At the end of it, it is ſaid to be *printed with licence*. The introduction of Mr. OLDENBURG, the editor, is in theſe words: "Whereas there is nothing more neceſſary for promoting the improvement of philoſophical matters, than the communicating to ſuch, as apply their ſtudies and endeavours that way, ſuch things, as are diſcovered or put in practice by others; it is therefore thought fit to employ the preſs, as the moſt proper way to gratify thoſe, whoſe engagement in ſuch ſtudies, and delight in the advancement of learning and profitable diſcoveries, intitle them to the knowledge of what this kingdom or other parts of the world do from time to time afford, as well of the progreſs of the ſtudies, labours, and attempts of the curious and learned in things of this kind, as of their complete diſcoveries and performances; to the end, that ſuch productions being clearly and truly communicated, deſires after ſolid and uſeful knowledge may be further entertained, ingenious endeavours and undertakings cheriſhed, and thoſe, addicted to and converſant in ſuch matters, may be invited and encouraged to ſearch, try, and find out new things, impart their knowledge to one another, and contribute what they can to the grand deſign of improving natural knowledge, and perfecting all philoſophical arts and ſciences; all for the glory of God, the honour and advantage of theſe kingdoms, and the univerſal good of mankind."

Sir

Sir NICHOLAS SLANNING and Mr. PHILIP CARTERET were admitted.

There was an experiment made to try, whether ſulphur caſt upon heated nitre would burn without air, by putting nitre into an iron crucible red hot, and incloſing it in the rarefying engine, whence the air being well exhauſted, (which appeared by the ſucker's going down almoſt to the bottom) the ſulphur, which thereupon by turning of the ſtop-cock was let fall upon the nitre, was ſeen to flame as freely, as if it had been in the open air.

The other experiment appointed for this day, of burning ſpirit of wine in the ſame engine, was referred to the next meeting; and Mr. HOOKE was ordered to deviſe more experiments to elucidate the nature of fire and burning.

A letter of Monſieur HUYGENS to Sir ROBERT MORAY, dated at the Hague Feb. 27, 166$\frac{4}{5}$, N. S. [q] was read, giving notice, 1. Of his inſtructions printed in Dutch for pilots, about the uſe of his pendulum watches at ſea. 2. Of an odd kind of ſympathy perceived by him in theſe watches ſuſpended by the ſide of each other. 3. Of his agreement with Dr. WREN about the place of the comet. 4. Of his opinion concerning Monſieur de SON's chariot, together with his thoughts of one of his own deviſing.

It was thought proper hereupon, 1. That the ſaid inſtructions ſhould be compared with thoſe of the preſident, to have them printed in Engliſh. 2. That the preſident and Sir ROBERT MORAY ſhould be deſired to think upon and make ſome experiments, to find out upon what account this pretended ſympathy ſhould happen; whether from a magnetical cauſe, or from the agitation of the air; and, among other things, to obſerve, whether pendulumns, that go alike in any clock-work, go together, hanging near to one another; as alſo, whether three or four watches do the ſame, that two do. 3. That Mr. HOOKE ſhould extract out of his lecture a diſcourſe upon the late comet, and fit it for the preſs, together with the neceſſary ſchemes. 4. That Col. BLOUNT having given ſeveral good hints for improving carriage, and particularly for trying experiments about chariots by weights, ſhould be deſired to bring in, after more trials upon this ſubject, a model of his conceptions about it.

Mr. EVELYN's paper, intitled, PANIFICIUM; *or the ſeveral manners of making bread in France, &c. where by general conſent the beſt bread is eaten*, was read, and ordered to be regiſtered [r]. And the author having ſuggeſted, that ſome good Engliſh oeconomical perſons might be conſulted for the beſt of Engliſh bread, biſcuits, and cakes; and alſo that Dr. KUFFLER might be deſired to give a perfect deſcription of his new oven, both ſtationary and portable; the firſt was recommended to thoſe, who had opportunity of conſulting with ſuch perſons for making of the beſt Engliſh bread, and particularly to Col. LONG; the other was recommended to Mr. BOYLE.

[q] Letter-Book, Vol. i. p. 255. [r] Regiſter, Vol. iii. p. 72—78.

Sir ROBERT MORAY propoſed, that it might be thought upon, how to make bread without yeaſt; as alſo how to keep yeaſt all the year.

Col. BLOUNT ſuggeſted, that furz-buſhes rolled in yeaſt make the yeaſt keep all the year.

Dr. CLARKE affirmed, that ſome good country houſe-wives beat together ſalt, whites of eggs, and flour, to make it ſerve inſtead of yeaſt both for bread and beer.

Dr. PELL ſeconded this, by affirming, that a little flour and the white of an egg beaten together with a little of the firſt wort will ferment a whole brewing.

Dr. WILKINS mentioned, that Mr. GRAUNT had received a good account of the poiſon of Macaſſar, and the effects of the ſame; rectifying withal a part of the common ſtories made thereof; and that he had got ſome of the poiſon itſelf, which he intended to produce before the ſociety.

The Italian-account concerning the performances of the optic glaſſes of CAMPANI upon certain characters being produced by Mr. OLDENBURG in Engliſh, it was ordered, that the preſident, Sir ROBERT MORAY, Col. LONG, Mr. HOOKE, and as many more as could conveniently, ſhould meet on the Thurſday following at night in Weſtminſter-hall, and try ſome Engliſh glaſſes of Mr. REEVES's making of the ſame length upon the ſame characters, obſerving the circumſtances preſcribed in the paper concerning diſtance, light, &c.

The preſident, Sir ROBERT MORAY, Dr. WILKINS, and Mr. EVELYN were deſired to view a place near Col. BLOUNT's houſe at Deptford, fit to try experiments of carriage, &c. there being a couple of workmen very fit to make and mend what might be found neceſſary for ſuch trials.

March 8, the experiment of flaming ſpirit of wine, as it was propoſed by Mr. BOYLE, included in a receiver of the pneumatic engine, was made with this ſucceſs, that the ſaid ſpirit was extinguiſhed in the receiver exhauſted in 9 ſeconds; in the unexhauſted it kept burning 24 ſeconds.

The experiment with nitre and filings of tin, ſuggeſted likewiſe by Mr. BOYLE, was alſo made; and the filings of tin caſt upon the nitre over a fire made it flame; though it was not known, that any ſulphur ever was extracted out of tin; which ſeemed to infer, that there are bodies combuſtible, that are not ſulphureous.

Dr. WILKINS propoſed, that the following experiment of Dr. WREN's ſuggeſtion might be made; viz. to put a fermenting liquor in a glaſs ball, to which a ſtop-cock ſhould be fitted, and to tie a bladder about the top of the ſtop cock; by which means a certain air generated by the fermenting liquor would paſs into the bladder, and upon the turning of the ſtop-cock be kept there in the form of air,

air, without relapſing into water. This or the like experiment was ordered to be tried at the next meeting.

Mr. HOOKE mentioned ſeveral liquors, that by their working upon one another would generate an air; viz. oil of tartar, and vitriol, ſpirit of wine and turpentine, &c.

Dr. CHARLTON affirmed, that rynkower wine and gall put together would preſently ferment.

Col. BLOUNT affirmed, that almoſt all greens put into wines would revive them, by putting them into a new fermentation; and he named angelica in particular for that purpoſe. He added, that oiſter-ſhells pounded and put into wine would make it ferment.

Mr. GRAUNT produced a box of Macaſſar poiſon, which was ordered to be tried at the next meeting, by dipping a needle in the poiſon, and pricking ſome dog, or cat, or pullet with it.

He produced likewiſe a ſort of ſmall nuts, which he affirmed to have been taken in a Spaniſh ſhip, coming from the Weſt-Indies ſome years before; promiſing to procure more of them, in order to examine what they were.

There was read a letter of Monſieur HUYGENS to Sir ROBERT MORAY, from the Hague, dated the 6th of March, 166⅔, N. S. [*]; containing, firſt, his deſire of being more particularly informed about the pendulum watches committed to Major HOLMES; and a rectification of a miſtake concerning a certain ſympathetical agreement, produced in ſuch watches by the motion of two chairs.

Occaſion was taken here by ſome of the members, to doubt the exactneſs of the motion of theſe watches at ſea, ſince ſo ſlight and almoſt inſenſible motion was able to cauſe an alteration in their going.

There being alſo mention made again of Major HOLMES's relation of the late performances of the pendulum watches in his voyage to Guinea, it was affirmed by ſeveral of the members, that there was an error in that relation, as to the iſland named therein; and that it was not the iſland of Fuego, which the Major's ſhips had touched in order to water there, but another thirty leagues diſtant from it. Mr. PEPYS was deſired to viſit the Major, and to inquire farther concerning this particular for the ſatisfaction of the ſociety.

Dr. MERRET produced an ox-bladder, which was double, having a partition and two ureters, into which water being put, it remained diſtinct in each bladder, but ran out of one hole, into which both the ureters terminated.

[*] Letter-Book, vol. i. p. 257.

Dr.

Dr. CHARLTON mentioned, that a little quantity of viper's fleſh put into a fermenting liquor would preſently ſtop the fermentation, and keep the liquor quiet for a pretty while. He added, that in making of viper-wine, he never obſerved any fermentation, though the air was excluded from it.

Mr. HAAK related, that he had put ſome young live vipers into a bottle with Malaga wine, which, though not full at firſt, became full after a while; whereupon untying the ſtring of the ſtopper, the cork burſt out againſt the ceiling of the room, three of the vipers following after it; the reſt he kept ſtill in the bottle unconſumed.

Col. BLOUNT propoſed the improvement of the French chariot, by taking off the burthen from the horſe, by means of two ſmall wheels before, retaining the long ſpringy boards.

Mr. HOOKE ſuggeſted, that for the convenience of turning, the ſprings might be doubled, and ſo made ſhorter, whereby the rider would have eaſe, and the chariot turn in any ſtreet conveniently.

March 15, Mr. DANIEL COXE was propoſed candidate by Dr. WILKINS.

The experiment propoſed by Dr. CHARLTON of mixing rynkower wine and ox-gall together, for a preſent fermentation, was tried, but ſucceeded not.

The experiment of generating air was made after this manner. There was taken a common glaſs-vial, with two pipes, and ſome pounded oiſter-ſhells and aquafortis; and as ſoon as the aquafortis was by one of the pipes poured in upon the powder, and the hole ſtopt with a piece of hard cement, the exhalation cauſed by the corroſion of the ſhells by the aquafortis, in a very little time blew up the bladder (tied on the other pipe) ſo as to ſwell it with air very plump: which expanſion remained till the riſing of the ſociety, when the veſſel in that poſture, was locked up in the box of the watch, to remain there till the next meeting.

Dr. WREN made uſe of this experiment to explain the motion of the muſcles by exploſion.

There was alſo taken a bottle, containing ſtrong ale, which had been bottled a while, and over the bottle's mouth was tied an ox-bladder, out of which the air was ſqueezed: after which, by looſing the cork by degrees, the air was blown into the bladder by the expanſion of the fermenting liquor within, and the bladder was almoſt half filled with an aerial ſpirit, generated by the working liquor.

Mr. BOYLE ſuggeſted, that this experiment was capable of improvement for the producing of air under water; and he mentioned coral or oiſter-ſhells and diſtilled vinegar, as wholeſome ſubſtances for that purpoſe. He moved, that an animal might be put into a receiver of his engine, and the air exhauſted till the creature

creature grew ſickly; and that then ſome new air might be produced in the receiver by a contrivance of making diſtilled vinegar work upon coral, to ſee, whether by this means the animal could be revived.

Dr. WILKINS moved, that at the next meeting the air generated by the mixture of aquafortis, and the pounded oiſter-ſhells, might be blown into a dog's or cat's mouth, in order to ſee what would be the effect of it.

The experiment of trying to poiſon a dog with ſome of the Macaſſar powder, in which a needle had been dipped, was made, but without ſucceſs. It is to be remarked, that this was done with the poiſon, as it was returned by Dr. CHARLTON, who had taken it away to his houſe, contrary to the order of the ſociety; for which fact the operator was ordered to ſummon him to attend the ſociety at their next meeting, that he might be heard, before any thing be declared againſt him for this action.

Mr. PEPYS gave an account of what information he had received from the maſter of the Jerſey ſhip, who had been in company of Major HOLMES in the Guinea voyage, concerning the pendulum watches, viz. that the ſaid maſter affirmed, that the vulgar reckoning proved as near as that of the watches, which, added he, had varied from one another unequally, ſometimes backward, ſometimes forward, to 4, 6, 7, 3, 5 minutes; as alſo that they had been corrected by the uſual account. And as to the iſland, at which they had watered, the ſaid maſter declared, that it was not Fuego, but another 30 miles diſtant from the ſame weſtward.

Sir ROBERT MORAY reported hereupon the ſubſtance of Major HOLMES's relation, rectifying ſome miſtake in the number of the leagues, formerly mentioned to have been 400 or 500 in ſteering the courſe from the weſt to the north-eaſt, and affirming, that it was but about 200 leagues: but the courſe from Guinea weſtward had been 800 leagues. He added, that though they had not watered at Fuego, yet they had made that iſland at the time, which the Major had foretold, and were gone from thence to another, more convenient, for watering. He mentioned alſo, that the Major had repeated his promiſe to him, of giving the whole hiſtory in writing, as ſoon as he could have leiſure for it; and that in the interim he had related to Sir ROBERT two experiments more, made by him in the ſame voyage. The one was, that having ſailed fifty or ſixty leagues from the coaſt of Africa weſtward, and being come back again to the ſame place, he found the watches agree with the ſun, juſt as they did when they departed thence. The other was, that having quitted the Equinoctial Line, to ſeek the coaſt of Africa, ſeven or eight degrees; and the wind becoming ſcanty, and continuing ſo for ſeveral days, whereby they were driven aſtern about eighty leagues eaſtward, which the pilots of the other ſhips did not perceive, he diſcovered it by the watches. Which ſhewed, that theſe watches were capable of diſcovering the currents in the ocean, as well as the longitudes; a thing, that was never yet done, and thought impoſſible to be done.

Mr. HOOKE remarked, that, in his opinion, no certainty could be had from theſe watches for the longitudes, becauſe, 1. they never hung perpendicular, and conſequently the cheeks were falſe. 2. All kind of motions upward and downward, (though it ſhould be granted, that the watches hung in an exact perpendicular poſture) would alter the vibrations of them. 3. Any lateral motion would produce yet a greater alteration.

The preſident obſerved, that theſe difficulties had been conſidered, and the matter put to experiment; which was to clear all.

In the mean time it was ordered, that the watches being brought aſhore, ſome experiments ſhould be made with them, by contriving up and down motions, and lateral ones, to ſee, what alterations they would cauſe in them.

Mr. HOOKE declared, that he intended to put his ſecret concerning the longitude into the hands of the preſident, to be diſpoſed of as his lordſhip ſhould think fit.

Mr. PEPYS was deſired to beſpeak a man, at Deptford, for diving.

The preſident, the earl of Northampton, Mr. BOYLE, Sir ROBERT MORAY, Sir WILLIAM PETTY, Mr. HENSHAW, and Mr. HOOKE, were appointed a committee, to conſider of the improvement of artillery.

Sir ROBERT MORAY was deſired to return the thanks of the ſociety to Col. LEGGE [u], for having obtained of the King a gun for the ſociety to make experiments with.

Mr. HOOKE was ordered to draw up a ſeries of experiments for the improving of artillery.

He mentioned, that he had diſcovered valves in the pores of wood, and ſeen them croſs the pores; which he was deſired to ſhew the ſociety.

There was read a letter from Signior CASSINI of Bologna, dated at Rome Feb. 14, 166$\frac{4}{5}$, N. S. and ſent from Paris by Monſieur AUZOUT to Mr. OLDENBURG, containing his hypotheſis of the motion of the late comet, about the Great Dog. Which letter was ordered to be preſerved [w].

Mr. OLDENBURG made a motion in the name of ſome member of the ſociety, that when any fellow ſhould have a philoſophical notion or invention, not yet made out, and deſire, that the ſame ſealed up in a box might be depoſited with one of the ſecretaries, till it could be perfected, and ſo brought to light, this might be allowed for the better ſecuring inventions to their authors.

[u] Col. WILLIAM LEGGE, of the bed-chamber to King CHARLES II. lieutenant and treaſurer of the ordnance. He died Oct. 13, 1670, in the 83d year of his age.

[w] Letter-Book, vol. i. p. 243, *& ſeq.* See Philoſ. Tranſact. n° 2, April 1665, p. 17, 18.

This motion was aſſented to, but with the following addition, that ſuch perſons as ſhould deſire this ſhould be put in mind, that they would endeavour to improve and finiſh their notions and inventions, and after about a year's interval produce them to the ſociety.

Dr. GODDARD and Mr. HOOKE were deſired to conſider of the barometrical obſervations made through the laſt year, and bring in an account thereof; and the former to be curator of making diſſolutions of bodies.

March 22, Dr. GILBERT SHELDON, archbiſhop of Canterbury, was elected *nemine contradicente.*

DANIEL COXE, eſq; was elected and admitted.

Dr. JOHN DOLBEN, dean of Weſtminſter, was propoſed candidate.

There were two experiments made for the finding out a way to breath under water, uſeful for divers. The firſt was made by putting a bird into the rarefying engine, and with it a glaſs-bottle with diſtilled vinegar and pounded oiſter-ſhells, which, whilſt the vinegar is diſſolving them, affords a ſteam, which is ſuppoſed to be a kind of new air fit for reſpiration. The bottle was alſo cloſe ſtopt with a cork, ſo ordered, that by putting the ſtop-cock placed on the top of the receiver, the cork might by turning it be pulled out, without admitting an ingreſs of the external air into the receiver at all. Then the receiver being accurately cemented to the engine, the air was pumpt out; whereupon the bird grew ſick, and when he was thought near dying, the bottle was unſtopped, that the ſteams and ſuppoſed air, that had been ſhut up in it during the operation, might have liberty to expand themſelves in the receiver, for the refreſhing and recovering of the animal. But here it ſucceeded not, ſo that though the bird was taken out of the receiver, and expoſed to the freſh air, yet it recovered not.

The other experiment was made with a kitling, after the ſame manner as the former, except that inſtead of diſtilled vinegar was employed aquafortis; the ſucceſs of which was, that the air being drawn out till the animal had done ſtruggling, and was upon the point of expiring, and the bottle being unſtopped to emit the ſteams and ſuppoſed air into the receiver, the kitling ſoon began to recover. Whereupon it had freſh air given it, which was again exhauſted, to ſee, whether it would revive of itſelf without the help of any nitrous exhalation; but after this exhauſtion, the animal appeared dying; upon which, it was after a little while taken out into the open air, where it revived again.

It was moved, that a cat ſhould be put into the receiver, and that it ſhould be obſerved how long ſhe would continue alive, the air being pretty well exhauſted; and that then another cat ſhould be put in, and as many exſuctions having been made as with the former, the nitrous air generated in the bottle ſhould be let out, in order to ſee whether the animal would recover thereby.

It was alſo moved, that a ſtandard might be uſed, to know what quantity of air was generated.

The glaſs phial with the ſwelled bladder, tried at the laſt meeting, and ſhut up till this, was produced, and the bladder found evidently ſhrunk. It was ordered to be tried at the next meeting with a glaſs phial whelmed under water, in order to collect thereby all the bubbles of the air generated by the corroſion.

It being inquired, how it was known, that what was ſuppoſed to be air, produced by the diſſolving of powdered oiſter-ſhells by ſpirit of nitre, or diſtilled vinegar, or aquafortis, was true air; and anſwer being made by the preſident, that a body rarefied by heat, and condenſed by cold, was air; the bladder was put to the fire, where it expanded again as much as before, and being removed from thence, grew ſomewhat flaccid again.

It being moved, that it might be tried, whether the ſteams produced by the operation of diſtilled vinegar upon the powder of oiſter-ſhells were convenient for reſpiration; the trial was made, and the bottle, wherein that diſſolution was performed, carried about to the members for every one to ſmell to it; and it was found by moſt of them incommodious, as it was undiluted.

It being moved by Mr. Hooke, that the air-boxes contrived for diving might be tried by the perſon beſpoken by Mr. Pepys for that purpoſe; it was ordered, that this diver ſhould be ſent to Mr. Hooke, to be inſtructed by him concerning the uſe of the ſaid boxes under water.

It was likewiſe ordered, that Mr. Hooke ſhould procure glaſſes fit to ſee with under water, as far as the thickneſs or turbidneſs of the water would permit.

Mr. Oldenburg having read an extract of a letter of Monſieur Auzout dated at Paris 13 October, 1664, N. S. [x] acknowledging the excellency of Campani's glaſſes above the Pariſian; Sir Paul Neile moved, that certain inquiries might be made concerning them, and their charge, apertures, &c. Whereupon he was deſired to draw up ſuch queries, as he ſhould think proper, for the better examining of the ſaid glaſſes.

Mr. Hooke offered to conſider of experiments relating to reſpiration for the next meeting.

It was moved, that the experiments of refraction, and the deſcent of falling bodies, might be proſecuted; which was ordered to be done.

Mr. Pepys was deſired to procure the journals of thoſe maſters of ſhips, who had been with Major Holmes in Guinea, and differed from him in the relation concerning the pendulum watches.

[x] Supplement to the Letter-Books, vol. i. p. 1.

1665, *March* 29, at the meeting of the COUNCIL were preſent,

The lord viſcount BROUNCKER, preſid[t]
The lord biſhop of Exeter
Dr. GODDARD
Mr. HENSHAW
Mr. PALMER
Mr. COLWALL
Dr. CROUNE
Dr. BALLE
Mr. OLDENBURG.

It was ordered, that the preſident be deſired to licenſe the ſecond tract of the *Philoſophical Tranſactions*, written in four ſheets of paper in folio.

At the meeting of the SOCIETY on the ſame day,

Dr. RICHARD STERNE, lord archbiſhop of York; Dr. HUMPHREY HENCHMAN, lord biſhop of London, and Dr. JOHN DOLBEN, dean of Weſtminſter, were elected.

There was read a letter written to Mr. BOYLE by Mr. DAVID THOMAS, concerning ſome farther particulars relating to the monſtrous calf formerly mentioned, and rectifying ſome miſtake in the preceding information concerning the ſtoneneſs of the breaſt of the calf. Whereupon it was ordered, that this account ſhould be compared with the former, and the error corrected [y].

An experiment was made for the generating of air by putting aquafortis and the powder of oiſter-ſhells into a ſmall glaſs-phial under water, and whelming a large glaſs filled with water over it, to receive the ſteam to be generated by the corroſion. The ſucceſs of which was, that the whelmed glaſs was filled about a quarter full with an aerial ſubſtance. It was ordered to be ſet by till the next meeting.

It was moved, that a way might be thought upon of producing air, that might be wholeſome to inſpire.

There was tried the refraction of water covered with turpentine; and the refraction of water alone being firſt examined by itſelf, and found to be 41° 40′, that with oil of turpentine being tried afterwards, was found to be 41° 45′.

It was moved by Dr. PELL, that the refraction of turpentine, after it had been upon the water, might be tried, in order to ſee, whether it differs from that, which was never joined with the water.

Col. BLOUNT brought in two models of chariots, one with two, the other with four wheels, of which he had tried the eaſineſs of moving them by bullets upon different grounds; the particulars of which he gave in writing. His paper was ordered to be kept, and the operator was directed to make ſome models of chariots for trials with them.

[y] Philoſ. Tranſact. n° 2. p. 20, April 1665.

Mr. HOOKE was desired to take notice of the pole of Prince RUPERT's hunting chariot.

Mr. HAAK was desired to get a draught and description of the great waggons used in the highways between Lubeck and Hamburgh, carrying sixteen persons, with nine horses, three a breast; which he promised to do.

Col. BLOUNT produced a little red spider no bigger than a pin's head, commonly called a *Taint*, which, it was said, would kill a cow or ox by swelling them extremely, if it be taken down into the belly. He added, that an ox or cow, swelled by green clover upon hasty feeding on it, finds a remedy against that swelling by driving the beast three or four miles very hard, which expells the wind. Others use a knife, which they thrust into the flank, and so let out the wind.

Mr. HENSHAW affirmed, that thrusting a knife into the belly, and so letting out the wind, would save the beast.

Dr. CHARLTON mentioned, that it was not probable, that the little spider should be the cause of the death of oxen and cows, since there are thousands of them in meadows, which would destroy innumerable cattle.

It was ordered, that some of these *Taints* should be procured by the operator, to try, whether they would kill a dog or cat.

Dr. CHARLTON having been called to account for his taking home with him, contrary to the society's order, the little box with Macassar poison brought in by Capt. GRAUNT; he alledged, that he had done so, fearing it might be left, it being found standing in the window, when all the company was gone out of the room; and he added, that he had opened and tried it before Mr. WYLDE. It was ordered, that nothing belonging to the society should be taken away without their leave.

April 5, by reason of the general fast kept this day, the meeting of the society was put off till the 12th of this month.

April 12, Mr. BOYLE's book intitled, *New Experiments and Observations touching Cold; or an Experimental History of Cold begun* [z], was presented to the society.

He proposed several experiments to be made, proper for this season of the year, viz. to try the grafting of pears upon *spina cervina*, the only purgative vegetable known in England, to see, whether the fruit would have that purging quality or not. 2. To try the sensitive plant in an exhausted receiver, to see, whether the exclusion of the air from it would be hurtful to that plant. 3. To try, whether the eggs of silk-worms and snails would be hatched; as also whether seeds would germinate and thrive, all in an exhausted receiver.

[z] Printed at London 1665, in 8vo.

Concerning the firſt of theſe experiments, it was ſaid, that the time of grafting was paſt. Upon which, Mr. BOYLE moved, that it might be tried in the ſeaſon of inoculation. Concerning the ſecond and third, it was moved, that Mr. HOWARD might be deſired to furniſh the ſociety with ſome ſeeds of an haſty growth, ſuch as orpin, lettice, and garden-creſs, &c. which Mr. HOWARD accordingly promiſed. And as for that part of the third experiment, which related to the eggs of ſilk-worms and ſnails, the operator was ordered to get ſome of both, if poſſible.

Col. BLOUNT affirmed, that by covering a vine with a glaſs, he ſtarved the vine; but that doing the ſame at another time with a glaſs having a vent-hole in it, it haſtened the growth thereof. He added, that plants, from which air is excluded, will come up yellow and very faintly; but the air being admitted to them, they may then grow better than they do by being covered; for hot-beds, if they be kept from air and moiſture, grow faint and weak likewiſe.

Dr. GODDARD obſerved, that plants live as much upon the air as the earth; and that the branches of them are rooted in the air, as their roots are in the earth.

Dr. PELL moved, that the roots of ſome plants might be turned upwards, waſhing away the earth, to ſee whether they would ſhoot out in that poſture; he judging it probable, that the tops of plants would turn into roots, as is ſeen in layers.

Sir ROBERT MORAY moved, that trials might be made with onions; firſt, by what degrees they decreaſe in weight, by growing and ſhooting out in the air without earth? Whereupon Dr. GODDARD mentioned, that he had found a ſquill decreaſe in weight for a quarter of a year, every fortnight eight or ten grains, the blades ſtill ſhooting out longer and longer: Secondly, Whether onions and other bulbous roots will ſhoot in an exhauſted receiver?

Mr. HOOKE affirmed, that a roſemary branch, cut from the root, will live by ſprinkling common water upon it.

Col. BLOUNT ſuggeſted, that the ſprinkling of the branches of harder vegetables would keep them alive; but not, if they were tender ones.

Dr. WILKINS moved, that a committee might be appointed to draw up a liſt of experiments about vegetation, as planting, grafting, &c. to be diſtributed for making experiments.

It was ordered, that Mr. HOWARD, Mr. EVELYN, Dr. WILKINS, and Col. BLOUNT conſtitute that committee.

Mr. DANIEL COXE was deſired to produce his inquiries touching vegetation at the next meeting.

Col.

Col. BLOUNT remarked, that having kept a vine from moiſture and air by leading it into a room of his houſe, he had found the grapes thereof ripe a fortnight ſooner than thoſe without.

Mr. HOOKE being called upon to give an account of one of the experiments at the laſt meeting relating to the air generated by aquafortis and the powder of oiſter-ſhells, reported, that the greateſt part of it was returned into liquor.

He was ordered to make at the next meeting the experiment of generating air with bottled ale, ſuppoſed to be wholeſome to breath in, which the air hitherto generated by aquafortis and diſtilled vinegar was not.

It was moved, that the air produced by aquafortis and diſtilled vinegar might be given a dog to breath in, to ſee the effects thereof.

The operator was appointed to try again the feeding of ſpiders upon one another, by ſhutting two or more of them up in a cloſe glaſs. As alſo to put a houſe-ſpider among a good number of ants, and to ſee, whether it would be torn and eaten by them; Dr. WILKINS having related, that ſuch a houſe-ſpider being put with a multitude of ants upon a barrel-head, the ants firſt ran away from the ſpider, but then returned, and tore it in pieces.

Col. BLOUNT produced another model of an eaſy coach with four ſprings, capable of holding ſix perſons; and he acquainted the ſociety, that he had made farther trials of draughts with weights, delivering an account thereof in writing, which however he deſired might not be looked upon as exact, becauſe his models were not made accurate.

Mr. HOOKE was ordered to proſecute the model of his chariot with four ſprings and four wheels, tending to the eaſe of the rider.

It was likewiſe ordered, that the preſident, Sir ROBERT MORAY, Sir WILLIAM PETTY, Dr. WILKINS, Col. BLOUNT, and Mr. HOOKE ſhould be deſired to ſuggeſt experiments for improving chariots, and to bring them in to the mechanical committee, which was to meet on the Friday ſevennight following, April 21, at the preſident's houſe.

Sir ROBERT MORAY was deſired to bring in the queries upon the new optic glaſſes of CAMPANI; which he promiſed to do at the next meeting.

Mr. HOWARD produced an account of the new comet, ſent to him by his brother from Vienna; which was delivered to Mr. HOOKE, to compare it with other obſervations.

Dr. CLARKE was deſired to finiſh his experiments of injection into the veins, and to publiſh them; and in order to the ſpeedier diſpatch thereof, to draw up a catalogue of ſuch farther experiments, as he ſhould think proper to be made, which ſhould

ſhould be recommended to ſeveral perſons of the ſociety for trial, by way of aſſiſtance to him.

Mr. BOYLE ſuggeſted an experiment to diſcover, whether an animal in an exhauſted receiver dies for want of air, or becauſe of the compreſſion of the lungs; which he ſaid might be done by making a perforation in the thorax, between two ribs; whereupon if the animal ſhould die as ſuddenly as others, it was manifeſt that it was for want of air: If not, it was becauſe of the compreſſion of the lungs, the external air being taken off.

April 19, Sir RICHARD CORBET, knt. was propoſed candidate by Mr. HOSKINS.

Sir ROBERT MORAY preſented the ſociety from the King with a phial of Florentine poiſon, ſent for by his Majeſty from Florence, on purpoſe to have thoſe experiments related of the efficacy thereof, tried by the ſociety. It was ordered, that moſt humble thanks ſhould be returned to his Majeſty by the preſident and Sir ROBERT MORAY, in the name of the ſociety, for this honour and favour; and that experiments ſhould be immediately made with the ſaid poiſon.

Accordingly a thread was dipped into it, and drawn with a needle through the ſkin of the neck of a pullet, which within two or three minutes was thereby ſo ſtupefied, that it fell down, and remained in that condition for about half an hour; but then began to ſtir again, recovering at laſt perfectly before the ſociety roſe.

It was alſo tried in the ſame manner upon a dog; whom it made to ſtrain and vomit very much; but that paſt alſo, and the dog recovered.

Then it was tried upon a kitling by pricking it in the palate of its mouth with a needle dipt in the poiſon; which had no other effect but making the animal ſomewhat drowſy, and to ſlabber at the mouth.

Laſtly, it was tried upon another pullet, by running a needle dipt in the poiſon into the great muſcle of the thigh, avoiding the great tendon; but this had no effect at all upon the fowl.

It was ordered, that at the next meeting theſe experiments ſhould be proſecuted, and a larger quantity be given to a dog at the mouth; and that a larger wound ſhould be made in ſome animal to receive a greater quantity of the poiſon.

The phial was ſealed up, and delivered to the cuſtody of Dr. GODDARD.

Mr. OLDENBURG preſented the ſociety with Monſieur AUZOUT's printed Ephemerides of the ſecond comet, the motion of which the author pretended to have predicted, after he had made only three or four obſervations.

Dr. CROUNE preſented from Sir ANDREW KING a paper with a ſcheme of the firſt comet, drawn by a Spaniſh jeſuit at Madrid; which was delivered to Mr. HOOKE.

HOOKE to compare it with the other obſervations; who was alſo appointed to take a copy of Dr. WREN's ſcheme of this comet, and to return the original to the Doctor for farther conſideration.

The experiment of generating air with bottled ale, corked and tied faſt about with an ox-bladder, was tried; but it yielded no air.

Sir PAUL NEILE produced a certain gum, brought from Guinea, thought to be like gum copal or gum anime; of which, he ſaid, a great quantity might be had, if upon trial, it ſhould be found worth the procuring. Mr. BOYLE was deſired to take this piece with him, and to give the ſociety an account of the ſucceſs; which he promiſed to do.

Mr. HOSKYNS produced a parcel of thread, which he ſaid was made in the Eaſt-Indies of a certain graſs, and fit to make ropes of.

The conſideration of the improvement of chariots was referred to the mechanical committee.

Mr. DANIEL COXE's inquiries concerning vegetables were read, and ordered to be regiſtered, and the conſideration thereof referred to the georgical committee. They were as follow [a].

" It is impoſſible to compoſe an exact hiſtory of vegetation, till we underſtand " the nature of the ground, as the matrix, wherein all plants are conceived, and " whence they derive their nouriſhment. This hath ſo conſiderable an influence on " vegetables, that we attribute the difference in figure, colour and other proper- " ties, principally to the variety of the mould; for we find, that every ſoil hath " a property of producing ſome peculiar plants, which will, either not grow at all, " or not ſo well, or, at leaſt, degenerate from their former ſtate, in any other. " Thus kitchen-herbs require a fat mould; others, and moſt trees, eſpecially foreſt, " a barren; or at leaſt one not too rich; ſome a dry; as marjoram, thyme and " crocus; moſt flowers require a middle ſoil, neither too rich nor too barren; " others a moiſt, as alder, willow, and all plants that naturally grow in or near " rivers, marſhes, or the ſea. There is an infinite variety of moulds, both for " colour, moiſture, drineſs, and other qualities. Black land is generally accounted " the beſt, eſpecially for a garden; and any mould to be ſo much the better, by " how much the nearer it approaches to that colour; and on the contrary: yet " there is ſcarce any ground, how bad ſoever, but may be enabled by ſuitable " compoſts, warmth, moiſture, and other meet helps, to anſwer our expectation.

" 1. For compoſts, theſe rules are generally obſerved; never to add compoſt " to ground, wherein that quality predominates, which doth alſo predominate in " the land.

[a] Regiſter, Vol. iii. p. 79.

" 2. That

" 2. That any thing, which hath active parts, if it be not of the nature of the " ground, will raiſe improvement. Any parts of animals are good compoſt; their " ſkins, hair, horns and hoofs make the richeſt, next their blood and fleſh; and " laſtly their urine and dung. So alſo are all ſubſtances, that contain any fatneſs or " ſaltneſs; as hog-waſh, lees of wine, beer, perry or cyder, ſea-ooze, ſcouring of " ditches, all ſorts of ſea-weeds, and moſt land-plants rotted; ſoot, aſhes of all " kinds, linen and woollen rags, nitre and common ſalt in a moderate quantity; for " any compoſt too plentifully beſtowed hinders the growth of vegetables.

" Divers kinds of earth are good compoſt for others of a different nature, " marle, chalk, lime, loamy earths, &c. Some dry grounds are meliorated by " ſeaſonable irrigations.

" Being ſkilled to improve grounds to the beſt advantage, we come to enquire; " how many ways plants may be propagated and altered, how the operations are " performed, and what products enſue.

" And it will be, firſt, worthy our enquiry, to examine, whether there are not " vegetables *ſponte nata*; for a new generation of plants do ſometimes ſuddenly " and unexpectedly ſpring up in places, none of the ſame ſpecies growing near; " as is affirmed by ACOSTA of lemons and citrons, which ſprang up without pre- " vious planting or ſowing in America: and by others the ſame of firs, pines, and " olives. An exotic plant being ſet in the phyſick-garden in Oxford, the next " year many of the ſame plants were found in a wood, ſome miles diſtant from " the city: And mould taken a great depth from under the ſurface of the earth, " placed in pots, and ſet on the top of an high tower, produced ſeveral plants, yet " none but ſuch, as that country afforded.

" 1. Query, Whether theſe ſeeds might not be brought by the wind, and there " depoſited, moſt ſmall ſeeds being fledged with little downy wings; or whether " the birds might not void them with their excrements; the vegetative virtue being " rather exalted than deſtroyed by that light digeſtion?

" 2. Whether plants are propagated by any other, than the five noted ways, of " ſeed, off-ſets, ſlips, layers and inciſions? Whether by tear, or flower? as ſome " even of the antients do confidently aver. And whether there be any inſtance " of propagating by leaf, beſides that of the Indian fig? Lens paluſtris, with " ſeveral other ſea-plants, are ſuppoſed to be propagated without ſeed or root? " We know not of any ſeeds, that ſallows and muſhrooms have, and yet 'tis report- " ed, that if the water, wherein muſhrooms have been ſteeped, be caſt on an hot " bed, they will ſoon ſpring up in the form of young muſhrooms; and the ſame " effect will follow from bits thereof ſtrewed on an hot bed.

" 3. Whether any plants ariſe from the fixed ſalt of any plant ſown?

" 4. Whether the duſt on the backs of hart's-tongue, maiden-hair, ferns, and " polypody, be their ſeeds? They deſerve to be examined by the microſcope.

" Nature's uſual way of propagating vegetables is by ſeed. And when we would " propagate plants this way, the moſt natural time of ſowing ſeems to be that, " which nature follows, when the ſeeds, of their own accord, fall into the ground. " Only plants, which cannot bear the cold, are to be ſowed in the ſpring.

" 5. Whence is it, that vegetables later ſown, often overtake the former; as " peaſe and beans?

" 6. Why ſome plants are hardly propagated by ſeeds; as garlick, dragons, " hops; and onions, contrary to the guiſe of all bulbs, never emit any off-ſets, but " are propagated only by ſeeds?

" 7. Whether double flowers give not little and invalid ſeed? and whether being " ſown, they do not moſtly afford ſingle flowers? For it ſeems probable, that the " more is ſpent on the flower, the leſs is left for the ſeed. And alſo, whether " the ſeeds of ſingle flowers of the ſame ſpecies will not afford much ſeed, and " that good?

" 8. Why divers ſeeds of the ſame kind, being ſet in the ſame mould, and " diſtance, ſome outſhoot the reſt: and whether the greater or leſs ſend forth largeſt " plants, and of ſpeedieſt growth; as it is evident the faireſt buds do?

" 9. Whether the bottom of the cod brings forth the largeſt ſeed? If ſo, whe- " ther it afford the faireſt flower?

" 10. Whether it is from the ſeeds of the ſame carnations, and ſo of divers " other flowers, ſo great a variety proceeds; few or none of them keeping colour " with the mother plant?

" 11. Whether there be a certain way to know what plants will yield variety " of colours? which double? which ſingle? or whether you can know from the " leaf or any other indication, as the broad leaved anemonies are ſuppoſed to " yield a greater variety of double flowers, than the narrow?

" 12. Whether that be true, which is related of the *marveil of the world*; " that if you would have variable flowers, chooſe ſuch as are variable, whilſt they " blow; for if the flowers be of a ſingle colour, the ſeed will bring the ſame?

" Moſt ſeeds have within their coats a neb anſwering to a root, which is joined " to leaves more or leſs in number, amidſt which leaves there is a germen oppo- " ſite to the initial root. Moſt plants have two leaves actually joined to the neb, " which are commonly very unlike the proper leaves of the plant, ſome have 2, " others 3, 4, 5 or 6. Thoſe leaves are viſible to the bare eye in common beans; " kidney-beans, peaſe, ſycamore-keys, &c. and they ſeem to differ but in growth " and bigneſs from the true leaves of the plant.

" 13. Whether they may not be diſcovered in leſſer ſeeds by the microſcope?

2 " 14. Whe-

" 14. Whether if the ſeed be cut in half, between the neb and germen, one half, " neither, or both will grow? 'Tis reported by credible perſons, that if the germen " be whole, though the other part were gnawn by vermin, cut off, &c. yet ne- " verthelefs the ſeed thrives exceeding well?

" 15. Whether the neb in germination ſtrikes downwards, and cauſes the root; " the germen upward, and produceth the ſtalk and leaves; or whether both root " and ſtalk proceed from one and the ſame point, thence taking different courſes; " as ſeems evident in walnuts, peaches, melons, and other ſeed?

" 16. Whether the whiteneſs of moſt roots ariſes from their being ſecluded from " the air, as the leaves of plants kept in a cloſe place grow pale, and thoſe leaves " of cabbage and lettice, that are expoſed to the open air, are green; thoſe, that are " covered, white?

" 17. Whether ſo many off-ſets will be emitted by a bulbous root, as wounds " were made in it before by a pen-knife; or your nail, as FERRARIUS reports.

" 18. Whether plants can be raiſed in water, and when grown up, whether " nouriſhed thereby, eſpecially plants of contrary qualities, as hot, cold, moiſt, " dry, freſh, ſalt, of healing or veſicatory nature: and what ſubſtances theſe plants " afford, expoſed to chemical analyſis?

" 19. Whether roots are drieſt in winter or ſummer?

" 20. Whether in graffing, this rule be conſtantly to be obſerved, to place the " graft ſo, that the ſpace under the bark of the graft muſt anſwer to the ſpace " under the bark of the ſtock; and whether that ſpace between the bark and " wood is the great channel for the conveyance and keeping of the ſap, and whe- " ther it runs up the fibres of the bark, or trunk itſelf?

" 21. Whether in grafting, the ſureſt way to obtain fruit be, to keep as clear " the ſpecies as can be; and what exceptions may be made from the general rule " of grafting, inoculating, ablactation, conjunction, by terebration, that the cyons " be of the like nature with the ſtock?

" 22. Why a plum will not bear fruit being grafted on a cherry, a pear, or " apple, when as they proſper on each other for ſeveral years?

" 23. Why medlars, but more eſpecially pears, thrive exceedingly well, and are " fruitful, being grafted on a white thorn; quinces on the pear, and *vice verſa*; " apricots with plums that are full of ſap; roſes on briars, currants on gooſberries? " And why a cherry grafted in the bud on a plum-tree will bear cherries, but not " contrariwiſe?

" 24. Whether it is abſolutely neceſſary, that cyons ſhould be gathered before " trees ſhoot their buds, ſince 'tis no matter though the ſtock be budded?

 " 25. Whe-

" 25. Whether a long cyon make a ſhort and ſpreading tree, and a ſhort a tall " one?

" 26. What graffs and ſtocks afford greateſt ſtore of fruit; and what moſt " ſpeedily?

" 27. Whether it be neceſſary to take the graffs from a tree, that is a good " bearer?

" 28. Whether if taken from a tree, that never did bear flowers or fruit, the " graft will give fruit?

" 29. Whether the rule holds univerſally, that grafting ſucceeds beſt on a drier " ſtock; and whether the graff ſhould be of 1, 2 or 3 years growth?

" 30. How to diſcern good grafts; whether we ſhould take the grafts from the " top or middle of the tree, thoſe ſhoots, that are obverted to the riſing meridian, " or ſetting ſun; and alſo what ſhould be the nature, bigneſs and age of the " ſtock?

" 31. Wherefore mulberries, walnuts, and cherries cannot be propagated by " grafting, when-as they may eaſily by inoculation?

" 32. If two twigs of ſeveral trees were flatted on the ſides and bound together, " whether will they unite in one ſtock? If ſo, perhaps the ſame branch would " produce different fruits.

" 33. If a ſhoot be taken from a tree, and another of a diverſe branch of the " ſame tree be grafted in its place, will not the fruit differ from all others on the " ſame tree?

" 34. Whether an apple grafted on the woody part of a cabbage-ſtalk will " thrive? If ſo, whether will the fruit follow the nature of the ſtock or graft?

" 35. If you graft ſharp fruit upon a ſweet ſtock, early or late, whether will the " fruit for nature and time follow the nature of the ſtock or graffs?

" 36. Wherefore pines, firs and reſinous trees will admit of no graffs?

" 37. Whether ſedums, tithymals, orpines, aloes, onions, tulips and other bul- " bous roots, which, hung up in the air, ſhoot out green leaves, leſſen in weight " thereby?

" 38. Wherefore change of ſeeds profitable for all grains, and garden plants?

" 39. Whether do trees and ſhrubs bear on ſprouts emitted the ſame ſpring, or " on the ſhoots of the antecedent ſpring, or both?

" 40. Where-

" 40. Wherefore are trees troubled with cancer, hidebound, and ſome flower " ſo full, that they burſt the calix, or caſe; and how thoſe diſeaſes may be cured?

" 41. The loweſt fruit in wall-trees is ſooneſt ripe and largeſt: whether would " it not be ſo in orchard-trees, if the ſun had as free acceſs to the lower boughs, " as it hath to the middle and upper?

" 42. Whence ariſes that great variety in apples, pears, &c. that ſome are ripe " early, ſome have excellent taſte, ſome are beautiful, others large, ſome great " bearers, others good bakers, ſome long laſters, others beſt to make perry, " cyder, &c.?

" 43. Whether that be true, which is related of Canada in America, an intolera- " ble cold country, yet the woods afford a grape without culture, whereof is " made good wine?

" 44. Whether lands are meliorated by being expoſed to the ſun and air, and " therefore grounds are ſaid to receive much benefit by often ploughing, the ſun " and dew engendring, as it is thought, a nitrous fatneſs, which is the cauſe of " fertility; on the contrary, the virtue of dung is daily exhauſted by being ex- " poſed to ſun and air.

" 45. Whether the tree orchis will thrive better on a dry chalky bank, than in " any garden, though it be never ſo carefully looked after, and the mould never " ſo rich?

" 46. Whether one grain of wheat or any other corn, by a peculiar way of fer- " mentation, maceration, compoſts, or otherways, may be enabled to bring forth " above an hundred ears from the ſame root, as is credibly reported?

" 47. Whether exotic plants, that at firſt difficultly thrive, yet being habi- " tuated to the country, and to ſhed their ſeed, are naturalized?

" 48. Whether ſeed, brought from barren ſtony grounds, and ſown on rich, " afford ſo great an improvement as is affirmed?

" The water, wherein cabbages and other garden fruit, raiſed in a ground forced " with dung, hath been boiled, will ſtink ſooner than that, wherein the ſame plants " were boiled, which grew in a barren ground; conſequently,

" 49. Whether dung, as it cauſeth increaſe in quantity, doth not embaſe vegeta- " bles, its ill taſte being eaſily diſcernable, as in muſk-melons raiſed on hot beds?

" 50. Whether great variety of fruit be obtained by ſowing kernels; it being " obſerved, that the kernels of the ſame tree bear fruit differing from each other, " in colour, taſte and form? From thoſe trees, being fruitful, cyons enough might " be taken to furniſh a whole country with fruits of the ſame kind.

" 51. Whether was not that great variety of fruit, which we have, formerly ob-
" tained by this means; at firſt all fruits being wild, and it is very improbable, that
" they ſhould afford fruits of ſuch variety and excellency?

" 52. Why doth the earth ſeldom produce ſome plants but in producing others;
" as ſome plants are rarely or never found, unleſs in ploughed fields, either under
" corn, tillage or fallow?

" 53. Why do ſome plants, as it were, deſtroy the vegetative nature of the ſoil
" where they grow, as to many plants, as wood, hemp, &c. and on the contrary,
" ſome fit it for others?

" 54. Whether the peach was poiſonous in Perſia; and whether the hemlock
" of the antients, wherewith they poiſoned malefactors, was the ſame with that,
" which is ſo often eaten innoxiouſly in Europe?

" We find by frequent experience, that many of our herbs have not the ſame
" properties and virtues, that the antients aſcribed to them:

" 55. Whether doth not this proceed from the variety of the ſoils, their diffe-
" rent ſituations and poſitions, in reſpect of the ſun, moon, and perhaps other
" planets? To what, beſides this, can we refer that infinite variety of colours,
" taſtes, odours, and other properties in vines, and other vegetables? As the in-
" habitants of the Torrid Zone acquire, not only thereby, black ſkin and hair,
" but alſo a peculiar craſis of body, and complexion of mind very different from
" theirs, that inhabit more temperate and cold regions.

" 56. What reſpect are we to have in ordinary vegetables to the phaſes of the
" moon; and whether are trees more full of moiſture in the increaſe of the
" moon?

" 57. Whether the perpetual ſummer in the Torrid Zone be to be aſcribed to
" the abundance of ſalt, or to equality of days: the former ſeems to contribute
" much; and ſeas between the tropics are thrice as ſalt as in our northern parts;
" ſo that many ſalt vapours are elevated, and many left in earth by percolation?

" 58. Whether that be credible, which is related of Tercera, one of the Azores,
" an iſle deformed with craggy hard rocks, which are nevertheleſs incredibly fruit-
" ful of vines, whoſe roots deſcend a conſiderable depth into the rock?

" 59. Whether ſheep in Spain, being fed and fatned with thyme, ſavory and
" roſemary, have thereupon finer wool, fleſh of a fragrant ſmell, and ſweeter
" taſte than ordinary?

" 60. Whether the iſland Ferro, one of the Canaries, hath a tree, whoſe leaves
" are perpetually green, and from whence water diſtils ſo plentifully, that it ſup-
" plies the whole iſland?

" 61. Whe-

" 61. Whether any trees bear their fruit on their bark, which PISO, and the " author of the hiſtory of the Antilles or Caribbee-Iſlands, affirm?

" 62. Whether any trees, whoſe flowers, when the ſun ſhines, are cloſed, ex- " pand in the night, and ſhut again at ſun-riſing; and what may cauſe the con- " traction of the branches of the ſenſitive plant on touching?

" 63. Whether what ACOSTA relates of the tree cocos may be credited, viz. " that the young nuts contained a potable juice like milk, which being ripe, was " as hard as the pulp of a cheſnut; and he alſo reports, that this tree did put out " every month a new ſhoot, each of which produced fruit, ſo that the tree did " bear 12 times in the year?

" 64. By what means may fairneſs and magnitude in fruit, and multiplicity in " the leaves of flowers, be promoted; and whether any plants bear ſingle and " double flowers on the ſame root?

" 65. Whether white flowers may not be changed into red, yellow, blue, &c. " by frequent irrigation with colorate liquors not corroſive: as infuſion of braſil, " crocus, &c.?

" 66. Wherefore flowers in their perfection are neither black nor green?

" 67. Whence it is, that trees decayed with inward hollowneſs do often bear " as full burthens of fruit, as the ſoundeſt; and that the fruit is more delicate, " than uſually any of the ſame kind from a more perfect and intire ſtock?

" 68. Whether do all trees in their increment proceed with more or leſs velo- " city, as they are of a more compact or lax contexture?

" 69. Whether white apples grafted on an elm will not change to a red colour; " and whether the graff doth not yield ſomewhat to the ſtock?

" 70. Whether will foreſt-trees thrive beſt in a fertile or barren ground? It is " ſtrange, that pines, firs, &c. thrive beſt on hard rocks, and will not grow " kindly in an over rich, fat ſoil; and yet they require much nouriſhment, and " that of a ſulphureous or oily nature?

" 71. Whether trees can live without their barks, whether the cork-tree be re- " lieved by diſbarking, and whether the cork be the inward bark; for it is not " that outward bark, that is vital, moſt trees being able to ſubſiſt without it; as " cherries, vines, lime-trees?

" 72. Whence that timber-trees in a copice grow better than in the open field; " and that mountain-timber is of a cloſer, finer grain, more tough and durable, " than that which grows in moſt ſhady places?

" 73. Whe-

" 73. Whether the juice, that diſtills from the wounded birch in March, will " in 12 or 14 days outweigh the tree itſelf, body and roots?

" 74. Whether willows will thrive, which end ſoever of the truncheon be ſet " in the ground?

" 75. Why wood of the larch-tree is ſo hard to conſume by fire?

" 76. How far cold proves conducive to vegetation; for ſnow is ſaid to warm " the ground; and in Greenland, the graſs and other vegetables in the midſt of " the moſt bitter winter retain their lively verdure, ſo they be under ſnow; and " it is reported, that plants will never freeze, if covered with *alga marina?*

" 77. Whether hot-beds be the beſt and moſt general help to accelerate germi- " nation and maturation? ſo that of the ſun, reflected from ſolid bodies, collected " by concave glaſſes, and projected on plants or fruits; ſo, if planted on the back " of a chimney, or tranſlated into richer mould.

" 78. Whether cutting the tops of flowers, after they have done bearing, will " make them come the ſame year? or whether pulling off the buds, when newly " knitted, removing the tree a little before it buddeth, girding the body of the " tree about with a ſtring, will retard germination?"

April 26, at the meeting of the COUNCIL were preſent

The lord viſcount BROUNCKER, preſid[t]
Mr. AERSKINE
Sir ROBERT MORAY
Sir PAUL NEILE
Sir JOHN LOWTHER
Sir WILLIAM PETTY
Mr. PALMER
Dr. WILKINS
Dr. GODDARD
Dr. CROUNE
Dr. BALLE
Mr. GRAUNT
Mr. OLDENBURG.

The papers of the third number of the *Philoſophical Tranſactions* having been conſidered of, and the account therein given concerning the ſtructure and advantages of Sir WILLIAM PETTY's double-bottomed ſhip; it was reſolved, that the publication ſhould be deferred till the King had been made acquainted with the particulars relating to the ſaid ſhip.

At the meeting of the SOCIETY on the ſame day,

Mr. HOWARD produced ſome obſervations on the ſecond comet, as they were ſent to him by his brother from Vienna; which were recommended to the peruſal of Mr. HOOKE.

Sir ROBERT MORAY moving, that ſome inquiries might be drawn up to be ſent to Mr. HOWARD's brother concerning obſervables in Hungary and Turky, whi-

ther

ther he was travelling, was desired to draw up such inquiries in conjunction with Mr. OLDENBURG.

The experiments with the Florentine poison were prosecuted. A drop of it in a quill was given at the mouth to a young dog, who presently fell into strong convulsions for about a quarter of an hour, with his eyes fixed, and then lifted up his head, looked about, and by little and little recovered.

The like quantity, as near as could be guessed, was given to a cat, who also fell immediately into the like convulsions, and within five or six minutes died.

There was likewise an incision of the bigness of about an half-penny made upon the neck of a pullet; and a drop of this poison put into the wound; upon which the pullet was soon stupefied, but within a little while after recovered.

Another pullet was pricked in the axillary vein, with a needle dipt in the same poison; which had no visible effect; but the same needle dipt again, and thrust into the muscle of the pullet, stupefied it. To the same pullet, when recovered, a drop was given at the mouth, which cast it into convulsions, yet without killing it.

The cat killed by the poison being opened, and the brain and stomach viewed, nothing appeared, that was extraordinary in either of those parts.

Dr. CROUNE was desired to bring in at the next meeting some oil of tobacco distilled in a retort, to try what effect that would have upon animals.

Mr. BOYLE suggested, that the oil of Florence performed its effect, either by the union of the subtle and spirituous parts of tobacco, or by a peculiar preparation of the same; and in order to know upon which of these two accounts the effect was produced, he moved, that some tobacco might be well distilled in an alembic with water.

Sir ROBERT MORAY affirmed, that he had known a man, who could take two or three pipes of tobacco into his stomach before he let out any smoke; and then let it out afterwards all together.

This was seconded by Mr. EVELYN, who remarked, that he had seen a person, who, after taking tobacco, would discourse a while before he let out the smoke.

Col. BLOUNT produced another model of a chariot with four springs, esteemed by him very easy both to the rider and horse, and at the same time cheap. It was ordered, that the committee formerly appointed, viz. the president, Sir ROBERT MORAY, Sir WILLIAM PETTY, Dr. WILKINS, Col. BLOUNT, and Mr. HOOKE should be desired to meet at Col. BLOUNT's house at Writlemarsh, about this matter, on the Monday following, and give an account of what they had done there at the next meeting of the society.

Dr. WILKINS moved, that a horſe-hair, ſaid to acquire an animal motion, after it had been put into a pool ſhined on by the ſun, might be procured by Col. BLOUNT, and brought to the ſociety to be viewed in a microſcope.

Mr. OLDENBURG produced a Latin letter, written to him by Dr. PHILIPPUS JACOBUS SACHS A LEWENHEIM, an able phyſician at Breſlaw in Sileſia, dated there 12 January 166$\frac{4}{5}$ [b], expreſſing his high eſteem of the inſtitution and deſign of the ſociety, accompanied with a tract of his concerning the analogy between the motion of the blood in animals, and that of the ocean in the earth; and deſiring ſome aſſiſtance to his book of cray-fiſh.

It was ordered, that Mr. OLDENBURG draw up an anſwer of thanks to Dr. SACHS, for his reſpect to the ſociety [c].

Dr. PELL put the ſociety in mind of the ſeaſonableneſs of making experiments with May-dew; which was ordered to be conſidered of at the next meeting.

May 3, at the meeting of the COUNCIL were preſent

The lord viſcount BROUNCKER, preſid[t]
Mr. HOWARD
Mr. AERSKINE
Sir ROBERT MORAY
Sir WILLIAM PETTY
Mr. PALMER
Mr. HENSHAW
Dr. GODDARD
Dr. BALLE
Mr. GRAUNT
Mr. OLDENBURG.

It was ordered, that the preſident be deſired to licenſe the third number of the *Philoſophical Tranſactions*, deferring to another time the account of Sir WILLIAM PETTY's ſhip.

At the meeting of the SOCIETY on the ſame day,

RICHARD earl of Dorſet was propoſed candidate by the earl of Northampton, and immediately elected and admitted.

Sir RICHARD CORBET was likewiſe elected and admitted.

Sir THEODORE DE VAUX, knight, was propoſed candidate by Dr. WILKINS.

Mr. DANIEL COXE read an account of the effects of tobacco-oil diſtilled in a retort, by one drop of which given at the mouth he had killed a luſty cat; which being opened, ſmelled ſtrongly of the oil, and the blood of the heart more ſtrongly than the reſt. His paper was ordered to be regiſtered [d].

[b] Letter-Book, vol. i. p. 269.
[c] Mr. OLDENBURG's Latin Letter to him, is dated at London 30 May, 1665. Letter-Book, vol. i. p. 272.
[d] Ibid. fol. 89.

One drop of the Florentine *oglio di tobacco* being again given to a dog, it proved ſtupefying and vomitive, as before.

The like effect was produced by one drop of Mr. Coxe's tobacco-oil upon a dog.

One drop of the ſame oil given at the mouth to a young cat caſt her preſently into convulſions, out of which ſhe however recovered. Mr. Coxe obſerved, that it was given in leſs quantity in this caſe, than before.

Dr. Croune produced a liquor prepared of tobacco, being the oil and ſpirit of it together; one drop of which being given at the mouth to a very little kitling, killed it in a few minutes.

He related, that he had heard from a credible perſon, that a certain woman troubled with the tooth-ach, and taking a drop of tobacco-oil, fell into very odd convulſive and hyſterical fits, from which ſhe was relieved by ſpirit of hartſhorn.

He and Mr. Daniel Coxe were deſired to proſecute this kind of experiments upon other animals, and to bring an account of the ſucceſs to the ſociety.

Mr. Howard brought in an account in writing of Macaſſar poiſon, called *Ippo* in the iſland of Celebes; which account he had received from one, who had lived four years there, and was now come to England. This account was ordered to be regiſtered [c], as follows:

"Ippo, ſo called in the Macaſſar and Malayan tongue, is the gum of a certain "tree, ſhining, brittle, black, and every way like ſtone-pitch, growing in the iſland "Celebes, in the South-ſeas, very far up in the country, and gathered by the "ſavage-people living there, who are called by the Macaſſars, *Teragias*; they "themſelves being civilized Mahometans, called Macaſſars, from the place of the "iſland ſo called; who having ſome correſpondence with them, have the ſaid "poiſon brought by them; with which all the natives arm themſelves in travel, "having a long hollow trunk (by them called *Sampitan*) of a hard red wood like "braſil, ſix or ſeven foot, very accurately bored, (like our trunks we uſe to ſhoot "clay-pellets with) and at one end is fixed a large lance-blade of iron.

"Then they make a ſmall arrow, a foot or ten inches long, very ſtrait, and "ſomething bigger than a large wheaten ſtraw: at one end they fix it into a round "piece of white, light, ſoft wood, like cork, about the length of the little finger, "juſt fit for the bore of the trunk, to paſs clear by the force of one's breath, and "to fill it ſo exactly, that the air may not paſs by, but againſt it, to carry it with "the more force.

"At the other end they fix it either in a ſmall fiſh-tooth for that purpoſe, or "make a blade of wood of the bigneſs of the point of a lancet, about three quarters

[c] Regiſter, Vol. iii. p. 90.

" of an inch long, and making a little notch in the end of the arrow, they ſtrike " it firm therein, the which is anointed with the poiſon, prepared and done in this " manner.

" The *Teragias*, when they gather this poiſonous gum, always go to windward " of the tree (as I have been told by them, no ſtranger having ever been in thoſe " parts of the country) and when they have gathered it, they put it into hollow " bamboos or canes, ſtopping it up very cloſe, and in that manner bring it to " Macaſſar.

" Of that which is good, none but the Kings and perſons of quality have, " which they diſſolve and make up, upon the end of a ſtick, about half an inch " thick; and then with plantain leaves and long ſtrings, wrap it and bind it up, " to keep it from the air; and they put it into a cloſe warm place to preſerve it. " In which manner it keeps two or three years good, it being ſometimes opened, " clean wiped, and, as before, put up again.

" And this caution had, that no live ſea-crab be brought and burnt alive under " the ſame roof, where it is kept, by reaſon, as I was credibly told by them, that " thereby the poiſonous quality thereof is deſtroyed, the experiment whereof I " have not had the opportunity to try.

" Divers great perſons there did inform me, that they and their predeceſſors " have endeavoured to find its antidote, to prevent its effects, after any one was " pricked therewith, but cannot.

" When they fit it for uſe, they take a piece of ſmooth turtle-ſhell, and a ſtick " cut flat and ſmooth at the end; then they take green galangal-root, grate it, " and with the addition of a little fair water, preſs the juice into a clean china- " diſh.

" Then with a knife, ſcraping a little of the poiſon upon the turtle-ſhell, dip " the end of the ſtick in the foreſaid liquor, and therewith diſſolve thereon the " poiſon, to the conſiſtence of a ſyrup; which ſo done, with the ſame ſtick anoint " the aboveſaid fiſh's-tooth, or wooden blade, it being fixed in the end of the ar- " row: And then lay them in the ſun, upon croſs-ſticks, three foot high from " the ground, until it is baked hard thereon; which will be in two hour's time.

" And then they are put up in hollow bamboos, cloſe ſhut; and ſo prepared, " they will retain their virtue a month's time. But after the poiſonous quality " will quite decay, and therefore the arrows, that are brought for England, having " loſt their poiſonous quality, effect nothing."

Mr. HOWARD was deſired to ſhew to the perſon, from whom he had received this account, the Macaſſar poiſon, brought in for ſuch by Capt. GRAUNT, to judge whether it be like the poiſon deſcribed by him.

Mr. PALMER preſented the ſociety with ſeveral American curioſities for their repoſitory, viz. a *cervus volans*, a humming bird, ſeveral rattles of rattle-ſnakes, and the pizzle of a raccoon.

Mr. THOMAS COXE preſented the ſociety with an abortive human fœtus, kept in ſpirit of wine well rectified.

Mr. HOOKE produced the model of a chariot with two wheels and ſhort double ſprings, to be drawn with one horſe; the chair of it being ſo fixed upon two ſprings, that the perſon ſitting juſt over, or rather a little behind the axle-tree, was, when the experiment was made at Col. BLOUNT's houſe, carried with as much eaſe, as one could be in the French chariot, without at all burthening the horſe.

He ſhewed two draughts of this model, having this cirumſtantial difference, that the one of theſe was contrived ſo, that the body ſitting in a ſeat made for him behind the chair, and guiding the reins over the top of it, drives the horſe: the other, by placing the chair clear behind the wheels, the place of entry being alſo behind, and the ſaddle on the horſe's back, being to be borne up by the ſhafts, that the boy riding on it, and driving the horſe, ſhould be little or no burden to the horſe.

Col. BLOUNT objected to theſe draughts, that the ſeat lay too near the ground: To which it was anſwered, that the bottom lying looſe, it would without inconvenience be lifted up, in caſe it ſhould hit againſt the ground.

The propoſition for trying experiments with May-dew being renewed, the operator was ordered to procure a good quantity of it, to be gathered, either with ſheets, oiled cloth, glaſs, earthen pans glazed, or ſponges.

It was ordered likewiſe, that the experiments ſuggeſted by Mr. HENSHAW concerning May-dew, be tried; and that Dr. PELL take the paper concerning thoſe experiments with him, in order to add ſuch as ſhould occur to him.

The following experiments were appointed for the next meeting,

1. Silk-worms eggs and ſeeds in an exhauſted receiver.

2. Two cats in a receiver, one without ſupply of air, the other with it.

3. Mr. BOYLE's experiment, mentioned at the meeting of April 12, to diſcover whether an animal in an exhauſted receiver dies for want of air, or from the compreſſion of the lungs.

4. Experiments of poiſoning animals by injecting tobacco-oil into their veins, and by anointing their ſhaved ſkins with it.

May 10. Sir THEODORE DE VAUX was elected.

EDWARD,

EDWARD, earl of Mancheſter, was propoſed candidate by Sir ROBERT MORAY, and immediately elected.

Sir WILLIAM HAYWARD was propoſed candidate by the earl of Northampton.

The experiment of perforating the thorax of a dog, and putting him into a receiver of the rarefying engine, was made with this ſucceſs, that the dog, which was but a very young whelp, upon a few exſuctions grew ſick, fell down, and probably would have died, if freſh air had not been re-admitted into the receiver, or the dog taken out.

The ground for making this experiment being taken notice of, viz. that it might be determined, whether an animal died in an exhauſted receiver upon the account of want of air, or the compreſſion of the lungs by the rarefied air, upon the removal of the external air; it was debated, whether there was any conſiderable quantity of air in the thorax; ſome pretending, that there was not, becauſe the concave part of the thorax and the convex parts of the lungs lie cloſe to one another: others alledging, that though there be that cloſeneſs between the thorax and the lungs, yet theſe and the other parts of the cheſt do not ſo adequately fill all the places thereof, but that there may be room for air and vapours.

Dr. WHISTLER upon this occaſion remarked, that the Moors had a faculty of killing themſelves with keeping in their breath.

Mr. BOYLE took notice, that he had tried, and found, that a large perforation being made in both ſides of the thorax, the animal died immediately, though not with a ſmall one.

It was ordered, that this experiment be ſhewed to the ſociety at the next meeting.

The experiment of injecting oil of tobacco into the veins of a dog was deferred till the next meeting.

Mr. DANIEL COXE affirmed, that he had given to a dog at the mouth, without killing it, ſix times the quantity of what he had given to a cat. He promiſed to try other experiments with this oil, and with other liquors, ſuppoſed by him to have the ſame quality with the ſaid oil; and to bring in an account thereof to the ſociety.

Dr. POPE preſented the ſociety with ſeveral curioſities, which he had met with in his late travels, viz. a ball of hairy matter found upon the ſhore of the Tyrrhene [f] ſea; ſome ſtones from mount Veſuvius, pumice-ſtones, *flos ſulphuris*, and ſome mercury-ore found in Friuli, which laſt was ordered to be weighed in water before it was diſtilled.

[f] That part of the Mediterranean ſea, which waſhes the ſouthern parts of Italy.

The

The perſon, who had been ſeveral years at Macaſſar, being ſent by Mr. HOWARD to the ſociety, to look upon the poiſon, which was brought in by Mr. GRAUNT for that of Macaſſar, and to give his judgment, whether it were ſuch, or not; affirmed, that it was not it, nor at all like it.

Mr. BOYLE deſired, that endeavours might be uſed to get ſome of the right Macaſſar poiſon; and that it might be ſent over in the ſame manner, as it is preſerved upon the place; which was recommended to Dr. CROUNE.

Mr. EVELYN read a letter from Deal in Kent, dated May 6, concerning Sir WILLIAM PETTY's double-bottomed ſhip, viz. that the captain and ſeveral officers of the Greyhound frigate had affirmed, that they with ſeveral ſhips beſides had borne her company to the land's end, the Greyhound being the beſt ſailor of thoſe ſhips, and reputed a very good ſailor; but that the double-bottomed ſhip ſpared her all her ſmall ſail, and yet ſhe out-ſailed her ſo much, that they were obliged to clue up the lee-clue of the main-ſail; and yet the Greyhound could hardly keep her company: That the trial was before the wind; but it was concluded, that ſhe would do as much or more by a wind.

Mr. HOWARD, Dr. MERRET, and Mr. HOSKYNS, chairmen of the committee for agriculture and compoſing of the hiſtories of nature and art, gave an account of what had been hitherto done in their reſpective committees[s]; for which they received the thanks of the ſociety, who recommended to them the care of making farther progreſs in their reſpective work.

Col. BLOUNT gave an account of the exceeding growth of carps in a ſhort time; and was deſired to make farther obſervations thereof, and to bring in an account, not only of the ſeveral dimenſions, but weights, of the carps taken at ſeveral times.

Dr. WILKINS mentioned an account, which he had received out of America concerning the comet; which was ordered to be produced at the next meeting.

May 16, at the meeting of the COUNCIL were preſent

The lord viſcount BROUNCKER, preſid[t]	Mr. HENSHAW
Mr. HOWARD	Dr. WILKINS
Mr. AERSKINE	Dr. BALLE
Sir ROBERT MORAY	Mr. COLWALL
Sir JOHN LOWTHER	Mr. GRAUNT
Mr. PALMER	Mr. OLDENBURG.

It was ordered, that the preſident, Sir ROBERT MORAY, Sir WILLIAM PETTY, and Dr. WILKINS be a committee for reviewing Mr. SPRAT's relation concerning the inſtitution and deſign of the Royal Society.

[s] Their inquiries concerning agriculture are printed in the Philoſ. Tranſact. n° 5, p. 92, July 1665.

May

May 17, Sir WILLIAM HAYWARD was elected, and MALACHY THRUSTON, M. D. was propoſed candidate by Dr. WILKINS.

Three accounts were brought in of the late comets; one by Dr. WILKINS concerning the firſt, ſent out of New England; the other two by Mr. AERSKINE, concerning the latter, written from Prague and Leige: All which were ordered to be delivered to Dr. WREN and Mr. HOOKE.

There was read a letter of Dr. WALLIS from Oxford, of May 8, 1665, concerning his performance in digeſting Mr. HORROX's papers into one piece, together with his recommendations thereof to the preſs; which was referred to the conſideration of the council.

The experiment of injecting the Florentine oil of tobacco into the veins of a dog's leg was made, but without any apparent effect upon him. It being ſuſpected, that the injection was not rightly made as to the quantity of the poiſon injected, it was judged neceſſary, that the experiment be repeated at the next meeting.

It was ſuggeſted by Dr. WILKINS, that the experiment of injecting the blood of one dog into the vein of another might be made.

The lord BRERETON related, that he had been informed, that a horſe tired in his journey to London, upon the giving him at the mouth a draught of ſheep's or calf's blood, (his lordſhip not remembering which of the two it was) was ſo revived and ſtrengthened, that he performed very well the reſt of his journey.

Mr. THOMAS COXE gave an account, that he had killed a boar-cat with a drop of the oil of tobacco drawn by himſelf; and that having given the ſame quantity to a female cat, he had recovered her, when ſhe was expiring, by the means of the oil of *aſa fœtida*. He was deſired to try the recovering of a male cat with the like oil, and to bring in an account of all his trials in writing; which was alſo deſired of Mr. DANIEL COXE about his experiments.

It being moved, that the experiments recommended the year preceding concerning the production of inſects by putrefying dead fleſh, the lungs, blood, &c. of animals, might be purſued; the lord viſcount STAFFORD promiſed to make ſome trials of this kind by putting ſuch matter into a receiver in a moiſt and warm place, expoſed to the morning ſun, the veſſel being tied over with flannel, to ſecure the matter from being fly-blown, and bruſhing the flannel ſometimes clean from the filth, which flies and other inſects might caſt upon it.

Mr. WILLUGHBY mentioned, that he was trying, whether mites will breed of eggs, as they will in wood, cheeſe, peaſe, &c.

Mr. BOYLE obſerved, that he had drawn a catalogue of experiments relating to ſpontaneous generation, to be made two ways: 1. in glaſſes hermetically ſealed, having

having the ordinary air in them: 2. in glaſſes firſt exhauſted, and then ſealed up. He was deſired to communicate his catalogue to the ſociety, that by them he might be aſſiſted in the proſecution of ſuch experiments.

Mr. HENSHAW affirmed, that he had ſeen mites bred on the top both of claret and white wine in bottles (which he gueſſed had not been well drained) and veſſels drawn low; the wine being full of flowers, which, when he looked upon by a microſcope, he found ſtored with mites.

Sir ROBERT MORAY inquiring how worms ſhould come to be generated in vinegar, it was ſuggeſted by Dr. GODDARD, that vinegar probably had ſome crude wateriſh matter in it; which turning into a ſlimy ſubſtance might breed thoſe worms.

There was tried an experiment of making an hole on each ſide of the thorax of a dog, to ſee, whether he would live after it. The ſucceſs was, that the dog remained alive, the wounds being but ſmall, and the animal by breathing making the ſkin to paſs over the wounds, and thereby covering them.

This experiment was ordered to be made at the next meeting, by cutting a hole in the ſternum of the dog on both ſides.

It was ordered alſo, that on the Friday morning following, about nine, the variation of the needle ſhould be obſerved in Whitehall garden, by the curators formerly appointed for that purpoſe; and that Mr. COLWALL be deſired to ſpeak to Mr. MARRE to be preſent, and furniſh materials neceſſary for that obſervation.

Mr. HOOKE mentioned, that he had a pocket-needle, which would ſhow the variation of the needle. He was deſired, upon further conſideration, to give a particular account of it to the ſociety.

The operator acquainted the ſociety, that ſome May-dew was gathered with napkins; and he was ordered to ſend ſome glazed earthen pans to Highgate for the gathering of it; and Sir ROBERT MORAY was deſired to take care for it there.

Mr. HOOKE was ordered to try ſome experiments of refraction by himſelf, and to acquaint the ſociety at their next meeting with the ſucceſs thereof.

May 24. Sir THEODORE DE VAUX was admitted.

Dr. MALACHY THRUSTON was elected and admitted.

Mr. HOOKE having acquainted the ſociety, that he had found the refraction of oil of turpentine upon water to be the ſame with that of water alone, the experiment was made before the ſociety, which verified the account given, viz. that in both theſe, the inclination being thirty degrees, the angle of refraction was 40° 43′. And it was conjectured by Mr. HOOKE, that the upper and under ſurfaces of the oil

being parallel, was the cauſe of the non-alteration of the refraction, with more thickneſs of the oil of turpentine.

There was alſo an account given of ſilk-worms eggs, hatched in an exhauſted receiver; but the glaſs having admitted water by the ſun's melting the cement, the experiment was ordered to be repeated againſt the next meeting.

There was read a letter to Mr. Hooke from Dunkenhall in Lancaſhire, dated 16 May, 1665, concerning caterpillers, that ſeemed to be produced of the downy palms of ſallows. It was ordered, that if the ſeaſon were not paſt, Mr. Hooke take care to make the obſervation himſelf.

Dr. Goddard moved, that the writer of this letter might be written to, that he would keep theſe inſects, and obſerve whether they do not turn into flies.

Sir Robert Moray moved, that both the changes in the generations of animals, and the ſteps of the growth of vegetables, might be more frequently and accurately obſerved than hitherto, by the help of microſcopes. For obſervations of the growth of vegetables he named beans, as growing faſt.

There was tried an experiment of injecting about 8 or 9 drops of ſpirit of tobacco into the vein of a dog, with this effect, that the dog, a little while after the injection, grew ſick and vomited.

Dr. Wilkins, Mr. Daniel Coxe, Mr. Thomas Coxe, and Mr. Hooke were appointed to take care of injecting the blood of one dog into the vein of another; and Mr. Thomas Coxe was particularly deſired to try the changing of dog's ſkins.

Mr. Thomas Coxe related, that he had made an experiment of injecting the blood of one pigeon into the vein of another, by opening the vein of one, and letting it bleed, till the pigeon was almoſt expiring; and then letting out the blood of another pigeon, and injecting it into the dying one, and thereby keeping it alive for half an hour, after which it died, as the other pigeon did, though a pretty while after.

Mr. Boyle produced a monſtrous head of a colt, put into ſpirit of wine, with a double eye in the midſt of its forehead, having double eye-lids, and double pupils. Mr. Hooke was ordered to draw the picture of it, and then to diſſect it.

Mr. Thomas Coxe related, that he could ſave a boar-cat with the ſpirit of *aſa fœtida*, as he had done a female cat, poiſoned with tobacco-oil.

Mr. Willughby moved, that moſt corruptions of bodies turning to mites, ways might be thought on to deſtroy them; and having propoſed that of ſmoking them with brimſtone, he deſired advice about inſtruments fit to convey ſmoke.

The preſident acquainted the ſociety, that an experiment had been made of obſerving the variation of the needle; and that the King had been pleaſed himſelf to make the obſervation on the Friday preceding in Whitehall garden, and had found no variation at all, the needle ſtanding in the Meridian.

It was ordered, that this variation be proſecuted; and that Mr. MARRE be called upon for his apparatus neceſſary thereto.

The following experiments were appointed for the next meeting.

1. Seeds of an haſty growth to be put into an exhauſted receiver, to ſee, whether they would come up.

2. Silk-worms eggs to be put again into an exhauſted receiver, to ſee, whether they would hatch.

3. The experiments of refraction to be proſecuted.

4. *Taints* to be given to a dog.

5. To try the ſaving of a ſhe-cat, that hath taken the poiſonous oil of tobacco, with the ſpirit of *aſa fœtida*; and to try, whether this ſpirit of *aſa fœtida* would ſave a boar-cat, that hath taken the ſame quantity of the like poiſonous oil, that the ſhe-cat hath taken.

6. To try the injecting of the blood of one dog into another.

7. To try the opening of a dog's ſternum on both ſides, to ſee, whether he would breath after it.

May 29, at the meeting of the COUNCIL were preſent

The lord viſcount BROUNCKER, preſid^{t}
Mr. AERSKINE
Sir ROBERT MORAY
Sir WILLIAM PETTY
Mr. PALMER
Dr. WILKINS
Dr. GODDARD
Dr. CROUNE
Dr. BALLE
Mr. GRAUNT
Mr. OLDENBURG.

It was ordered,

That Mr. SPRAT be deſired to take notice in his hiſtory of the ſociety what is meant by their council, when they grant an *Imprimatur*; and to draw up a draught concerning it, and offer it to the council.

That the preſident be deſired to licence the fourth number of the *Philoſophical Tranſactions*; and

That Mr. HOOKE be urged to profecute the grinding of glaſſes by his new engine.

Mr. HOOKE mentioned to the council, that he had a way of making a ſhort object-glaſs draw as much longer, as ſhould be deſired.

May 31, the monſtrous colt's head was opened, wherein both the eyes were found together in one place in the midſt of the forehead, and two pupils therein, and but one optic nerve [h]. Mr. HOOKE was appointed to give in writing a full deſcription of all that was obſervable in this head, together with the ſcheme of the head.

It was ordered, that Mr. BOYLE be aſked by Mr. OLDENBURG, whether this colt had any other monſtroſity in its body; Dr. GODDARD ſuſpecting, that the colt might have received a blow in the forehead, whereby the eyes might be thus forced together.

Mr. HOWARD preſented the ſociety with a ſpunge, in part petrified, after it had lain, as he affirmed, four years upon a boarded floor of a room about ſix inches above ground, in which room had been kept paper and ſeeds of plants not at all ſpoiled.

Sir ROBERT MORAY produced a ſmall piece of pure copper, taken out of a mine in Cornwal by Sir SACKVILLE CROW.

Mr. WILLUGHBY produced pieces of an egg hardened to a kind of ſtoneneſs by lying in lime. All theſe curioſities were committed to Mr. HOOKE for the repoſitory.

Mr. HOWARD having preſented the ſociety with ſeveral curious exotic plants and flowers, had their thanks, and was deſired to continue theſe preſents from time to time, that they might be put upon the table at the meeting of the ſociety.

Sir THEODORE DE VAUX produced a Latin paper of Sir THEODORE MAYERNE, concerning worms bred in the teeth of men. He was deſired to leave this paper with the ſociety, and to communicate likewiſe the receit againſt ſuch worms mentioned in that paper, and what other conſiderable papers he had of Sir THEODORE MAYERNE for the purpoſe of the ſociety; which he promiſed to do.

Dr. CROUNE affirmed, that he had likewiſe heard of worms taken out of the teeth; concerning which he would make farther enquiry, and give the particulars at the next meeting.

Sir ROBERT MORAY affirmed the like of worms taken out of the gums of a man in Scotland.

[h] Philoſ. Tranſact. n° 5. p. 85, July 1665.

Dr. WILKINS ſurmiſed, that theſe ſuppoſed worms were nothing but the condenſed ſweat, ſqueezed out of the pores.

Col. BLOUNT preſented two models of coaches, for the eaſe of both man and horſe; of which he was deſired to bring the deſcription in writing.

Sir ROBERT MORAY moved, that it might be conſidered, how to make coaches of ſeveral ſizes and forms, for the eaſe of one, two, three, or more perſons; and how to improve ſingle perches.

Col. LONG remarked, that he had ſeen a cyclopic bird, the ſpecies of which was ſuch; as alſo an unicorn's head, anſwering the deſcription given of it in CÆSAR's commentaries and in PURCHAS; and likewiſe a fowl called a bear-killer, a kind of caſſawar; which two letters he ſaid were in the poſſeſſion of Major SCOT, from whom he hoped to obtain the liberty of producing them to the ſociety.

Sir ROBERT MORAY preſented the ſociety with twenty Moriſco coins dug up about Tangier.

There was read a ſecond letter written from Dunkenhall to Mr. HOOKE, about inſects found in the palms of ſallows; mentioning, that by a ſecond and more accurate obſervation there were found little eggs in the down of thoſe palms, which were the original of thoſe caterpillers before ſuppoſed to be bred out of the little green thing in the center of the downy globules.

The experiments of refraction were deferred till the next meeting; and Mr. HOOKE was ordered to have the veſſel of the refracting engine made larger, in order to try ſeveral quantities of liquors.

Dr. PELL ſuggeſted, that in the experiments of refraction many times that may be imputed to the medium, which is cauſed by the figure of the liquor put to trial; and that the liquor may vary its figure, according to its quantity and the capacity of the veſſel containing it; as alſo, that different liquors will have different convexities; upon the account whereof they may differ in their refraction, rather than upon the account of their nature.

The preſident moved, that in order to diſcover what alteration in refraction the thickneſs of the medium makes, experiments might be tried with a plano-convex-glaſs, and ſeveral plain glaſſes behind it, to make the medium thicker.

The experiment of opening the dog's ſternum was deferred till the next meeting.

The dog, who had the eight or nine drops of tobacco-oil injected at the laſt meeting, being inquired after, the operator affirmed, that he was well.

It was ordered, that the experiment of injecting the blood of one dog into another be tried at the next meeting; upon which occaſion Dr. CROUNE ſuggeſted, that a common pipe might be uſed for both, in order to have thereby the blood of one dog ſucked out by the other.

June 7. Dr. WILKINS made a report of an experiment committed to his care, viz. that a dog's belly had been opened, and out of the *vena cava* there was let blood to the quantity of 5 or 6 ounces into a bladder, having a ſmall pipe of braſs faſtened to it in the manner of a clyſter-pipe, the end of which being put into the crural vein of a bitch, there was, by preſſing the ſaid bladder, about two ounces of blood injected into that vein, but without any ſenſible alteration in the bitch: that afterwards, in either ſide of the ſame dog's thorax there were cut two holes, each of an inch bigneſs; whereupon tho' the dog endeavoured very much to breathe, yet he was not able to move his lungs, nor draw any breath, except the wound were ſtopped by the finger; but that being taken off, the animal grew preſently breathleſs and expired.

This experiment was atteſted by Sir WILLIAM PETTY, Mr. WILLUGHBY, Mr. DANIEL COXE, and Mr. HOOKE, who had been preſent at the making it.

Mr. DANIEL COXE related, that having mixed ſome cold common water with the tobacco-oil, and given it to a cat, the animal had not been killed, as others uſed to be with tobacco-oil alone.

It was ordered, that the experiment be made before the ſociety both with tobacco-oil and water mix'd together, and with each of theſe apart, giving one of them after the other.

Mr. DANIEL COXE likewiſe obſerved, that he had heard, that ſcurvy-graſs-oil would alſo occaſion convulſions, and had the like operations upon animals with that of tobacco.

It was ordered, that Sir ROBERT MORAY ſhould deſire Monſ. le FEBURE to furniſh the ſociety with ſome of that oil for trying this experiment.

Mr. HOOKE reported, that he had ſown ſome lettice-ſeed upon earth in the open air; and at the ſame time upon other earth in a glaſs-receiver, which was afterwards exhauſted of air; that the ſeed expoſed to the air was grown up an inch and an half high within eight days; but that in the exhauſted receiver not at all: both which were produced and ſhewn the ſociety.

Whereupon it was ordered, that air ſhould be let into the exhauſted receiver, to ſee whether any of the ſeed would come up between this and the next meeting.

It was ordered alſo, that the next day, June 8, about five in the evening, the variation of the needle be obſerved in Whitehall by the ſame committee formerly appointed for it, viz. the preſident, Sir ROBERT MORAY, Sir PAUL NEILE, Dr. WREN,

WREN, Mr. OLDENBURG, and Mr. HOOKE; and that Mr. MARRE and Mr. BOND have notice given them by the operator, to bring their needles and inſtruments to the ſaid place.

Sir THEODORE de VAUX brought in the Latin receit of Sir THEODORE MAYERNE, which he had promiſed, for the worms growing in the gums.

Sir ROBERT MORAY produced a piece of a ſtone, ſaid to be taken out of the midſt of a Portland ſtone, and having ſome parts of it cryſtallized, ſticking about the opake part of the ſtone.

Dr. MERRET affirmed, that he had very many ſorts of them found in lead mines, and yielding excellent lime.

The preſident was deſired to put Mr. PEPYS in mind of the diver for the diving experiments in this ſeaſon.

It was ordered, that the experiments begun the laſt ſummer upon St. Paul's ſteeple be reſumed and purſued; and that the curator provide the apparatus neceſſary for it againſt the Monday following in the afternoon about four of the clock; the curators of theſe experiments being the preſident, Sir ROBERT MORAY, Sir WILLIAM PETTY, Dr. WILKINS, Dr. GODDARD, Mr. OLDENBURG, and Mr. HOOKE.

Dr. POPE mentioned, that he had ſeen at Paris a fellow walking upon the water by means of a pair of leather breeches made bladder-wiſe, with pipes to them to blow them up, and with legs joined thereto, liquored after a peculiar way.

Mr. HOOKE ſaid it might be thought upon to contrive a way of making a girdle to be tied about a man to ſave him from ſinking. He was ordered to think upon it himſelf.

He mentioned a certain wheel to go in both over land, and bogs and water.

It was objected, that in plain grounds ſuch a contrivance would be of uſe, but in aſcents uſeleſs; yet it was moved, that Mr. HOOKE ſhould endeavour to have a wheel made for a trial.

It was ordered, that there be provided againſt the next meeting a dog and ſome male vipers, to try whether in this hot weather their biting be mortal; and that it be done with vipers newly taken.

Dr. POPE mentioning his having brought ſome viper-powder from Venice, was deſired to furniſh the ſociety with ſome of it; which he promiſed to do.

There were made ſome experiments of refraction, viz. 1. With water alone, which ſtanding at an angle of inclination of 30° had an angle of refraction of 40°

40° 44′. 2. With ſpirit of turpentine alone of 45° 54′. 3. With water and ſpirit of turpentine together of 40° 44′: The ſame with water alone. 4. With common oil of 45° 20′. 5. With common oil and ſpirit of turpentine together of 45° 20′: The ſame with common oil alone.

June 14. CHARLES earl of Carliſle was propoſed candidate by Sir PAUL NEILE, and unanimouſly elected.

Sir ROBERT MORAY produced a bone conceived to be petrified in a gravel-pit. Some of it being weighed, viz. 1 $\frac{1}{4}$ ounce and 1 $\frac{1}{2}$ grains, was found to have loſt $\frac{1}{4}$ of an ounce and 22 grains by heating it red hot, and keeping it in the fire about $\frac{1}{3}$ of an hour. In this burning it had not the ſmell of a bone; but yet was not judged by the members to be truly petrified.

Mr. HENSHAW preſented the ſociety with the *Exuviæ* of a viper found by himſelf in his orchard, where it had ſeemed to him recently caſt, having in its head the cornea's of both the eyes, through which an object being looked upon ſeemed to diminiſh.

Dr. WILKINS produced the ſkin of a monſtrous lamb ſent him out of Cambridgeſhire, having ſeven legs, two bodies, two tails, and only one head: which he left with the ſociety, promiſing, in caſe it ſhould not be redemanded of him, to beſtow it on the ſociety for their repoſitory.

An account was given of the experiment of the growth of garden-creſſes in a receiver, after air was admitted to it; whereby in the ſpace of one week it was grown up to the height of two or three inches; whereas during the whole week before, when the receiver ſtood exhauſted, it did not grow at all.

Col. BLOUNT propoſed and diſcourſed of models of chariots, which he was again deſired to give a deſcription of in writing.

There was read a letter of Monſr. HUYGENS to Sir ROBERT MORAY, dated at the Hague, May 29, 1665, N. S. [1] giving notice of Mr. HEVELIUS's having printed a treatiſe of the late comets [k] in ſixty ſheets in folio, and expreſſing his apprehenſions about the difficulty of making Mr. HOOKE's new grinding inſtrument to ſucceed.

The experiment of having a dog bitten by a black male viper was tried; the event of which was, that the dog ſwelled much at the lip, where he was bitten, and foam'd, but was recovering.

The experiment was alſo tried of giving a drop of tobacco-oil drawn in England to a ſhe-cat, and of following it preſently with two or three drops of the ſpirit of *aſa fœtida*; the event being, that the cat was very ſick, yet ſhe recovered.

[1] Letter-Book, vol. i. p. 268.

[k] Prodromus Cometicus.

The

The ſame was tried upon a great and luſty boar-cat, which, though very ſick too, recovered likewiſe.

It was ordered, that the committee appointed for obſerving the variation of the needle meet again the next morning about eight of the clock in Whitehall garden, in order to proſecute that buſineſs, whereof Mr. MARRE and Mr. PHILIPS brought in their obſervations made June 8, which were ordered to be kept.

It was ordered likewiſe, that the apparatus for making the experiments at St. Paul's be made ready for the week following:

That at the next meeting the experiments of refraction be proſecuted: And

That it be tried, whether a cat poiſoned with tobacco-oil can be recovered with common water, either mixt with it or given preſently after it.

June 20, at the meeting of the COUNCIL were preſent

The lord viſcount BROUNCKER, preſid^{t}	Dr. WILKINS
Mr. HOWARD	Dr. GODDARD
Sir ROBERT MORAY	Dr. CROUNE
Sir PAUL NEILE	Dr. BALLE
Sir WILLIAM PETTY	Mr. GRAUNT
Mr. AERSKINE	Mr. OLDENBURG.

It was ordered, that the preſident be deſired to move it at the next meeting of the ſociety, that, by reaſon of the preſent contagion, it would be convenient to intermit their publick weekly meetings, until the ſickneſs ceaſe, and the preſident with the advice of the council ſummon them to meet again:

That the curator, amanuenſis, and operator, during this intermiſſion, be employed by the direction of any three of the council in buſineſs relating to the deſign and work of the ſociety; of which three the preſident, vice-preſident, Sir ROBERT MORAY, Sir WILLIAM PETTY, Dr. GODDARD, the treaſurer, either of the ſecretaries, Dr. CROUNE, or Mr. COLWALL ſhould be one:

That on the day following, being the next meeting of the ſociety, thoſe, who ſhould be preſent, and were in arrears, ſhould be put in mind of it by the preſident, and deſired to pay the ſame, before the ſociety intermit their public meetings: And

That upon a report of Sir WILLIAM PETTY of his having peruſed the additions of Mr. GRAUNT to his *Obſervations upon the Bills of Mortality*, the preſident be deſired to licenſe the reprinting of that book, together with ſuch additions: which was done accordingly.

June 21, the COUNCIL met again, there being preſent

The lord viſcount BROUNCKER, preſid^{t}	Mr. PALMER
Mr. HOWARD	Dr. WILKINS
Mr. AERSKINE	Dr. GODDARD
Sir ROBERT MORAY	Mr. HILL
Sir PAUL NEILE	Mr. COLWALL
Sir WILLIAM PETTY	Mr. OLDENBURG.

Sir PAUL NEILE moved, that the amanuenſis might be ordered to attend Sir ANTHONY MORGAN, and to deſire of him the papers, which relate to the ſociety in the matter of Chelſea-college, and to deliver them to Dr. WILKINS; who ſhould be deſired to find out a fit perſon, who might in the abſence of Sir ANTHONY MORGAN attend the attorney-general for the proſecuting this buſineſs concerning Chelſea-college: which was ordered accordingly.

At the meeting of the SOCIETY on the ſame day,

The preſident having propoſed an intermiſſion of the meetings of the ſociety by reaſon of the preſent contagion in London, the ſociety approved of it, and reſolved to diſcontinue their aſſemblies on the Wedneſday following, until the preſident, by advice of the council, ſhould ſummon them to meet again.

Mr. HOOKE produced a ſextant contrived by himſelf, and explained the uſe and ſtructure thereof, viz. that it was made after the manner of a pair of dividing compaſſes, there being two three-feet tubes opening upon a joint in the manner of the legs of compaſſes, and a long ſtrait ſcrew moving in two motions, ſerving to take angles very exactly.

It was moved by Sir PAUL NEILE, that this inſtrument might be examined, to ſee whether it performed what it was intended for, by meaſuring ſome known diſtances with it: And it was ordered thereupon, that this ſhould be done.

Mr. HOOKE produced ſome curioſities addreſſed to him by Mr. WILLIAM JUMPER, viz. certain tongues, and teeth, and eyes, called ſerpents-tongues, &c. ſaid to be found frequently at Malta, and knock'd out of that rock only where St. PAUL ſuffered ſhipwreck. They were ordered to be put into the repoſitory.

Dr. WILKINS likewiſe preſented the ſociety with ſome curious ſtones, as large Corniſh diamonds, *lapis ſtellaris*, ſerpentine ſtones, ſome other ſorts of petrified ſhells, &c.

Sir ROBERT MORAY mentioned, that prince RUPERT had contrived and made uſe of a quadrant to take altitudes with, viz. by a perpendicular, which, as ſoon as by raiſing the hand, the eye brings the ſight upon the object, the height of which is to be taken, the ruler moving all the while perpendicularly is with a tricker clapt faſt to the ſide of the quadrant, thereby marking, without wavering and exactly, the altitude required: which contrivance was eſteemed moſt uſeful for ſuch obſervations at ſea, in regard of the wavering of the hand by the motion of the ſhip.

It was order'd, that the variation of the needle be again obſerved between that and the next meeting.

Mr. DANIEL COXE and Mr. THOMAS COXE were put in mind to proſecute the experiments with antidotes to ſave cats poiſoned with tobacco-oil.

Col. BLOUNT being deſired, that his chariot might be brought into the court of Greſham-college at the next meeting, promiſed, that it ſhould be done.

He was put in mind to give in writing a ſhort deſcription of the ſeveral models of chariots propoſed by him, and produced before the ſociety.

Occaſion being given to diſcourſe of the art of flying, and Dr. WREN being deſired to leave with the Society what he had conſidered on this ſubject, promiſed to do ſo.

He affirmed, that a man would be able ſo often to move the wings, as he could with double his own weight on his back aſcend a pair of ſtairs built at an angle of 45 degrees.

Mr. HOOKE ſuggeſted, that it was not ſufficient to have a theory for the deſcent of an expanded area perpendicularly downward, becauſe the deſcent of an expanded area, moved edgewiſe horizontally in the air, was extremely different; in which way however all motion of flying muſt be performed.

Dr. WREN being deſired to leave what he had done about the late comets, promiſed to do ſo.

He moved, that an experiment might be made, whether the point of a magnetic needle being ſharpened with all exactneſs imaginable, the needle would return to the ſame point, himſelf having found, that it would not.

Dr. GODDARD mentioned, that ſome variation might poſſibly happen from the very ſhape of the needles; and that it ſeemed to be requiſite, that a proportion of the metal ſhould be obſerved in reſpect of the length thereof.

The operator being called upon to give an account, how the dog did, that was bitten at the laſt meeting by a viper, affirm'd, that he ſwelled much more the next day, and was very ſick, ſo that he would eat nothing; but that on the Friday after he recovered his appetite, and grew well.

Mr. DANIEL COXE affirm'd, that at Line in a chalk-pit running quickſilver had been found among the chalk.

The lord BRERETON obſerved likewiſe, that in an inn in St. Alban's mercury was found running in a ſaw-pit.

June 28, at the meeting of the COUNCIL were preſent

The lord viſcount BROUNCKER, preſid[t]
Sir ROBERT MORAY
Mr. AERSKINE
Sir WILLIAM PETTY
Dr. GODDARD
Dr. BALLE
Mr. COLWALL
Mr. GRAUNT
Mr. OLDENBURG.

It was order'd, that the preſident be deſired to licenſe the fifth number of the *Philoſophical Tranſactions*, written in four ſheets of paper in folio: And

That the preſident be deſired to ſign the allowance to Mr. HOOKE as curator to the ſociety, tho' the ſum exceed five pounds.

At the meeting of the SOCIETY on the ſame day,

Monſr. HUGUES LOUYS DE LYONNE[l], and Monſr. VITAL DE DAMAS[m] were admitted fellows of the ſociety. For the entertainment of theſe two foreigners ſome of the experiments formerly made were repeated, tending to ſhew, that the air is a diſſolvent of combuſtible bodies[n].

Sir ROBERT MORAY preſented the ſociety with a curious ſtone, of which he had received this relation, that within four miles of the tomb on the ſide of Loghneach in Ireland there was a well, which produced this kind of ſtone; ſeveral hundreds of people meeting there every firſt day of May, and cleanſing the well, the bottom of which was ſaid to be an hard kennel-rock, which made a cracking noiſe; whereupon theſe ſtones were thruſt out to a great number.

It was order'd, that ſome of the members of the ſociety, who were in Ireland, be written to, to enquire after the truth of this relation: As alſo that the curator try to diſſolve this ſtone with *aquafortis*, in order to ſee, whether any mineral be contained in it; and that he try likewiſe, whether it would burn.

Sir THEODORE DE VAUX communicated a Latin paper found among the writings of Sir THEODORE MAYERNE, relating to the preſerving timber and other wood for a great while from putrefaction and being worm eaten; and containing likewiſe a method of ſalting beef, that ſhould keep a great while: Which paper was ordered to be filed up.

It was reſolved, that the public aſſemblies of the ſociety be henceforth diſcontinued, till ſummoned by the preſident to meet again.

The members of the ſociety were then exhorted by the preſident to bear in mind the ſeveral taſks laid upon them, that they might give a good account of them at their return; and Mr. HOOKE was ordered to proſecute his chariot-wheels, watches, and glaſſes, during the receſs.

[l] Son of Monſr. DE LYONNE, ſecretary of ſtate to LEWIS XIV. of France.

[m] Agent of the French merchants. See Mr. OLDENBURG's letter to Mr. BOYLE, of July 4, 1665. BOYLE's Works, vol. v. p. 331.

[n] Ibid.

Upon

Upon this diſcontinuance of the meetings of the ſociety, on account of the ſpreading of the plague throughout London and Weſtminſter, moſt of the members retired into the country. But Mr. OLDENBURG, one of their ſecretaries, continued during the height of the diſtemper, and through the whole ſummer and following winter, at his houſe in Pall-mall, Weſtminſter, whence he frequently wrote to Mr. BOYLE, who reſided then at Oxford, and others of his friends, and to his foreign correſpondents, and particularly to Mr. HEVELIUS of Dantzick.

In his letter to Mr. BOYLE of the 4th of July, 1665 [o], he takes notice, that their noble preſident's neighbourhood, but two houſes diſtant from his lordſhip's, was infected; and adds, "I know not whether this dreadful neighbour will occa-"ſion him to alter his thoughts for a removal. It is a great mercy, that Southwark "and Rotherhith, where ſeamen are ſo numerous, and other people, that relate "and work in the navy, remain ſo free yet of the contagion, that there are not "above two houſes ſhut up in thoſe quarters. If it ſhould come into this row, "where I am, I think I ſhould then change my thoughts, and retire into the "country, if I could find a ſojourning corner. In the mean time I am not a "little perplexed concerning the books and papers belonging to the ſociety, that "are in my cuſtody: all I can think of to do in this caſe is, to make a liſt of "them all, and to put them up by themſelves in a box, and ſeal them together "with a ſuperſcription, that ſo, in caſe the Lord ſhould viſit me, as ſoon as I "find myſelf not well, it may be ſent away out of mine to a ſound houſe; *&* "*ſic deinceps.*"

It appears from this letter, that the fifth number of the *Philoſophical Tranſactions* was then ready for publication; at the cloſe of which is an advertiſement; that "by reaſon of the preſent contagion in London, which may unhappily cauſe an "interruption as well of *correſpondencies* as of *public meetings*, the printing of theſe "*Philoſophical Tranſactions* may poſſibly for a while be intermitted, though en-"deavours ſhall be uſed to continue them, if it may be." But none were publiſhed till November following.

Mr. OLDENBURG wrote again to Mr. BOYLE on the 10th of Auguſt [p], that he had now put all his affairs and papers in order, ſeparating what belonged to the Royal Society, to Mr. BOYLE, &c. from his own, intending at the very beginning of his indiſpoſition, if he ſhould be ſeized, to have thoſe papers conveyed to an healthy place. In another letter of the 24th of that month he returned his acknowledgements to Mr. BOYLE for imparting to him ſomewhat of his philoſophical employments at Oxford; and expreſſed his ſatisfaction, that ſome other members of the Royal Society were active alſo, and likely to give a good account of their ſpent time at their meeting again. In a third letter written on the 29th of the ſame month [q], he remarks, that it would be obliging to the public, if Mr. BOYLE would print that catalogue, mentioned by him, of the antipeſtilential medicines; which would be moſt conveniently done at Oxford, the London ſtationers and printers having for the moſt part retired into the country, as well as others. "I ac-

[o] BOYLE's Works, vol. v. p. 330. [p] Ibid. p. 332. [q] Ibid. p. 334.

"know-

" knowledge, *continues he*, that that jealouſy about the firſt authors of experiments, " which you ſpeak of, is not groundleſs; and therefore offer myſelf to regiſter " all thoſe, you or any perſon ſhall pleaſe to communicate as new, with that fideli- " ty, which both the honour of my relation to the Royal Society (which is highly " concerned in ſuch experiments) and my own inclinations do ſtrongly oblige me " to."

Mr. BOYLE in a letter to Mr. OLDENBURG from Oxford, dated Sept. 30, [q] mentioned, that there being then in that city Sir ROBERT MORAY, Sir PAUL NEILE, Sir WILLIAM PETTY, Dr. WALLIS, Dr. COXE, Capt. GRAUNT, and Mr. WILLIAMSON, he had put them in mind, that as there were then no inconſiderable number of the Royal Society, ſo that the King ſeeing Sir ROBERT MORAY and Mr. BOYLE, with ſome others, took notice of it; it ſeemed proper for them to meet, though not as a ſociety, yet as a company of virtuoſi, and to renew their meetings. Upon which, being deſired to name the day and place, he propoſed Wedneſday as an auſpicious day, having been that of their former aſſemblies, and his own lodgings for the place of meeting, till they could be better accommodated. This being agreed to, the members mentioned above met at his lodgings, where, beſides their diſcourſe on various ſubjects, he ſhewed ſome experiments, particularly one of turning a liquor like fair water in a moment into an inky ſubſtance, and preſently changing that firſt into a clear liquor, and then into a white one almoſt like ink.

Mr. OLDENBURG in his anſwer of Octob. 5, 1665 [r], thanked Mr. BOYLE for his account of what was done by him and others of the ſociety at Oxford, adding: " Methinks you are ſo many fellows of the ſociety, that you can make more than " a *quorum*, but that you want the preſident. I rejoice to find by yours, that you " intend to make ſo good uſe of that opportunity as you did; and I hope ſince you " are ſo many, and ſo conſiderable ones of our body, you will make it a part of " your buſineſs ſo to inſinuate the deſigns of the ſociety into the Oxonians, that " they may reliſh them as much as moſt of them have been reported to diſguſt " them, and give them cauſe to prefer that ſolidity of knowledge the ſaid ſociety " aims at, before ſcholaſtical intentions."

Mr. BOYLE in his letter of Octob. 14. [s] remarks, that at their meeting on the Wedneſday preceding at Dr. WALLIS's, two letters of Mr. OLDENBURG to Sir ROBERT MORAY had been publicly read, which adminiſtered occaſion of much diſcourſe; and that himſelf had exhibited ſome experiments, particularly with the poiſon drawn from tobacco, and an eaſy way of ſuſpending Mercury in a pipe open at both ends, and held perpendicular, though nothing kept it from falling but the reſiſtance of the ſubjacent water in an open veſſel.

Mr. OLDENBURG in his anſwer of the 17th of October [t], mentions his having his papers ready for a ſixth number of the *Philoſophical Tranſactions*, to be printed the firſt Monday in November, after they ſhould be reviewed by his Oxonian

[q] Supplement to the Letter-Book, vol. iv. p. 38.
[r] BOYLE's Works, *ubi ſupra*, p. 337.
[s] Supplement, *ubi ſupra*, p. 39.
[t] BOYLE's Works, *ubi ſupra*, p. 340.

friends;

friends; and accordingly that number was publiſhed on Monday Nov. 6, 1665, with this preface, that "an opportunity being preſented to revive the publiſhing "of theſe papers, which for ſome months had been diſcontinued by reaſon of the "great mortality in London, where they were begun to be printed, it hath been "thought fit to embrace the ſame, and to make uſe thereof for the gratifying of "the curious, that have been pleaſed to think well of ſuch communications."

The ſeventh number publiſhed on the 4th of December, was printed at Oxford, as was likewiſe the 8th publiſhed on the 8th of January $166\frac{5}{6}$; but the 9th for February, and all the ſubſequent ones, were printed at London.

During the receſs of the ſociety Mr. OLDENBURG kept up his correſpondences with ſeveral of the learned men abroad, and particularly HEVELIUS; the letters which paſſed between them being extant in the Letter-Book [u]. In one of theſe, dated January 24, $166\frac{5}{6}$ [w], he informs that great aſtronomer, that ſome members of the Royal Society having examined the difference between him and Monſieur AUZOUT, concerning the motion of the late comet, had determined in favour of the latter; the Italian, French, and Dutch, as well as Engliſh aſtronomers, being found to concur in their obſervations with Monſieur AUZOUT in oppoſition to HEVELIUS.

Another active member of the Royal Society, Mr. HOOKE, before he left London, wrote to Mr. BOYLE on the 8th of July, 1665 [x], his ſentiments concerning the cauſe and nature of the plague. "I cannot, *ſays he*, from any information I "can learn of it, judge what its cauſe ſhould be; but it ſeems to proceed only "from infection or contagion, and that not catched but by ſome near approach to "ſome infected perſon or ſtuff. Nor can I at all imagine it to be in the air, "though yet there is one thing, which is very different from what is uſual in other "hot ſummers, and that is, a very great ſcarcity of flies and inſects. I know "not whether it be univerſal; but it is here at London moſt manifeſt. I can "hardly imagine, that there is a tenth part of what I have ſeen other years."

The week after the writing of this letter he accompanied Sir WILLIAM PETTY and Dr. WILKINS to Durdens, a ſeat of the lord BERKLEY near Epſom in Surry, where ſeveral experiments were made during their receſs; an account of which was brought into the ſociety, after their return to Greſham-College.

Feb. 21, $166\frac{5}{6}$, the COUNCIL of the Royal Society, after a long interruption cauſed by the contagion, met again in the uſual place in Greſham-College, viz.

The lord viſcount BROUNCKER, preſid[t]
Sir PAUL NEILE
Dr. WILKINS
Dr. GODDARD
Dr. CLARKE
Mr. PALMER
Mr. COLWALL
Mr. GRAUNT
Mr. OLDENBURG.

[u] Vol. i. p. 275, *& ſeq.* [w] P. 291. [x] BOYLE's Works, vol. v. p. 543.

The

The time of ſummons for opening again the weekly meetings of the ſociety being conſidered of, it was reſolved, that it be left to the preſident to ſummon the fellows to meet on the ſecond Wedneſday in March, if his Lordſhip ſhould find no cauſe to the contrary.

It was reſolved, that the fifty pounds in caſh, that were formerly preſented by Mr. COLWALL, be delivered out to be added to another fifty pounds preſented by him, to pay for the collection of rarities formerly belonging to Mr. HUBBARD[y].

It was ordered, that the ninth number of the *Philoſophical Tranſactions* be printed by JOHN MARTYN and JAMES ALLESTRY, printers of the ſociety.

It was reſolved, that the council meet on the Monday following, the 26th inſtant, without ſummons.

Feb. 26, at the meeting of the COUNCIL were preſent

Dr. WILKINS, vice-preſident
Sir PAUL NEILE
Dr. GODDARD
Dr. CLARKE
Mr. PALMER
Mr. COLWALL
Mr. HILL
Mr. GRAUNT
Mr. OLDENBURG.

It was ordered, that the ſeveral members of the council, who had particular acquaintance with thoſe lords of the ſociety, who were in arrears, ſhould be deſired to recommend to them thoſe letters, which formerly were drawn up, to put them in mind of ſatisfying ſuch arrears; and that accordingly the preſident be deſired to give to the earl of Northampton the letter addreſſed to him; the lord biſhop of Exeter and Sir ROBERT MORAY, that to the marquis of Dorcheſter; Sir ROBERT MORAY, that to the duke of Buckingham; and Dr. WILKINS, that to the lord HATTON.

[y] Mr. OLDENBURG in a letter to Mr. BOYLE, dated 24 February, 166⅔, three weeks after this meeting of the council (BOYLE's works, vol. v. p. 350,) ſtiles this *a very handſome collection of natural things*; and adds, "We are now undertaking ſeveral good things, as the collecting a repoſitory; the ſetting up a chemical laboratory, a mechanical operatory, an aſtronomical obſervatory, and an optic-chamber: but the paucity of the undertakers is ſuch, that it muſt needs ſtick, unleſs more come in, and put their ſhoulders to the work. We know, Sir, you can, and will do much to advance theſe attempts; and we hope the heavens are reconciled to us, to free us from the infection, and to return you to London.—The arrears of the ſociety amount to above 600 l. How to get them paid is the queſtion?" He takes notice, that the lord viſcount BROUNCKER would now by all means be releaſed of his preſidentſhip, and was ſo peremptory in his reſolution, that it would be very hard to engage his lordſhip for another year. "I know, Sir, *continues he*, they [the ſociety] have an eye upon you for his ſucceſſor, thinking it very important to chooſe perſons into that chair, in whom birth and ability are in conjunction; and I would fain perſuade myſelf, you will neither injure them nor yourſelf ſo much, as to decline that honour, eſpecially ſince it will not oblige you to ſuch aſſiduity, as is indiſpenſible, proviſion being ready to ſupply your place upon occaſion."

It was ordered, that the collector make haſte to go about with the general liſt of arrears, and uſe all diligence to gather them in; and that in doing ſo, he take particular notice of thoſe, who refuſe or delay payment.

Reſolved, that the amanuenſis make ſeveral copies of the following order, for thoſe, who are hereafter named, inſerting their names, and the ſums of their arrears, and carry them to the preſident to be ſigned:

The form of the ſaid order;

" Ordered, that the collector to the treaſurer of the Royal Society do repair " to ———— and give him notice, that he is in arrear the ſum of —— " due to the Royal Society on the 23d of December laſt paſt, according to his " ſubſcription and the ſtatutes of the ſaid ſociety; and do deſire him to pay the " ſaid ſum unto the ſaid collector, who, in caſe of non-payment, is to return his " anſwer unto the council of the ſaid ſociety."

The perſons are theſe

Mr. VERMYYDEN	Mr. STANLEY	Dr. SCARBURGH
Mr. WALLER	Sir JOHN TALBOT	Mr. DRYDEN.
Dr. TERNE	Mr. STANHOPE	

March 12, at the meeting of the COUNCIL were preſent

Dr. WILKINS, vice-preſident	Mr. COLWALL
Dr. GODDARD	Mr. GRAUNT
Dr. CLARKE	Mr. OLDENBURG.

It being ſignified by Mr. OLDENBURG, that the preſident had peruſed the *Philoſophical Tranſactions* deſigned for this month, viz. n° 10, and given his conſent for the publiſhing of them; thoſe, who were preſent, gave their conſent likewiſe for it, to make up the *quorum* of ſeven, requiſite for giving licenſes.

March 14, after above eight months interruption, occaſioned by the public calamity of the plague, the SOCIETY opened their meetings again upon a ſummons ſent out by the preſident, as it had been ordered at their laſt meeting, June 28, 1665.

Captain GEORGE COCK was propoſed a candidate by the preſident; and WILLIAM HARRINGTON, eſq; by Dr. WILKINS.

Mr. OLDENBURG preſented to the ſociety from Mr. BOYLE his *Hydroſtatical paradoxes*, the peruſal of which was recommended to Dr. WILKINS, who was deſired to give an account thereof to the ſociety.

He preſented likewiſe from Monſieur PETIT his diſſertations upon the two late comets in December 1664 and in April 1665; the reading of which was recommended to Mr. HOOKE, that an account thereof might be given to the ſociety.

Mr. OLDENBURG preſented alſo from Mr. EDWARD DIGGES a couple of Virginian ſilk-worm-bottoms of an extraordinary bigneſs, equalling almoſt a hen's egg; and he mentioned from the preſenter's mouth, that generally thoſe bottoms were of that magnitude in that plantation; and that about four pounds of theſe bottoms would yield a pound of ſilk, whereas there muſt be ſeven pounds of the ordinary ones for a pound of ſilk.

Dr. WILKINS produced ſome ſeeds ſent by Mr. JOHN HINDE from Bermudas, producing a tree of about eight feet high, and a fine flower. The ſeeds themſelves were affirmed to have a purging and vomiting quality; and three parts of four of them turning to oil, it was eſteemed a ſovereign remedy for aches, and good for common uſe.

Mr. WILLIAMSON mentioned, that he had received news from Florence, that there was coming to England a perſon with an engine for deſtroying ſhips; and that at his arrival the invention would be referred to the examination of the ſociety.

The preſident inquiring into the employments, in which the members of the ſociety had been engaged during their long receſs, ſeveral of thoſe, who were preſent, gave ſome account thereof: viz.

Dr. WILKINS and Mr. HOOKE of the buſineſs of the chariots, viz. that after great variety of trials they conceived, that they had brought it to a good iſſue, the defects found, ſince the chariot came to London, being thought eaſy to remedy. It was one horſe to draw two perſons with great eaſe to the riders, both him who ſits in the chariot, and him who ſits over the horſe upon a ſpringy ſaddle; that in plain ground 50 pound weight, deſcending from a pully, would draw this chariot with two perſons. Whence Mr. HOOKE inferred, that it was more eaſy for a horſe to travel with ſuch a draught, than to carry a ſingle perſon: That Dr. WILKINS had travelled in it, and believed, that it would make a very convenient poſt-chariot.

It was ordered, that Dr. WREN and Mr. HOOKE ſhould join in mending what might be amiſs in this chariot, and endeavour to bring it to perfection.

Mr. HOOKE gave an account of what experiments he had made by weighing bodies in a very deep well [z], and above ground; and that he had found no difference in their weight in thoſe different places. He was ordered to bring in theſe experiments in writing.

[z] See his letters to Mr. BOYLE of Auguſt 15, and Sept. 26, 1665, in BOYLE's Works, vol. v. p. 544.

Sir

Sir ROBERT MORAY gave an account of his employment in trying of ores brought him out of a mine in Wales, relating, that he had made it part of his buſineſs, to try, whether he could extract all the lead of the ore of that mine at one operation, with ſmall expence, in a ſhort time; and that he had found, that whereas ordinarily but about 40 pound was extracted out of 100 pound, he had extracted near 70 pound; which, as it was conſiderable, in regard of the quantity of lead, ſo it was preſumed it muſt be ſo likewiſe in reſpect of the quantity of ſilver to be extracted out of ſo much more lead. He added, that he had made trials alſo both upon litharges, the red and the white, and obtained 14 ounces of lead, out of a pound of ſuch ſort of litharge; but that that of the white was not ſo fair, as that of the red. He ſaid farther, that the occaſion given him to ſet upon this kind of experiments had been, that Sir GEORGE HAMILTON having a ſilver mine in Ireland, and ſuſpecting that it might yield more than was extracted, cauſed his workman to apply himſelf to this work with more care and labour; and thereupon obtained, inſtead of 14 or 15 pounds ſtirling out of a tun of lead, 50 pounds.

The preſident inquiring after the hiſtory of maſonry, undertaken by Sir ROBERT MORAY, the latter ſaid, that it was yet imperfect; but the preſident preſſed him to bring it in as it was.

Mr. DANIEL COXE gave ſome account how he was employed in examining the nature and figure of all ſorts of ſalts, and that he had made a good number of experiments upon that ſubject; intimating, that he conceived, that the origin of all ſalts was ſea-ſalt. It being demanded, how then, and by what he diſtinguiſhed ſalt? it was anſwered, by the alteration of the figure cauſed by the addition or mixture of ſomething elſe.

He was urged to go on vigorouſly in ſo noble a ſubject; and to deſire in it the conjunction of Mr. BOYLE, Sir ROBERT MORAY, Mr. HENSHAW, Dr. GODDARD, and Mr. HOOKE.

Sir ROBERT MORAY preſſed particularly, that the nature of ſalt petre might be well inquired into.

Dr. CLARKE being called upon for his hiſtory of the injection into the veins, gave anſwer, that he had not neglected it, and intended to finiſh it, as ſoon as poſſibly he could, for the preſs.

Sir ROBERT MORAY took hence occaſion to ſpeak of the transfuſing of the blood of one animal into another, attempted by Mr. BOYLE, as a conſiderable experiment, if it could be practiſed.

Dr. CLARKE affirmed, that above two years before he had endeavoured to make that experiment, but found it ſo difficult, that he gave it over.

Sir ROBERT MORAY intimated, that Mr. BOYLE was of opinion, that the difficulties of this experiment might be maſtered.

Dr. CLARKE related, that Dr. DICKENSON [a] at Oxford had turned three or four ounces of water into ſo much earth, without addition.

Sir ROBERT MORAY mentioned, that BAPTISTA PORTA affirmed, that he had changed ſublimate into water, and made uſe of it to harden iron tools with that liquor; and that Mr. THOMAS VAUGHAN had aſſured him, that it would do.

Dr. CLARKE remarked, that Dr. DICKENSON had put a toad into an open glaſs, wherein it lived ſix months without any viſible food, but after that time died, and diſſolved into a jelly, which the next ſpring produced two live toads, which he kept, as he had done their parent before; and that they alſo diſſolved at laſt into a liquor; but that out of this liquor no other toads were generated.

Dr. WALLIS being aſked, what experiments had been made during the laſt ſummer at the committee of the ſociety, which had frequently met at Oxford, related, that, among others, there had been tried divers muſical experiments; whereof he mentioned ſome, but referred for more particulars to Mr. BOYLE, who had cauſed them to be put into writing. Mr. OLDENBURG was deſired to write to Mr. BOYLE to communicate them.

March 21, at the meeting of the COUNCIL were preſent

The lord viſcount BROUNCKER, preſid[t]
The lord biſhop of Exeter
Mr. CHARLES HOWARD
Sir ROBERT MORAY
Sir PAUL NEILE
Mr. ABERSKINE
Dr. GODDARD
Mr. PALMER
Mr. HILL
Dr. WILKINS
Mr. COLWALL
Mr. GRAUNT
Mr. OLDENBURG

The preſident ſuggeſting, that it would be neceſſary that the ſociety ſhould proceed to the election of a new council and officers for the remaining part of the year; and it being according to the charter requiſite, that there ſhould meet for that purpoſe at leaſt thirty-one of the fellows of the ſociety for appointing a day for ſuch election, it was ordered, that ſummons ſhould be iſſued to this effect, viz.

That there being an extraordinary occaſion for a full meeting of the ſociety on the Wedneſday following the 28th of March, 1666, the ſeveral fellows were deſired not to fail to be then preſent at the uſual time and place.

It was ordered alſo, that the amanuenſis draw up for the next meeting of the council a fair liſt of all the fellows, in order to print new liſts for the election-day;

[a] EDMUND DICKENSON, M. D. of Merton-College in Oxford, afterwards fellow of the College of Phyſicians in London.

and

and that he leave ſome ſpace on the top of the paper for the names of his Majeſty and the Princes, who were members of the ſociety; and ſome ſpace alſo at the beginning of every letter for occaſion:

That Dr. WILKINS be deſired to go to the lord chancellor, and to intreat his lordſhip, that he would pleaſe to appoint a time when the lords referees ſhould meet about the buſineſs of Chelſea-College: And

That Dr. WILKINS and Dr. GODDARD do meet, in order to conſider of a ſupplement to the charter of the ſociety.

Dr. WILKINS and Mr. HOOKE were deſired to look over the operator's bills, and, if they found them juſt, to ſet their hands to them. And it was reſolved, that in caſe the public meetings of the ſociety ſhould be interrupted again, the ſalary of the operator ſhould be abated for that interval.

At the meeting of the SOCIETY on the ſame day,

Capt. GEORGE COCK and Mr. WILLIAM HARRINGTON were elected.

Mr. JOHN COPLESTON was propoſed candidate by Mr. GRAUNT.

Dr. CHARLTON related, that the notion concerning the vermination of the air, as the cauſe of the plague, firſt ſtarted in England by Sir GEORGE ENT, and afterwards managed in Italy by father KIRCHER, was ſo much farther advanced there, that, by the relation of Dr. BACON, who had long practiſed phyſic at Rome, it had been obſerved there, that there was a kind of inſect in the air, which being put upon a man's hand, would lay eggs hardly diſcernible without a microſcope; which eggs, being for an experiment given to be ſnuffed up by a dog, the dog fell into a diſtemper accompanied with all the ſymptoms of the plague. Dr. CHARLTON offering to bring Dr. BACON to give a full and punctual account of this matter, was deſired to do ſo.

He mentioning likewiſe, that the maſters of the Peſt-houſe had promiſed him their obſervations of the plague, and Sir ROBERT MORAY moving, that queries might be thought upon to put to them, it was ſuggeſted by Sir PAUL NEILE, that he conceived it beſt to take firſt their obſervations nakedly, and afterwards to put queries to them; which was approved of by the ſociey.

Mr. HOOKE brought in a ſmall new quadrant, which was to ſerve for accurately dividing degrees into minutes and ſeconds, and to perform the effect of a great one. It had an arm moving on it by the means of a ſcrew, that lay on the circumference. But the complete deſcription of it was referred to the inventor.

He preſented a paper, which was read, containing ſome experiments of gravity made in a deep well near Banſtead Downs in Surry; to which was annexed the ſcheme of an inſtrument for finding the difference of the weight, if any, between a body

body placed on the ſurface of the earth, or at a conſiderable diſtance from it, either upwards or downwards. It was ordered, that this paper ſhould be regiſtered [b]; as follow:

" Gravity, tho' it ſeems to be one of the moſt univerſal active principles in the " world, and conſequently ought to be the moſt conſiderable, yet has it had the " ill fate, to have been always, till of late, eſteemed otherwiſe, even to ſlighting " and neglect. But the inquiſitiveneſs of this latter age hath begun to find ſuffi- " cient arguments to entertain other thoughts of it. GILBERT began to imagine " it a magnetical attractive power, inherent in the parts of the terreſtrial globe: " the noble VERULAM alſo, in part, embraced this opinion; and KEPLER (not " without good reaſon) makes it a property inherent in all celeſtial bodies, ſun, " ſtars, planets. This ſuppoſition we may afterwards more particularly examine: " But firſt it will be requiſite to conſider, whether this gravitating or attracting " power be inherent in the parts of the earth; and, if ſo, whether it be magnetical, " electrical, or of ſome other nature diſtant from either.

" Firſt then, if it be magnetical, any body attracted by it ought to gravitate " more, when nearer to its ſurface, than when farther off.

" To examine which property, ſeveral trials have been made, both on the " higher parts of Weſtminſter-abbey, and alſo at the top of St. Paul's-tower: But " tho' in the making of them, I endeavoured to be as accurate as the way was " capable of, I took to try it, which was by counterpoiſing a heavy ſolid body, " and as much braſs-wire, as would ſerve to let down that body from the top to " the bottom of the tower, and then poiſing theſe equilibrated bodies firſt, whilſt " the ſolid body and wire were in the ſcale at the top; and afterwards by poiſing " them likewiſe, when the body was let down almoſt to the bottom by the wire, " (whoſe upper-end was faſtened to the ſcale at the top;) yet ſuch were the incon- " veniencies, this way was ſubject to, from the vibrations of ſo long a line, and " from the motion of the interpoſed air, that nothing of certainty could be col- " lected from theſe trials; ſave only, that if there were any difference in the gravi- " tation of the body, it was but very ſmall and inconſiderable, ſince I found in " the trials made from the top of the abbey, that a few grains put into this or " that ſcale would manifeſtly turn the beam this or that way, notwithſtanding the " former inconveniencies. But to diſtinguiſh, whether there be any the leaſt varie- " ty, there muſt be attempted ſome other way: of which by and by.

" Next, if all the parts of the terreſtrial globe be magnetical, then a body at a " conſiderable depth, below the ſurface of the earth, ſhould loſe ſomewhat of its " gravitation, or endeavour downwards, by the attraction of the parts of the earth " placed above it.

" This opinion ſome experiments, made by ſome worthy perſons of this ho- " nourable ſociety, ſeem to countenance. But conſidering the vaſt proportion of

[b] Regiſter, vol. iii. p. 93.

" the decreaſe of gravity at ſo ſmall a depth, it ſeemed not improbable, but that " the moiſture of the air, or ſome other unheeded accident, might intervene in the " experiments, which might much contribute thereunto: For the trial of which " I had a great deſire, and happily meeting with ſome conſiderably deep wells, " near Banſtead-downs, in Surrey, I endeavoured to make them with as much " exactneſs and circumſpection as I was able. My firſt trials were in a well about 15 " fathom deep, or 90 foot; the packthread I made uſe of was about 80 foot long; " the bodies I weighed, or let down by it, were braſs, wood, and flints; each " of which, at ſeveral times, I counterpoiſed exactly, and hung the ſcales, which " were very good ones, over the midſt of the well, ſo as that the packthread might " hang down to the bottom without touching the ſides. The effects were theſe, " that each of thoſe bodies ſeemed to keep exactly the ſame gravity at the bottom " of the well, that they had at the top. For, trying it when the air was very calm " and ſtill, I found, that the weight of a grain would eaſily turn the ſcales either " ways, according as it was put into the one or the other ſcale; which exactneſs " of equipollency in the ſcale I found both before I let down the body by the pack- " thread, when they were ſo let down, and after they were again drawn up; ſo " that it ſeemed manifeſt, that about a pound weight, either of wood, flint, or " braſs, by being placed fourſcore foot either nearer or farther from the center of " the earth, did not vary its weight more than a grain; that is, not more than a " 7680th part of its weight, by having eighty foot of earth ſituate above it; " whereas the other experiments make it loſe near a 16th part, at a depth not " much greater.

" This experiment I afterwards tried with the like circumſpection in a well of " near ſixty fathoms deep, where the weight, tho' ſuſpended at the end of a ſtring " of about 330 foot long, ſeemed to continue of the ſame weight, that it had " above, both before it was let down, and after it was pulled up: for the beam of " the balance, tho' very tender, did in all thoſe trials, (that is, before the weight " was let down, when it was let down and ſuſpended, and after it was again drawn " up) keep, as to ſenſe, exactly its horizontal parallelifm or equilibration: So that " this opinion, how probable ſoever it might ſeem to GILBERT, VERULAM, and " divers other learned men, is not at all favoured by the experiments made in theſe " wells; whether from the peculiar nature of the earth about theſe wells, which " was a pretty ſolid chalk; or whether from ſome other cauſe, I determine not, till " farther experiments evince it. But in truth, upon conſidering the nature of the " theory aright, we may find, that (ſuppoſing the theory true, that all the con- " ſiſtent parts of the earth had a magnetical or attractive power) the decreaſe of " gravity would be almoſt an hundred times leſs than a grain to a pound, at as great " a depth as 50 fathom. For if we conſider the proportion between the parts of the " earth placed upon the one ſide of the ſtone below it, with the parts above it, we " may find the diſproportion greater. If therefore there be any ſuch inequality of " gravity, we muſt have ſome ways of trial much more accurate, than this of ſcales: " Of which I ſhall propound two ſorts, which, if there be any difference, ſeem ca- " pable of diſtinguiſhing and finding it out.

The

" The firſt is by the motion of a ſwing-clock: for if the attraction of the " earth towards its center be leſs, the farther the body is placed above or below its " ſurface, then the motion of ſuch a watch muſt be ſlower there than when placed " on the ſurface: And though perhaps it be ſo ſmall as not to be ſenſible at one, " or ten, or perhaps an hundred vibrations, yet in many thouſands of them, it " will not be difficult to find it. But a clock for this experiment ought to be " ſealed up exactly in a glaſs, ſo that no air may have any intercourſe with it; " which is ſufficiently eaſy; otherwiſe the changes of it may perhaps be rather " aſcribable to the air, which is moſt evidently of a differing conſtitution. And " by this means (which I look upon as the moſt exact) I could wiſh, that trial were " made at the top and bottom of ſome very high hill, that ſo, by the differing " velocity of the clock, at the top of the hill, from that at the bottom, we might " be able to judge, whether there be any ſuch variation of gravity; and, if ſuch " there be, whether it be analogous to that of a load-ſtone.

" The other inſtrument for this purpoſe may be ſome ſuch as this, deſcribed in " the adjoining figure, which ought alſo to be well fortified againſt the mutations " of the ambient air: otherwiſe in ſo nice an experiment nothing can be done.

" Now becauſe the deſign of both theſe inſtruments is, to find out a difference " of gravity, if there be any, to the end, that by comparing them with the at- " traction of the load-ſtone, we may the better judge of this ſuppoſition; it will " therefore be requiſite, to make ſeveral experiments on a good magnet, for the " finding out of the decreaſe of the force of its attractive power upon a body, " according as it is placed, at greater and greater diſtances. For which, I have " contrived and deſigned to make an appropriate inſtrument. Which experiments, " as they are wholly new, being not attempted hitherto (that I know) by any; " and as they may afford many helps toward the finding out the true nature of " the magnet, and the laws and reaſons of divers other motions; ſo if this ana- " logy between the decreaſe of the attraction of the one, and of the gravity of " the other, be found real, we may perhaps by the help of the load-ſtone, as it " were, epitomiſe all the experiments of gravity, and determine, to what diſtance " the gravitating power of the earth acts; and explicate perhaps divers other " phænomena of nature by ways not yet thought of."

The deſcription of the inſtrument is as follows,

A B a frame, to which is faſtened C D a ſpring, from the end of which C a thread C E is faſtened to a ſmall wheel F F, which moves on a very ſharp edge, in the hole m. To the other ſide of this wheel is faſtened a ſmall long beam H H, reaching beyond the frame A B, namely to N, to which end a weight of a convenient bigneſs I being hung, and the inſtrument carefully conveyed from place to place, the end of the beam will ſhew upon the divided pillar K K the differing weight of that body in ſeveral places.

It was ordered, that experiments of this kind ſhould be prepared for the next meeting; in order to which Sir ROBERT MORAY was deſired to accommodate the curator with his Majeſty's load-ſtone, being in his cuſtody.

Sir ROBERT MORAY produced the two pieces of lead, mentioned at the preceding meeting, extracted by him out of litharge of gold and ſilver; which he ſaid he intended to carry to the Tower to make eſſays upon.

Mr. EVELYN preſented ſome aſhes rained down far off at ſea, in the Archipelago in December of the year 1631, at ten at night, continuing to fall till two the next morning, which covered the deck of a ſhip a foot deep, totally darkened the air, and cauſed all the mariners to abandon the decks for fear of being ſuffocated.

He brought in likewiſe 45 ſorts of moſs, which he ſaid were gathered in one wood in Surrey, upon ſeveral trees.

Dr. WILKINS moved, that Mr. HOWARD being furniſhed with various flowers of a ſtrawy conſiſtence, might be deſired to increaſe the ſociety's repoſitory with them.

He moved likewiſe, that a committee might be appointed to take care of the well ordering, preſerving, and increaſing the ſtock of the ſaid repoſitory. Upon which it was ordered, that himſelf, Mr. COLWALL, Mr. EVELYN, Dr. GODDARD, Dr. CHARLTON, Mr. HILL, Capt. COCK, Mr. HARRINGTON, Mr. GRAUNT, and Mr. HOOKE, or any three or more of them, ſhould conſtitute that committee, and begin their meetings on the Monday following in the afternoon, in Mr. HOOKE's lodgings, continuing the ſame from time to time on that day, and in that place.

M. COLWALL had the public thanks of the ſociety for the generous purchaſe, which he had made for them, of ſo good a collection of natural things for their repoſitory; and it was ordered, that this gift ſhould be particularly expreſſed, where he is recorded a benefactor to the ſociety.

Mr. HOOKE related, that in the ſalt-urns in Hampſhire he had obſerved, that a good quantity of ſand, near a gallon, was ſeparated from the clear ſea-water in the boiling it up to ſalt; which ſand was collected out of the corners of the iron-veſſel, wherein the ſaid water was boiled.

Sir ROBERT MORAY was again urged to give in his hiſtory of maſonry, which he ſtill declined to do, alledging it to be incomplete.

Mr. HENSHAW mentioned, that the Italians thought they had retrieved the antient way of hardening tools for the cutting of porphyry; and that it was by quenching them ſeveral times in the diſtilled water of *Branca Urſina*, or bear's-breech.

Dr. CHARLTON remarked, that that way of hardening tools, which is commonly called case-hardening, was performed with hoofs, soot, and bay-salt, put together with the iron in a case, and kept with it hot in the fire.

Dr. WREN and Mr. HOOKE being asked, what they had done in the business of chariots, since the perfecting thereof was committed to them, Dr. WREN answered, that he had given Mr. HOOKE the descriptions of those, which they had in France [c].

1666, *March* 28, Mr. HARRINGTON was admitted.

It was voted by ballot, that the election of the new council and officers for the remaining part of the year be upon April the 11th following, since the anniversary election of that year could not, by reason of the contagion, be made on St. ANDREW's day preceding. There were present at this meeting one and thirty fellows, as the charter required for such an occasion, viz.

The lord viscount BROUNCKER, presid[t]	Sir ANDREW KING
Mr. AERSKINE	Dr. MERRET
The lord CAVENDISH	Sir ROBERT MORAY
Dr. CLARKE	Sir ANTHONY MORGAN
Mr. COLWALL	Sir PAUL NEILE
Mr. DANIEL COXE	Mr. WILLIAM NEILE
Mr. CREED	Mr. OLDENBURG
Sir GEORGE ENT	Mr. PALMER
Mr. EVELYN	Mr. PONEY
Lord bishop of Exeter	Dr. QUARTREMAINE
Dr. GODDARD	Sir JOHN TALBOT
Mr. GRAUNT	Dr. WHISTLER
Mr. HARRINGTON	Dr. WILKINS
Mr. HOOKE	Mr. WILLIAMSON
Mr. HENSHAW	Dr. TERNE.

Mr. HOOKE presented a paper containing some observations made by himself of the planet Mars, in the face whereof he affirm'd to have discovered, during the last months of February and March, both that there were several spots, and that they changed their place, and did not return to the same position till the next ensuing night near about the same time; collecting thence, that Mars, as well as Jupiter, the earth, &c. moves about his own axis in about 24 hours. To which he added his observations concerning the different dispositions of the air, as to its greater or less fitness to see through it, affirming, that frequently a very bright sky was altogether unfit for observation; but that when it had fewer reflecting vapours dispersed through it, it was then most transparent, and consequently most proper for it.

[c] Dr. WREN had been in that country in the summer of the year 1665, and returned from thence about the end of February or beginning of March 166$\frac{5}{6}$. See BOYLE's works, vol. v. p. 333 and 351.

Where-

Whereupon the preſident took notice (in which his lordſhip was ſeconded by Dr. WILKINS) that Sir PAUL NEILE had already ſome years before obſerved the like difference in the air; and that ſometimes in a very bright ſky he could ſee nothing diſtinctly in the celeſtial bodies, but at other times, the ſky being ſerene after a good ſhower of rain, that had ſwept down a great quantity of terreſtrial effluvia mingled with the air, and hindering the free paſſage of the ſtarry beams, he could ſee thoſe bodies very diſtinctly.

Mr. HOOKE was deſired to continue his obſervations for farther confirmation; and it was order'd, that his paper ſhould be regiſter'd [d].

He produced a pair of ſcales in a box, to make experiments with upon a good loadſtone for the finding out of the decreaſe of its attractive force upon a body, according as it is placed at greater and greater diſtances, in order to find out, whether gravitation be ſomewhat magnetical; which he ſaid might be done by comparing the diſtances of the bodies made uſe of in the experiments from the ſuperficies of the earth and loadſtone with the diameters; it being probable, that if they hold the ſame proportion, they have the ſame cauſe.

It was ordered, that he ſhould make in it ſeveral experiments by himſelf, and then make them before the ſociety.

Mr. OLDENBURG preſented from Mr. GREEN, who had lived many years in Virginia, and had alſo been in Carolina, ſeveral plants of the growth of thoſe parts, viz. 1. The wild penny-royal, or baſtard dittany, ſaid to kill the rattle-ſnake, and cure thoſe who are bitten by it. 2. Both the *piſtolochia's*, the major and minor, eſteemed to be very good cordials, and remedies againſt the bite of ſerpents. 3. The true Virginia *ſcorzonera* root, uſed by the inhabitants of Virginia for fevers and agues. 4. The *faba Ægyptiaca*, the leaf of which is affirm'd to be as large as the brim of a large hat, the flower glorious, of a yellow colour, three times as big as an ordinary tulip, growing in rivers and other waters of Carolina in the mud at a man's depth; the root of it being much uſed by the Indians, and eaten as a reſtorative; and the beans toaſted by them, and eaten againſt fluxes.

There was read a letter ſent to Sir ROBERT MORAY out of Virginia, by a countryman of his, dated from Ware-river in Mochjack-bay, Feb. 1, $166\frac{5}{6}$, containing ſeveral particulars, about a new way of ordering mulberry-trees, and the progreſs of the ſilk manufacture there; as alſo of a probability of making rice and coffee merchantable commodities of Virginia, and of improving a new ſort of ſweet-ſcented tobacco.

Sir ROBERT MORAY was deſired to exhort his friend to proſecute what he had begun, and to impart the farther ſucceſs thereof to the ſociety, who ordered, that a copy ſhould be made of this letter, and filed up [e].

[d] Regiſter, vol. 3. p. 98. It is printed in the *Philoſophical Tranſactions*, n° 2. p. 198, and n° 14. p. 239.

[e] Letter-Book, vol. i. p. 241. It is printed in the *Philoſophical Tranſactions*, n° 12. p. 201. for May, 1666.

The uſefulneſs of collecting obſervations of the plague being again ſpoken of, it was moved, that the phyſicians of the ſociety would employ themſelves in the work; and that Dr. GLISSON and Dr. WHARTON, and ſuch others as had ſtaid in London during the late mortality, might be deſired to communicate what particulars they had either obſerved themſelves, or learned from others, about this diſeaſe. Dr. TERNE promiſed, that he would ſollicit Dr. GLISSON for it; and Dr. MERRET related, that he had been inform'd by Dr. HODGES[f], one of the city phyſicians during the plague, that the true peſtilential ſpots, called the tokens, were a gangrenated fleſh of a pyramidal figure, penetrating to the very bone, with its baſis downward, altogether mortified and inſenſible, tho' a pin or any other ſharp body were thruſt into it; and (what the Doctor thought particularly remarkable) the next adjoining parts of the fleſh, tho' not diſcoloured, yet mortified as well as the diſcoloured ones.

There were produced by Mr. OLDENBURG a couple of bottoms of the Virginia ſilk-worm, ſent in by Mr. DIGGES for the repoſitory, of the bigneſs of a ſmall hen's egg; which being cut open, there were found four worms in each, ſuppoſed to have ſet themſelves near together at the time of ſpinning, and ſo to have ſpun themſelves all four into one cod.

Mr. POVEY offered ſome curioſities of ſilk-worms for the repoſitory.

Mr. BOYLE's treatiſe on the *Origin of Forms and Qualities, according to the Corpuſcular Philoſophy, illuſtrated by Conſiderations and Experiments, written formerly by way of notes upon an eſſay about Nitre*[g], was preſented to the ſociety, who recommended the peruſal of it to Dr. WILKINS.

March 29, at the meeting of the COUNCIL were preſent

The lord viſcount BROUNCKER, preſid[t]
The lord biſhop of Exeter
Sir ROBERT MORAY
Sir PAUL NEILE
Mr. AERSKINE
Mr. HENSHAW
Mr. PALMER
Dr. WILKINS
Dr. GODDARD
Mr. COLWALL
Mr. OLDENBURG.

Dr. WIKLINS having made a report, that the lord chancellor had appointed the Saturday following for a meeting of the committee of the lords referees about Chelſea-college to be at his houſe about ten of the clock, it was ordered, the preſident, the lord biſhop Exeter, Sir ROBERT MORAY, Sir PAUL NEILE, Dr. WILKINS, Dr. GODDARD, Mr. PALMER, Mr. HENSHAW, Mr. COLWALL, and Mr. OLDENBURG ſhould be deſired to attend the ſaid committee; and that Sir ANTHONY MORGAN ſhould be deſired to be likewiſe preſent.

[f] NATHANIEL HODGES, M. D. author of ΛΟΙΜΟΛΟΤΙΑ, *ſive peſtis nuperæ apud populum Londinenſem graſſantis narratio hiſtorica.* London 1672, in 8vo.

[g] printed at Oxford 1666, in 4to. and reprinted the year following in 8vo.

Sir

Sir PAUL NEILE was desired to speak the next day at Whitehall to the archbishop of Canterbury [h], the bishop of London [i], the lord privy seal [k], and the lord ASHLEY, to meet at the lord chancellor's on the day appointed; and in case the lord privy-seal should not be at Whitehall the next day, Sir ROBERT MORAY was desired to write to him about this meeting.

The list of the fellows of the society was perfected, and ordered to be printed against the Wednesday following.

It was ordered, that particular written summons be sent to the princes of the blood, and to as many of the lords of the society as were in town, in the form following:

"On Wednesday the 11th of this instant April, 1666, at two of the clock in the "afternoon, the president, council, and officers of the Royal Society for the re- "maining part of this present year, are to be elected at the usual place in Gre- "sham-college."

It was ordered likewise, that the following form be printed and sent to the fellows for this extraordinary day:

"Whereas the usual time for the annual election could not be observed this last "year by reason of the sickness; these are to give notice, that the Royal Society, "according to the power given to them by charter, have appointed the 11th day "of April, 1666, being Wednesday, for the election of the council and officers of "the Royal Society for the remaining part of this year: at which election your "presence is expected at two of the clock in the afternoon, at the usual place."

It was order'd, that number eleven of the *Philosophical Transactions* be printed.

April 4, at the meeting of the SOCIETY

Capt. COCK was admitted.

There were nominated by the president, and chosen by ballot, the following persons, as a committee for auditing the treasurer's accounts; Dr. CHARLTON, Capt. COCK, Mr. NEILE, Mr. HAAK, and Mr. HOOKE; and they were desired to meet on the Monday following at Mr. HOOKE's chambers in Gresham-college.

Mr. HOOKE presented a table of the degrees of the loadstone's attraction of a little square oblong piece of iron at several distances from the pole of the magnet, as he had found it in making trials privately himself, viz.

	grains
at 6 inches —— —	0
at 4 inches —— ——	0 $\frac{m}{T}$

[h] Dr. SHELDON. [i] Dr. HUMPHREY HENCHMAN. [k] Lord ROBERTS.

		grains
at 2 inches	—— ——	2 $\frac{13}{16}$
at 1 inch	—— ——	17 $\frac{6}{8}$
at $\frac{1}{2}$ of an inch	— —	57 $\frac{6}{8}$
at $\frac{1}{4}$ of an inch	—— —	104 $\frac{5}{16}$
at $\frac{1}{8}$ of an inch	—— ——	197 $\frac{4}{8}$

Which trials being repeated before the ſociety held good, except, that inſtead of the 2 $\frac{13}{16}$ grains at 2 inches diſtance, the weight was 3 $\frac{3}{4}$ grains; and inſtead of 17 $\frac{6}{8}$ grains at 1 inch diſtance, the weight was 18 $\frac{7}{8}$ grains, to equal the attraction.

A thin plate of ſteel being interpoſed at about an inch diſtance made the weight leſs by 14 grains.

Sir ROBERT MORAY mov'd, that the ſeveral ways of capping of loadſtones might be conſidered, to ſee, whether it could be reduced to a rule.

It was order'd, that Mr. BALLE ſhould be written to by Mr. OLDENBURG, to know what he had done in magnetical experiments, and that he ſhould be deſired withal to ſend up the magnetic apparatus, that was with him, belonging to the ſociety, who had preſent occaſion for it.

Mr. PALMER preſented the ſociety for the repoſitory with a caſe of curious turn'd Nurenburg cups of wood, to the number of ninety-five.

Capt. COCK was deſired to inform himſelf by ſome Turky or Eaſt-India merchants of the way uſed by them for the unhuſking of rice.

Mr. DANIEL COXE deſir'd, that ſome ruſma might be ſent for out of Italy.

April 9, at the meeting of the COUNCIL were preſent

The lord viſcount BROUNCKER, preſid^{t}
The lord biſhop of Exeter
Sir ROBERT MORAY
Sir PAUL NEILE
Mr. AERSKINE
Dr. WILKINS
Dr. GODDARD
Mr. HILL
Mr. COLWALL
Mr. GRAUNT
Mr. OLDENBURG.

A committee of the council was appointed to examine the treaſurer's accounts, and to prepare them for the committee of the ſociety, according to ſtatute, viz. the preſident, Dr. WILKINS, Mr. COLWALL, Mr. GRAUNT, and Mr. OLDENBURG.

This committee of the council having examined the accounts, and after rectification of ſome miſtake in the tranſcript thereof made a report to the council, which was accepted, the council referred the ſaid accounts to the committee of the ſociety appointed for auditing the ſame.

Sir

Sir ANTHONY MORGAN brought in from the lord chancellor the report concerning Chelsea-college, in order that it might be read by the council, before it was signed by his lordship and the other lords referees. And the council having read it, it was ordered, that the president, Sir ROBT MORAY, and Sir PAUL NEILE, should be desired to return the lord chancellor their humble thanks for his lordship's favour in giving them a view of this report before signing; and that the lord bishop of Exeter should be desired to deliver the report to the lord archbishop of Canterbury and to the bishop of London to be signed by them; and that then it should be sent by the care of Sir ANTHONY MORGAN to Mr. MATTHEW WREN to be signed also by the lord chancellor.

In the mean while Sir ANTHONY MORGAN was desired to speak with the attorney-general, and to enquire, whether there be not a mistake in his report, as to the house of Chelsea-college.

April 11, the society being met for the election of a new council and officers, according to what was resolved March 28, there was first a report brought in of the treasurer's accounts by the committee chosen at the preceding meeting for the auditing them, viz.

That by the audit of Mr. HILL's account it appear'd, that he was debtor

	l.	*s.*	*d.*
To the arrears due to the society for the weekly payments to and for Lady-day, 1666	875	3	0
To money received for admissions	39	8	0
To money received of Sir PAUL NEILE more than his ordinary payments	3	0	0
To the balance of his last account	51	1	4
	968	12	4

It appeared,

That the treasurer had received upon the weekly payments of the society	196	18	0
For admission-money	39	8	0
Of Sir PAUL NEILE more than his ordinary payments	3	0	0
And the balance of his last account	51	1	4
	290	7	4

That he was creditor

By the money paid to the uſe of the ſociety, as by the bills appeared	256	4	8
By arrears remaining yet unpaid	678	5	0
By balance remaining in caſh	34	2	8
	968	12	4

Remaining in caſh thirty-four pounds, two ſhillings, and eight-pence,
ſigned BROUNKER, P. R. S.

It alſo appeared,

That the treaſurer had paid to the uſe of the ſociety ſeveral bills amounting to	256	4	8
That he had now in his hands	34	2	8

And that there remained in arrear, yet unpaid by the members of the ſociety, ſix hundred, ſeventy-eight pounds, five ſhillings.

Signed

WILLIAM NEILE
THEODORE HAAK
WALTER CHARLTON
GEORGE COCK
ROBERT HOOKE.

This being done, the ſociety being forty-ſix in number proceeded to election, according to the manner preſcribed by their ſtatutes.

Of the old council were continued the following eleven,

WILLIAM, lord viſcount BROUNCKER
SETH, lord biſhop of Exeter
WILLIAM AERSKINE, eſq;
Sir ROBERT MORAY, knt.
Sir PAUL NEILE, knt.
JOHN WILKINS, D. D. dean of Rippon
JONATHAN GODDARD M. D.
DUDLEY PALMER, eſq;
ABRAHAM HILL, eſq;
DANIEL COLWALL, eſq;
HENRY OLDENBURG, eſq;.

The ten new ones choſen in, were theſe

JAMES, earl of Northampton
WILLIAM, lord viſcount STAFFORD
ROBERT BOYLE, eſq;
Sir ANTHONY MORGAN, knt.
Sir GEORGE ENT, knt.
DANIEL WHISTLER, M. D.
MATTHEW WREN, eſq;
JOSEPH WILLIAMSON, eſq;
WILLIAM NEILE, eſq;
JOHN CREED, eſq;.

Out

Out of the new council were elected officers.

The lord viſcount BROUNCKER, preſident
Mr. COLWALL - - - - - treaſurer
Dr. WILKINS, Mr. OLDENBURG - - - ſecretaries.

The new counſellors were then ſworn, except the earl of NORTHAMPTON, the lord viſcount STAFFORD, and Sir GEORGE ENT, being all three abſent.

After this Sir ROBERT MORAY preſented the ſociety with the ſtones taken out of the lord BELCARRES's heart, in a ſilver box, together with a written account of the diſſection of his body, atteſted by a phyſician and chirurgeon in Scotland, with this condition only, that in caſe the lady BELCARRES, the deceaſed lord's mother, ſhould ſend for it, it might not be denied her.

Between this and the former election on the 30th of November, 1664, died an eminent member of the ſociety, Sir KENELME DIGBY. He was ſon and heir of Sir EVERARD DIGBY of Dryſtoke in the county of Rutland, knt. executed at the age of twenty-four, for being privy to the gun-powder-plot in 1605; whoſe eſtate was afterwards reſtored to his ſon KENELME, who was born at Gothurſt, commonly called Gadhurſt, in Buckinghamſhire, 11 July 1603[l].

Though his father lived and died a zealot for the church of Rome, this ſon of his, who was an infant at his death, was educated in the proteſtant religion, but he afterwards abandoned it for that of Rome. About the year 1618, he was ſent to Glouceſter-hall in the Univerſity of Oxford, and entered a gentleman commoner of it, and committed to the care of the learned Mr. THOMAS ALLEN, but to the tuition of another perſon. After continuing there above two years, he travelled into foreign parts, and upon his return received the honour of knighthood from King JAMES I. at Henchingbrook 28 October, 1623.

In 1628, he was appointed by King Charles I. admiral of a fleet ſent to the Levant, in which poſt he acquired great honour by his gallant behaviour at Algier, in reſcuing many Engliſh ſlaves, and by his attack upon the Venetian fleet in the Bay of Scanderoon[m]. After he had embraced the Roman catholic religion, which was in the beginning of 1636, he became warmly attached to it, as appears from the letters, which paſſed between him and GEORGE lord DIGBY, in the years 1638 and 1639, publiſhed at London in 1651, in 8vo. In 1639, he was employed with Mr. WALTER MONTAGU by the Queen to procure contributions from the papiſts for raiſing troops for the King againſt the Scots[n]. Upon the breaking out of the civil wars, he exerted himſelf with vigour for the Royal Cauſe; for which reaſon he was impriſoned by the Long Parliament in Wincheſter-Houſe, till July 1643, when at the requeſt of the French Queen he obtained leave to go to France[o].

[l] WOOD, Athen. Oxon. vol. ii. col. 351. BEN JONSON in his *Underwoods*, p. 243, makes Sir KENELME's birth-day 11 June.

[m] WOOD, *ubi ſupra*.

[n] WHITELOCKE's Memorials, p. 32, edit. 1732.

[o] WOOD, col. 352.

In 1645, he was ſent by Queen Henrietta, wife of Charles I. to the Pope, in order to procure aſſiſtance for that King [p]; ſoon after whoſe death he returned to England [q], and was ſuffered by the parliament to compound for his eſtate, but upon condition of departing the commonwealth, and not returning without leave of the houſe, under pain of death and confiſcation of his eſtate [r].

But after OLIVER CROMWELL became protector, he came back to England, and was in conſiderable favour with the protector in the beginning of the year 1654 [s], and upon his return to France, correſponded with ſecretary THURLOE, to whom he wrote a letter on the 4th of December 1655, N. S. in favour of the merchants trading to England [t]; and another dated there March 18, 1656 [u]; complaining that Sir ROBERT WELSH had endeavoured to render him ſuſpected to the protector, to whom his own obligations had been ſo great, that it would be a crime in him to behave himſelf ſo negligently, as to give any cauſe for any ſhadow of the leaſt ſuſpicion, or to do any thing, that might require an excuſe or apology. "I make it, *adds he*, my buſineſs every where, to have all the world take notice, "how highly I eſteem myſelf obliged to his highneſs, and how paſſionate I am "for his ſervice and for his honor and intereſts, even to the expoſing of my life "for them." After the Reſtoration of King CHARLES II. he returned to England, and was one of the earlieſt members choſen into the Royal Society, and nominated of it's council in the firſt charter. He had been long chancellor to the Queen-mother; which office he held till his death, at his houſe in Covent-Garden the 11th of June, 1665, being interred in a vault in Chriſt-church near Newgate, where he had erected a monument to his wife VENETIA, daughter and co-heir of Sir EDWARD STANLEY, deſtroyed in 1666, by the fire of London. His abilities and learning were very conſiderable, but his character as a philoſopher much leſſened by his credulity or want of veracity. His writings are,

A Conference with a Lady about the Choice of Religion: Paris, 1638, in 8vo.

Obſervations upon Dr. THOMAS BROWN's Religio Medici: London, 1643, in 8vo.

A Treatiſe on the Nature of Bodies: Paris, 1644, in fol.

A Treatiſe of the Nature of Man's Soul: Paris, 1644, in fol.

Obſervations on the 22d Stanza in the ninth Canto of the ſecond Book of SPENSER's Fairy Queen: London, 1644, in 8vo.

Inſtitutionum peripateticarum Libri quinque, cum appendice theologicâ de Origine Mundi: Paris, 1651, fol.

[p] Letter of lord JERMYN to lord DIGBY, Aug 5, 1645, printed in HUSBAND's Collection, p. 852; and Inquiry into the ſhare, which King CHARLES I. had in the tranſactions of the earl of Glamorgan, p. 46, 52, 53, 137, 143, and 232, edit. 1747.

[q] CARTE's collection of original letters, vol. i. p. 216, 220.

[r] WOOD, col. 352.

[s] BOYLE's works, vol. v. p. 263.

[t] THURLOE's ſtate papers, vol. iv. p. 244.

[u] Ibid. p. 591, 592.

Letters

Letters to the lord GEORGE DIGBY *concerning Religion:* London, 1651, in 8vo.

Of the Cure of Wounds by the Powder of Sympathy: London, 1658, in 8vo. delivered in French in a ſolemn aſſembly at Montpellier in France, and tranſlated into Engliſh by RICHARD WHITE.

A Diſcourſe concerning the vegetation of Plants: delivered at the Royal Society 23 January, 166$\frac{6}{7}$. London, 1661, in 8vo.

Some of his collections on phyſic, chemiſtry, &c. were publiſhed after his death by GEORGE HARTMAN, his ſteward and operator.

April 18. Mr. HOOKE produced a new kind of watch, the motion of which was regulated by a load-ſtone, the balance of it being a rod of ſteel; concerning which the preſident declared, that this way might do beſt of all, in caſe the magnet kept always the ſame temper.

The ſpringy ſaddle contrived by Mr. HOOKE was tried, and an exception being made againſt the narrowneſs of the ſeat, and the way of hanging on the ſtirrups, it was ordered, that againſt the next meeting it ſhould be made with a full ſeat, and with the ſtirrups hanging from the ſeat itſelf.

It was ordered, that Mr. BALLE be again written to, to ſend up the magnetical apparatus in his hands belonging to the ſociety.

Dr. WILKINS moved, that Sir ANDREW KING, Capt. COCK, and Mr. HARRINGTON might be deſired to procure out of Spain and the Eaſt country as many good load-ſtones, as they could, for the uſe of the ſociety.

Mr. BOYLE was called upon for the experiments of ſounds, made at Oxford the preceding ſummer by ſome of the members of the ſociety, and ſaid by Dr. WALLIS to have been put in writing by him: to which he anſwered, that they were not perfect.

He being deſired to inform the ſociety, what ſucceſs he had had in the experiment of transfuſing blood out of one animal into another, declared, that he had found ſo much, as made him hope, that the difficulties, which to ſome appeared therein, might be ſurmounted; and that he thought, that the experiment, which he had made of it, would have proved a good one, if the ſyphon had not broke.

Dr. CHARLTON obſerved, that if the fluidity and life of the blood depended upon the ferment vitality with or in the veſſels, which ceaſed preſently upon its being extravaſated, the experiment would prove uſeleſs: But that if the courſe and vigour of the blood was impaired only by the external air, that might eaſily be prevented.

Mr. BOYLE being deſired to proſecute this experiment, declared, that he thought Dr. LOWER would do ſo at Oxford.

He related, that being once desirous to try, whether a dog might be fed by injection, he injected some quantity of broth into the jugular vein; but that this dog soon after died, and being opened, the broth was found in the right ventricle of his heart. He observed therefore, that it would be better to try by injecting broth into the crural vein, as being at a greater distance from the heart.

Dr. CHARLTON mentioned, that purges given by injection had no effect; but vomits had, and that quickly.

Mr. BOYLE added, that opiates given this way operated likewise presently; which Dr. CHARLTON confirmed.

Mr. OLDENBURG presented the society with a curious piece of turning made in Germany, viz. a solid ivory triangle, with many thin circles, and several parts of the shape of lillies; all turned out of one piece, and contained in a small ivory ball.

Mr. POVEY mentioned a new way of painting used by one Mr. STREETER, by means whereof he affirmed a picture appeared very well without glaring, though hung directly opposite to the light; which was performed by beating an egg yolk and white into a glass, and stirring it with a rod, or the juice, or the shreddings of a branch of a fig-tree, and so mingling it with the several colours.

He offering to go with Mr. HOOKE to the artist, to see the operation itself, his offer was accepted, and Mr. HOOKE ordered to attend him accordingly.

He presented a skeleton to the society.

April 23. the new COUNCIL met the first time, there being present

The lord viscount BROUNCKER, president

The lord viscount STAFFORD	Dr. WHISTLER
Sir ROBERT MORAY	Mr. COLWALL
Sir PAUL NEILE	Mr. HILL
Sir ANTHONY MORGAN	Mr. WILLIAMSON
Sir GEORGE ENT	Mr. NEILE
Mr. AERSKINE	Mr. CREED
Dr. WILKINS	Mr. OLDENBURG.
Dr. GODDARD	

Sir GEORGE ENT was sworn of the council.

Mr. COLWALL was sworn as treasurer of the society.

It was ordered, that Mr. HILL do pay to Mr. COLWALL, the present treasurer, the remainder of the account in his hands; viz. thirty-four pounds, two shillings, and eight pence.

Mr.

Mr. COLWALL ſuggeſting to the council, that a perſon might be taken into the ſociety's ſervice for collecting their arrears, he was impowered to employ ſuch perſon, as he ſhould think fit for that purpoſe, taking ſecurity of him, and ſo rewarding him, that the reward might not exceed one ſhilling in the pound.

Sir ROBERT MORAY mentioned, that the lord MASSARENE had formerly by a letter deſired Mr. BOYLE and himſelf, that they would engage themſelves for one hundred pounds, which he gave to the uſe of the ſociety. Which letter being in the preſident's hands, his lordſhip was deſired to bring it with him to the next meeting of the council.

An expedient for bringing in the arrears of the ſociety being conſidered of, it was thought good, that thoſe members, who were frequently preſent at the meetings of the council and ſociety, ſhould be deſired to ſpeak to their acquaintance, and to urge payment.

Sir ANTHONY MORGAN mentioned, that the lord biſhop of London not having got ſigned the report of the lords referees concerning Chelſea-College, it had not yet been preſented to the King; and that the attorney-general had declared, that his Majeſty granting only what right he had to Chelſea-College, Mr. COLE could not at all be prejudiced by that grant.

April 25. Mr. OLDENBURG was deſired to write to Sir JOHN FINCH, to requeſt him, that he would procure for the ſociety ſome good load-ſtones in Italy, and eſpecially out of the iſland of Elva: As alſo, that he would communicate the obſervations made upon the famous magnet in the palace of the great duke at Florence; and particularly inform the ſociety, what weight it was able to hold? whether it could raiſe a man from the ground by holding an iron ſo faſt, that one may hang on it? whether it had changed its poles, as ſome reported? &c.

Mr. HOOKE ſhewed by a terrella, that the lines of a load-ſtone's direction are all ovals, of which the center of the magnetic globe is the place of contact, and the axis of them perpendicular to the axis of the terrella. This was performed by ſuſpending and letting freely move a needle upon a ſmall triangular piece of wood, and marking the points of it with reſpect to the magnet; all which fell into an oval.

He offered his thoughts of an hypotheſis, for explicating all the phænomena of a load-ſtone; which he was deſired to give in to the next meeting.

He affirmed, that he had put all ſorts of bodies between a magnet and iron, and that none altered the attraction except iron.

Mr. BOYLE propoſed, that in order to examine both the Epicurean and Carteſian hypotheſis concerning the cauſe of the coition of the load-ſtone and iron, viz. the diſpelling of the air by the efflux of the *particulæ ſtriatæ*, an experiment might be made of it in an exhauſted receiver.

Dr.

Dr. GODDARD propoſed, that this experiment, whether the attraction depends upon the air, might be tried by putting a magnet and iron both in water in a glaſs: which was ordered to be done at the next meeting.

The directive virtue of the load-ſtone was tried by putting a magnetic needle under water, where the needle kept the like poſture upon the approach of a load-ſtone, that it does in the air.

Dr. WILKINS moved, that the experiment deſcribed by Mr. BOYLE in his book concerning *the origin of forms* of changing water into earth, almoſt weight for weight, might be tried by ſome members of the ſociety; and Mr. DANIEL COXE was deſired to undertake it, and to try ſome in glaſs, and ſome in metalline veſſels.

May 2. The experiment of the load-ſtone's attraction in water was tried; and it was found, that the load-ſtone and the iron-ball touching one another under water, held 128 grains before they were ſeparated. And the water being drawn off from the load-ſtone, and the load-ſtone dried, the two bodies held near the ſame weight before ſeparation; ſo that the magnet ſeems to be as powerful in the very water, as in the air.

Dr. GODDARD moved, that it might be tried, whether the magnet will attract at the ſame diſtance in the water, as in the air.

Sir PAUL NEILE produced a piece of a mineral brought out of Guinea, taken from a rock, which had an aluminous taſte. It was delivered to Mr. DANIEL COXE to diſſolve it, and then to give the ſociety an account of what he found in it.

Sir ROBERT MORAY mentioned, that Sir HUGH CHOLMONDELEY had promiſed him the whole proceſs of making alum. He was deſired to get that promiſe effected.

Some experiments were made with two load-ſtones, one a terrella, the other of an irregular figure. Some ſteel-duſt being ſcattered about them, there appeared upon the different poſition of the latter in reſpect of the former different and odd poſtures in the ſteel-duſt.

Mr. HOOKE was ordered to deſcribe theſe poſtures in ſchemes, and to bring them in to the ſociety.

Mr. POWLE brought in the hiſtory of iron; or an account of the manner of its preparation in the foreſt of Dean. Which was read, and ordered to be regiſtered [v].

[v] Regiſter, vol. iii. p. 106. It is printed in the Philoſ. Tranſact. vol. xii. n° 137, p. 931, for January and February 167⅞.

The

The experiments appointed for the next meeting were the chariot, and the proſecution of the magnetical experiments.

May 9. At the meeting of the COUNCIL were preſent

The Preſident

Mr. BOYLE	Dr. GODDARD
Sir ROBERT MORAY	Dr. WHISTLER
Sir ANTHONY MORGAN	Mr. COLWALL
Mr. AERSKINE	Mr. CREED
Sir GEORGE ENT	Mr. NEILE
Dr. WILKINS	Mr. OLDENBURG.

It was ordered, that the preſident be deſired to write a letter to thoſe of the nobility, who were members, concerning their arrears, to this purpoſe, viz. that the occaſions of the ſociety requiring a preſent ſupply of money, they were deſired to give order for the immediate payment of their reſpective arrears to the treaſurer, or to whom he ſhall appoint to wait upon them for it.

It was ordered likewiſe, that the treaſurer write to the reſt of the ſociety to the like purpoſe.

Sir ANTHONY MORGAN was deſired to get the papers concerning Chelſea-College, and to ſend them to the preſident, that, together with them, the report of the lords referees might be by his lordſhip preſented to his Majeſty.

At the meeting of the SOCIETY on the ſame day,

JOHN COPLESTONE, eſq; was elected.

JOHN lord YESTER was propoſed candidate by Sir ROBERT MORAY.

Monſieur ADRIAN AUZOUT of Paris was propoſed candidate by Mr. OLDENBURG.

THOMAS CRISPE, eſq; was propoſed candidate by Mr. COLWALL.

Mr. HOWARD gave in a relation from his brother Mr. HENRY HOWARD, at Vienna, wherein the emperor's hiſtoriographer PETER LAMBECIUS, J. U. D. deſired to correſpond with the ſociety, and offered to contribute what he could to their deſign.

Mr. HOWARD likewiſe preſented a book of LAMBECIUS, containing an account of the emperor's library, its beginning, increaſe, and preſent ſtate, conſiſting of about eighty thouſand books, manuſcript and printed; part of which conſiſted of ſeveral libraries, as that of TYCHO BRAHE, KEPLER, MÆSTLINUS, and the relics of the Royal Hungarian library of Buda, &c. containing likewiſe near ſixteen thouſand

medals, and a collection of curiosities both of nature and art. Mention is also made by Dr. LAMBECIUS of a book of his intitled *Historia Literaria*, undertaking to give an account of the rise, progress, fall, and restoration of languages, sciences and arts, from the beginning of the world to that age; as also of the men famous for the increasing and promoting of knowledge, viz. when and where they lived, and what they wrote and contributed to learning.

Mr. OLDENBURG was desired to write two letters, one to Mr. HENRY HOWARD, giving him the society's thanks for taking into consideration their concerns even whilst he was abroad; the other to Dr. LAMBECIUS, expressing the kind reception of his offers by the society.

Mr. HOWARD was particularly desired to write to his brother about the mummy for the society's repository.

Mr. OLDENBURG produced a discourse written by Dr. WALLIS concerning his hypothesis for solving all the phænomena of the flux and reflux of the sea, upon the consideration of a common center of gravity of the earth and moon. The amanuensis was ordered to write a fair copy of this discourse, and to make the schemes contained in it large, against the next meeting.

Mr. OLDENBURG read a letter to himself from Monsieur AUZOUT, dated at Paris 5 May, 1666, N. S. [z] giving an account of EUSTACHIO DE DIVINIS's pretence, that the permanent spots in JUPITER had been first discovered by his glasses, though that was nothing but a pretence. To which Monsieur AUZOUT adds an account of the contest between EUSTACHIO and CAMPANI about optic glasses; with a relation first of two rain-bows intersecting each other almost at right angles; next of four suns lately seen in France about Chartres in three circles, a small one concentric to the true sun, a larger one passing through the disk of the true sun, and having one of the parhelia almost diametrically opposite to the sun; another circle excentric to the sun, in whose two intersections with the biggest circle the two other parhelia appeared.

Two magnetical experiments were made by Mr. HOOKE: One was, that the terrella being so placed, as to have its poles perpendicular to the horizon, the steel-dust held over it in a sieve, and put into motion, was, instead of being attracted, chased away from both the poles in two several trials; and the same terrella being placed horizontally, and the steel-dust held again over it, it was likewise driven from both the poles at once. The same was tried with a magnet of an irregular figure with the like success. The other experiment was, that the terrella being put in the midst of a board in a hole, and the steel-dust ranged in oval figures about it, a small load-stone being placed on the same board, the dust, when put into motion, was determined by it into analogous oval figures; which seemed to shew how the load-stone conforms itself to the earth.

[z] Letter-Book, vol. i. p. 305. Part of this letter is printed in the Philos. Transact. n° 12, p. 209. for May 1666.

The buſineſs of chariots being again ſpoken of, the preſident related, that as Mr. Hooke's chariot was now contrived, it was better than before, and free from jolting.

Col. Blount was deſired to have his chariot brought to Greſham-college againſt the next meeting; which he promiſed to do.

Mr. Harrington preſented a piece of Japan copper, eſteemed to be more brittle than Swediſh copper.

Mr. Boyle's general heads for making a natural hiſtory of a country, were read, and order'd to be regiſter'd [y].

May 16, a paper of Mr. Philips was brought in by Mr. Hooke concerning the variations of the magnetic needle, as they had been obſerved in two Eaſt-India voyages.

Mr. Powle was deſired to peruſe this paper, and to give an account of the particulars contained therein.

Mr. Oldenburg brought in a letter from Dr. Wallis dated at Oxford, May 12, 1666, containing an account of an accident by thunder and lightning there; which was read, and order'd to be regiſtered [z].

Dr. Wallis's diſcourſe concerning the ebbing and flowing of the ſea was read, and generally approved of, and thought fit not only to be regiſter'd [a], but alſo upon the private peruſal and examination of the preſident to be printed [b].

It being, among other things, objected, firſt, that it appeared not, how two bodies, that have no tie, can have one common center of gravity, upon which the whole hypotheſis of Dr. Wallis is founded; and ſecondly, that contrary to his conjecture of the annual ſpring and neap-tides falling out, not about the æquinoxes, but the beginning of February and November, it was obſerved otherwiſe at Chatham and in the Thames; as alſo that at Briſtol the higheſt annual tides happen about a month after the æquinoxes; it was deſired, that Dr. Wallis ſhould be acquainted with theſe exceptions; and likewiſe, that as many members, as had opportunity, would henceforth make careful obſervations of this particular, both in the Thames, the Severne, and other maritime places.

An experiment was made to ſee, whether the magnet attracts iron at as great a diſtance in water as in the air; and it was found, that it did very near; for the loadſtone and the iron being diſtant a little leſs than half an inch in both mediums, the counterpoiſe to the attraction of the iron by the loadſtone in the water and air

[y] Regiſter, vol. iii. p. 119. They are printed in the Philoſ. Tranſ. n° 11. p. 186. for April, 1666.

[z] Regiſter, vol. iii. p. 101. It is printed in the Philoſ. Tranſ. n° 13. p 222. for June, 1666.

[a] Regiſter, vol. iii. p. 123.

[b] It is publiſhed in the Philoſ. Tran. n° 16. p. 264. for Auguſt, 1666.

was in a manner the same. But whereas the experiment was made first in the water, and then in the air, it was order'd, that at the next meeting it should be made first in the air and then in the water.

It being mentioned by Mr. HOOKE, that the motion of the celestial bodies might be represented by pendulums, it was order'd, that this should be shewed at the next meeting.

May 23, the lord YESTER, Monsr. AUZOUT[c], and Mr. CRISPE were elected.

SAMUEL PARKER, M. A. was proposed candidate by Dr. WILKINS.

Dr. WHISTLER produced an odd insect, called Gryllotalpa, given him by Capt. WINGATE for the repository.

The president produced a letter and a note sent him by the earl of SANDWICH out of Spain, wherein his lordship offered himself to make observations for finding the bearing of Madrid from London, and desired a correspondent to observe the same times in England.

Mr. HOOKE in London and Dr. WALLIS at Oxford were fixed upon for that correspondency; and it was ordered, that the latter should be written to by Mr. OLDENBURG, to acquaint him with this appointment.

Mr. HOOKE proposed, that the distance of the moon's center from two or more fixt stars, when she is full south, as well as the other places mentioned by the earl of SANDWICH, might be observed.

He was order'd to take the paper of Mr. ROOKE, delivered by Sir ROBERT MORAY to Mr. OLDENBURG, containing some observations of the satellites of Jupiter, and to deduce thence the periods of their revolutions.

A paper of Mr. HOOKE concerning the inflection of a direct motion into a curve by a supervening attractive principle was read, and order'd to be registered[d], and was as follows:

[c] He was elected *nemine contradicente*, as appears from a letter of Mr. OLDENBURG to Mr. BOYLE, dated at London, June 8, 1666, and printed in Mr. BOYLE's works, vol. v. p. 357. In this letter Mr. OLDENBURG observes likewise, that he found by his last from Paris, that "Monsr. "AUZOUT was nominated for one of those choice "persons, that are to constitute their academy; "some of the rest, that are pitch'd upon, being M. "ROBERVAL, M. CARCAVI, M. FRENICLE, M. "PICART, M. HUYGENS, all very able men.— "I hope, adds Mr. OLDENBURG, our society "will in time ferment all Europe at least. I wish "only we had a little more zeal and a great deal "more assistance to do our work thoroughly, as "I am apt to believe the French will study to do "theirs (they being like to be endowed) were it "but out of emulation. So good be done to "our generation, and a ground laid to do the "like to posterity, no great matter what passions "do concur for the performance."

[d] Register, vol. iii. p. 114. See Mr. WALLER's life of Dr. HOOKE, p. 12. prefix'd to the posthumous works of Dr. HOOKE.

" I have often wondered, why the planets ſhould move about the ſun according " to COPERNICUS's ſuppoſition, being not included in any ſolid orbs (which the " antients poſſibly for this reaſon might embrace) nor tied to it, as their center, by " any viſible ſtrings; and neither depart from it beyond ſuch a degree, nor yet " move in a ſtrait line, as all bodies, that have but one ſingle impulſe, ought to do: " For a ſolid body, moved in a fluid, towards any part, (unleſs it be protruded " aſide by ſome near impulſe, or be impeded in that motion by ſome other obvi- " ating body; or that the medium, through which it is moved, be ſuppoſed not " equally penetrable every way) muſt perſevere in its motion in a right line, and " neither deflect this way nor that way from it. But all the celeſtial bodies, being " regular ſolid bodies, and moved in a fluid, and yet moved in circular or elliptical " lines, and not ſtrait, muſt have ſome other cauſe, beſides the firſt impreſſed " impulſe, that muſt bend their motion into that curve. And for the performance " of this effect I cannot imagine any other likely cauſe beſides theſe two: The firſt " may be from an unequal denſity of the medium, thro' which the planetary body " is to be moved; that is, if we ſuppoſe that part of the medium, which is far- " theſt from the center, or ſun, to be more denſe outward, than that which is more " near, it will follow, that the direct motion will be always deflected inwards, by " the eaſier yielding of the inward, and the greater reſiſtance of the outward part " of that medium. This hath ſome probabilities attending it; as, that if the æther " be ſomewhat of the nature of the air, 'tis rational, that that part, which is " nearer the ſun, the fountain of heat, ſhould be moſt rarefied; and conſequently " that thoſe, which are moſt remote, ſhould be moſt denſe: But there are other " improbabilities, that attend this ſuppoſition, which being nothing to my preſent " purpoſe I ſhall omit.

" But the ſecond cauſe of inflecting a direct motion into a curve may be from " an attractive property of the body placed in the center; whereby it continually " endeavours to attract or draw it to itſelf. For if ſuch a principle be ſuppoſed, " all the phænomena of the planets ſeem poſſible to be explained by the common " principle of mechanic motions; and poſſibly the proſecuting this ſpeculation " may give us a true hypotheſis of their motion, and from ſome few obſervations, " their motions may be ſo far brought to a certainty, that we may be able to " calculate them to the greateſt exactneſs and certainty, that can be deſired.

" This inflection of a direct motion into a curve by a ſupervening attractive " principle I ſhall endeavour to explicate from ſome experiments with a pendulous " body: not that I ſuppoſe the attraction of the ſun to be exactly according to the " ſame degrees, as they are in a pendulum: for in a circular pendulum the degrees " of conatus at ſeveral diſtances from the perpendicular are in the ſame proportion " with the ſines of their arches of diſtance; as is evident by the figure.

Let A B repreſent a pendulum hanging perpendicular, ſuſpended at A: if it be moved out of it, as to C or F, the conatus of the body to deſcend in the point C to the conatus in F ſhall be always as C D to F G. For it is a common principle of mechanics, that the conatus of a body deſcending in an inclining plane to that of one deſcending perpendicular, is in reciprocal propor-

tion to the length of thoſe planes included between two horizontal paralell lines: As if there be a body at C, and another at D, the one deſcending by C E, the other by D E, the conatus in C E to that in D E ſhall be as D E to C E; that is as C A to C D. The ſame may be alſo proved of a ball at F and G, that the conatus of the body to deſcend in G H to that deſcending in F H, ſhall be as F H to G H; that is as A F to F G: Therefore the conatus in C to that in F, ſhall be as C D to F G; and conſequently the conatus of returning to the center in a pendulum is greater and greater, according as it is farther and farther removed from the center, which ſeems to be otherwiſe in the attraction of the ſun; as I may afterwards farther explain.

" But however it be, the compounding this motion with a direct or ſtrait " motion juſt croſſing it, may ſerve to explicate this hypotheſis, tho' all the ap- " pearances of it are not exactly the ſame. As for inſtance, &c.

" By this hypotheſis, the phænomena of the comets as well as of the planets " may be ſolved; and the motions of the ſecondary, as well as of the primary pla- " nets: The motions alſo of the progreſſion of the auges are very evident. But as " for the motion of libration or latitude, that cannot ſo well be made out by this " way of pendulum; but by the motion of a wheel on a point is moſt eaſy."

This diſcourſe was an introduction to an experiment to ſhew, that circular motion is compounded of an endeavour by a direct motion by the tangent, and of another endeavour tending to the center. For which purpoſe there was a pendulum faſtened to the roof of the room with a large wooden ball of lignum vitæ on the end of it. And it was found, that if the impetus of the endeavour by the tangent at the firſt ſetting out was ſtronger than the endeavour to the center, there was then generated an elliptical motion, whoſe longeſt diameter was parallel to the direct endeavour of the body in the firſt point of impulſe. But if that impetus was weaker than the endeavour to the center, there was generated ſuch an elliptical motion, whoſe ſhorter diameter was parallel to the direct endeavour of the body in the firſt point of impulſe. And if they were both equal, there was made a perfect circular motion.

There was alſo made another experiment by faſtening another ſmall pendulous body by a ſhorter ſtring on the lower part of the wire, which the greater was ſuſpended by, that it might freely make a circular or elliptical motion round about the bigger, whilſt the bigger moved circularly or elliptically about another center. The intention whereof was to explain the manner of the moon's motion about the earth, it appearing evidently thereby, that neither the bigger ball, which repreſented the earth, nor the leſs, which repreſented the moon, were moved in ſo perfect a circle or ellipſis, as otherwiſe they would have moved in, if either of them had been ſuſpended and moved ſingly; but that a certain point, which ſeemed to be the center of gravity of theſe two bodies, howſoever poſited (conſidered as one) ſeemed to be regularly moved in ſuch a circle or ellipſis, the two balls having other peculiar motions in ſmall epicycles about the ſaid point.

Mr. OLDENBURG produced a letter written to him by Dr. WALLIS from Oxford, May 19, 1666 [d], in anſwer to the objections made at the preceding meeting againſt his hypotheſis of the tides: which letter giving occaſion to renew the diſcourſe upon that ſubject, Dr. GODDARD offer'd to the conſideration of the ſociety this doubt, viz. ſuppoſing the earth and moon to move about a compound center of gravity, if the higheſt tides be at new moon, when the earth is fartheſt from, and the moon neareſt to the ſun, and the tides abate as the earth approaches nearer, till ſhe come into the ſuppoſed circle of her annual motion; why they do not abate, as the earth comes ſtill nearer to the ſun within the ſaid circle? And ſo why we have not one ſpring-tide and one neap-tide in every courſe of the moon?

Others ſuggeſted, that in the Eaſt-Indies the higheſt and loweſt tides were in the quadratures of the moon; as alſo that they happened in England not juſt at the full and change, but two or three days after.

The preſident deſired the members to conſider farther of Dr. WALLIS's hypotheſis againſt the next meeting, and to bring in their thoughts accordingly.

Mr. HOOKE gave in his remarks upon Monſr. PETIT's diſſertation of the nature of comets, which had been preſented to the ſociety ſome weeks before by the author, and referred to Mr. HOOKE's peruſal; the ſubſtance of whoſe ſentiments upon it were, that he found, that Monſr. PETIT's obſervations of the two laſt comets agreed in the general with thoſe made by himſelf, and with the beſt, which he had met with of others: And that the hypotheſes mentioned in that diſcourſe were very ingenious, and ſome of them not improbable. But whether the comets were moved in equal ſpaces of a curve line in equal ſpaces of time (which Monſr. PETIT ſeemed inclin'd to believe) deſerved to be farther examined by ſuch obſervations, as had been made accurate enough to determine the diſtance or parallax of them in ſeveral places of their appearance.

Sir THEODORE DE VAUX produced ſome papers about coloration [e]. And it was ordered, that himſelf, Sir GEORGE ENT, Dr. GODDARD, Dr. QUATREMAINE, Dr. MERRET, Dr. WHISTLER, Dr. CLARKE, Dr. CHARLETON, and the reſt of the phyſicians of the ſociety, as alſo Mr. DANIEL COXE, Mr. HOOKE, and Mr. OLDENBURG, or any two or more of them, be a committee to conſider of the ſaid papers, and to cauſe them to be tranſlated into Engliſh from the French, that ſo they might be the better digeſted afterwards. The time and place of the ſaid committee's meeting to be at Sir GEORGE ENT's, on the Monday following in the afternoon.

Mr. COLWALL preſented the head of a ſhark.

[d] Letter-Book, vol. i. p. 320. It is printed in the Philoſ. Tranſact. n° 16, p. 281—283, to the end of the 2d ſection.

[e] Drawn up by a very famous and curious phyſician from the mouth of the moſt knowing and experienced dyers of England and Holland in his time. See Mr. OLDENBURG's letter to Mr. BOYLE cited above.

Sir

Sir PAUL NEILE communicated a paper delivered to him by Sir GILBERT TALBOT, containing an account of a ſtone found in Sweden, yielding ſulphur, vitriol, allum, and minium. It was ordered, that Sir GILBERT ſhould be deſired to procure a quantity of this ſtone from Sweden for a trial; and that the paper ſhould be regiſtered [f], as follows:

Sulphur. "There is a ſtone in Sweden of a yellow colour, intermixed with "ſtreaks of white, (as if compoſed of gold and ſilver) and heavy withal: it "is found in firm rocks, and runneth in veins, upon which they lay wood, and "ſet it on fire: when the ſtone is thus heated, they caſt water upon it to make it "rend; and then dig it up with mattocks. This done, they break it into ſmaller "pieces, and put it into iron pots, of the ſhape in the margin, the mouth of the "one going into the other. There they place the one in an oven upon an iron "fork ſloping, ſo that when the ſtone is melted, it may run into the other, which "ſtands at the mouth of the oven, ſupported upon an iron. The firſt running "of the ſtone is ſulphur.

Vitriol. "The remainder of the burned ſtone is carried out, and laid upon a "high hill, where it lieth expoſed to the ſun and air, for the ſpace of two years; "and then taketh fire of itſelf, caſting forth a thin blue flame, ſcarce diſcernible "in the day-time.

"This being conſumed, leaveth a blue duſt behind it, which the workmen ob-"ſerve, and mark with wooden pins. This they dig up and carry into the work-"houſe, and put it into great tubs of water, where it infuſeth twenty-four hours "or more. The water they afterwards boil in kettles, as we do ſalt-petre, and "put it into cooling-tubs, wherein they place croſs ſticks, and on them the vitriol "faſteneth, as doth ſugar-candid.

Allum. "The water, that remaineth after the extraction of the vitriol, they mix "with an eighth part of urine, and the lees of wood-aſhes, which is again boiled "very ſtrong, and being ſet to cool in tubs, croſs-ſticks are likewiſe placed, and "thereon the allum faſteneth.

Minium. "In the water, which remaineth after the allum, there is found a ſedi-"ment, which being ſeparated from the water is put into an oven, and wood laid "upon it and fired, till it become red, which maketh the minium, wherewith "they paint their houſes and make plaiſter."

Mr. DANIEL COXE mentioned, that there was an allum-ſtone in the north of England, yielding the ſame ſubſtances, except minium.

Mr. HOSKYNS produced a relation of the death of Mr. BROOKES, a juſtice of the peace in Hampſhire, by lightning, written in a letter by THOMAS NEALE, eſq; then high-ſheriff of that county; which was ordered to be regiſtered [g].

[f] Regiſter, vol. iii. p. 118.
[g] Ibid. p. 117. It is printed in the Philoſ. Tranſact. n° 14, p. 247, for July 1666.

Col. BLOUNT and Mr. HOOKE were desired to appear on the Saturday following in the afternoon in St. George's Fields, with their new chariots, to compare them together; and it was requested, that as many of the society, as conveniently could, would meet them there.

It was ordered, that Mr. HOOKE should give an account of his experiments with the pendulum mentioned above in writing at large, together with the discourse, which he made upon them.

Dr. WILKINS proposing, that the balls might be so ordered, as to put some sand into them, which by running out might shew the lines of those motions, it was ordered to be done against the next meeting.

May 30. The president and vice-president being both absent, there could be no meeting of the society.

June 4. At the meeting of the COUNCIL were present

The President

Sir PAUL NEILE	Dr. WHISTLER
Mr. AERSKINE	Mr. MATTHEW WREN
Sir GEORGE ENT	Mr. COLWALL
Mr. PALMER	Mr. NEILE
Dr. WILKINS	Mr. CREED
Dr. GODDARD	Mr. OLDENBURG.

Mr. MATTHEW WREN was sworn of the council.

Mr. PALMER was desired to consult with a lawyer about the following case,

"Whether the president appointing one deputy in his absence, and another in "the absence of the said deputy, and so farther, these deputies be not one in law, "and may be all sworn together, and act with intermission, as occasion serves, "without being sworn anew; the form of the oath being as follows, *I* A. B. *do* "*promise to deal faithfully and honestly in all things belonging to the trust committed to* "*me as vice-president of the Royal Society of London for improving natural knowledge* "*during my employment in that capacity.*"

It was ordered, that the clause, which contains the power of deputation, be transcribed by the amanuensis out of the charter, and shewed to the same lawyer, together with the recited case.

It was likewise ordered, that the secretary bring in a draught of a diploma for Monsieur AUZOUT:

That

That n° 13 of the *Philoſophical Tranſactions* be printed [h].

And that the committee of the mercers company be ſpoken to by Mr. HARRINGTON, Mr. COLWALL, and Mr. GRAUNT, for flooring the weſt gallery of Greſham-College; and that the form of the order be thus:

"June 4, 1666.

"At a meeting of the COUNCIL of the Royal Society.

"Ordered,

"That Mr. DANIEL COLWALL, Mr. WILLIAM HARRINGTON, and Mr. JOHN "GRAUNT do wait upon the committee for the affairs of Greſham-College Lon- "don, to deſire, that they would pleaſe to repair the floor and windows in the "weſt gallery of the ſaid college, where the ſociety's repoſitory is to be."

June 6. The ſociety did not meet, it being the day appointed for faſting and humiliation on account of the late peſtilence.

June 13. Mr. SAMUEL PARKER was elected and admitted.

Dr. WILKINS brought in for the repoſitory three queen-bees, affirmed to be one third part longer than the ordinary ones, and a drone and a working-bee. Mr. HOOKE was deſired to view in his microſcope the queen-bees, to ſee what they had peculiar and different from other bees.

Sir THEODORE DE VAUX mentioning, that he had a written hiſtory of bees, was deſired to produce it at the next meeting.

Dr. WILKINS produced a bone ſaid to be taken out of the head of a whale, taken about the iſland of Bermudas. The perſon, from whom he received it, having offered his ſervice to the ſociety in making obſervations of the natural

[h] The order for printing n° 12, for May 1666, does not appear in the council-book. At the end of that number is the following advertiſement: "Whereas it is taken notice of, that ſeveral perſons perſuade themſelves, that theſe *Philoſophical Tranſactions* are publiſhed by the Royal Society, notwithſtanding many circumſtances to be met with in the already publiſhed ones, that import the contrary; the writer thereof hath thought fit expreſly here to declare, that that perſuaſion, if there be any ſuch indeed, is a mere miſtake; and that he, upon his private account (as a well-wiſher to the advancement of uſeful knowledge, and a furtherer thereof by ſuch communications, as he is capable to furniſh by that philoſophical correſpondency, which he entertains and hopes to inlarge) hath begun and continues both the compoſure and publication thereof. Though he denies not but that having the honor and advantage of being a fellow of the ſaid ſociety, he inſerts at times ſome of the particulars, that are preſented to them; to wit, ſuch as he knows he may mention without offending them, or tranſgreſſing their orders; tending only to adminiſter occaſion to others alſo to conſider and carry them farther, or to obſerve or experiment the like, according as the nature of ſuch things may require."

things

things to be met with in that iſland, Mr. EVELYN was deſired to draw up ſome inquiries to that purpoſe.

Mr. HOOKE brought in a petrefied fiſh called *Echinus Spaticus*, by which he conceived his notion of figured ſtones to be confirmed.

Mr. WILLUGHBY produced ſome both prepared and crude Bononian ſtone. The prepared would ſhine no more in the dark; the crude was offered to ſome of the members for preparation.

Mr. POWLE's account of Mr. PHILIPS's paper concerning the needle in two Eaſt-India voyages was read, and ordered to be filed up together with that paper.

Mr. HOOKE exhibited a new contrivance of a circular pendulum applicable to a watch, and moving without any noiſe, and in continued and even motion without any jerks.

He was deſired to ſhew the uſe of it in a watch, which he ſaid the preſident had already given order for.

Sir GEORGE ENT brought in the tranſlation of thoſe papers communicated by Sir THEODORE DE VAUX about coloration, which had been committed to Sir GEORGE's care; and Sir THEODORE DE VAUX took them with him again, in order to compare them with the original book.

Sir THEODORE DE VAUX brought in ſome others tranſlated by himſelf.

Mr. DANIEL COXE mentioning, that he had with ſucceſs tried the experiment of changing gold into ſilver, was deſired to ſhew it to the ſociety at their next meeting.

The experiments appointed for the next meeting were

1. The proſecution of the magnetical ones.

2. The new watch with a circular pendulum.

3. The application of ſand to the pendulum with two balls, ſhewing the motion of the earth and moon together.

June 20. EDWARD NELTHROPE, eſq; was propoſed candidate by Dr. WILKINS.

The count of Traun of Auſtria with his retinue was preſent at this meeting.

Mr. OLDENBURG produced a printed paper in Latin, ſent to him for the ſociety by his correſpondent at Paris from the Venetian ambaſſador Signor JUSTINIANI, containing the obſervations made in Italy by CASSINI, CAMPANI, DIVINI, and

others, about the ſpots diſcovered by them in Mars, and the converſion of this planet about his own axis, confirming what had been diſcovered in England in February and March preceding by Mr. HOOKE, who was deſired to peruſe this paper, and to give an account of it to the ſociety at their next meeting.

Two letters of Dr. WALLIS, one dated at Oxford June 2, 1666 [1], and the other June 8 [k], were read, containing his anſwers to ſeveral objections made by ſome of the members at their late meeting of May 23, upon his hypotheſis of tides. He being now come to London, and preſent at this meeting, and there farther declaring his thoughts by word of mouth concerning ſome particulars of this ſubject, received the public thanks of the ſociety, who ordered, that he ſhould be aſſiſted for the farther evidencing of this ſubject, both with the relations contained in their regiſter-books about the current of the tides in the open ſea, and with aſtronomical obſervations, ſuch as he had ſuggeſted in his letters above-mentioned.

Mr. HOOKE mentioned, that he had obſerved a new ſpot in JUPITER different from thoſe, which he had formerly obſerved in that planet, and in another belt. He added, that he had ſeen the ſatellites of Jupiter with Mr. Boyle's ſixty-foot-glaſs as bright as he ſaw Jupiter himſelf with the naked eye.

He undertook to make obſervations of the parallax of the earth's orb to ſeconds; as alſo to make obſervations with long teleſcopes without the uſe of a tube.

It was ordered, that Mr. BOYLE, Sir PAUL NEILE, Sir ROBERT MORAY, Dr. WALLIS, Dr. GODDARD, Mr. WILLUGHBY, or any two or more of them, ſhould be a committee to ſee to the execution of theſe undertakings; and it was deſired, that as many more of the ſociety, as conveniently could, would join with them therein.

Dr. WALLIS, upon the motion of Mr. BOYLE, related the ſucceſs of the experiment made at Oxford by Dr. LOWER, of transfuſing the blood of one animal into the body of another, viz. that having opened the jugular artery of a maſtiff, and injected by the means of quills the blood thereof into the jugular vein of a grey-hound; and opened alſo a vein in the ſame grey-hound to let out ſo much of his blood, as was requiſite for the receiving that of the maſtiff, the maſtiff at laſt died, having loſt almoſt all his blood, and the grey-hound having his veſſels cloſed, ſurvived and ran away well.

Mr. BOYLE was deſired to procure from Dr. LOWER a full deſcription of the method uſed by him in the performance of this experiment, and to let him know, how acceptable it would be to the ſociety, to receive ſuch an account, they having a deſign to get the experiment made before them.

Mr. BOYLE was likewiſe deſired to engage Dr. LOWER in the making of the experiment of changing a dog's ſkin.

[1] Letter-Book, vol. i. p. 329.

[k] Ibid. p. 332. The ſubſtance of this and of the other letter of June 2, is printed in the Philoſ. Tranſact. n° 16. p. 285, *& ſeq.*

Sir

Sir THEODORE DE VAUX produced a paper, containing a relation, formerly ſent to Sir THEODORE MAYERNE, of an aged woman, named SARAH HASTINGS, who had taken worms out of the teeth, gums, tongue, throat and face of ſeveral perſons; Sir THEODORE MAYERNE affirming with his own hand on the back of the letter, that himſelf had ſeen the like operations of this woman performed before King CHARLES I. at Whitehall, in 1642.

This paper was ordered to be filed up.

This gave occaſion to diſcourſe concerning the breeding of worms in all kinds of animals, eſpecially in all young fat beaſts; which worms were affirmed to come out and change into flies, particularly in hogs, that are fatted with nuts.

Some affirmed, that the roots of the horns of deer falling off every year in April were eaten and looſened by worms; and that the itch of this gnawing cauſed the deer to rub and thruſt off their horns againſt the trees, which they met with. But others were of opinion, that the new and copious afflux of the humour of theſe deer thruſt the effete horns out of their place.

The experiments appointed for the next meeting were

1. To ſhew the lines, which the two balls affixed to a pendulum in their circular motions make, with letting ſome ſand run out as they move round, relating to the experiment mentioned at the meeting of May 23.

2. Mr. DANIEL COXE to produce the ſilver-powder, into which gold had been tranſmuted.

June 27. Mr. THOMAS CRISPE was admitted.

Mr. NELTHROPE was elected and admitted.

Dr. WILKINS related, that Dr. BARWICK [1] had been cured of the plague by the means of ſalivation, effected by Mr. HUES's powder. He was deſired to procure the particulars in writing.

Mr. BOYLE mentioned, that he had particulary obſerved in the thunder of the day preceding the extreme ſwiftneſs of the *fulmen*, which then fell and broke with the appearance of a flame, like that of a cannon-ſhot, ſeen by himſelf and others at the Pall-mall of St. James's Fields; and that the noiſe of the thunder, which belonged to that *fulmen*, was heard a conſiderable time after the whirling noiſe of the *fulmen* was paſſed; though, as he and others had obſerved, a noiſe moves conſiderably ſwifter than a bullet ſhot off.

He took notice likewiſe, that he had obſerved in the ſame place the whirl-wind preceding the ſaid thunder, and found by inquiry, that it had extended to about a

[1] PETER BARWICK, M. D.

mile and half from London, where workmen labouring about a houſe had not been able to keep their ſtanding, without taking faſt hold of poſts and other things thereabout.

Mr. HOOKE produced a new ſubſtance fit for a hygroſcope, much ſtronger and better than the beard of a wild oat. It was the cod of a vetch, which was tried before the ſociety, and anſwered expectation.

He brought in likewiſe his obſervations made upon Jupiter, June 26, with a ſixty-foot glaſs, which were ordered to be regiſtered [m].

The obſervations of the ſolar eclipſe on the 22d of June, made by Mr. WILLUGHBY, Dr. POPE, Mr. HOOKE, and Mr. PHILIPS were alſo communicated, and ordered to be regiſtered [n].

Dr. POPE brought in the dimenſions of an ox of unuſual ſize, weighing 2368 pounds, and being five yards, wanting a handful, long, five yards and one handful high, and three yards and one handful in girth.

Dr. CROUNE produced a piece of that nitre, which is called *antient nitre*, brought by him from Montpellier, and there ſaid to have been taken up at Alexandria near a lake; eſteemed, as the doctor obſerved, to be that antient nitre, by reaſon of its uſefulneſs in making counterfeit gems, and whitening of linnen. It had the taſte of a ſea-ſalt, and ſomewhat of a ſulphureous ſtinking ſmell. It was recommended to Dr. GODDARD to diſſolve a part of it.

Dr. CROUNE acquainted the ſociety out of a letter, which he had received from Mr. NICHOLAS STENO out of Italy, that there was at Rome a Sicilian artiſt, who believed, that he had found out a method of working hyperbolical-glaſſes. He was deſired to make farther inquiry after the particulars of this invention, and in caſe any glaſſes were actually made of that figure, what were the performances thereof.

He related, that there was a ſalamander ſent to the great duke of Florence, which being ſick was caſt into the fire, where vomiting out a certain ſtuff, it put out the fire, and then ſeemed to lie there quietly.

This was confirmed by Mr. BOYLE and Mr. WILLUGHBY, as to other ſalamanders; and the latter of theſe two having propoſed, that whereas the water-neut ſeems to be *ſalamandra aquatica*, ſome of them might be provided againſt the next meeting, to try what they would do, when caſt into the fire, it was ordered, that ſome both water and land neuts ſhould be provided by the operator againſt the next meeting.

[m] They are not in the Regiſter, but are printed in the Philoſ. Tranſact. n° 14. p. 145, for July, 1666.

[n] Regiſter, vol. iii. p. 175. See Philoſoph. Tranſact. n° 17, p. 295, for Sept. 1666.

The

The experiments appointed for the next meeting were

1. The proſecution of a circular pendulum to be applied to a clock.

2. The two balls on a pendulum, to ſhew the motion of the earth and moon, with the contrivance of a ſand-box to have the ſand run out, for repreſenting the line of that motion.

3. The ſpringy ſaddle upon two wheels.

July 4. There was no meeting of the ſociety on the account of the faſt, but there was one of the COUNCIL, at which were preſent

Dr. WILKINS, vice-preſident

Mr. BOYLE	Dr. GODDARD
Sir ROBERT MORAY	Dr. WHISTLER
Sir PAUL NEILE	Mr. CREED
Mr. AERSKINE	Mr. COLWALL
Mr. PALMER	Mr. OLDENBURG.
Sir ANTHONY MORGAN	

It was order'd, that the treaſurer pay into the cheſt of the ſociety the ſum of one hundred pounds, part of ſuch monies as he had collected for the ſociety; which ſum was accordingly put into the cheſt at this meeting:

That the preſident, accompanied with Sir ROBERT MORAY and Sir PAUL NEILE, preſent to the king, when they ſhall ſee convenient time for it, the report of the lords commiſſioners about the buſineſs of Chelſea-college: As alſo that the treaſurer iſſue out ſuch ſums of money for the occaſions of that buſineſs, as ſhould be thought neceſſary by Sir ANTHONY MORGAN: And

That the anſwer brought in by Mr. PALMER to the caſe concerning the plurality of deputations of vice-preſidents (as it was ſtated at the meeting of the council on the 4th of June laſt) be recorded in the journal-book of the council, viz.

"I do conceive, the preſident can make but one deputy at one time; but I do "conceive, if he make two deputations to two ſeveral perſons, to avoid the in- "convenience of the abſence of one of them, that ſuch of the deputies, as come "firſt, may act, and the entry will be before ſuch an one lawfully deputed; and "there being no matters of moment then acted, it will do well enough. But if "one deputy ſit, and after another, the deputation to the firſt ceaſeth."

July 11. At the meeting of the SOCIETY on the ſame day, Mr. EDMUND KING was propoſed candidate by Dr. WILKINS.

Sir ROBERT MORAY preſented to the ſociety a book, intitled *Del Arcano del Mare*, written by Sir ROBERT DUDLEY duke of Northumberland.

He

He produced a ſubſtance taken out of the ſtomach of a ſheep, of the figure of half a ball.

Mr. OLDENBURG related out of a letter to him from Dr. BEAL, dated July 7, 1666. that the ſaid doctor had ſeen and handled a ſtone, cut in Eaſter-week preceding out of the womb of one Mrs. WINDHAM in Somerſetſhire; and that he had examined it, whether it were not a fœtus petrefied; but that he could not determine it: that there was no feature viſible, tho' that might be covered with a tegument: that it was very whitiſh, and ſo crudely and faintly petrefied, as to be eaſily friable, ſome parts by handling or carriage being raſed off: that it was light for a ſtone, and, as he was informed, much diminiſhed in bulk: that he had weighed it in gold ſcales, and found it of ſomewhat leſs than four ounces weight[o]: that it was intended for a preſent to the ſociety by a kinſman of the lady; and that the chirurgeon of Shirbourn, who cut it out, would give an account of his operation.

Mr. WILLUGHBY moved, that it might be inquired into, whether it might not be got out of the bladder into the womb.

It was ordered, that Dr. BEAL ſhould be deſired to encourage the intention of ſending the ſaid ſtone to the ſociety.

Dr. CROUNE mentioned, that he had a ſtone, that would keep the light of the fire a good while, and was deſired to produce it at the next meeting.

He produced a letter, written to him by NICHOLAS STENO, from Rome, May 23, 1666. mentioning, 1. The emulation between DIVINI and CAMPANI about optic glaſſes. 2. That CAMPANI had been miſtaken in ſome of his obſervations, taking the ſpots adhering to the body of Jupiter for the ſhadows of his ſatellites. 3. That the chevalier CORVINI had aſſured him, that he had caſt a ſalamander, brought him out of the Indies, into the fire; whereupon the animal ſwelled preſently, and then vomited a good quantity of thick viſcous matter, which put out the neighbouring coals, whither the ſalamander retired preſently, putting them out again the ſame way as ſoon as they rekindled, and by this means ſaving himſelf from the force of the fire for the ſpace of two hours, the chevalier CORVINI being then unwilling to hazard the creature any farther. That afterwards it lived nine months. That he had kept it eleven months without any other food than what it took by licking the earth, on which it crept, and on which it was brought out of the Indies; which at firſt was covered with a thick moiſture, but being dried afterwards, the urine of the animal ſerved to moiſten it. At the end of eleven months, when the owner had a mind to try how it would do upon Italian earth, it died three days after the earth was changed[p]. 4. That he, STENO, had begun to diſſect tortoiſes; the particulars of the obſervations upon which he would ſend at large at another time; but that having cut off the head of one, it was found to keep motion and feeling for above twenty-four hours after, ſtirring

[o] See Philoſ. Tranſact. nº 18. p. 320. for Oct. 1666.

[p] See Philoſ. Tranſact. vol. i. nº. 21. p. 377.

ſeveral parts of the body, according as he touched ſeveral places in the joinings of its ſcales.

Mr. HOOKE's obſervation on Saturn, made June 29, 1666, was read, and ordered to be regiſtered [q].

Mr. HEVELIUS's letter to Mr. OLDENBURG of July 3, 1666 [r], was read, acquainting the ſociety, 1. That he had anſwered Monſieur AUZOUT's exceptions to his obſervations on one of the late comets, and ſent ſeveral copies thereof to England by ſea, deſiring the ſociety to examine and conſider the whole, and ſubmitting it to their judgment. 2. That Signior BURATTINI was ſtill employed in Poland in making long teleſcopes. 3. That himſelf, HEVELIUS, was ready to contribute what he could for the compoſing of a natural hiſtory.

Mr. OLDENBURG produced an account given by ſome Pariſian aſtronomers of the late eclipſe of the ſun, obſerved June 22, 1666 [s]. It was ordered, that it be compared by Mr. HOOKE with the obſervations made in England, and read before the ſociety at their laſt meeting.

A paper of Mr. BOYLE was read, containing a new frigorific experiment, ſhewing how a conſiderable degree of cold may be ſuddenly produced without the help of ſnow, ice, hail, wind, or nitre, and that at any time of the year, by ſal armoniac. It was ordered, that this paper be regiſtered [t]; and that the operator provide a pound of ſal armoniac, and as much nitre, againſt the next meeting, to try which of theſe two ſalts has the greater ſtrength to cool.

Mr. DANIEL COXE mentioned, that he had a kind of vitriol of conſiderable force to freeze. He was deſired to produce ſome of it at the next meeing for a trial, which he promiſed to do.

Dr. GODDARD produced the ſolution of nitre, recommended to him at the laſt meeting; and gave an account, that he had diſſolved ſome of that nitre, ſaid to be the nitre of the ancients, in common water, which being evaporated, ran into ſquare grains like common ſalt.

It was ordered, that the experiment with the pendulum and two balls be better fitted for the next meeting.

July 18. At a meeting of the COUNCIL were preſent

[q] Regiſter, vol. iii. p. 176. It is printed in Philoſ. Tranſact. n° 14. p. 246.
[r] Letter-Book, vol. i. p. 338.
[s] Printed in Philoſ. Tranſact. n° 17. p. 296. for Sept. 1666.
[t] Regiſter, vol. iii. p. 144. It is printed in Philoſ. Tranſact. n° 15 p. 255. for July 1666.

The

The Preſident

Sir ROBERT MORAY	Mr. PALMER
Sir GEORGE ENT	Mr. NEILE
Mr. AERSKINE	Mr. CREED
Dr. GODDARD	Mr. OLDENBURG.

Sir ROBERT MORAY was by the preſident nominated vice-preſident, and ſworn as ſuch.

N°. 15. of the *Philoſophical Tranſactions* was licenſed.

At the meeting of the SOCIETY on the ſame day, Mr. KING was elected.

Sir ROBERT MORAY preſented the ſociety with ſome bags full of ſeveral ſorts of ore and curious ſtones, and with ninety-ſix old Roman braſs coins, ſaid to have been dug up about ten miles from Worceſter.

He produced likewiſe a very curious waſp's neſt wrought by the inſect into hexangular cells.

The preſident communicated a ſecond letter from the earl of Sandwich, together with ſome celeſtial obſervations made by his lordſhip at Madrid, accompanied with a deſire of a correſpondence in England in making obſervations.

The preſident was deſired to thank the earl for his reſpect to the ſociety; and it was ordered, that Mr. HOOKE ſhould give in writing what had been done in England in that matter, and what was intended farther; as alſo that the obſervation of the late eclipſe of the ſun ſhould be ſent to his lordſhip; and that Dr. POPE and Mr. HOOKE ſhould join in making obſervations anſwerable to thoſe, that were intended to be made in Spain.

Notice was given by Sir ROBERT MORAY, that Mr. MAY had ſent in for the repoſitory the ſkin of an antilope, which died in St. James's Park.

The lord BRERETON produced ſome pieces of glaſs taken out of the window of a church both on the north and ſouth ſide of it, obſerving, that they were all eaten in by the air; but that the piece taken from the ſouth ſide had ſome colours like thoſe of a rainbow upon it, which the other from the north ſide had not.

His lordſhip promiſed to give in an account, as ſoon as he conveniently could, of his ſalt-pits.

He likewiſe mentioned, that at his houſe in Cheſhire good ale had been brewed of oats without malting; as alſo, that about his houſe the water was vitriolate, which he found by putting galls into it; which being done in September, turned it immediately black; but in ſpring, only into a crimſon colour, and that after nine or ten days after the infuſion.

An experiment was tried with ſal armoniac and ſalt petre, to ſee, which of the two had the greateſt force to cool. But the experiment not being ordered as it ſhould have been, the curator was charged to let it be made at the next meeting with the ſalts put into an equal quantity of water in the ſame veſſel, obſerving the ſame time with both.

The circular pendulum applied to a clock being enquired after, the preſident affirmed, that he had made trial of one, and obſerved the motion of it for four days, in which time it had gone ſo equally with his pendulum-clock, that after thoſe four days were elapſed, he found it only to have gone one minute too faſt.

The experiment with the pendulum and two balls not yet ſucceeding, it was referred to the next meeting; when alſo the experiment ſhewing, that a circular pendulum is the ſame with two pendulums croſſing one another was ordered to be made; as likewiſe that of the water-neuts.

Mr. DANIEL COXE was deſired to bring in to the next meeting the white powder made out of gold, and the vitriol for the producing of gold.

July 25. Mr. KING was admitted.

The experiment of cooling water with ſal armoniac and ſalt-petre was tried ſeparately. The ſpirit of the ſealed thermometer ſtanding at 12 ½ degrees, and having firſt ſubſided in cold water, ſo far as it could, viz. to 8 ½ degrees, a quarter of a pound of ſal armoniac was put into it at $4^h\ 56^m$: whereupon the ſpirit deſcended to 4 ½ degrees in 8 minutes, and after that time was found to deſcend no lower. Then into the like quantity of water in a like glaſs veſſel was put the ſame ſealed thermometer, after it had recovered the height of 8 ½ degrees, and then a quarter of a pound of ſalt-petre being put in at $5^h\ 13^m$ the ſpirit deſcended a little below 4 degrees in the ſpace of 7 ½ minutes.

Some of the members of the ſociety expecting, that the ſal armoniac ſhould cool more potently than the nitre, ſcrupled the goodneſs of the ſal armoniac; but Mr. HOOKE affirmed it to be very good. The experiment was tried with bay-ſalt, but that made the ſpirit deſcend from 8 ½ degrees to 7 ½ in 5 minutes.

It was ordered, that Mr. HOOKE ſhould privately try the ſame experiment again, and add ſome others of the ſame kind, and give an account of the ſucceſs at the next meeting.

An experiment was tried to ſhew, that the circular pendulum is the ſame with two pendulums croſſing one another, and was ordered to be repeated at the next meeting, making the contrivance ſo, as that the centers might be in the ſame plain and at a greater diſtance.

The experiment frequently made to repreſent the earth's and moon's compounded motion by two balls ſuſpended on a line, being found not to anſwer expectation,

which was to ſee, whether the center of gravity be in the middle of the ellipſis, was laid aſide.

Col. BLOUNT mentioned, that having made ſome cherry-wine, he found, that the yeaſt riſing from thence was better and ſtronger than our yeaſt.

Some of the ſociety obſerved, that raſberries and elder-berries yielded likewiſe a very good yeaſt.

Colonel BLOUNT was deſired to try, whether French wine or cherry-wine yielded more and better ſpirit, taking the ſame quantity of each of theſe liquors.

He affirmed, that gooſeberries ripe enough make a good ſtrong and laſting wine, excelling the beſt rheniſh, if well ſugared.

The lord BRERETON remarked, that plum-wine taſted like a kind of Languedoc wine, with an aromatic ſcent.

The experiments appointed for the next meeting were,

1. The circular pendulum.

2. Experiments with cooling ſalts.

3. Water-neuts.

4. The wheel-ſaddle.

Auguſt 1, being the faſt-day, the ſociety did not meet.

Auguſt 8. At the meeting of the COUNCIL were preſent

The Preſident

Sir ROBERT MORAY	Mr. COLWALL
Mr. AERSKINE	Mr. NEILE
Mr. PALMER	Mr. CREED
Dr. GODDARD	Mr. OLDENBURG.

It was ordered, that N°. 16 of the Philoſophical Tranſactions be printed.

It was reſolved, that the original of the late lord MASSEREENES's letter, concerning the hundred pounds intended by him as a donation for the uſe of the ſociety, written to Mr. BOYLE and Sir ROBERT MORAY, be ſent to one of the members of the ſociety reſiding at Dublin, who ſhould be deſired to deliver a copy of it to the preſent lord MASSEREENE, to ſee his inclination to the performance of that intention.

At

At the meeting of the Society on the ſame day,

The preſident produced another letter of the earl of Sandwich, dated at Madrid in July, containing his lordſhip's obſervations of the late ſolar eclipſe of June 22, together with ſome others of the moon's bearing. They were read, and referred to Mr. Hooke.

Mr. Oldenburg preſented the ſociety from Mr. Hevelius with his book concerning the two late comets, together with his *Mantiſſa* to his *Prodromus Cometicus*.

The preſident, Sir Paul Neile, Dr. Wallis, Dr. Goddard, Dr. Wren, Dr. Pope, and Mr. Hooke were deſired to peruſe and conſider this book, and to bring in a report of it to the ſociety, to whoſe judgment the author had ſubmited it.

A letter of Monſr. Auzout to the ſociety, dated at Paris July 16, 1666, N. S.[a] was read, acknowledging the honour done to him by their electing him of their body.

Mr. Hooke exhibited his obſervations of the comet in the end of the year 1664, intimating, that he intended to publiſh them very ſhortly[b].

He produced a certain contrivance to ſhew, that the circular pendulum was made of two ſtrait lines croſſing one another.

Dr. Goddard ſuggeſted, that the wire moving in a ſtrait line, and pretended to keep equal time with the circular pendulum, ſhould move upon two pivots, as the other did upon four, to be upon equal terms.

The preſident reported, that the experiment mentioned April, 18, 1666, by Mr. Povey, of a new way of laying on colours, had been made that morning by Mr. Streeter at his houſe before himſelf, Sir Robert Moray, Mr. Slingesby, Mr. Povey, Dr. Charleton, Mr. Hooke, and Mr. Oldenburg, viz. that an egg was beaten yolk and white together, with a few ſhreddings of a fig-tree branch, whereby the egg was reduced into an oily ſubſtance, without any tenacity or ropineſs, ſo that it would be ductile, and fall on the pencil like oil; having likewiſe this quality, that being mixed with any colour it would loſe its own in it, and make a picture without any glaring, however placed againſt the light; of which an example had been ſeen in Mr. Povey's houſe. Beſides that whereas oil makes all colours yellow in time, and ſize waſhes off; this liquor will not ſuffer the colours to turn yellow, nor eaſily waſh off, if it were kept but two or three months within doors to contract ſome hardneſs. It was added, that any part of a fig-tree, the juice, a ſprig, the leaves, or the ſhreddings of a branch, would produce this effect at any time of the year.

[a] Letter-Book, vol. i. p. 342.

[b] They are publiſhed among his *lectures and collections*, at London, 1678, in 4to.

Dr. MERRET moved, that it might be tried, whether other lacteſcent plants, eſpecially acrimonious ones, would not perform the ſame thing, it being probable, that by the corroſion of the juice of the fig-tree, the fibres of the egg were deſtroyed, and the liquor, that was tenacious before, made ductile afterwards.

He mentioned, that he had ſome time before ſuggeſted to a painter a way of purifying oil, delivered by SENNERTUS, viz. by percolating it through ſand; and that he had been lately informed by that painter, that it had ſucceeded well.

Some of the members conceived, that the ſand ſtopt and kept the ſaline particles of the oil, ſince the oil thus defecated and robbed of its ſalts would quickly become rancid.

There was produced a box of ſeveral ſtones and minerals preſented by Sir ROBERT MORAY for the repoſitory, and reduced into order by Mr. HOOKE.

Some experiments were tried to produce cold with ſeveral ſalts. Mr. HOOKE affirmed, that he had found, that white ſalt, vitriol, and allum had not any ſenſible virtue to refrigerate. Sandever and pot-aſhes being tried before the ſociety, it was found, firſt, that the ſpirit of wine in the thermometer ſtanding at $\frac{1}{4}$ below one, deſcended, after the throwing in a quarter of a pound of ſandever into the water, one degree in about 5 minutes. Secondly, that the ſpirit ſtanding at $3\frac{1}{2}$ quarters below one, did, after throwing in a quarter of a pound of pot-aſhes into $\frac{1}{4}$ of water, riſe above $\frac{1}{4}$ of a degree in 4 minutes.

Mr. HOOKE was ordered to proſecute at the next meeting the circular pendulum; and alſo to ſhew his new watch, affirmed by him to be more exact than any pendulum-watch; and to produce ſome water-newts for the experiment appointed before.

Auguſt 15. The contrivance for the experiment appointed to ſhew, that the circular pendulum was made of two ſtrait lines croſſing one another, being fitted, as was ſuggeſted at the preceding meeting, it appeared, that the motion from the one end of the greater diameter of the circular pendulum to the ſame end again was equal to two vibrations of the ſtrait line pendulum, equal in length to the former, and moving in the ſame plane.

The correſpondence deſired by the earl of Sandwich in making obſervations of the moon's bearing being again mentioned, it was ordered, that the mathematical profeſſors ſhould be deſired to take care of that buſineſs, and call in to their aſſiſtance Mr. STREET or ſuch others as they thought fit.

The trial of the lacteſcent and cauſtic plants, beſides the fig-tree, for preparing a new kind of paint with beaten eggs, was committed to Dr. CHARLETON.

The materials for cooling being again ſpoken of, it was ordered, that Mr. BOYLE ſhould be deſired by Mr. OLDENBURG to provide himſelf ſome ſal armoniac,

moniac, as preferred by him to nitre in point of cooling, for repeating the experiment.

Sandever and pot-aſhes having been tried as to their virtue of cooling, occaſion was taken to diſcourſe of the nature of ſandever; and it was obſerved by Sir ROBERT MORAY and Mr. HENSHAW, that there was ſomething more in ſandever than other ſalts; Sir ROBERT particularly remarking, that when no borax, nor any thing elſe would diſſolve gold, pretended to have been unbodied and irreducible, ſandever would do it.

Sir ROBERT MORAY related, that kelp was an excellent manure for land, and that in ſome parts of Scotland no manure was uſed but that, the country people ſowing their corn upon ſand, and covering it over with kelp, without any other care; and that the land yielded twenty for one.

A letter from Dr. WALLIS to Mr. OLDENBURG dated at Oxford, Auguſt 11, 1666[y], was read, importing, that whereas he had uſed to obſerve in his baroſcope, that the ſun-ſhining made the quickſilver to riſe, in which the obſervations of others had concurred with him; he had this ſummer in the hot time of June, July, and Auguſt obſerved the mercury conſtantly to riſe in the night, and to fall in the day, notwithſtanding the hot ſun-ſhine.

The preſident affirmed, that he had generally obſerved the contrary in his baroſcope.

Mr. OLDENBURG read the relation ſent him from Paris about a kind of worms obſerved in the abbey of Caen to eat out ſtones, and to feed upon them[z]. He was deſired to endeavour to procure ſome of thoſe worms to be ſent over with ſome of that in a box. And ſince there were many old churches in England built of Caen-ſtone, the members were deſired to obſerve, as they had opportunity, whether there were any ſuch worms found in the ſtones of ſuch churches.

A liſt being read of thoſe particulars, which, ſince the ſociety's reſuming of their meetings, had been recommended to the care of the ſeveral members; it was ordered, that every one of them, according as they appeared at the meetings, ſhould be put in mind of their ſeveral taſks; Mr. BOYLE, of giving in the experiments of ſounds, made the preceding ſummer at Oxford; Dr. CLARKE, of the experiments of injection; Sir ROBERT MORAY, of perfecting his hiſtory of maſonry; Mr. DANIEL COXE, of the experiments of the nature and figure of all ſorts of ſalts, as alſo of tranſmuting water into earth, and gold into ſilver, and of producing cold by a kind of vitriol; Mr. HOOKE, of perfecting his new quadrant; of producing a new ſort of watch more exact than a pendulum-watch; of obſerving the parallax of the earth's orb; of proſecuting the magnetical experiments, firſt for finding out whether gravitation be ſomething magnetical; and then whether the magnet will

[y] Letter-Book, vol. i. p. 346.

[z] See Journal des Sçavans, 4ᵉ xxxii. 9 Auguſt, 1666, p. 635, edit. Amſterdam, 1679, & Phil. Tranſact. 4° 18, p. 321, for October 1666.

attract at the ſame diſtance in water, as in air; as alſo whether the lines of a load-ſtone's direction are truly oval.

The experiments appointed for the next meeting were

1. The circular pendulum to be proſecuted:

2. The new watch to be produced:

3. Some water-neuts to be provided.

Auguſt 22. DAVID lord viſcount STERMONT was propoſed candidate by Sir ROBERT MORAY; but there not being a ſufficient number of members preſent for election, it was deferred till the next meeting.

Mention was made by Sir ROBERT MORAY, of a new kind of watch contrived by Mr. NICHOLAS MERCATOR, repreſenting the motion of the equation of time. It was ordered, that the ſecretary ſhould deſire Mr. MERCATOR, if he made it not a ſecret, to produce it before the ſociety at their next meeting.

Mr. HOOKE was deſired to bring in at the next meeting his new watch, which he formerly mentioned to be exact as a pendulum.

He was ordered to obſerve, whether the circular motion be compounded of ſines.

Sir ROBERT MORAY mentioned, that he had received ſome ſtag's tears, ſent him out of Warwickſhire, being a ſubſtance like ear-wax, of a ſtrong ſmell, yet not unpleaſant.

Sir THEODORE DE VAUX produced ſome papers, which were read, containing a relation of a furred robe, made of the ſkin of the Tartarian boramez, ſuppoſed to be a plant animal; which robe was ſaid in that paper to be kept in the library at Oxford, to which it was given by Sir RICHARD LEA, ambaſſador in Ruſſia in the reign of Queen ELIZABETH.

Dr. WREN was deſired to inform himſelf concerning this robe, and to view it at his return to Oxford; and the amanuenſis was ordered to take a copy of theſe papers to be filed up.

Sir ROBERT MORAY mentioned, that the King had been diſcourſing of ant's eggs, and inquiring how they came to that bigneſs, which ſometimes exceeded that of the inſect itſelf.

Mr. KING related hereupon ſeveral particulars, that had fallen under his obſervation, concerning ſeveral ſorts of ants and their eggs, which he, at the deſire of the ſociety, promiſed to give in writing at the next meeting.

Dr.

Dr. WREN affirmed, that in Wiltſhire it was uſual, when mites were gotten into the wheat, to put ants among them, which killed all the vermin, without deſtroying the wheat; and that ſome perſons put ants upon trees infeſted with worms, and thereby freed them from their noiſomeneſs, the ants themſelves doing the trees no harm.

It was moved, that it might be obſerved, whether the wheat thus freed from worms by ants would grow, it being believed, that the ants eat the germen of the corn.

Mr. HOOKE remarked, that he had obſerved with a microſcope, how the leaping cheeſe-maggots put their tail into their mouth, and when they leap, ſpring it out with great force, to leap a great way like fleas.

Sir THEODORE DE VAUX preſented a paper of enlumineure, which was recommended to Mr. EVELYN to peruſe, and to give the ſociety an account of.

He mentioned the art of enamelling of Mr. PETITOT, and promiſed to uſe his intereſt to procure an account of it for the ſociety.

This gave occaſion to mention, that Mr. POVEY had intimated, that, upon the ſociety's deſire, Mr. PETER LELY, Mr. COOPER, and Mr. STREETER would perhaps not be unwilling to communicate to them the ſeveral curioſities and varieties of painting. Whereupon it was ordered, that Sir THEODORE DE VAUX, Mr. POVEY, Mr. EVELYN, Mr. HENSHAW and Mr. HOOKE, or any two or more of them, ſhould be deſired to meet and conſider together, what particulars were fit to inquire into, and thereupon to diſcourſe with the ſaid maſters concerning the ſame.

Mr. OLDENBURG read part of a letter of Dr. WALLIS to him, dated at Oxford, Auguſt 18, 1666[a], deſiring, that certain obſervations about the tides might be made by the ſociety's order, to ſee how matter of fact would agree or diſagree with his hypotheſis. It was mentioned, that the preſident having already ſeen this letter at his houſe, had already undertaken to recommend thoſe obſervations to ſeveral perſons living near the Thames. And Sir ROBERT MORAY relating what he had obſerved in Scotland concerning a certain and conſtant proportion of the increaſe of the tides from the quarter to the ſpring-tide, and their decreaſe from the ſpring-tide to the quarter, as likewiſe of the ebb's riſing and falling conſtantly after the ſame manner; he was deſired to put the particulars of it in writing, and to draw up directions for obſervations, to find out in what proportion theſe increaſes and decreaſes, riſings and fallings happen to be in regard of one another; which proportion Sir ROBERT conjectured to be that of ſines, or ſomething near it.

Mr. HOOKE mentioned a new aſtronomical inſtrument for making obſervations of diſtances by reflection, and was deſired to give order for the conſtruction of it, and to produce it before the ſociety.

[a] Letter-Book, vol. i. p. 347. It is printed in the Philoſ. Tranſact. n° 17, p. 297.

He remarked, that he had obſerved a kind of ſhell-fiſh, called limpits, to make holes in rocks of the ſea above an inch deep, juſt of the bigneſs of their ſhell, which was of the figure of a ſnail.

The experiment of transfuſing blood out of one animal into another being again mentioned, it was ordered, that Dr. BALLE, Mr. DANIEL COXE, Mr. THOMAS COXE, Mr. KING, and Mr. HOOKE ſhould be deſired to undertake the making of this experiment; and having conſidered what apparatus was neceſſary to perform it, to ſet ſpeedily upon the work.

Dr. CROUNE communicated a letter of Mr. NICHOLAS STENO, as alſo a ſcheme of the ſeveral new chariots lately contrived in France; together with the ways of preparing alkermes, verdegreaſe, and white wax: all which were referred to the next meeting.

Auguſt 29. At a meeting of the COUNCIL were preſent

The Preſident

Sir ROBERT MORAY	Mr. PALMER
Sir PAUL NEILE	Mr. NEILE
Sir GEORGE ENT	Mr. CREED
Mr. AERSKINE	Mr. OLDENBURG.

It was ordered, that Mr. HEVELIUS having deſired ſuch books, as had been lately publiſhed by any fellows of the ſociety, and ſuch others, as were curious and philoſophical, lately printed, the ſecretary ſhould provide them, and ſhew the liſt of them to the council; and that the treaſurer of the ſociety ſhould pay for them:

That the amanuenſis ſhould make a copy of the warrant for demanding a body for diſſection, to be performed in Greſham-College by ſome of the members of the ſociety at their own charge: And

That n° 17 of the *Philoſophical Tranſactions* be printed.

At the meeting of the SOCIETY on the ſame day,

The lord viſcount STERMONT was elected and admitted.

Mr. MERCATOR produced a watch of his invention, repreſenting the equation of times. The ſociety having viewed and approved it, deſired him to bring in the demonſtration of it, viz. that his tables of equation are true; and that the motion of the watch agrees therewith.

Mr. HOOKE produced alſo a new piece of watch-work of his contrivance, ſerving to meaſure time exactly both by ſea and land; of which he was ordered to bring in the deſcription.

He

He mentioned again a perſpective, which he was preparing for obſerving the poſitions and diſtances of fixed ſtars from the moon by reflexion; and was deſired to have it made with ſpeed, and to bring in the deſcription of its ſtructure and uſes.

Mr. KING read his diſcourſe concerning ants, which was ordered to be regiſtered [b].

Mr. DANIEL COXE ſhewed ſome of the white powder, into which he affirmed that he had tranſmuted gold. He was deſired to tranſmute a greater quantity for fluxing, and to do it with a diſſolvent, that had nothing metalline in it, the ſociety being at the charge of the operation.

Sir THEODORE DE VAUX communicated a paper found among thoſe of Sir THEODORE DE MAYERNE, concerning the nature of craw-fiſh; which was ordered to be copied, and filed up, after the copy had been peruſed by Sir GEORGE ENT for his animadverſions upon it, and additions to it.

Mr. OLDENBURG read a paper, borrowed of one Mr. ROBINSON, concerning the fall of aſhes into a ſhip ſailing in the Archipelago in 1631, at the time of the eruption of mount Veſuvius [c], agreeing with what Mr. EVELYN had formerly communicated.

There were alſo produced from the ſaid Mr. ROBINSON two of the firſt microſcopes made by the direction of GALILEO, and ſent from him to the ſaid Mr. ROBINSON, together with GALILEO's letter dated in 1646.

Sept. 5. The ſociety could not meet by reaſon of the late dreadful fire in London [d].

Sept 12. At the meeting of the COUNCIL were preſent

The Preſident

The lord biſhop of Exeter	Dr. GODDARD
Sir ROBERT MORAY	Mr. COLWALL
Sir PAUL NEILE	Mr. NEILE
Mr. AERSKINE	Mr. CREED
Mr. MATTHEW WREN	Mr. OLDENBURG.
Dr. WHISTLER	

It was reſolved, that the ſociety ſhould meet the next time in Dr. POPE's lodgings in Greſham-College. And by reaſon, that the former place of meeting for the ſociety, and other rooms alſo convenient for the ſame, were taken up for the uſe of the lord mayor of London and the city, it was ordered, that the preſident, Mr. AERSKINE, Sir ROBERT MORAY, Sir PAUL NEILE, Dr. BALLE, Mr. OLDEN-

[b] Regiſter, vol. iii. p. 153. It is printed in Philoſ. Tranſact. vol. ii. n° 23, p. 425, for March 1667.

[c] This paper is printed in the Philoſ. Tranſact. vol. i. n° 21, p. 377, for January 1666.

[d] It began on Sunday September 2.

BURG, or any two of them, ſhould be a committee to conſider of another place for the future meetings of the ſociety, in caſe they could not be at all continued in Greſham-College; and that for that purpoſe the ſaid committee ſhould meet on the Tueſday following about ſix of the clock in the evening at Arundel-houſe.

At the meeting of the SOCIETY on the ſame day,

Sept. 12. Mr. MERCATOR produced his watch again, and declared, that his demonſtrations for it conſiſted only in this, that he could ſhew, that his tables of equation were true; and that the motion repreſented thereof in his watch agreed with thoſe tables.

Mr. HOOKE preſented his new perſpective for taking angles by reflexion; which was approved of by the ſociety, and he was deſired to bring in the deſcription of it in writing.

The ſociety being taken up for the moſt part of this meeting with the conſideration of the place for their future meetings in that time of public diſorder and unſettlement by reaſon of the late fire, was thereby hindered from making experiments, and diſcourſing of philoſophical ſubjects, as they uſed to do.

Mr. OLDENBURG acquainted the ſociety, that Mr. HEVELIUS had ſent him duplicates of the four copies of his ſecond book concerning the late comets, with a deſire, that in caſe the former were come ſafe to hand, theſe might be diſtributed to ſuch other perſons, as were converſant in the ſubject. Whereupon he had delivered them, one to the preſident, another to Sir PAUL NEILE, a third to Dr. CHRISTOPHER WREN, and the fourth to Dr. WALLIS, as the copy in the former packet deſigned for the laſt, and ſent to him to Oxford, had miſcarried.

Sept. 19. At the meeting of the COUNCIL were preſent

The Preſident

The lord biſhop of Exeter	Mr. COLWALL
Sir ROBERT MORAY	Mr. NEILE
Sir PAUL NEILE	Mr. CREED
Mr. AERSKINE	Mr. OLDENBURG.

The preſident reported, that Mr. CHARLES HOWARD had very freely offered convenient rooms in Arundel-houſe both for the council and the ſociety to meet in, if there were occaſion for it: upon which thanks were ordered to be returned to Mr. HOWARD for this great reſpect and civility to the ſociety.

Sir ROBERT MORAY acquainting the Council with Mr. BALLE's deſire of keeping for himſelf ſome of the *apparatus magneticus* belonging to the ſociety, being things of the leaſt uſe to the public, amounting to the value of eighteen pounds, the council granted his deſire, Mr. BALLE paying in the ſaid ſum.

At

At the meeting of the Society on the ſame day,

Mr. Hooke ſhewed his model for rebuilding the city to the ſociety [e], who were well pleaſed with it; and Sir John Laurence, late lord mayor of London, having addreſſed himſelf to the ſociety, and expreſſed the preſent lord mayor's [f] and aldermen's approbation of the ſaid model, and their deſire, that it might be ſhewn to the King, they preferring it very much to that, which was drawn up by the ſurveyor of the city; the preſident anſwered, that the ſociety would be very glad, if they or any of their members could do any ſervice for the good of the city; and that Mr. Hooke ſhould wait on them with his model to the King, if they thought fit to preſent it [g]: which was accepted with expreſſions of thanks to the ſociety.

Sept. 26. There was read a deſcription of the method of transfuſing the blood of one animal into another, as it had been practiſed with ſucceſs at Oxford by Dr. Richard Lower; which deſcription was communicated by him in a letter to Mr. Boyle. It was ordered to be regiſtered [h], and Mr. Daniel Coxe, Mr. Thomas Coxe, Mr. King, and Mr. Hooke were appointed to be curators of this experiment, firſt in private by themſelves, and then, in caſe of ſucceſs, in public before the ſociety; and Dr. Goddard, Dr. Merret, Dr. Clarke, Dr. Croune, and Dr. Balle were deſired to be preſent at the experiment.

Capt. Silas Taylor preſented the ſociety with a collection of curioſities, among which was a piece petrified and concreted of mud, wood, and ſhells. Mr.

[e] Mr. Waller in his life of Dr. Hooke, p. 13, prefixed to his *Poſthumous Works*, remarks, that he could not well determine what that model was, but had heard, that it was deſigned in it to have all the chief ſtreets, as from Leaden-hall corner to Newgate, and the like, to lie in an exact ſtrait line; and all the other croſs ſtreets turning out of them at right angles; all the churches, public buildings, market-places, and the like, in proper and convenient places: which no doubt would have added much to the beauty and ſymmetry of the whole.

[f] Sir Thomas Bludworth.

[g] Dr. Christopher Wren had before this, as appears from a letter of Mr. Oldenburg to Mr. Boyle, dated at London, Sept. 18, 1666, (Boyle's Works, vol. v. p. 358) drawn up a model for a new city, and preſented it to the King, who produced it himſelf before his council, and ſhewed great approbation of it. "I was, "*adds Mr.* Oldenburg, yeſterday morning "with the doctor, and ſaw the model; which, "methinks, does ſo well provide for ſecurity, "conveniency and beauty, that I can ſee nothing "wanting as to thoſe three main articles; but "whether it has conſulted with the populouſneſs "of a great city, and whether reaſon of ſtate would "have that conſulted with, is a query to me. "I then told the doctor, that if I had had an "opportunity to ſpeak with him ſooner, I "ſhould have ſuggeſted to him, that ſuch a mo-"del contrived by him, and reviewed and ap-"proved by the Royal Society, or a committee "thereof, before it had come to the view of his "Majeſty, would have given the ſociety a name, "and made it popular, and availed not a little "to ſilence thoſe, who aſk continually, What "have they done? He anſwered, that he had "been ſo preſſed to haſten before other deſigns "came in, that he could not poſſibly conſult the "ſociety about it. However, ſince it is done "without taking in the ſociety, it muſt ſuffice, "that it is a member thereof, that hath done it; "and by what I ſee, hath done it ſo, that other "models will not equal it; and I hope, that "when it comes to be preſented to the parlia-"ment, as the author will be named, ſo his re-"lation to the ſociety will not be omitted." This model was ingraved from his own draught, at his ſon's expence, in 1724, and has ſince been publiſhed.

[h] Regiſter, vol. iii. p. 159. It is printed in Philoſoph. Tranſact. vol. i. n° 20, p. 353, for December 1666.

OLDENBURG was desired to write into Ireland to get such a piece of petrified wood, as is partly wood and partly stone together in one piece.

October 3. A letter of Dr. BEAL to Mr. OLDENBURG, dated Sept. 24, 1666, was read, containing an account, 1. Of a considerable number of oak-trees found in Somersetshire under ground, as black as ebony. 2. Of a saline pool found in rich pasture ground in the same county. It was ordered, that the letter be preserved, and Dr. BEAL desired, to send up some bottles of that salt water, to try how much salt it would yield, into what figure the salt shoots, and what effect it has mixed with several liquors or other substances. It was also directed, that it should be suggested to him, that he would employ Mr. GULSON, living in those parts, and skilful in chemical operations, to make experiments with that water and salt.

Mr. THYNNE offering his service to the society in his voyage to Sweden, it was ordered, that a copy should be made, both of general and particular inquiries, and that it should be recommended to him to procure answers to them.

The lord bishop of Exeter being requested to communicate the observations of Jupiter's satellites made by Mr. LAURENCE ROOKE [i], in order to the calculating of tables of their motion, his lordship desired, that he might be put in mind of it by Mr. HOOKE, and that he would purposely come to his library in Gresham-College to look them out.

October 10. There was no meeting of the society, by reason of the extraordinary fast kept this day.

October 17. Dr. CROUNE produced several schemes of chariots, which he had seen in France, and a paper containing a description in French of alkermes, and its use both for medicine and dying. It was ordered, that the schemes be filed up; and the description of alkermes translated into English by Mr. OLDENBURG, and registered [k].

Dr. CROUNE was put in mind of his promised description of the making of verdigrise, and of the whitening of wax.

An experiment was tried of the propagation of motion, by a contrivance, whereby two balls of the same wood, and of equal bigness, were so suspended, that one of them being let fall from a certain hight against the other, the other was impelled upwards to near the same hight, from which the first was let fall, the first becoming then almost quiescent, and the other returning, impelled the first upwards again to almost the same hight it had fallen from before, itself becoming then in a manner motionless, till after some returns they both vibrated together.

[i] He by a nuncupatory will left what he had to the bishop of Exeter.

[k] Register, vol. iii. p. 163. It is printed in the Philos. Transact. n° 20, p. 362, for December 1666.

It

It was ordered, that this experiment be profecuted, and others of that kind thought upon.

Mr. POVEY mentioned, that there was a certain moving ſand in Suffolk, that was driven from one part of the country to the other, and had laid waſte great parcels of land, and dam'd up a river; a full deſcription of which he promiſed to procure with the firſt convenience.

Dr. BALLE preſented the ſociety with a box of ſeveral curioſities of nature, for their repoſitory.

October 24. Mr. NICHOLAS MERCATOR was propoſed candidate by Sir ROBERT MORAY.

The experiment about propagating of motion was proſecuted with three balls, of which the middle remained almoſt quieſcent, though ſtruck by either of the lateral ones, which impelled each other upwards.

It was moved, that the materials for building, and the ſeveral ſorts of earth for making brick and tile, might be now conſidered of by the ſociety; who were deſired to think upon it againſt the next meeting. It was mentioned, that there was good terrace in England, eſpecially in Derbyſhire.

Sir ROBERT MORAY remarked, that about Plymouth an unuſual cave had been found, and in it great bones and vaſt teeth; that the bones being touched turned all into aſhes: That the cave was twenty feet from the ſurface, and about twenty-four feet ſquare; the vault of it covered with huge icicles, of which the earl of BATH had promiſed to ſend up ſome.

A paper communicated by Sir THEODORE DE VAUX was read concerning ſeveral ways of making cheap and ſweet fires of coal-balls, wherein ſea-coal is by the mixture of other combuſtible bodies both ſweetned and multiplied. The paper was ordered to be filed up.

Sir ROBERT MORAY preſented the ſociety for the repoſitory with ſome ſtag's tears, as did Mr. JUMPER with ſeveral curioſities by the hands of Mr. HOOKE.

It was order'd, that the committee appointed before for the experiment of bleeding one dog into another do meet on the Friday following about two o'clock in the afternoon in Dr. POPE's lodgings to make that experiment: as alſo, that the experiment be afterwards made before the ſociety, in caſe it ſhould ſucceed in private; in reference to which Dr. LOWER's paper, about the method to be obſerved therein, was delivered to them.

October 29, At a meeting of the COUNCIL were preſent

The Preſident

Sir ANTHONY MORGAN	Mr. COLWALL
Dr. WILKINS	Mr. NEILE
Mr. WILLIAMSON	Mr. CREED
Mr. PALMER	Mr. OLDENBURG.

It was order'd, that the preſident, one of the ſecretaries, Mr. PALMER, Mr. NEILE, and Mr. CREED, or any three or more of them, do meet at Dr. POPE's lodgings in Greſham-college on the Wedneſday following, Oct. 31. as a committee of the council to examine the accounts of the treaſurer from April 11, 1666, to Michaelmas, and to make a report thereof to the council on Monday Nov. 5:

That the journal of the ſociety be peruſed by the ſecretary, to find out what had been formerly order'd concerning the payment of the thirty pounds *per ann.* to Mr. HOOKE:

That the ſponſors for ſeveral fellows of the ſociety do ſpeak or write to them for the payment of their arrears, and bring in, if they conveniently could, their anſwer on the Monday following:

That the lord LUCAS, Sir JOHN DENHAM, Dr. SCARBURGH, Mr. DRYDEN and Mr. VERMUYDEN be left out of the account of the arrears:

That Dr. BATHURST and Mr. BAROW be diſpenſed with as to their weekly payments as to the half:

That the book for ſubſcriptions be carried before the Monday following to the earls of MANCHESTER and CARLISLE to ſubſcribe their names: And

That the liſt of the preſent fellows of the ſociety be drawn up againſt that day, and then read before the council, in order to be printed for the approaching day of the anniverſary election.

October 31, At a meeting of the SOCIETY,

It was ordered, that the experiment of bleeding one dog or one ſheep into another dog or ſheep be made on the Tueſday following in the morning by the committee appointed before for that purpoſe.

Mention being again made of conſidering the ſeveral ſorts of clay fit for making bricks, Sir PAUL NEILE affirmed, that there was a certain clay in England, which made as good founding bricks, as any of thoſe call'd klinkers in Holland.

The earl of KINCAIRDIN remarked, that the klinkers in Holland differed from the other bricks chiefly in the manner of burning; thoſe, that lie near the fire, making the more laſting bricks; the remoter from it the ſofter.

Another member mentioned, that Mr. WYLDE had a way, by mixing ſeveral ſorts of earth together, to make hard and laſting bricks.

It was obſerved by another, that Sir GEORGE DOWNING[1] had commended the bricks made in the iſle of Ely, as being equal in goodneſs to any of the Dutch klinkers.

Mr. HOOKE took notice, that thoſe earths, which will vitrify, make the more laſting bricks.

It was ordered, that Mr. HOOKE ſhould make trials of ſeveral earths by burning them in a wind-furnace, to ſee, which kind would yield the beſt brick.

The earl of Sandwich's letter to the preſident from Madrid was read, together with the papers of obſervations made there. And the preſident was deſired to return the thanks of the ſociety to the earl, and to excuſe in the beſt manner he could their not correſponding with his lordſhip as he expected, in making the like obſervations in England.

The papers containing the ſaid obſervations were delivered to Mr. HOOKE to peruſe them, and make a report of them to the ſociety. To which was added a little ſcheme made by the preſident.

A letter of Dr. WALLIS, dated at Aſhford in Kent, October 23, 1666, was read; giving an account of the great hight of the tides about Hythe and Romney-marſh, two or three days after the laſt new moon of the ſaid month of October; which the doctor looked upon as agreeing with his hypotheſis, though the people in the country imputed it very much to the great winds.

The preſident, and Sir ROBERT MORAY, and as many others, as had an opportunity, were deſired to take notice of the ebbings and flowings during the whole enſuing month of November, and to recommend the like to their friends, who had the convenience of obſerving.

Mr. HOOKE produced an inclining pendulum, which, though ſhort, ſhould perform the office of a long perpendicular one, the ſeveral degrees of inclination anſwering the ſeveral dimenſions of length. It was ordered, that the trial of it ſhould be proſecuted at the next meeting.

Nov. 5. At a meeting of the COUNCIL were preſent

The lord biſhop of Exeter	Mr. NEILE
Sir PAUL NEILE	Mr. COLWALL
Sir ANTHONY MORGAN	Mr. CREED
Mr. AERSKINE	Mr. OLDENBURG.
Mr. PALMER	

[1] He had been ſeveral years ambaſſador to the States-General.

The

The preſident being obliged to attend the Queen's council, and Sir ROBERT MORAY, who was vice-preſident, being alſo abſent at the beginning of this council, the lord biſhop of Exeter was deputed and ſworn vice-preſident.

The committee appointed by the council October 29, to examine the accounts of the treaſurer from April 1666, to Michaelmas of the ſame year, made a report of their examination to the council, who approved of it; and ordered thanks to be given to the treaſurer, both for the juſtneſs of his accounts, and his care and diligence in collecting the arrears.

It was ordered, that the buſineſs of the monies, pretended to be due to Mr. HOOKE, be deferred till Dr. WILKINS's return; and that in the mean time all the orders ordered in the journals relating to the ſame be looked out and produced upon occaſion:

That the liſt of the ſociety read this day before the council be printed, only altering therein what ſhould be ordered on the Wedneſday following at the meeting of the ſociety, ſome perſons being then probably to be left out, and ſome to be inſerted: and

That inquiry be made at the next meeting of the ſociety, whether the rooms, now taken up by Sir THOMAS BLUDWORTH, might be had for the ſociety to meet in upon their anniverſary election-day.

The lord biſhop of Exeter and Sir ROBERT MORAY were deſired to ſpeak to Mr. MATTHEW WREN about ſome rooms in the Savoy for the ſociety.

Sir ROBERT MORAY being come in, did, upon the deſire of the lord biſhop of Exeter, return to his vice-preſidentſhip, and was by the council again ſworn as ſuch.

Novemb. 7. At a meeting of the SOCIETY,

There was read a paper of Sir WILLIAM PERSALL, concerning a new kind of loadſtone found in a rock in the iſle of Angleſea[m]. It was ſuggeſted by the preſident,

[m] Mr. OLDENBURG in a letter to Mr. BOYLE, dated Novemb. 15, 1666, (BOYLE's Works, vol. v. p. 363.) obſerves, that Sir WILLIAM PERSALL, though *much addicted to magnetics, was eſteemed not very knowing or diſcerning in them*; and that in his paper he mentioned, "that there is a rock "of loadſtones in the iſle of Angleſea hanging "over the ſea, of a greeniſh colour, which he "went lately to ſee; and breaking off ſome "ſtones found, they were perfect magnets, be- "cauſe they would nimbly excite a verſorium. "But as to their attraction, they would hardly "take up a needle, though every ſtone was full "as big as a man's hand; though poſſibly towards "the middle, the attraction may prove more "vigorous, the virtue of the outward parts, be- "cauſe expoſed to the cold air and winds, being "perhaps much impaired. I took, *added* Sir WIL- "LIAM, an obſervation, which gave me great ſa- "tisfaction, in order to confute DES CARTES's opi- "nion, which imports, that the heat of the torrid "zone draws the *particulæ ſtriatæ* from the north, "which paſſing by a kind of tranation through "the bodies of magnets, gives them the influence "of their conſtant poſition to north and ſouth; "for I made trial by the help of a verſorium, "and

ſident, that it would not be improper to have the rock cut, and to get ſome of the inner parts of it for trial. Whereupon it was ordered, that Mr. OLDENBURG ſhould ſpeak to Mr. BAGNAL from the ſociety, and deſire him to employ what intereſt he had in the iſland for doing what had been ſuggeſted. The paper was ordered to be filed up.

Sir ROBERT MORAY mentioned, that an Engliſh loadſtone had been lately brought out of Devonſhire to the King by the ſons of Sir WILLIAM STROUD; which he would ſhew to the ſociety at their next meeting.

Mr. OLDENBURG related, that he had waited on Mr. HOWARD this day to St. Paul's church, where they had been ſhewn a human corpſe, that had been buried, as was conjectured by a ſtone lying over it, about two hundred and ſixty-two years, being found in a vault of St. Faith's church, and no other corpſe, as was ſaid, beſides it in all that vault: that this body ſtood ſtiffly upright on tip-toe, with the head awry turned to the right ſide; the ſkin all over, and the ſinews and bones all unputrified (except a ſmall part on the backſide of the arm, which ſeemed, as it were, worm-eaten) nothing fœtid, nor any ways tainted, only ſmelling a little muſty: that there was found no odorous ſmell or ſign of embalming, though ſearch was made both with hands and eyes in all the uſual probable places for it; neither was there ſeen any ſign of ſear-cloth, only here and there ſome threads of the conſumed winding-ſheet: that there was ſome hair remaining on the head and chin, and under the arm-pits, which was of a yellowiſh colour: that the ſtone next adjoined, and ſuppoſed to be the cover of the corpſe, had for inſcription, as the perſon, who ſhewed the corpſe, affirmed, *Thomas Preybrack, biſhop of London*[a], *and chancellor, died anno* 1404.

Dr. CROUNE related, that he had alſo ſeen a body long ſince buried taken up unputrified from a great depth; which he imputed to the dryneſs of the place.

Sir ROBERT MORAY mentioned the many dead corpſes unputrified, ſtanding round in the vault of a church in Thouloufe, taken up from under the ground of the ſame church, where bodies are dried up, and not otherwiſe conſumed.

Mr. COLWALL took notice of the church-yard of the Innocents at Paris, conſuming all bodies in the ſpace of twenty-four hours.

The preſident promiſed to obſerve the tide's going down on the Friday following, and to recommend the obſervation thereof to others.

Mr. AUBREY offered to recommend the obſervation of tides to the deputy-governor of Chepſtow in Monmouthſhire: whereupon the ſecretary was ordered to

" and going about ſeveral parts, I found in ſome " out-parts of the rock, wherein the weather " and tempeſts had made great cavities, that ſome " of the poles were directly north-eaſt, and in " two places directly eaſt and weſt."

[a] ROBERT BRAYBROOK conſecrated biſhop of London January 5, 1381, and in September made lord chancellor of England, died Auguſt 27, 1404. Godwini de Præſul. Ang. Comment. p. 245. edit. London. 1616, 4to.

procure for him thoſe printed papers, that contain the inquiries and tables concerning them.

Sir ROBERT MORAY propoſed, that the directions for ſeamen, and the inquiries of tides, might be printed ſeparately, and the inſtruments mentioned in the printed papers concerning theſe particulars provided, both at the ſociety's expence; and promiſed, that he would endeavour to procure an order from his Royal Highneſs the duke of York to Trinity-houſe, importing, that every captain and maſter of a ſhip ſhould take with them in their voyages a copy of ſuch printed books, and make obſervations and trials accordingly, and write down the ſucceſs thereof in their journals; of which they ſhould at their return give one to Trinity-houſe, and another to the ſociety.

This propoſal was approved of, and order given, that Sir ROBERT MORAY and Mr. OLDENBURG the ſecretary ſhould take care of procuring ſuch an order from the duke of York, and of having the inquiries and directions printed, and ſome ſets of inſtruments provided at the charge of the ſociety.

Mr. HOSKYNS ſuggeſted, that it might be inſerted among theſe directions, to fetch up the ſeveral ſorts of earth from the bottom of the ſea.

Mr. HOOKE was ordered to think upon and provide an eaſy inſtrument for that purpoſe.

Mr. HOWARD was put in mind to bring in his account upon the inquiries into agriculture, as it was managed in Surrey and Berkſhire.

The inclining pendulum being again ſpoken of, it was ordered, that it ſhould be fitted by Mr. HOOKE againſt the next meeting for all inclinations, to bring it at laſt to reſt.

Dr. POPE was deſired to ſpeak to Sir THOMAS BLUDWORTH to ſpare the rooms now poſſeſſed by him in Greſham-college, to the ſociety, for their election-day.

It was ordered, that Mr. OLDENBURG ſhould cauſe extracts to be made in papers by themſelves, of the reſpective experiments committed to ſeveral fellows of the ſociety, in order that every one, who ſtood charged with any, might know the particulars, and mind the better to diſcharge himſelf of his taſk.

Novemb. 13. At a meeting of the COUNCIL were preſent:

The Preſident

The lord biſhop of Exeter	Sir ANTHONY MORGAN
Sir ROBERT MORAY	Sir GEORGE ENT
Sir PAUL NEILE	Mr. MATTHEW WREN
Mr. PALMER	Mr. CREED
Mr. COLWALL	Mr. OLDENBURG.
Mr. NEILE	

Sir

Sir ANTHONY MORGAN was desired to speak to the lord HATTON, to know, whether his lordship would continue a member of the society.

It was ordered, that it be proposed at the meeting of the society the day following, whether they thought fit to leave out of their list Monsr. DE SORBIERE; the council inclining to do so, but wanting power actually to do it without the society.

It was resolved, that the society meet upon their anniversary election-day in Dr. POPE's lodgings, if they could not get the rooms taken up by Sir THOMAS BLUDWORTH.

Novemb. 14. At a meeting of the SOCIETY,

Mr. HALES, upon the motion of Dr. POPE, was present at this meeting.

The president nominated, according to statute, five of the fellows of the society, to audit and examine the yearly accounts of the treasurer, viz. Dr. MERRET, Mr. HARRINGTON, Dr. POPE, Mr. AUBREY, and Mr. KING; which five were also, according to statute, chosen by ballot for that purpose, and agreed to meet all, or any three or more of them, on the Wednesday following at Dr. POPE's lodgings before the society should assemble.

The lord ROBARTES, lord privy-seal, and Dr. BENJAMIN LANEY, lord bishop of Lincoln, were proposed by the lord bishop of Exeter, and elected.

Mr. MERCATOR proposed on the 24th of October by Sir ROBERT MORAY, was likewise elected.

The experiment of transfusing the blood of one dog into another was made before the society by Mr. KING and Mr. THOMAS COXE upon a little mastiff and a spaniel with very good success, the former bleeding to death, and the latter receiving the blood of the other, and emitting so much of his own, as to make him capable of receiving that of the other.

It was ordered, that the whole method, and all the particulars of the operation, should be fully described by the curators of this experiment, and brought in at the next meeting.

The experiment of the inclining pendulum was repeated, and Mr. HOOKE was ordered to bring in a scheme of it, and a description of its uses.

Col. BLOUNT gave an account of the improvements of his chariot; how he had made his springs five double on each side, and thereby freed it from tossing; suggesting, that if Mr. HOOKE's springy-saddle should do well, the springs of it must be doubled.

Dr. CROUNE promiſed to produce his chariot at the next meeting.

Col. BLOUNT preſented the ſociety with ſeveral particulars very acceptable to them; as 1. Two ſorts of Engliſh wines, one of two months, the other of fourteen months old, but both of the ſame ſoil, cultivated by himſelf about Deptford; the new wine being ſomewhat harſh, but the other not unpleaſant to the taſte, having withal, as ſome judged, ſomething of the flavour of Rheniſh in it. Both took flame. 2. A pea of Engliſh growth, which the colonel affirmed to have produced with good tillage, ſteeping and keeping the ground clean, from one ſingle ſtem, ſhooting into ſeveral branches, five hundred and thirteen peaſe the firſt year; and theſe the next year a peck and half, and this peck and half the next year five buſhels. They were very good eating peaſe. 3. Two ſcorzonera roots, the one an inch thick, of four months growth, the other full as thick again of three years growth. He ſuggeſted, that this root being ſo wholeſome a food, it ſhould be propagated in England, ſince it might eaſily be made to grow there. The colonel mentioning, that it was a good food ſeveral ways, was deſired to give an account thereof in writing, which he promiſed to do. 4. A ſpirit extracted out of cherry-wine, very ſtrong.

Mr. HOSKYNS mov'd, that it might be tried, what quantity of ſpirits theſe Engliſh wines would yield, compared with French white wines. Dr. CROUNE offering himſelf to make the trial, Col. BLOUNT promiſed to ſend him ſome quantity of his wine for that purpoſe.

Sir ROBERT MORAY produc'd a loadſtone digged up in England in Devonſhire, brought from thence by the ſons of Sir WILLIAM STROUD for the king; which was committed to Mr. HOOKE for the repoſitory.

The preſident related out of a letter of Dr. COTTON, that the latter promiſed the ſociety an Engliſh loadſtone of ſixty pounds weight.

Mr. AUSTEN produced from Dr. CHARLETON a bird called *Coccothrauſtes*, together with the Latin deſcription thereof out of BELLONIUS; which new bird was committed to Mr. HOOKE for the repoſitory, and the deſcription ordered to be filed up.

An order of the council was read, importing, that it ſhould be propoſed to the ſociety this day, whether they thought fit to leave Monſr. DE SORBIERE out of their liſt, the council inclining to do ſo, but wanting power to execute it without the ſociety. After ſome debate it was put to the ballot, and there were fourteen votes for his continuance, and eight for his expulſion. It being late, it was order'd, that the charter ſhould be conſulted concerning the number of votes, that carries the queſtion both for election and ejection.

Nov. 21. ROBERT earl of LINDSEY, lord great chamberlain of England, was elected.

A paper

A paper communicated by Mr. KING was read, giving an account of the method and ſucceſs of the late experiment of transfuſing the blood of one dog into another; which was order'd to be regiſtered *, as follows:

" In obedience to your commands, we tried this experiment; firſt by ourſelves upon two ſheep, viz. Having tied them, and placed them in a convenient poſture, we laid bare the carotid artery of the one ſheep, near two inches, dividing from it the nerve of the eighth pair; then we made a ligature upon the upper part of the artery (next the head) and tied a falſe knot; which done, we made another ligature upon the other end next the clavicle, with a riding-knot; then we made an opening on this ſide of the riding-knot, at a convenient diſtance, and put in a braſs pipe, and tied it faſt in, the which pipe was ſtopped very cloſe, and brought over the ſkin again till we had prepared the other ſheep, as follows, viz. We laid bare the jugular vein about the ſame diſtance as before, rather more, and made a ligature at either end, with a riding-knot; then on this ſide of each knot (having made apertion) we put in a braſs pipe, both tied very faſt in, and cloſe ſtopped. Then we ordered the poſition of the ſheep, ſo as we might conveniently plant other pipes (which were of quills) to convey the blood from the artery of the one ſheep to the vein of the other, which does immediately flow, upon the ſlipping of the riding-knots, the recipient ſheep being placed a little lower than the emittent, and the poſition kept ſteady. Then we preſently ſlipt the riding-knot alſo of the upper part of the jugular vein, and received blood from thence, proportionably to what was admitted into the lower part of it, or near it: We did take away by the upper part of the vein between four and five pints according to gueſs; about which time the emittent grew faint, which made the owner very earneſt to kill it the uſual way; which he did, but could not get half a pint of blood, and upon opening the ſame ſheep, confeſſed, he never ſaw mutton look whiter in his life. The other ſheep, which was the recipient, ſeemed as well as if ſhe had been unconcerned in the experiment. We ſtaid alſo to ſee her killed too, and ſhe bled at the rate as is uſual, and as much in quantity.

" We repeated the ſame experiment the laſt Wedneſday before the ſociety, upon a ſmall bull-dog and a ſpaniel, much after the ſame manner, as many of you were eye-witneſſes: only we were more exact in the performance, by letting the maſtiff bleed into the ſpaniel till the maſtiff died: And we took account, as near as we could, by weighing the blood taken from the ſpaniel, which we reckon was ſixty-four ounces or thereabouts. The ſpaniel was next morning very well and briſk, and ſo continues."

It was order'd, that the experiment of exchanging the blood of animals be proſecuted and improved by bleeding a ſheep into a maſtiff, and a young healthy dog into an old and ſick one, *& vice verſa*; and that Mr. KING be deſired to continue his aſſiſtance therein.

The ſpaniel, which in the late experiment had received the blood of a bull-dog, was produced and found very well.

* Regiſter, vol. iii. p. 167.

Mr.

Mr. Hooke's account of inclining pendulums was read, and order'd to be regiſter'd [p], as follows:

"There are two things chiefly to be conſider'd in the motion of a pendulum; "the one is the velocity of the motion in each vibration, and the other is the equi- "diuturnity or equality of duration of the vibrations of the ſame pendulum, tho' "of very differing arches.

"As to the firſt, the determination of the velocity of the vibration depends on "the proportion between the quantity of ſtrength, and the bulk of the body to be "moved; wherever the proportion of ſtrength is greater to the proportion of the "bulk, there the motion is ſwifter, and where leſs, there ſlower. In all pendu- "lous motions, the ſtrength moving is gravity, and that is more or leſs, accord- "ing as it moves the body more directly or obliquely towards the center of the "earth.

"As to the ſecond conſideration, the equality of duration of vibrations of dif- "fering arches or lengths depends upon the figure of the curve-line, in which the "body is moved; which figure being for a great part very near the ſame with that "of a circle, it follows, that the motion in differing arches of the ſame circle "will be very near of equal duration.

"Now this equation depends on the proportion of the length of the intercepted "arches to the length of the perpendicular lines of attraction terminating thoſe "arches, that is, (to avoid multiplicity of defining words) on the proportion be- "tween the lengths of A B, A B, A B, to the lengths B C, B C, B C, &c. Now, "if thoſe proportions be, as of a ſeries of roots, to a ſeries of ſquares, the vibra- "tions of differing arches ſhall be of equal duration. Now the proportion of "arches to the bounding perpendiculars, or (which is all one) to the correſpond- "ing verſed ſines, being very near the ſame, the vibrations in differing arches of "the ſame pendulum are very near of an equal duration.

"This being premiſed, I ſay, that the vibrations of an inclining pendulum in "differing arches ſhall be very near alſo of equal duration: For in all circular "motions in an inclining plane, the proportion of the intercepted arches to the "perpendiculars ſhall be very near, as of a ſeries of roots to a ſeries of ſquares: "Or, which is ſufficient to our preſent purpoſe, the intercepted perpendiculars "ſhall be to one another, in the ſame proportion with that of the verſed ſines of "thoſe intercepted arches: therefore the vibrations muſt neceſſarily be of an almoſt "equal duration.

Let F A or G A repreſent the inclination of an oblique pendulum, 'tis evident, that the parts F H, F H, F H, &c. are to F A, and G I, G I, G I, &c. to G A, as E D, E D, E D, &c. to E A. But theſe are in proportion, as the ſine-complements of arches increaſing by an arithmetical proportion, from

[p] Regiſter, vol. iii. p. 165.

the

the loweſt point A: therefore the arches correſponding to the aforeſaid diviſions of AF and AH, ſhall be in arithmetical proportion, and conſequently alſo, the perpendiculars from thoſe points H, H, H, &c. and I, I, I, &c. to the horizontal line AC, ſhall be the ſame with the lines AD, AD, AD: That is the perpendicular lines of gravitation or attraction anſwering to the ſeveral arches in an inclin'd plane, ſhall be to one another, as the perpendicular lines of attraction or gravity are to one another in a perpendicular pendulum, which was to be demonſtrated.

"How to determine the time, according to the ſeveral inclinations, I ſhall "demonſtrate in my next."

Mr. HOOKE ſhewed the ſociety another kind of pendulum, which being perpendicular and ſhort, by counterpoiſing performed the part of a long one.

The preſident was of opinion, that the circular pendulum, as far as he yet ſaw, was the beſt of all kinds, of which he had hitherto made trial.

There were delivered to Mr. AUBREY the printed inquiries in n° 17 and 18 of the *Philoſophical Tranſactions* about the obſerving of tides, which he undertook to recommend to his acquaintance at Chepſtow for obſervation.

It was ordered, that the ſecretary ſhould deſire thoſe, who were formerly charged with reading and conſidering Mr. HEVELIUS's ſecond book of comets preſented by him to the ſociety for their judgment upon it, that they would bring in their reports.

Dr. POPE ſhewed the ſociety ſome grains of wheat, which, he ſaid, were of thoſe 2600 grains, that had been, as the lady HILLIARD had affirmed them to him, produced in Surrey at once out of one grain, ſhooting up into a ſtraw not hollow, but like a ruſh. Several of the members took each a ſingle grain to plant for trial, viz. the earl of KINCAIRDIN, Sir ROBERT MORAY, Mr. HOSKYNS, Mr. AUBREY, and Mr. KING.

Dr. CROONE promiſed to bring his chariot at the next meeting, who owed the ſociety likewiſe an account of the whitening of wax, and the making of verdigriſe.

The lord biſhop of Exeter was by the preſident nominated and deputed vice-preſident, but not ſworn again, having been ſworn formerly.

Monſr. SORBIERE was voted to continue a member of the ſociety, the major part of the fellows preſent at the laſt aſſembly conſenting, that it ſhould be ſo; and the charter not having provided a certain number for ejection.

November 27. At the meeting of the COUNCIL were preſent.

The lord biſhop of Exeter, vice-preſident

Sir ROBERT MORAY	Mr. COLWALL
Sir ANTHONY MORGAN	Mr. PALMER
Sir GEORGE ENT	Mr. CREED
Dr. WILKINS	Mr. OLDENBURG.

The council conſidered of the perſons, who were moſt likely to attend the buſineſs of the council for the year enſuing.

It was ordered, that Mr. OLDENBURG attend Mr. HENRY HOWARD of Norfolk at Arundel-Houſe, and acquaint him with the ſenſe, which the Royal Society had of his great civilities and reſpects to them, which they intended alſo to acknowledge publicly, when he ſhould honour them with a viſit at a meeting of the ſociety: And

That at the next council it ſhould be conſidered, where the ſociety ſhould meet for the future, Greſham-College being by reaſon of its too great diſtance from the habitations of the greateſt number of the ſociety very inconvenient to meet in, eſpecially in the winter ſeaſon.

Mention was made of hiring a houſe ſomewhere in the city of Weſtminſter; and Dr. WILKINS offered to contribute ſomething towards it, if he might have ſome rooms in it.

November 28. At the meeting of the SOCIETY,

Mr. HENRY HOWARD [q] of Norfolk, was elected and admitted, who alſo received the public thanks of the ſociety for his reſpects to them.

Mr. HOOKE produced a new kind of level, by including a large bubble of air in a glaſs-pipe, having its ſides exactly blown, and filled with water, and ſealed up at both ends. He was ordered to bring in its deſcription and manner of application to practice.

He produced likewiſe a new kind of back-ſtaff for taking altitudes; as alſo an augre or inſtrument to take up earth with; of both which he was alſo ordered to give in a deſcription and the manner of uſing them.

Mr. POVEY preſented the ſociety with ſeveral curioſities brought from the Weſt-Indies, viz. ſeveral very curious crab-ſhells, both white and red; a great piece of cryſtal leſs tranſparent than other cryſtal; a collar of teeth, ſuch as are worn by the princes of thoſe countries; and a weapon of very heavy wood, uſed by their commanders.

Mr. OLDENBURG produced ſome rarities left with him by two of Sir WILLIAM STROUD's ſons, viz. a ſmall piece of perfect natural gold, affirmed by them to

[q] Afterwards duke of NORFOLK.

have been found in the lead mines of Devonſhire, of which kind their father had formerly ſent a little box full to the King; and an odd excreſcence out of the top of a vegetable called *bit*, reſembling lettice, overſpread on both ſides with curious plants growing on them.

Mr. KING preſented a perfect fœtus, which had died ſoon after it was born; half of which he had diſſected, preſerving the whole in ſpirit of wine.

Mr. HOSKYNS preſented a kind of locuſt, which he ſaid was given him by a merchant, who affirmed it to have been ſent from Teneriffe.

Mr. HOOKE produced a ſubſtance, which he called the eggs of a ray-fiſh: Which and the other preſents were ordered to be put into the repoſitory.

Dr. WALLIS gave the ſociety ſome account of what he had lately obſerved in Kent about tides, viz. that, according to his hypotheſis, the tides had been very high about Romney-marſh, three days after the new moon on the 20th day of October preceding; which though the ſeamen there aſcribed to the high winds, as not thinking of any other cauſe, yet he thought it might be imputed to the cauſe aſſigned in his theory; eſpecially if upon continued obſervations for ſeveral years together it ſhould happen in the ſame manner; and that the high winds, if conſtantly accompanying ſuch high waters, might be aſcribed to the ſame cauſe.

The experiments appointed for the next meeting were a new kind of watch, and optic glaſſes upon new principles, to be produced by the curator Mr. HOOKE.

November 30. On this day of the anniverſary election there was firſt made a report from the committee appointed to examine the accounts of the treaſurer, as follows:

" At a committee for auditing the accounts of DANIEL COLWALL, eſq; treaſurer " of the Royal Society, November 21, 1666,

" It appears, that Mr. COLWALL is D^r

	l.	*s.*	*d.*
" To arrears due to the ſociety for their quarterly payments to and " for Michaelmas 1666	866	1	0
" To monies received for admiſſions	22	11	0
" To monies received of Mr. BALLE for the magnetical inſtruments	20	0	0
" To money received the balance of Mr. HILL's account	34	2	8
	942	14	8

	l.	s.	d.
" Of which it appeareth he hath received upon the quarterly pay- } " ments	240	5	6
" For admiſſions	22	11	0
" Of Mr. HILL the balance of his account	34	2	8
" Of Mr. BALLE for the magnetical inſtruments	20	0	0
	316	19	2
" And that there reſteth unpaid by the fellows of the ſociety	625	15	6
	942	14	8

" It alſo appeareth, that Mr. COLWALL is creditor

" By monies paid to the uſe of the ſociety, as by the particulars is } " made out	143	16	10
" By money put in the cheſt by order of the council	100	0	0
" By balance now reſting in his hands	73	2	4
	316	19	2
" And by arrears yet unpaid	625	15	6
	942	14	8

" Examined and approved of by us

" WALTER POPE
" JOHN AUBREY
" EDMUND KING."

After which the ſociety proceeded to election, at which there were preſent, at firſt, forty members, who balloted the eleven to continue in the council; which done, there were found forty-two (two more being come) who elected the ten new ones.

The eleven continued were

The lord viſcount BROUNCKER
The earl of NORTHAMPTON
The lord biſhop of EXETER
Sir ROBERT MORAY
Sir PAUL NEILE
Mr. AERSKINE
Dr. WILKINS
Dr. GODDARD
Mr. PALMER
Mr. COLWALL
Mr. OLDENBURG.

The

The ten new ones choſen in were

Mr. Henry Howard of Norfolk	Dr. Christopher Wren
Sir William Petty	Mr. Hoskyns
Mr. Henshaw	Dr. Croune
Dr. Clarke	Dr. Balle
Dr. Merret	Dr. Pope.

The ſame preſident, treaſurer and ſecretaries, who had ſerved the ſociety the laſt year, were re-choſen for the year enſuing.

Of the new-choſen members of the council were ſworn Dr. Wren, Mr. Hoskyns, Dr. Pope, and Dr. Balle; the reſt being abſent.

It was ordered, that a council ſhould be ſummoned to meet on the Tueſday following at three in the afternoon, at the preſident's houſe.

December 4. At the meeting of the Council were preſent

The lord biſhop of Exeter, vice-preſident

The earl of Northampton	Dr. Wren
Mr. Henry Howard of Norfolk	Mr. Colwall
Sir Robert Moray	Mr. Hoskyns
Mr. Aerskine	Dr. Pope
Mr. Palmer	Mr. Oldenburg.
Dr. Wilkins	

Mr. Henry Howard was ſworn of the council.

Dr. Wilkins moved, that Mr. Hooke might be conſidered as to the payment of ſome money, which he thought due to him from the ſociety. But the orders concerning that buſineſs not being yet extracted out of the Journals, it was referred to the next meeting of the council.

Sir Robert Moray moved, that the council would take care of ſupplying the defects of the charter of the ſociety: Which motion being approved of,

It was ordered, that the preſident, earl of Northampton, Mr. Howard of Norfolk, Sir Robert Moray, Mr. Aerskine, Mr. Palmer, Dr. Wilkins, Dr. Goddard, and Mr. Hoskyns, or any three or more of them, be a committee to conſider, both of the particulars, wherein the charter may be defective, and of the remedies thereof; and that they meet for that purpoſe at Sir Anthony Morgan's lodgings on Thurſdays in the afternoon about four of the clock, and make report of their proceedings from time to time to the council.

Sir Robert Moray propoſed, that the council would take into conſideration, how the experiments at the public meetings of the ſociety might be beſt carried

on; whether by a continued ſeries of experiments, taking in collateral ones, as they were offered, or by going on in that promiſcuous way, which had hitherto obtained.

This was left to farther conſideration at the next meeting; as alſo whether the experiments for propagating motion, and the magnetic ones, ſhould not be proſecuted by the ſociety, though Monſr. HUYGENS and Mr. BALLE had engaged themſelves particularly, the one in thoſe of motion, the other in thoſe of the magnet. In the mean time the ſecretary was directed to conſult the Journals, to ſee what had been ordered concerning this particular.

As to the experiments of transfuſion there were ſuggeſted ſeveral; to try mutual transfuſion between old and young, ſick and healthy, and that both of the ſame and of different ſpecies. In particular it was ſuggeſted, that it ſhould be tried upon a mangy and a ſound dog, a young and an old horſe; and upon a diſeaſed horſe and an ox or cow, to bleed the cow, to be killed, into ſuch a horſe.

The earl of NORTHAMPTON and the lord biſhop of EXETER were deſired to ſpeak to the duke of BUCKINGHAM, that he would accommodate the ſociety with ſome rooms in York-houſe for their meetings; which they promiſed to do.

December 5. At the meeting of the SOCIETY,

PAUL RYCAUT eſq; was propoſed candidate by Mr. HENRY HOWARD of Norfolk.

It being intimated, that the ſaid Mr. RYCAUT was to go into Turky, and offered his ſervice to the ſociety in inquiring into philoſophical matters, it was ordered, that the ſecretaries ſhould get ready, both a copy of the general inquiries for all countries, and of ſuch particular ones, as were proper for Turky; which laſt were recommended to the conſideration of Mr. HOSKYNS and Mr. OLDENBURG.

Mr. BOYLE promiſed to communicate at the next meeting the particulars, which he had thought upon for the proſecuting and improving the experiment of bleeding animals into one another.

It was deſired alſo, that others would conſider the importance of this experiment, and ſuggeſt things to be tried accordingly.

Sir ROBERT MORAY mentioned a new kind of level contrived by Dr. CHRISTOPHER WREN, which Mr. HOOKE was ordered to get made as ſoon as he could; adding to it the way to determine, how much it varied from the level.

Mr. HOOKE produced a new ſort of pendulum made after the manner of a beam, and ſo contrived, that by placing the beam nearer or farther below the center of motion, the pendulum may perform its vibrations in any time aſſigned; in which he

he affirmed to be one certain depth, beyond which the pendulum would not go quicker, which he had not yet reduced to a theory, but hoped to do it.

He having mentioned likewiſe his contrivances of two inſtruments, the one for fetching up earth from the bottom of the ſea, the other for fetching up the ſeveral ſorts of earth out of the ground on the land, was ordered to get them both made with ſpeed.

The experiments appointed for the next meeting were,

1. The bleeding of a ſheep into a dog; the curators of which were to be Dr. Pope, Dr. King, Mr. Coxe, and Mr. Hooke, who were to perform it firſt by themſelves in private.

2. Mr. Hooke's new principle of making optic-glaſſes.

Decemb. 12. Mr. Rycaut was elected and admitted.

The experiment, which was ordered of bleeding a ſheep into a dog of the kind of curs was made; which ſucceeded pretty well, though not ſo well as that, which had been made at the meeting of Novemb. 21, by reaſon, as it was ſuppoſed, of the froſty weather cauſing more coagulation in the blood. In the mean time Dr. King reported to the ſociety, that on the Monday before, the like experiment had been tried in private with very good ſucceſs, at which were preſent Dr. Pope, Mr. Daniel Coxe, Mr. Thomas Coxe, Mr. Oldenburg, and Mr. Hooke.

It was ordered, that at the next meeting this experiment ſhould be tried upon a mangy and a ſound dog, letting the blood of the former into the veins of the latter; and that Dr. Balle, Mr. Daniel Coxe, Mr. Thomas Coxe, and Mr. Hooke ſhould take care of the experiment.

Mr. Boyle moved, that the animals might be weighed before the operation; and that the tranſpiration, made in ſo ſhort a time as that work laſted, could not be conſiderable.

Mr. Powle gave an account of ſome obſervations concerning tides, which he promiſed to give in more largely in writing before he went out of town.

Sir Paul Neile moved, that thoſe, who were employed to obſerve high tides, might be deſired to obſerve, whether they are conſtantly accompanied with high winds.

Dr. Wren's level being called for, it was produced ready made, and ordered to be deſcribed.

Some

Some inquiries for Turky drawn up by Mr. HOSKYNS and Mr. OLDENBURG were read, and ordered to be regiſtered [a], and a copy of them to be delivered to Mr. RYCAUT.

Decemb. 19. Monſr. LE FEBURE the younger was propoſed candidate by Sir ROBERT MORAY.

Mr. HOOKE propoſed a new clock-work, and a new bucket to fetch up earth from the bottom of the ſea, and promiſed to bring them in both at the next meeting.

He was alſo put in mind of his new way of making optic glaſſes, formerly propoſed by him.

It was ordered, that at the next meeting the experiment be made of transfuſing the blood of a ſound dog into a mangy one; and that the operator provide neceſſaries for it, to begin the operation about twelve o'clock that day.

Mr. BOYLE ſuggeſted, that it might be conſidered to make an eſtimate of what proportion of blood is let out.

Dr. POPE moved, that a trial might be made of letting out half the blood of a dog, and of ſupplying it with warm milk, or, becauſe milk may coagulate, with a liquid of barley-cream.

Mr. BOYLE mentioned, that not only care muſt be had of the kind of liquor to be injected, but alſo of the manner and place of the injection; in default whereof the liquor would drive the blood before it to the heart, and by too great abundance crowding in there kill the animal. To avoid which, it might be injected by degrees, and in the remoter parts from the heart, as in a crural vein.

Dr. GODDARD moved to try the bleeding of a dog almoſt to death, and to let in blood again, to ſee whether he might be reſtored that way.

There were read two papers concerning tides, one of Mr. POWLE, the other of Mr. SAMUEL COLEPRESSE, who both offered their ſervice for continuing and communicating their obſervations. Their papers were ordered to be kept for enlargements.

Sir PAUL NEILE ſuggeſted, that it might be recommended to ſome perſon, who had opportunity for it, to obſerve, whether at the ſame hour it was high water at the new and full moon upon all the capes of the ſouth-weſt coaſt of Ireland. This was recommended to Mr. BOYLE, who undertook the recommending of it; but deſired, that this and the like particulars might be given him in writing. Sir ROBERT MORAY and Mr. OLDENBURG were deſired to draw them up, and deliver them to Mr. BOYLE.

[a] They are printed in the Philoſ. Tranſact. vol. i. n° 20. p. 360. for Dec. 1666.

Sir

Sir ROBERT MORAY was alſo deſired to procure obſervations of the courſe of tides upon the north-weſt iſlands of Scotland; which he undertook to do.

He and Mr. OLDENBURG were deſired to obtain the hiſtory of the tides of the Britiſh coaſt of France.

Mr. BOYLE moved, that the courſe of the tides of the ſtreights of Magellan might be inquired into.

Mr. HOOKE took notice, that he had obſerved, that between Portſmouth and the Iſle of Wight from half flood to high water, and ſo to half ebb, it runs from weſt to eaſt, and again from half ebb to low water, and ſo to half flood again, it runs from eaſt to weſt.

Decemb. 21. At the meeting of the COUNCIL were preſent

The Preſident

The lord biſhop of EXETER	Dr. WREN
Sir ROBERT MORAY	Dr. POPE
Sir PAUL NEILE	Dr. BALLE
Mr. PALMER	Mr. OLDENBURG.
Dr. WILKINS	

It was ordered, that Dr. WILKINS write a letter from the council to the earl of SANDWICH, giving him thanks for his reſpects to the ſociety, and his care of making celeſtial obſervations; excuſing alſo the omiſſion of correſponding with him from England in ſuch obſervations; and annexing the particulars of the late ſolar eclipſe obſerved at London, Paris, and Dantzick, and ſome experiments newly made in the ſociety:

That the accounts concerning Mr. HOOKE be ſtated by the treaſurer, that it may appear what the former had already received, and what yet remained due to him, according to the ſeveral orders formerly made by the council; and that thereupon the treaſurer pay Mr. HOOKE what ſhould thereby appear remaining due to him:

That the ſum of forty pounds be preſented by the treaſurer to Mr. OLDENBURG, for the great pains, which he had taken in behalf of the ſociety:

That Mr. HOOKE be deſired to promiſe by his hand-writing to obſerve the ends, for which the report from Sir JOHN CUTLER entered in the journal-book of the ſociety, Nov. 9, 1664, affirms the fifty pounds a year to be given him by Sir JOHN: and

That the preſident be deſired to draw up a form for ſuch a promiſe to be ſubſcribed by Mr. HOOKE.

Decemb.

Decemb. 27. At a meeting of the COUNCIL were preſent

The Preſident

The lord biſhop of EXETER	Dr. CLARKE
Mr. HENRY HOWARD	Dr. WREN
Sir ROBERT MORAY	Mr. COLWALL
Sir PAUL NEILE	Dr. BALLE
Mr. AERSKINE	Mr. OLDENBURG.
Dr. MERRET	

Dr. MERRET and Dr. CLARKE were ſworn members of the council.

It was ordered, that the operator, RICHARD SHORTGRAVE, do for the future bring no bill of work done for the ſociety without ſome avoucher, who ſhall be a curator of the reſpective experiments, about which he ſhall have been employed: and that without ſuch an avoucher, no account of the ſaid operator ſhall paſs in council: with which order he, being called in was made acquainted: and

That Sir PAUL NEILE and Mr. OLDENBURG be added to the committee appointed on the 4th of Decemb. for conſidering of the ſupplemental charter; and that the ſame committee, upon the occaſion of Mr. PALMER's death, take into their conſideration the ſtatute concerning the manner of electing a new member into the council in caſe of vacancy, in the interval of the anniverſary elections.

January 2, $166\frac{6}{7}$, at a meeting of the SOCIETY,

Mr. HENRY HOWARD of Norfolk preſented the ſociety with the library of Arundel-houſe [t], to be diſpoſed thereof by them as their property, deſiring only, that in caſe the ſociety ſhould come to fail, it might return to Arundel-houſe; and that this inſcription *ex dono* HENRICI HOWARD *Norfolcienſis* might be put upon every book given them; he allowing alſo the liberty of changing thoſe books, that were double, or ſuch as were not for the ſociety's purpoſe, for others; which exchanged books were to be marked likewiſe with the ſame inſcription.

The ſociety received this noble donation with all thankfulneſs, and ordered, that Mr. HOWARD ſhould be regiſtered as a benefactor.

Mr. HOOKE brought in the formerly propoſed bucket for fetching up earth or any other ſolid body from the bottom of the ſea. It was ordered, that care ſhould be taken ſo to fit it, that the ſprings might go off both together, and that eaſily and

[t] This library had been purchaſed by Mr. HOWARD's grandfather, THOMAS earl of Arundel, during his embaſſy at Vienna. It had formerly been part of that of MATTEW CORVINUS king of Hungary, erected by him at Buda in 1485; and after his death in 1490, it came into the poſſeſſion of the famous BILIBALDUS PIRCKEIMERUS of Nuremberg, who died in 1530. It contains, beſides a great number of printed books, many rare and valuable manuſcripts.

certainly

certainly, and when it meets with ſoft ground, as well as hard; as alſo to grate it over.

He likewiſe brought in a new clock-work, ſo regulating and adjuſting a circular pendulum, that at the end of a certain number of vibrations, the clock-motion ſhould be reduced to an exactneſs, which it had not before. He was ordered to perfect it, and to bring in a full deſcription of its ſtructure and uſe in writing.

Mr. OLDENBURG produced two ſmall printed books ſent to him from Paris, one written in Latin, intitled, ISMAELIS BULLIALDI *ad aſtronomos monita duo; primum de ſtellâ novâ, quæ in collo ceti ante annos aliquot viſa eſt: alterum de nebulosâ in Andromedæ cinguli parte boreali ante biennium iterum ortâ:* the other in French by Monſr. PAYEN, intitled, *Selenelion.* The former was recommended to the peruſal of the lord biſhop of EXETER, the latter to that of Mr. HOOKE, to whoſe view the author alſo had particularly deſigned it.

It was ordered, that the experiments of transfuſing blood be proſecuted, when the ſummer-weather came in.

Sir ROBERT MORAY mentioned, that one capt. BLACK was lately come from the Eaſt-Indies, who was capable of giving a good account of thoſe parts, and particularly of Japan and China, having lived there many years. It was ordered, that Sir ROBERT and Mr. OLDENBURG ſhould deſire him to impart an account of the obſervables, which he had met with in thoſe countries.

The experiments appointed for the next meeting (beſides the perfecting of the two inſtruments abovementioned) were

1. A new kind of weather-glaſs, to try all degrees of heat in, viz. what degree will melt ſuch and ſuch bodies.

2. An inſtrument to apply the ſtrength of powder to the bending of ſprings ſecurely and certainly, both by Mr. HOOKE.

The inquiries for the weſtern coaſt of Ireland, ordered in the former meeting to be drawn up by Sir ROBERT MORAY and Mr. OLDENBURG, were produced and delivered to Mr. BOYLE, viz.

1. At what hour it is high water on the day of the new and full moon upon every cape and bay of the weſtern coaſt of Ireland.

2. How long after the new and full moon the higheſt ſpring-tides will be.

3. What are the perpendicular heights of the flood, both at the ordinary and ſpring tides.

January 4. At a meeting of the COUNCIL were preſent

Sir ROBERT MORAY vice-preſident

Sir PAUL NEILE	Mr. COLWALL
Mr. AERSKINE	Mr. HOSKYNS
Dr. WILKINS	Dr. BALLE
Dr. WREN	Mr. OLDENBURG.

It was ordered, that the following form, for notifying, that the meetings of the ſociety be henceforward at Arundel-houſe, be printed, viz.

"Theſe are to give notice, that the weekly meetings of the Royal Society are "appointed to be at Arundel-houſe on Wedneſday next, being the 9th of this "preſent January 1666, and thenceforward on the uſual day and hour."

It was ordered likewiſe, that Mr. HOSKYNS, Dr. BALLE, Mr. OLDENBURG, and Mr. HOOKE be a committee for cauſing a catalogue to be made of the library of Arundel-houſe; and that the amanuenſis and operator from time to time attend this committee, which was to begin to meet on the Thurſday following in the ſaid library: and

That Mr. HOOKE attend Dr. WILKINS about reducing the extracts of the ſociety's journal-books into a method for Mr. SPRAT.

January 9. The ſociety meeting the firſt time in Arundel-houſe, the preſident took notice again of the great favour, which Mr. HENRY HOWARD of Norfolk had ſhewn to the ſociety, not only in accommodating them with convenient rooms for their meetings, but alſo in preſenting them with the library of the ſaid houſe.

THOMAS LAKE eſq; was propoſed candidate by Mr. HAYES.

Dr. MERRET preſented the ſociety with his book intitled *Pinax Rerum Naturalium Britannicarum, continens vegetabilia, animalia, foſſilia, in hac inſulâ reperta, inchoatus*, printed at London.

He produced ſome obſervations of his concerning the uniting of the barks of trees cut to the tree itſelf; as alſo an experiment on *aloë Americana ſerratifolia* weighed: which papers were ordered to be regiſtered [a].

It being preſſed by Mr. OLDENBURG, that an account might be brought in of Mr. HEVELIUS's book concerning his juſtification of what he had written of the firſt comet, and his deſcription of the ſecond, the preſident exhorted thoſe, to whom the peruſal and examination of that book had been committed, to haſten the bringing in an account thereof in writing.

[a] Regiſter, vol. iii. p. 172, 173. They are printed in Philoſ. Tranſact. vol. 2. n° 25. p. 453. and 455. for May 1667.

Sir

Sir PAUL NEILE renewed his former motion for obſerving the ſun's figure at his riſing and ſetting both at Greenwich and Whitehall, or Kenſington, or Chelſea. Mr. EVELYN and Mr. HENSHAW undertook the obſerving it at the ſetting of the ſun for ſeveral evenings together.

Mr. OLDENBURG read an extract of Monſr. AUZOUT's letter to him from Paris Decemb. 28, 1666, N. S. [x] mentioning a new method eſteemed by him better than any hitherto practiſed, of taking the diameters of the planets to ſeconds, and of knowing the parallax of the moon by means of her diameter.

Dr. WREN and Mr. HOOKE having related to the ſociety ſeveral ways, which they had known long before, of taking the diameters of the planets to ſeconds, were deſired briefly to deſcribe them, that ſo it might be ſignified to the Pariſian philoſophers, that it was a thing not at all new among the Engliſh.

Mr. HOOKE renewed his former propoſal of obſerving the parallax of the earth's orb; which he was exhorted by the preſident to do with all convenient ſpeed [y].

There was again produced the bucket for fetching things from the bottom of the ſea. It being not yet altered, as had been directed at the preceding meeting, it was ordered to be perfected againſt the following one.

The new clock-motion for adjuſting the circular pendulum was alſo ordered to be perfected againſt the next meeting.

The experiments appointed for the next meeting were,

1. That of applying the ſtrength of powder to the bending of ſprings.

2. A new kind of weather-glaſs to try all degrees of heating.

January 16. There were preſented a brace of the birds called *Coccothroſtes*, a male and female, the male being diſtinguiſhed from the female by a black ſpot, which the male had under his jaw.

Col. BLOUNT mentioned, that he had a bird, of which he knew not well the ſpecies, promiſing to bring it to the ſociety.

Dr. CROUNE produced his chariot, which was examined and approved for being plain, light, and eaſy, but thought ſomewhat weak; for which defect a remedy was ſuggeſted by underlining with cordage the board, upon which the body of the chariot reſted. He was deſired to bring in a ſcheme of it, with a full deſcription of

[x] Letter-Book, vol. i. p. 370. It is printed in the Philoſ. Tranſact. n° 21. p. 373, for January 1665/7.

[y] The reſult of his obſervations was afterwards publiſhed in his *Attempt to prove the motion of the earth from obſervations*, printed at London 1674 in 4^to^, being the firſt of his *Cutlerian lectures* publiſhed.

its ſtructure and conveniencies; which was alſo deſired to be done by thoſe, who had formerly brought in models of chariots, as Col. BLOUNT and Mr. HOOKE.

Col. BLOUNT mentioned, that he had now a way of making ſuch a chariot, wherein eaſe, ſecurity and ſtrength were found together; which he was deſired to produce at Arundel-houſe.

Mr. HOOKE ſhewed a metal, which he ſaid was a preparation of mercury fit to take off any impreſſion of a ſeal or medal, &c. and to inlarge or leſſen the ſame, keeping its proportions, and then to grow hard again after two or three hours time. He tried it before the ſociety with ſome ſucceſs, by ſoftening the hard metal with the preſſure and working of a knife, and by taking off impreſſions. He was deſired to perfect the experiment.

Dr. CROUNE produced two letters written to him by Mr. STENO from Florence, Dec. 4, 1666; one of which ſignified, that he had written elements of the ſtructure and motion of the muſcles, demonſtrating, that the conſtruction of the muſcles is performed by thruſting: The other mentioned two experiments made with mercury, one to ſhew, that the cane containing the water and quickſilver being inverted, there iſſued ſomething out of the mercury, that enters into the void ſpace in the top of the cane; the other, to make appear the equilibrium of the air with the mercury, by a way different from that, which is ordinary. To which was added an account of an experiment of freezing with a mixture of ice and brandy. An extract was ordered to be made of theſe letters.

Mr. BALLE having ſent the apparatus magneticus belonging to the ſociety, Mr. HOOKE was ordered to take care of and to regiſter it.

It was mentioned by Mr. OLDENBURG, that the council had thought fit, that the experiments for making out a theory of the laws of motion formerly begun by Dr. WREN, Dr. CROUNE, and Mr. HOOKE; as alſo thoſe about the magnet formerly begun by Mr. BALLE and Mr. HOOKE, ſhould be proſecuted. The ſociety hereupon deſired Dr. WREN to give in thoſe experiments of motion deviſed by himſelf; but he alledging, that the account of them was at Oxford, Dr. CROUNE and Mr. HOOKE were deſired to bring in theirs; as alſo, that Mr. HOOKE ſhould proſecute the experiments of the loadſtone.

Dr. WREN and Mr. HOOKE were again deſired to communicate their methods of taking the diameters of the planets to ſeconds.

Dr. WREN was put in mind of the teleſcopical moon formerly promiſed by him.

The members, who had undertaken the examination of Mr. HEVELIUS's book on the comets, were likewiſe put in mind of bringing in an account thereof.

The experiments appointed for the next meeting were,

1. To

1. To have perfected the circular pendulum lately exhibited:

2. The engine for applying gunpowder to the bending of ſprings:

3. To have the bucket for fetching up of things from the bottom of the ſea compleated.

January 17, At a meeting of the COUNCIL were preſent

The Preſident

Mr. AERSKINE	Mr. HOSKYNS
Sir ROBERT MORAY	Dr. BALLE
Sir PAUL NEILE	Dr. CROUNE
Dr. WILKINS	Mr. OLDENBURG.

Dr. CROUNE was ſworn member of the council.

It was ordered, that the form, drawn up by the preſident, of the promiſe to be made by Mr. HOOKE for obſerving the ends, for which (according to the report of Nov. 9, 1664) the fifty pounds *per ann.* were given him by Sir JOHN CUTLER, be delivered to the ſaid Mr. HOOKE; which was accordingly done. The form was as follows:

" Whereas upon conſideration, that Sir JOHN CUTLER, knight and baronet, " hath ſettled upon me fifty pounds *per annum* during my life, I have promiſed and " undertaken to read in the vacation times in Greſham-college, or in ſuch other " place, as the Royal Society ſhall meet in, ſixteen lectures *per annum*, in order to " the advancement of art and nature, the ſaid ſociety having been deſired to direct " the particular matter of the ſaid lectures by reading one, each week, during the " ſo many weeks ſucceſſively, next after each of the four uſual terms in the year, " as were weeks in the then laſt preceding term, upon ſuch day of each week, as " the ſaid Royal Society ſhall meet upon; I do hereby renew the ſaid promiſe, and " undertake to read the ſaid lectures upon ſuch particular matters, as the ſaid ſociety " ſhall direct. In teſtimony whereof I have hereunto ſet my hand and ſeal."

It was ordered, that a copy of the ſaid report, as alſo of the thanks, that were to be returned to Sir JOHN CUTLER, be forthwith made and delivered to Sir ROBERT MORAY or Sir PAUL NEILE, to give it the lord biſhop of EXETER, to ſhew it to the ſaid Sir JOHN CUTLER, that he might declare, whether it was really his intention to intruſt the ſociety with the management of the fifty pounds given by him to Mr. HOOKE.

The letter to be ſent from the council to the earl of SANDWICH at Madrid was ſigned by the preſident and council.

The council approved of the particulars for the ſupplemental charter of the ſociety; as alſo of the alteration in the ſtatute for electing a new member in the

council, in caſe of vacancy, in the intervals of the anniverſary elections. The heads of particulars for the charter were as follow:

1. That the power in the preſident of ſubſtituting one vice-preſident may be inlarged to the ſubſtituting as many vice-preſidents at one and the ſame time, as to the preſident ſhould ſeem meet: and that all the clauſes in the charter any way relating to the vice-preſident may be made to relate to each of ſuch vice-preſidents reſpectively.

2. That the ſeveral powers, which cannot be exerciſed but by the preſident and council, or ſeven or more of them, may be exerciſed by the preſident and council, or five or more of them.

3. That the authority of meeting within London, or ten miles of it, may be inlarged to all England.

The council licenſed N° 21 of the *Philoſophical Tranſactions*, Mr. MARTYN having undertaken again the printing thereof, as being ſomewhat reſettled after the late fire of London [z].

January 23. At a meeting of the ROYAL SOCIETY,

The experiment of bending a ſpring by the force of gunpowder was tried three times without ſucceſs, and the fourth time it ſucceeded. It was ordered, that it ſhould be repeated at the next meeting, and that particularly a weight ſhould be wound up by a ſhot of gunpowder, to ſee for example, what force would wind up an hundred pounds weight.

It was obſerved, that the ſtroke of gunpowder was ſo briſk and ſudden, that it would break any thing; and that therefore little powder ſhould be uſed.

Col. BLOUNT produced a draught of his chariot, and was deſired to bring in the model itſelf at the next meeting, which he promiſed to do.

He produced likewiſe a live grey gull, in Latin *Larus cinereus*, which lives upon fleſh and boiled corn.

[z] Mr. MARTYN and Mr. ALLESTRY, the printers of the Royal Society, and the booksellers in St. Paul's Church-yard, loſt their ſtock of books in that fire, after removing them from their own houſes into St. Faith's church under St. Paul's; and among theſe were all the copies then printed and unſold of the *Philoſophical Tranſactions*. See Mr. OLDENBURG's letters to Mr. BOYLE of Sept. 10, and 18, 1666, in Mr. BOYLE's works, vol. v. p. 358. He complains in another letter of Octob. 23, (p. 362.) that to that very hour he could get none to print the *Philoſophical Tranſactions*: "and unleſs, ſays he, Mr. CROOK "(whom I do what I can to encourage to it, by "promiſing him, that I will endeavour the beſt "I can to procure for him the printing ſome good "vendible books, as occaſion ſhall ſerve) under-"take it, I deſpair of the continuation" . . . . N° 17 was printed after the fire gratis. N° 18 for October 1666, was accordingly printed for Mr. JOHN CROOK in Duck-lane; N° 19 for him and MOSES PITT in Little-Britain; and N° 20 for December for MOSES PITT alone.

Dr. CHARLETON mentioned, that two grains of nux vomica being given to a linnet killed it, which being thrown to a grey gull, killed that likewiſe.

Dr. WILKINS introduced Mr. LYTTELTON to be preſent at this meeting; who offered his ſervice to the ſociety in his voyage to Barbadoes: upon which it was ordered, that a copy be made of the queries for all countries in general, and delivered to Mr. LYTTELTON.

A letter of Dr. WALLIS to Mr. OLDENBURG dated at Oxford January 19, 1666[c], was read, containing his thoughts of Mr. HEVELIUS's *Mantiſſa* and ſome conſiderations about tides.

Mr. HOOKE was ordered to bring in ſomething in writing relating to the controverſy between Mr. HEVELIUS and Monſ. AUZOUT, which might import, that upon examination of the obſervations made in England, and compared with thoſe made in other parts, the ſociety was inclined to believe, that Mr. HEVELIUS had been miſtaken.

Mr. HOOKE affirmed, that the altitude of the ſun or other ſtars might be taken with a ſingle ſix foot teleſcope put perpendicular, without any refraction or parallax, and that in the ſpace of two or three minutes: which was ordered to be tried, and the ſucceſs and way of doing it to be regiſtered.

He affirmed likewiſe, that the circumference of the earth might be meaſured to ſeconds by a ſixty foot glaſs put perpendicular, a place being given, where the diſtance may be conveniently meaſured, ſuch a one as may be ſmooth and a mile long, lying north and ſouth, or at leaſt north-eaſt and ſouth-weſt. He was ordered to make this experiment as ſoon as a place could be found convenient for it.

The making of a teleſcopical moon being again inſiſted upon, it was ordered, that the King ſhould be requeſted by Sir ROBERT MORAY to lend that in his cloſet; and that Dr. WREN ſhould employ a fit perſon to caſt it upon a bigger globe; which being done, it might afterwards be perfected by freſh obſervations of the moon.

The inſtrument for bringing up things from the bottom of the ſea being again mentioned, Mr. HOOKE took notice, that this, as it then was, having been tried, could bring up things only from a ſmall depth; but that he would try other ways for greater depths.

He affirmed, that Venus had lately appeared to him in a twelve foot glaſs as big again as the moon to the naked eye; adding, that he never ſaw her ſo ſharp, and that ſhe was very near the ſun, with whom ſhe would be in conjunction within a very few days.

[c] Letter-Book, vol. i. p. 375.

January

January 25. At a meeting of the COUNCIL were preſent

The Preſident

The earl of NORTHAMPTON	Mr. COLWALL
Sir ROBERT MORAY	Dr. CROUNE
Dr. WILKINS	Dr. POPE
Dr. WREN	Mr. HOSKYNS
Dr. BALLE	Mr. OLDENBURG.

The council having conſidered the greater conveniency of the ſociety's meeting on Thurſdays than Wedneſdays, reſolved, that the fourth chapter of their ſtatutes, which appointed the ordinary meetings of the ſociety to be on Wedneſdays, ſhould be repealed: and

That at the next meeting of the council the following draught for the ſociety's meeting on Thurſdays hereafter be preſented, viz.

"The ordinary meetings of the ſociety ſhall be weekly upon Thurſday, beginning about three of the clock in the afternoon, and continuing until ſix, unleſs the major part of the fellows preſent ſhall for that time reſolve to riſe ſooner, or ſit longer: and no fellows ſhall depart without giving notice to the preſident."

It was ordered, that the treaſurer pay to the operator (according to ſtatute) the yearly ſalary of ten pounds from the time, that the payment made to the ſaid operator of twenty ſhillings a week hath ceaſed.

Mr. HOOKE delivered to the council a paper ſigned and ſealed by him, containing a renewal of his promiſe and undertaking of reading ſixteen lectures a year upon ſuch particular matters, as the ſociety ſhall direct.

January 30, being the anniverſary faſt-day, there was no meeting of the ſociety.

Feb. 1. At a meeting of the COUNCIL were preſent

The Preſident

Mr. H. HOWARD of Norfolk	Mr. HOSKYNS
Sir ROBERT MORAY	Dr. POPE
Sir PAUL NEILE	Dr. BALLE
Mr. AERSKINE	Mr. OLDENBURG.
Mr. COLWALL	

It was voted, that the draught, which was voted on the 25th of January to be preſented to the next meeting of the council, be paſſed into a law.

It

It was ordered, that Sir SAMUEL TUKE be written to by the ſecretary, and deſired to ſend the council an account of Sir KENELME DIGBY's [d] library at Paris, what kind and number of books it conſiſts of, and what they are rated at: and

That Mr. HOOKE prepare himſelf to read before the ſociety in Arundel-houſe at their next meeting-day after this preſent term.

Feb. 5. At a meeting of the COUNCIL were preſent

The Preſident

Mr. HENRY HOWARD
Mr. AERSKINE
Sir ROBERT MORAY
Sir PAUL NEILE
Dr. CLARKE
Mr. COLWALL
Mr. HOSKYNS
Dr. WREN
Dr. CROUNE
Dr. BALLE
Mr. OLDENBURG.

It was voted, that the ſtatute for meeting on Wedneſday be repealed: and

That the following draught for a ſtatute now agreed upon about ſupplying of one or two vacant places of the council be read at another meeting of the council, viz.

" The eleventh article of the eighth chapter of the ſtatutes of the Royal Society " concerning the ſupplying vacancies of places, which happen in the interval of " anniverſary elections, ſhall have place only, where the number of perſons to be " elected by the fellows of the ſaid ſociety into the council or any office is three " or more, and not otherwiſe. But when there are but one or two to be elected, " upon credible notice given to the preſident or his deputy, for the time being, " that any member or members of the council or officer or officers, who ought to " be choſen by the fellows of the Royal Society, is or are dead or otherwiſe re- " moved, and his or their place or places, office or offices, thereby become void, " he the ſaid preſident, or his deputy as aforeſaid, ſhall, at the weekly meeting of " the Royal Society, which ſhall be next after ſuch notice, or ſo ſoon as conveni- " ently it may be done, declare to all then and there preſent, that ſuch place or " places, office or offices, is or are become void, and that at the weekly meeting " then next enſuing there ſhall be other or others elected, to ſupply the ſaid vacant " place or places, office or offices; and at the next meeting after, where there ſhall " one and twenty or more be preſent, ſcrutators ſhall be choſen, as at an anniver- " ſary election, and every fellow then preſent ſhall deliver to the ſecretary a ſcroll " or paper folded up, having in it written the name or names of ſuch perſon or " perſons, as he, who delivers the ſaid ſcroll, ſhall think moſt fit to ſupply the " ſaid vacant place or places, office or offices: and when all the ſcrolls are delivered " in, they ſhall be opened, read, and counted, and he or they, that is or are " named by the greateſt number, and ſuch a number, as by the charter is required,

[d] He died June 11, 1665.

" ſhall be declared elected to ſuch place or places, office or offices: And if it happen, " that no one perſon be elected, to ſucceed in one or both of the ſaid vacant places " or offices by a competent number of votes, as by the charter is required, in ſuch " caſe the preſident or his deputy as aforeſaid ſhall declare, what perſons have " been named in the ſaid ſcrolls, and by how many each man has been named, " and ſhall then require the fellows then preſent to repeat the election in manner " aforeſaid, and that ſo often as there ſhall remain any one of the ſaid places or " offices unſupplied for want of a competent number of votes, after the giving in, " reading, and counting the ſcrolls as aforeſaid; unleſs the preſident or his deputy " and the fellows of the Royal Society, or the major part of them then preſent, " ſhall think fit to adjourn the election to ſome other time, and then they ſhall " proceed in manner aforeſaid."

The preſident then adjourned the council to meet again on the Thurſday following at two of the clock in the afternoon at Arundel-houſe.

February 6. At a meeting of the SOCIETY,

Mr. HOOKE produced a new kind of lamp ſerving to ſupply the oil in due quantity, ſo that as it waſts, there may not riſe too much or too little, by a weight, that ſhould always counterpoiſe the oil, the figure being a half cylinder. The deſcription and demonſtration of it were ordered to be brought in by him, as ſoon as conveniently he could [*].

It was likewiſe ordered, that this veſſel ſhould be ſo prepared for the next meeting, that it might actually ſerve for a lamp, as it was deſigned.

The experiment for raiſing a weight by the force of gunpowder was tried, but the weight was thrown off, inſtead of being raiſed.

It was ordered, that Mr. HOOKE ſhould think of a way to make it ſucceed; as alſo, that he ſhould proſecute the experiment of winding up a ſpring the ſame way.

Sir ROBERT MORAY remarked, that in this experiment it was to be conſidered, how the impetus of the gunpowder might be ſo ordered, as not to break the bodies tried; and if that could not be done, then to make a compound, which might move ſtrongly enough, and yet ſlowly.

Mr. BOYLE ſuggeſted, that the force of gunpowder might be tried by making it raiſe a weight of water; by which means, if the veſſel were conveniently ſhaped, the decrement of the force, according as the fired gunpowder would be weakened by expanſion, might in ſome meaſure appear: as alſo, that the ſtrength of gunpowder might be tried by the weight of water, which it will expel out of a veſſel; by which means might be examined the ſtrength of different powders.

[*] The deſcription of this lamp is publiſhed in his *Lampas* printed at London 1677 in 4to.

Dr.

Dr. WREN moved, that this experiment might be tried by laying within a pair of bellows, with a weight upon it, a ſerpentine line of powder, to make it fire only with ſuch a degree of velocity, that it ſhould break nothing; adding, that if the concuſſion be made too quick for the vibration of parts, the body tried muſt break.

He affirmed, that if he might know, how much gunpowder expands, he would tell what weight it raiſed.

Mr. BOYLE deſiring, that the expanſion of powder might be examined, it was ordered, that Mr. HOOKE ſhould conſider of and draw up ſuch experiments, as might be proper to examine the ſaid expanſion.

There were read ſeveral letters; one from the earl of SANDWICH to the preſident, dated at Madrid January $\frac{3}{13}$, 1667, together with three ſheets of celeſtial obſervations; and the preſident was deſired to let the earl know, that the aſtronomers, to whom the care of making obſervations was committed, were likely to obſerve more for the future than they had hitherto done; and that particularly the obſerving the ſpots in the ſun was recommended to them.

The ſecond letter was from FERDINAND ALBERT duke of Brunſwick, to Mr. OLDENBURG, dated at Wolfenbuttel January 8, 1667, containing both his deſire to be made acquainted with the experiments made in the ſociety, and his offer of communicating in return what ſhould come to his knowledge in Germany and out of Italy. It was ordered, that the thanks of the ſociety ſhould be returned to his highneſs, and that his correſpondence ſhould be embraced.

The third letter was from Dr. WALLIS to Mr. OLDENBURG dated at Oxford 31 January, 1667[f], containing his farther thoughts concerning Mr. HEVELIUS's *Prodromus* and *Mantiſſa*; upon which it was ordered, that the preſident and the lord biſhop of EXETER be deſired to invite thoſe perſons, to whom, beſides Dr. WALLIS, the peruſal and examination of Mr. HEVELIUS's books had been committed, that they would meet with them at a convenient time, to conſider of this account of Dr. WALLIS, and what additions or alterations were fit to be made therein, in order to ſend an anſwer to Mr. HEVELIUS.

The ſame letter of Dr. WALLIS deſiring, that ſome other circumſtances, beſides theſe formerly mentioned relating to tides, might be obſerved, it was ſuggeſted by Sir PAUL NEILE, that it might be taken particular notice of, what kind of wind, and from what point of the compaſs it ſhould blow, when the greateſt tides happened to be.

Feb. 14. At a meeting of the COUNCIL were preſent

[f] Letter-Book, vol. i. p. 380.

The Preſident

The lord biſhop of EXETER	Dr. WREN
Mr. HENRY HOWARD	Mr. COLWALL
Sir ROBERT MORAY	Mr. HOSKYNS
Sir PAUL NEILE	Dr. BALLE
Dr. CLARKE	Mr. OLDENBURG.

The draught of the ſtatute now agreed upon relating to the ſupplying of one or two vacant places in the council was voted to paſs into a law, as it was entered in the council-book at the preceding meeting of February 5.

It was ordered, that the treaſurer pay Mr. HOOKE what appeared to be due to him, upon the balance of his account, now preſented, which was as follows:

" The account of monies due to Mr. ROBERT HOOKE, as curator to the Royal " Society, is debtor

	l.	*s.*	*d.*
" To the firſt payment of 80 l. *per annum*, due to him at Midſum- " mer 1664	20	0	0
" To the ſecond quarter's payment due at Michaelmas 1664	20	0	0
" To money due upon the ſaid account of 80 l. *per annum* from " Michaelmas 1664 to the 23d of November following	11	13	4
" To money due to him by an order of the 23d of November " 1664, at 30 l. *per annum* to 23 November 1665	30	0	0
" To money due more upon the ſaid order from the 23d of Novem- " ber 1665, to Chriſtmas 1666	32	10	0
	114	3	4

" The ſaid account is creditor

" By monies received by Mr. HOOKE of Mr. HILL on account of " the 80 l. *per annum*	39	0	0
" By money received of Mr. COLWALL *per* order	30	0	0
" By the balance reſting due to Mr. HOOKE, which the treaſurer is " hereby ordered to pay	45	3	4
	114	3	4

It

It was ordered, that the payment of Mr. HOOKE for the future be conſidered of at the next meeting:

That Sir ANTHONY MORGAN be put in mind to draw up the form of the particulars to be added to the charter, and to preſent them to the council, when he is ready: And

That he be deſired to draw up a deed of gift concerning the library preſented by Mr. HOWARD to the ſociety.

On the ſame 14th of February, the SOCIETY began to meet upon Thurſday, according to the new ſtatute.

Mr. LAKE was elected.

The preſident gave notice, that at the next meeting there was an election to be made of a member into the council in the place of Mr. PALMER, deceaſed.

The lord biſhop of EXETER produced a load-ſtone of ſixty pounds weight ſent out of Devonſhire by Dr. EDWARD COTTON, archdeacon of Cornwall, as a preſent to the ſociety, with this deſcription in a letter to the biſhop dated at Silferton Feb. 6, 166$\frac{6}{7}$, that though the load-ſtone took up no great weight, yet it moved a needle about nine feet diſtant; and that ſome part of it being broken off had been alſo ſet up, becauſe being put in its proper place it added much ſtrength to the load-ſtone, it moving not much more than ſeven feet without that addition [s].

It was ordered, that the virtue of the ſtone be tried at the next meeting, both of the two pieces put together, and of each piece ſeparately.

Sir ROBERT MORAY made mention of a ſmall load-ſtone lifting eighty times its own weight.

Mr. HENRY HOWARD preſented a ſtone taken out of the dead-ſea, burning and ſtinking. He was deſired to procure more of them by the means of Mr. PAUL RYCAUT; which being obtained, it ſhould be examined, whether it does not contain a powerful diſſolvent, ſome of the members judging by the taſte, that it held a conſiderable quantity of ſal armoniac.

The lamp brought in at the laſt meeting was tried and recommended to the care of Mr. CHARLES HOWARD, for obſerving the manner of its burning.

Dr. WREN mentioning, that he had a new kind of lamp, the operator was ordered to attend him, to receive his inſtructions how to make it.

[s] This account is printed in the Philoſ. Tranſact. vol. ii. n° 23, p. 423, for March 1667.

He ſuggeſted likewiſe, that there being added to the lamp abovementioned a ſmall ſocket upon the wick, it would make the wick furniſh the oil according to any proportion of time, and to regulate the lamp to be a clock.

This was ordered to be tried.

The experiment of winding up a ſpring by the force of gunpowder was made by Mr. HOOKE; and the ſucceſs, as he related it, was, that about a grain and a half of powder wound up a ſpring to the top, which was about four feet high. It was ordered to be tried again at the next meeting.

Dr. CROUNE's chariot was produced, and generally approved of by the members; only ſome fence was propoſed to be made for the coachman againſt the kicking of the horſes.

Mr. HOSKYNS affirmed, that a method had been related to him of making old trees fruitful, by planting ſome young ſtocks to the old tree, and by cutting them off when they were faſtened and grew well, inſerting them, bared about the top, into holes made in the old tree, in ſuch manner, that the bark of the young and that of the old tree may join together; whereby a good quantity of juice would be conveyed to the old ſtock to renew it, and make it bear.

Mr. HOOKE propoſed for the next meeting (beſides the particulars mentioned above, relating to the addition to the lamp, and the repeating of the experiment of winding up a ſpring by gun-powder) an experiment improving circular pendulums, by ſo ordering them, that they ſhall not vary their motion by more or leſs appendant weight; which he alſo undertook to demonſtrate.

The operator was ordered to take out and reconvey into a glaſs, with a narrow mouth, ſuch a frame of wood, as the King had ſent a pattern of in a glaſs.

February 21. JOHN PEARSON, D. D. Maſter of Trinity-college in Cambridge, was propoſed candidate by Mr. MATTHEW WREN.

Sir ANTHONY MORGAN was elected into the council in the room of DUDLEY PALMER, eſq; lately deceaſed.

There were produced by Mr. HOWARD's ſervants ſeveral pictures of Turkiſh habits (to the number of 16 ſingle and 8 double ones) as well of thoſe of the grand ſignor and the empreſs, as of thoſe of their officers and ſervants. He deſired, that they might be put into the library of Arundel-houſe.

Mr. HOOKE produced a circular pendulum ſo contrived, that its motion ſhould be equal, whatever weight was appended to it. He affirming, that he knew the demonſtration of it, was ordered to give it in writing at the next meeting.

He

He was ordered likewiſe to compare the motion of this circular pendulum with a clock: And

To bring in the deſcription and demonſtration of the new lamp, as alſo to proſecute and improve the experiment of raiſing weights by the force of gunpowder to a greater hight.

The operator was again ordered to attend Dr. WREN to receive his directions for the making his new kind of lamp, and for the addition to Mr. HOOKE's lamp mentioned at the preceding meeting.

Mr. OLDENBURG mentioned, that in France Monſr. BULLIALDUS and other aſtronomers now obſerved again the new ſtar in the neck of the whale, and were deſirous, that the aſtronomers of other nations might join with them in theſe obſervations, to ſee whether it kept the ſame analogy of motions and periods, which it had from the year 1638 to 1664, it being manifeſt from obſervations hitherto made of this ſtar, that the greater phaſes thereof every year anticipate by 32 or 33 days.

As to the other ſtar in the girdle of Andromeda, which Monſr. BULLIALDUS thought to appear and diſappear by turns, as thoſe in the necks of the whale and the ſwan, Mr. HOOKE affirmed, that he had ſeen it this winter, and ſeveral times in the years 1664 and 1665. He was deſired to obſerve carefully both theſe phænomena.

Mr. BOYLE propoſed two experiments,

1. To try the operation of the air upon a pendulum-watch in an exhauſted receiver.

2. To try a body not ſpring made ſpringy, whether it would loſe any thing of its bulk, by weighing it before its ſpringineſs and after, in water.

Sir ROBERT MORAY produced a ſubſtance of a kind of ſalt petre made out of the earth of a common; and he mentioned, that there was a perſon, who would undertake to make as much ſalt-petre, as England ſhould need, out of the commons and heathy grounds of England.

February 28. Sir PETER WYCHE, returned from Portugal, gave an account of what he had done concerning thoſe inſtructions and inquiries recommended to him by the ſociety at his going thither as envoy extraordinary from his Majeſty to the King of Portugal; viz. that he had engaged for a correſpondent in philoſophical matters the profeſſor of mathematics at Liſbon, father JOHN MARKES, an Engliſh jeſuit; as alſo an ingenious merchant, Mr. HENRY JACOB; the former of whom had offered to make aſtronomical obſervations, if he might be furniſhed from England with a convenient quadrant; as alſo to endeavour to return an anſwer to the queries left with him, and to engage for the like correſpondence a jeſuit at Fe-

nambuco. The other, Mr. JACOB, had alſo promiſed his concurrence in procuring the like account in anſwer to the memorial left with him.

It was ordered, that theſe correſpondencies ſhould be entertained by Mr. OLDENBURG, and a quadrant provided, and ſent to Liſbon, of the ſame kind with that of Dr. GODDARD.

Mr. OLDENBURG mentioned, that Monſr. BULLIALDUS had by a note deſired to know, whether in England the ſea-compaſs was rendered more perfect than it was in other parts.

To which it was anſwered, that all the perfection of a ſea-compaſs hitherto known in England conſiſted in touching the needle on a good magnet, in well libraring it, and placing the variation truly.

Sir PAUL NEILE moved, that, as there was occaſion, it might be obſerved from time to time, how the variation of the magnetic needle varies here; and that by correſpondence in foreign parts the curious might be put in mind to obſerve ſuch alterations there.

Mr. BOYLE moved likewiſe, that the inland variations remarked in OLEARIUS might be taken notice of.

The lord BRERETON affirmed, that a ſea-compaſs being carried into an iron mine, the ore of which yielded 23 pounds in 120 pounds, had not been perceived to move there at all.

Mr. HOOKE produced a box with optic-glaſſes fitted in it, deſigned to contract the power of a long teleſcope into a ſhort one [h].

It was ordered, that the eye-glaſs ſhould be made to draw, and that the two ſteel glaſſes ſhould be truly ground, well poliſhed, and exactly placed.

Sir PAUL NEILE taking occaſion to ſpeak of what had been formerly communicated from Rome, viz. that EUSTATHIO DIVINI had made an optic-glaſs of rock-cryſtal, which had proved a very good one, though full of veins, intimated, that he thought, that they were not veins; and that whether they were or not, might be tried by grinding ſuch glaſſes over again; which being done, if they were true veins, they would change their poſture, but they would not do ſo, if they were not veins.

He moved likewiſe, that to find, whether the breadth of a glaſs, or the way of working it, cauſe an object-glaſs to bear a greater aperture, there might be ground two glaſſes for the ſame length, of different diameters, by the ſame man, upon the ſame tool.

[h] This is deſcribed in his treatiſe of *Helioſcopes*, printed in 1676.

The

The lamp brought in Feb. 6, was again produced with a ſmall wax-light, to ſerve for a wick, and ſo contrived, as to be thruſt up by the moving weight in the veſſel. But this contrivance not ſucceeding, it was ſuggeſted, that there ſhould be provided a ruſh with a ſmall braſs wire in it, and likewiſe a ſmall waxed thread with a cotton whipt about it. This was ordered to be provided againſt the next meeting.

The circular pendulum deſigned for an equal motion with unequal weights being again ſpoken of, the preſident affirmed, that though the inventor Mr. HOOKE had demonſtrated, that the bullet of the circular pendulum, if it can be always kept riſing or falling in a parabola, will keep its circular motion in the ſame time; yet he had not demonſtrated, that the diameter of the parabola from the point of contact in the curve to the vertex of the diameter is equal to that portion of the curve from the ſaid point of contact to the vertex of the ſame curve, *plus* half the *latus rectum* or *plus* double the focus of the parabola.

March 7. Mr. LAKE was admitted.

The lamp was again produced, having for a wick a ſmall thread of lead thruſt through the midſt of cottons, which melted as the cotton burnt.

The new teleſcope produced at the laſt meeting was ordered to be perfected againſt the next meeting.

Mr. HOOKE mentioned a metal, that might be ground with ſand, and poliſhed with putty; which was ordered to be put in execution.

Dr. WREN intimated, that an exact plan was beſt made by motions in a ſtrait line.

Sir ROBERT MORAY mentioned, that Mr. REEVES would make a globe of 120 feet length, and give the uſe of it to the ſociety, if they would mount it. Whereupon it was ordered, that Mr. REEVES ſhould be made acquainted, that if he would make ſuch a glaſs, they would take care to fit it for uſe with what they ſhould judge convenient.

Commiſſioner PETT was deſired to make ſuch obſervations of tides, as were directed in print; and it was ordered, that one of the printed books ſhould be delivered to him by Mr. OLDENBURG for that purpoſe.

There were read ſeveral liſts of particulars formerly recommended to ſeveral members of the ſociety; and it was ordered, that they ſhould be copied out, and delivered to thoſe, who were concerned; and that the reſt of the like liſts be produced and read at the next meeting; as alſo, that every quarter of a year there be made the like extracts of experiments and obſervations committed to the reſpective members.

It was ordered, that the experiments of raiſing a weight and bending a ſpring by the force of gunpowder be proſecuted; and that experiments be made with the loadſtone ſent by Dr. COTTON: as alſo, that the operator attend Dr. WREN about his lamp; and that Sir ROBERT MORAY ſpeak to his Majeſty about the globe of the moon for another to be made after that model.

Mr. HOOKE was ordered to bring in writing at the next meeting his demonſtration of the motion of his new lamp; and likewiſe the demonſtration of the curve line in his circular pendulum.

He was put in mind to perfect his inſtrument for taking up things from the bottom of the ſea ſo as to make it ſerve for all depths.

Dr. CROUNE was deſired to bring a draught and deſcription of his chariot.

Dr. WREN gave in the deſcription of his new level; which was ordered to be read at the next meeting.

March 14. At a meeting of the COUNCIL were preſent

The lord biſhop of EXETER,	vice-preſident
The earl of NORTHAMPTON	Dr. CLARKE
Mr. H. HOWARD of Norfolk	Mr. HENSHAW
Mr. AERSKINE	Mr. COLWALL
Sir ROBERT MORAY	Dr. BALLE
Sir PAUL NEILE	Dr. CROUNE
Sir ANTHONY MORGAN	Mr. OLDENBURG.
Dr. MERRET	

Sir ANTHONY MORGAN, elected into the council in the room of Mr. PALMER deceaſed, and Mr. HENSHAW were ſworn as members of the council.

Sir ANTHONY MORGAN gave the council an account, that Dr. WILKINSON had delivered up the charter of Chelſea-college into his hands, and referred all to the diſcretion of the ſociety without inſiſting upon any capitulation.

The council hereupon deſired Sir ANTHONY MORGAN to acquaint Dr. WILKINSON, how well they had taken this frankneſs of his; and how ready they were to ſhew him their reſpect and kindneſs, as occaſion ſhould ſerve.

Sir ANTHONY MORGAN was likewiſe deſired to conſider, whether it would be neceſſary, that Dr. WILKINSON ſhould make a formal reſignation and ſurrender of the ſaid charter.

He, Mr. AERSKINE, and Sir ROBERT MORAY were deſired to look into the title of Mr. COLE to Chelſea-college, and having found it clear, to ſee a convey-

ance of it made to the ſociety, and to conclude with him for one hundred pounds for it.

Sir ANDREW KING by a note under his hand deſired to be left out of the liſt of the ſociety.

Mr. HOWARD deſired, that if any papers concerning his family ſhould be met with in the library, of which he had made a donation to the ſociety, they might be carefully preſerved for him.

The council licenſed N°. 23 of the *Philoſophical Tranſactions*.

At a meeting of the SOCIETY on the ſame day,

Dr. PEARSON was elected.

Mr. HOOKE brought in the deſcription and demonſtration of his new lamp; which was ordered to be regiſtered [1], as follows:

" Let the veſſel be made of braſs, tin, wood, or the like, of a ſemi-cylindrical, " hemiſpherical, or any rounded figure, placing the axis of that figure exactly " horizontal, and leaving the upper part open. Then fit into it another ſemi-cylin- " der, hemiſphere or like faſhioned body, to the containing veſſel of braſs, wood, " or any other material, which will be capable of being made lighter by half, than " ſo much of the oil, as is equal to it in bulk. Let the two ends of the axis of " this ſemi-cylinder terminate in two ſeveral pivots, and let the containing veſſel " have likewiſe two ſmall holes in the centers of each end, into which let the " pivots be fitted, and ſo ordered, that it may freely paſs and turn round within " the hollow of the containing veſſel. On ſome part of the ſide of this containing " veſſel make a ſmall ſocket, ſo that the hole of it, where the flame is to be, may " be a little above the plane, that paſſeth through the axis. Then pour your oil " into the containing veſſel, and the counterpoiſing ſemi-cylinder ſhall always keep " the ſurface of the oil of equal hight with the horizontal plane, that paſſeth " through the axis of both ſemi-cylinders.

" Suppoſe it firſt perfectly filled to the horizontal plane; then it is evident, that, " the whole ſolid ſemi-cylinder being about the oil, the one half of it will coun- " terpoiſe the other, and ſo neither can have any preſſure upon the oil.

As in the firſt figure, let F D G repreſent the containing veſſel, filled to the line F G with oil; and A B C the ſolid ſemi-cylinder, equal in weight to half as much oil as is equal to it in bulk: then it is evident, that the quadrant A E B will counterpoiſe the quadrant B E C, and neither ſide preſs on the oil.

Next, ſuppoſe it only to contain oil enough to fill half the ſemi-cylinder; and let A B C in the ſecond figure repreſent the containing veſſel, D E F the ſolid

[1] Regiſter, vol. iii. p. 177.

counterpoiſe, and A N B the oil; it is evident the two ſolid quadrants D N D and E N F, being each of them half the weight of the oil, and in the ſame poſition, muſt counterpoiſe the quadrant of oil A N B.

Thirdly, ſuppoſing it to contain any other quantity, leſs than will ſuffice to fill the veſſel to the horizontal plane, that paſſeth through the axis, the ſame will follow, as in the third figure; let A N F repreſent the wedge of oil, and D E F the ſolid ſemi-cylinder: I ſay, the ſemi-cylinder ſhall, in this poſture alſo, counterpoiſe the oil in the veſſel. Make C N E equal to D N C, then ſhall F N B and B N E be equal, and conſequently counterpoiſe each other. Next, C N E being equal to D N C; and D N C to A N F, it follows, that the wedge of liquor A N F ſhall be counterpoiſed by two equal wedges, each of half the weights D N C and C N E. The like may be demonſtrated of any other quantity of oil whatſoever, leſs than will fill the veſſel to the horizontal plane, and more than will fill the ſpace, neceſſary to be left between the concave and ſolid cylinder.

Mr. Hooke produced likewiſe a contrivance to make a motion of a clock to go along with the ſhadow on a wall, for which he offered a demonſtration; affirming withal, that the ſame inſtrument would be applicable to all planes to make all ſorts of dials; and that upon the ſame principle he would make an inſtrument to ſolve the inequality of days both from the ſun's excentricity and his right aſcenſion upon the elliptical as well as circular hypotheſis.

The operator was ordered to beſpeak a quadrant like that of Dr. Goddard, to be ſent to Liſbon; as alſo one of the largeſt globes, that Mr. Moxon uſes to make, for Dr. Wren's teleſcopical moon, to be directed by the ſaid doctor.

Sir Theodore de Vaux produced a paper containing a deſcription of the tallow-chandlers trade, and the ways of making candles with the pith of ruſhes, and of making candles in moulds, and cheap candles for poor men to burn; with ſeveral queries for the improvement of the trade. The paper was ordered to be filed up; and mention being made in it of a way of multiplying the light of a candle, it was recommended to Mr. Hooke to conſider of other ways of doing the ſame.

Sir Robert Moray informed the ſociety, that Mr. May had left with him for the repoſitory a dead Indian bird like a crane.

Dr. Croune preſented ſome pictures of Turkiſh habits for the repoſitory.

Mr. Williamson produced extracts of two letters, one written by Dr. Collins[k] in Moſcow, January 7, 166$\frac{6}{7}$, giving an account of an Engliſh mechanician there, who had extraordinary ſkill in gunnery, as of ſhooting melted lead without gunpowder, and of contriving methods of deſtroying rigging and fire-

[k] Samuel Collins, M. D.

ſhips:

ſhips: the other written at Dantzick, February 19, 166$\frac{6}{7}$, mentioning, that the ſame mechanician had invented a mill, which would form bricks as faſt as many hands could take away.

Mr. WILLIAMSON was deſired to procure a more particular account of theſe matters, and the ſecretary to cauſe a copy to be taken of theſe letters.

Mr. OLDENBURG read a letter written by Mr. SAMUEL COLEPRESSE at Underwood near Plymouth, March 6, 166$\frac{6}{7}$ [l], giving notice of a late irregular tide at Crimmel-paſſage, and of the exceeding hight of the tide in the preceding February; as alſo of a kind of turf cut out of the moors and charked, ſerving to make very cheap and ſweet fires, and ſuch as are uſed with good advantage in the blowing of tin, the fuſion of which he affirms to be facilitated by it, and that it makes it to yield the better.

Sir PAUL NEILE mentioned on this occaſion, that he knew of a peat in Wales, which being charked would make as good and ſweet a fire, as could be deſired.

Mr. OLDENBURG took notice, that Mr. COLEPRESSE had likewiſe ſent him a paper containing an anſwer to almoſt all the queries formerly drawn up by Mr. BOYLE concerning mines, and afterwards printed: which paper was ordered to be read at another meeting, and it was directed, that the writer of it ſhould be deſired to write word, whether he had obſerved, whence the wind blew at the time of the extraordinary tide in January 14, 166$\frac{6}{7}$.

Dr. WREN's deſcription of a new level for taking the horizon every way in a circle was read, and ordered to be regiſtered [m]; as follows:

"If a concave-glaſs be placed to turn upon a foot with a ball and ſocket horizontally, and a drop of quickſilver be laid upon it, when the quickſilver lies upon "the center of the ſection, the edges of the glaſs will be ſituated in a true horizontal "plane, and conſequently a dioptra laid upon it will give an exact level in any "azimuth, without motion of the inſtrument: and this ſort of level will prove "as true, as from a pendulum of a length equal to the radius of the ſection."

Sir ROBERT MORAY mentioned, that he had given the printed inquiries about tides to commiſſioner PETT, to whom that matter had been recommended.

The new teleſcope contracting the power of a long one into a ſhort, was referred to the next meeting.

Dr. CROUNE promiſed to bring in the deſcription of his chariot at the next meeting.

[l] Supplement to the Letter-Books, vol. ii. p. 222.

[m] Regiſter, vol. iii. p. 184. It is deſcribed by Mr. HOOKE in his Animadverſions on HEVELIUS's machina cœleſtis, p. 65.

Mr. HOOKE was ordered

1. To profecute the experiments of raiſing a weight, and bending a ſpring, by the force of gunpowder.

2. To make experiments with Dr. COTTON's load-ſtone.

3. To perfect the inſtrument for taking up things from the bottom of the ſea.

4. To bring in the demonſtration of the curve line, that ſhall ſo regulate the motion of the circular pendulum, as to make it go equally with unequal weights.

The operator was ordered to attend Dr. WREN about his lamp.

March 21. Sir CLIFFORD CLIFTON, knt. was propoſed candidate by Sir GEORGE ENT.

Mr. HOOKE produced again his new kind of contracted teleſcope of two foot long, performing the part of a ſix foot glaſs by the means of two reflexions. He was ordered to bring in the deſcription of it, and to try it upon nocturnal objects; as alſo to have ready for the next meeting a ſix foot glaſs to compare it with, and to change the object glaſſes.

The operator was directed to acquaint Mr. REEVES, that the ſociety accepted of his offer of making a hundred and twenty foot glaſs upon the condition that they ſhould fit it for uſe.

Sir PAUL NEILE acquainted the ſociety, that one Mr. SMETHWICK had ſhewn a glaſs, which he affirmed to be of a conic ſection, of about an inch and a half diameter; and that they tried it for an eye-glaſs in a twelve foot teleſcope, which had an ordinary object glaſs, fitted for a tube of that length, wherewith they ſaw a tree very well on Shooters-hill without any conſiderable colours; and that they uſed it alſo for an object-glaſs in a microſcope, leaving it all open, and found it to take in a great deal of light, and to magnify up to the very edges with very little flaming.

Sir PAUL NEILE was deſired to encourage the inventor, and he intimated, that he had adviſed him to apply himſelf to Mr. HOOKE for aſſiſtance.

Mr. HOOKE brought in the deſcription of a very eaſy and ſimple but univerſal inſtrument to deſcribe all kinds of plane dials, together with a demonſtration of the principles and reaſon of it: Which was ordered to be regiſtered [n], as follows:

"Unto the end of a very ſtrait and ſtiff ſteel wire, as A B, faſten at one "end an index at right angles with it, as q r, and at the other make a pair of "forked arms, as C D, having two ſmall center-holes, at each end one, as at E

[n] Regiſter, vol. iii. p. 180.

"and

" and F, between which, if a right line be drawn, (as EF) it ſhall paſs both " through the axis of the wire AB, and likewiſe be at right angles with it. This " done, make another wire of the ſame material, and in all other particulars ex- " actly the ſame with the former; then make a croſs of ſteel EFGHI, ſharpen- " ing all the four corners EIFH into very ſharp and ſmall pointed pivots, and " make all the arms of the croſs exactly at right angles with one another; and " the length of each arm from the point of interſection exactly half the diſtance " between E and F. This done, join the two ſteel-wires (formerly deſcribed) to- " gether, by the croſs, by putting two of the oppoſite pivots into the center- " holes of the arm of the one wire: the two other oppoſite pivots into the pivot- " holes of the arms of the other wire, which may be eaſily done, if thoſe arms are " made a little ſpringing: then, by any convenient contrivance (of which there " may be multitudes, as by a frame, or ſtaples upon a movable ſcrew, &c.) ſo " order theſe wires, that one of them may lie in, or parallel to, or at leaſt in the " ſame plane with the plane of the ſtile; and with the ſame inclination to, or " angle with the plane of the dial, with the inclination or angle of the axis and " plane of the dial. And that the other arm may lie at right angles with, or " perpendicular to the plane of the dial, then ſhall the moving of the index of " the wire in the axis, equal ſpaces, cauſe the index of the perpendicular wire to " move unequal ſpaces, according to the proportions of the ſhadows. If there- " fore the wire of the axis be moved by an exact clock, once round in 24 hours, " or the ſpace of time between the ſun's leaving a meridian, and returning again " to the ſame, the index of the other wire ſhall move on the plane of the dial, to " which it is adapted, in the ſame velocity with the ſhadow of the ſun in that " plane. The reaſon of all which is moſt evident, for if a plane be ſuppoſed to " paſs through the axis of the ſtile, and to be turned round upon that axis with " equal velocity once in 24 hours, it is evident, that if at the beginning of its " motion, that plane paſs through the center of the ſun, it ſhall alſo continue to " paſs through the ſame center, for its whole revolution; and conſequently, that " part of the plane, which lies on the other ſide of the axis, oppoſite to the ſun, " ſhall always be in the ſhadow of the axis; and conſequently, the lines of the " interſection, of this moved plane, with the plane of the dial, ſhall give the re- " ſpective lines of ſhadow appropriate to that plane. But 'tis evident, from the " contrivance of the newly deſcribed engine, that thoſe branches of the croſs " whoſe pivots are centered in the arms of the wire in the axis, do always move " round the axis in the ſame plane, and conſequently move equal ſpaces in equal " times. And it is likewiſe evident, alſo, that the other branches of the croſs, " do always move both in a plane at right angles with the former plane, and con- " ſequently move alſo about the axis equal ſpaces in equal times; and alſo in the " plane of the dial; and conſequently muſt always lie in the line of the inter- " ſection of the plane through the axis with the plane of the dial, and muſt there- " fore always move, in the ſhadow of the axis, according to the ſeveral velocities " of the ſhadow, unequal ſpaces in equal times.

" The application of which inſtrument to the uſe of deſcribing all ſorts of dials " is ſo very evident, that I think I need not further explain it: For if the index " of the axis be moved, to the equal diviſions in a ring about it of hours, quarters,

" minutes,

" minutes, &c. the index on the wire perpendicular to the plane of the dial will " point out the reſpective unequal diviſions on that plane. The uſe of this me- " chanical principle for equation of time, reſolving triangles, raiſing water, facili- " tating wheel-work, and ſeveral other mechanical uſes, I may hereafter ſhew."

Mr. HOOKE affirming, that upon the ſame principle he could frame an inſtrument to indicate the inequalities of the days, was deſired to cauſe ſuch an inſtrument to be made.

Sir ROBERT MORAY preſented the ſociety with an amethyſt ſent him out of Scotland, where, he mentioned, there were whole rocks of the ſame; and another ſtone ſent him out of Ireland, of a yellowiſh colour, eſteemed to be a kind of tranſparent ſpar.

The lord biſhop of EXETER produced a letter from Dr. COTTON of November 16, 1666, importing, that he thought, that he ſhould be able to furniſh the ſociety with as many magnets to be found in Cornwall, as they would uſe.

Mr. HOOKE was put in mind of making experiments with the great load-ſtone formerly ſent by Dr. COTTON.

Mr. OLDENBURG mentioned, that he had lately received a letter from Paris, ſignifying, that the aſtronomers there ſaw frequently the new ſtar *in collo Ceti*; and the other *in Cingulo Andromedæ*.

Mr. HOOKE obſerved, that the air had been for a good while ſo thick about London, that he had not been able to ſee thoſe ſtars.

Sir PAUL NEILE mentioned, that Dr. WREN had taken care of his teleſcopical moon, in order to have another of a larger ſize made by it.

He was deſired to bring in at the next meeting his demonſtration for the curve line, that ſhould regulate the circular pendulum for an equal motion with unequal weights.

Mr. HAYES produced a letter containing ſome obſervations concerning the figure of ſnow fallen in Hampſhire-marſh *; and the figures were ordered to be drawn with ink.

Mr. THOMAS COXE produced a ſmall bone, which he ſaid had been voided by Sir WILLIAM THROCKMORTON out of his bladder, into which it was ſuppoſed to have been forced by a ſhot made through the thigh into the bladder, the wound whereof was poſſibly healed up again.

* This letter is dated at Bramſhill-houſe March 13, 166$\frac{6}{7}$, and is entered in the Letter-Book, vol. i. p. 402.

He

He affirmed, that he had made the experiment of transfuſing blood upon a mangy dog and a ſound dog, by opening a vein in each of them; and that he had found, that the ſound dog was not infected thereby, and the mangy dog was cured.

Mr. OLDENBURG produced an account, which he had received from Paris, of the ſucceſs, which the curious had met with there in the ſame experiments, viz. that they had ſo tried it, as that the ſame blood had been in three dogs within the ſpace of ſix days; one of the animals having been a bitch big with puppies, which ſome time after the operation had caſt one whelp dead, having not above three or four drops of blood in its whole body.

It was ordered, that at the next meeting this kind of experiments ſhould be reſumed; and Dr. KING was deſired to perform the operation by letting moſt of the blood of a dog run out before any other was infuſed; and that then he ſhould be recruited by the blood of a ſheep.

1667, *March* 28. At a meeting of the COUNCIL were preſent

The Preſident

The earl of NORTHAMPTON	Dr. GODDARD
Sir PAUL NEILE	Dr. WREN
Sir ANTHONY MORGAN	Dr. CROUNE
Mr. HENSHAW	Dr. BALLE
Mr. COLWALL	Dr. POPE
Dr. WILKINS	Mr. OLDENBURG.

Sir ANTHONY MORGAN gave an account of Mr. COLE's title to the land belonging to Chelſea-college: Which not being found clear, it was ordered,

That Sir ANTHONY MORGAN ſhould be deſired to ſpeak with Mr. COLE from the council to this effect;

That if he made a legal conveyance of his leaſe of the land to the council of the ſociety, and procured a releaſe from thoſe, who pretended to it, or got any ſuch pretender to join with him in the conveyance of his leaſe, they would then pay him an hundred pounds.

Sir ANTHONY MORGAN was deſired to conſider of a deed of gift of the library, which Mr. HOWARD had preſented to the ſociety.

Dr. WILKINS was deſired to conſider of the inſtances, that might be proper to be inſerted in the *Hiſtory of the Society*; and having done ſo, to preſent them to the council.

At the meeting of the SOCIETY on the ſame day,

Sir CLIFFORD CLIFTON was elected.

Monſr. ISMAEL BULLIALDUS and Monſr. SAMUEL PETIT were upon their deſire in a letter propoſed candidates by Mr. OLDENBURG.

FRANCIS SMETHWICK, eſq; was propoſed candidate by Dr. WILKINS.

Dr. WILKINS was deſired to ſpeak to Mr. SMETHWICK, that the ſociety was deſirous to ſee one of his newly invented optic glaſſes, affirmed by him to be not ſpherical, and performing better than ſpherical ones.

An experiment was made, by Dr. KING's operation, of bleeding a ſheep into a ſpaniel dog, ſo as fifteen ounces of the dog's blood being firſt let out, before any ſupply of other blood was given, there were afterwards transfuſed into him out of the ſheep thirty-ſix ounces at leaſt, which was computed by the time of bleeding, meaſured by a minute watch; by which it appeared, that in the ſpace of four minutes ſeventeen ounces of blood, at leaſt, had been let run into the dog out of the ſheep; ſince the ſheep being afterwards ſuffered to bleed into a diſh for the ſpace of eight minutes, the blood let out in that time weighed about thirty-ſix ounces; during which time the blood muſt be ſuppoſed to have run ſlower than it did before, when it was ſuffered to run into the dog.

Dr. KING was deſired to give in a full account of this experiment at the next meeting, in order to its being regiſtered.

Mr. BOYLE moved, that ſome animals might be bled to death, to ſee what quantity of blood they contained. Upon which the operator was ordered to provide a dog for the next meeting, to let out all his blood.

Mr. THOMAS COXE brought in writing the relation, which he made at the laſt meeting, of the experiment of transfuſing the blood of an old mangy dog into a ſound dog, whereby the former was cured, and the latter not infected. It was ordered to be regiſtered [p].

Mr. HOOKE preſented ſome muſcles grown in a ſtone at the bottom of the ſea, for the repoſitory.

Dr. WREN produced drawings of the figures of hail, which had fallen March 27, 1667, at four in the afternoon, the upper part of which was a perfect cone, the under part the fruſtrum of a cone. Being turned up, it repreſented a marigold-flower. The angle, he ſaid, was the angle of a pentagon; ſo that five of them joined together made a circle. Theſe drawings were ordered to be regiſtered [q].

Dr. WILKINS preſented for the repoſitory a kind of ſilken ſubſtance ſent from Mr. WILLUGHBY, who affirmed, that he had taken it himſelf out of a living ſhell-fiſh, called pinna marina.

[p] Regiſter, vol. iii. p. 193. It is printed in the Philoſ. Tranſact. vol. ii. n° 25. p. 451, for May 1667.

[q] Regiſter, vol. iii. p. 184.

Dr.

Dr. CROUNE being called upon for a written account of his chariot, desired time till the next meeting; and the operator was, upon the doctor's desire, ordered to attend him for the making of such experiments with his chariot, as he should direct.

Mr. HOOKE's demonstration of the curve line in the circular pendulum was referred to the next meeting; as also Dr. WREN's lamp, and the quadrant, that was ordered to be made to be sent to Lisbon.

The operator was ordered to try the growth of lettice-seed in open, exhausted, close, and compressed air, as it was suggested partly by Mr. BOYLE and partly by Dr. GODDARD; and likewise to try in an exhausted receiver, whether frog's spawn being inclosed there, the water, in which it is found, would come to any motion; this experiment being suggested by Mr. BOYLE.

Some of the members were of opinion, that by forcing out the air, the texture of the spawn would be extremely altered and spoilt.

Mr. HOOKE proposed an expeditious way of making bricks, the consideration of which was referred to the next meeting.

He promised to bring a six foot glass to compare with the reflecting box, to change the object glasses.

April 4. At the meeting of the COUNCIL were present

The President

Mr. AERSKINE
Sir ROBERT MORAY
Mr. HENSHAW
Mr. COLWALL
Dr. CROUNE
Dr. BALLE
Mr. OLDENBURG.

N° 24 of the *Philosophical Transactions* was licensed; which being peculiarly designed for the instruction of seamen in making observations in their voyages, one hundred copies extraordinary were ordered to be printed off at the expence of the society, and lodged with the master of Trinity-house, to be by him disposed of to fit seamen.

It was also discoursed of, that the operator would consider, what would be the charge of a whole set of the instruments described in this number of the *Transactions*.

It being likewise mentioned, that Mr. SPRAT desired to know, what he should do in the matter of inserting the statutes into the *History of the Society*, it was thought proper, that Dr. WILKINS should be desired to peruse the said statutes, and so to abridge them, as that the most material and least alterable particulars thereof might be inserted in the history.

At the meeting of the Society on the ſame day,

Monſr. Bullialdus, Monſr. Petit, and Francis Smethwick, eſq; were elected.

Mr. Oldenburg read a Latin letter dated January 1, 1667, addreſſed to him from a Venetian philoſopher, Francesco Travagino [r], making mention of a ſyſtem of a new practical philoſophy eſtabliſhed by himſelf, and of a printed Synopſis concerning the ſame. It was ordered, that Mr. Oldenburg ſhould return him a letter of thanks [s], and deſire him to ſend over that *Elenchus* of experiments mentioned by him in his other letter to Sir Kenelm Digby.

Dr. King brought in an account in writing of two experiments made at his own houſe by himſelf, aſſiſted by ſome friends of his; one of which was the bleeding of a calf by a vein into the vein of a ſheep; the other of injecting ſugared milk into the vein of a dog, after the emiſſion of eighteen ounces of his blood: Which experiments were ordered to be regiſtered [t].

The operator gave an account of the lettice-ſeed put 30 March, 1667, into the rarified, cloſe, and open air; that that in the cloſe air had ſprouted, (which the members alſo ſaw) that in the open air had not then ſprouted; and that in the exhauſted receiver had miſcarried.

It was ordered, that the experiment of that in the exhauſted receiver ſhould be made again.

Mr. Howard produced a noſegay of dictamnus of two years old.

Dr. Croune produced a letter of Mr. Townley to him, dated 25 March, 1667, taking notice of Monſr. Auzout's pretended invention of dividing a foot into 30,000 parts, and taking thereby angles to a very great exactneſs; and ſhewing, that Mr. Gascoygne had before the late civil wars both invented and uſed ſuch an inſtrument, which Mr. Townley had by him, and of which he would ſend a more perfect deſcription, if deſired. Dr. Croune was requeſted to deſire that deſcription, and the obſervations made with the inſtrument; and Mr. Townley's letter was ordered to be entered into the Letter-Book [u].

Dr. Wren produced his new lamp, wherein the oil would not come faſter than it is conſumed. He having mentioned, that he had a ſtill better way, was deſired to communicate it at the next meeting.

It was ordered, that Mr. Hooke produce his method of making bricks with leſs charge and more ſpeed than hath been hitherto uſed; as alſo, that he bring in

[r] Letter-Book, vol. i. p. 287.

[s] Mr. Oldenburg's letter in Latin was dated at London 15 May, 1667, Letter-Book, p. 318.

[t] Regiſter-Book, vol. iii. p. 185. This account is printed in the Philoſ. Tranſact. n° 25, p. 449, for May 1667.

[u] It is not entered there, but it is printed in the Philoſ. Tranſact. vol. ii. n° 25, p. 457.

his

his demonſtration of the curve line regulating the circular pendulum, ſo as to make it move equally with unequal weights.

It was likewiſe ordered, that at the next meeting an experiment be made of letting out the blood of a dog, both by a vein and artery, at one and the ſame time, out of veſſels equally diſtant from the heart, as out of the jugular vein and a jugular artery; and that the operator provide a dog for that purpoſe:

That another ſuch experiment be made, as Dr. KING had given at this meeting an account of; and that the recipient ſheep be turned to graze again: And

That Mr. THOMAS COXE bring in at the next meeting his paper about the bone voided out of the bladder of Sir WILLIAM THROCKMORTON.

April 11. Sir CLIFFORD CLIFTON ſent in his admiſſion-money.

Dr. WREN's new lamp was produced and approved. He intimated, that the main point in it was to balance it well. He was deſired to make a ſcheme thereof, with ſome diſcourſe upon it in writing; which he promiſed to do.

He mentioned, that he had ſeen a digging-engine contrived by one Mr. BAYLEY, which he ſaid would perform twice as much as the ſame number of men in the uſual way.

A paper of Dr. MERRET was read, containing a deſcription of granaries, as they were built at London, together with the way of ordering the corn in them [w]. And not having met with any perſon in London, who could give him a good account of the granaries at Dantzick, in Poland, and at Amſterdam, he deſired, that letters might be written to thoſe places, ſoliciting an account of the ſtructure of ſuch buildings, as they were there.

Dr. WREN related, that ſome of the granaries of Dantzick were of eight or nine ſtories high, having funnels in their floors, to let the corn run from one into the other, the loweſt floor ſerving for a warehouſe.

He remarked likewiſe, that in Muſcovy they preſerved their corn under ground, digging a great hole of the figure of a ſugar-loaf, broad at the bottom, and pointed towards the top, plaiſtering it within, and covering it with a ſtone; into which they put the corn, when firſt well dried.

Mr. BOYLE mentioned a way of freeing the air from its moiſtneſs, by expoſing a quantity of ſalt of Tartar, which would imbibe it.

It was ordered, that in caſe the merchants of London could not give a good account of the granaries in the places abovementioned, the ſecretary ſhould write thither, and deſire one.

[w] Philoſ. Tranſact. vol. ii. n° 25. p. 464.

The

The lord BRERETON affirmed upon his own experience, that corn well dried needed not to be malted for brewing; which he had tried more than once with oats.

Sir ROBERT MORAY mentioning, that lieutenant-colonel DRUMMOND had been long in Muſcovy, and could doubtleſs give a good account of their granaries, as well as he had given him of their way of ordering bees, was deſired to procure both thoſe accounts from him; and to draw up ſome heads of inquiries concerning bees, to be recommended to a gentleman going to Muſcovy.

Mr. OLDENBURG produced and read a letter written at Paris by Monſr. PECQUET to Monſr. CARCAVI [x], containing an account of a new anatomical diſcovery made by the ſaid Monſr. PECQUET and Monſr. GAYANT, of a communication between the *ductus thoracicus* and the emulgent vein: upon which it was deſired, that the phyſicians of the ſociety would, as they had an opportunity, ſee whether they could obſerve the like.

Sir GEORGE ENT moved, that ſome care might be taken to obſerve what paſſage there might be from the ſtomach to the kidnies, and that this ſhould be tried chiefly upon fowls, which have more open paſſages.

It was thereupon ordered, that as many of the anatomical committee, as conveniently could, ſhould be deſired to meet on the Monday following about four of the clock in the afternoon at Sir GEORGE ENT's houſe, to conſider of and ſet down a method for making ſuch kind of experiments; which being done, a curator ſhould then be particularly appointed to make them.

Dr. WILKINS renewed his former motion [y], that the phyſicians of the ſociety would employ their intereſt with thoſe of their profeſſion, who had ſtaid in London, to obtain from them their obſervations of the late plague in 1665.

Sir GEORGE ENT, Sir THEODORE DE VAUX, and Dr. CHARLETON were deſired accordingly to ſpeak to Dr. GLISSON and the French peſt-maſter about this particular.

Sir GEORGE ENT moved, that a dog might be bled almoſt to death, and then the blood of another dog transfuſed into him, to try to recover him.

The operator was ordered to have dogs ready at the next meeting for that purpoſe.

He was likewiſe ordered to be at Dr. KING's houſe on the Monday following at two in the afternoon, for repeating the experiment of bleeding a calf into a ſheep by a vein; which being done, the ſheep ſhould be kept alive and turned to graſs again:

[x] Printed in the Philoſ. Tranſact. vol. ii. n° 25, p. 461.

[y] On the 28th of March, 1666.

It was ordered, that Dr. KING be desired to give a farther account in writing of the experiment, which he had made in private of injecting eighteen ounces of milk and sugar into a dog, from which he had taken as many ounces of blood, whether the dog lived or not:

That Mr. THOMAS COXE be put in mind of giving in writing the account of Sir WILLIAM THROCKMORTON's voiding a little bone at his bladder: and

That a dog be bled both by a vein and artery at one and the same time; and that the differences of the arterial and venal blood be more particularly considered than had been before done.

Mr. HOOKE was put in mind to bring in a model for his expeditious way of making bricks; as also a six foot glass to compare with his reflecting-box by changing the object-glasses.

The operator was appointed to make the experiment with frogs spawn in an exhausted receiver.

April 18. Dr. KING brought in a written account of his concerning the second experiment made by himself in private upon a sheep and a calf, by transfusing the venal blood of the latter into the vein of the former, turning the sheep, after the operation, to grass again: and another written account of his containing some farther observations made by him upon a dog, into whose veins he had injected a quantity of sugar'd milk, after the letting out of him the like quantity of blood: both which accounts were ordered to be registered [z].

Dr. KING having mentioned, that the dog, which had the sugar'd milk injected into his veins, had stunk before he died, Mr. BOYLE moved, that this experiment might be tried again, to see whether the like effect would follow.

Dr. CROUNE moved (what had formerly been suggested by Mr. BOYLE) that a purging medicine might be given to the emittent dog before the operation, to see, whether the recipient dog would be thereby purged; and how?

The experiment of letting a dog bleed almost to death, and then transfusing into him the blood of another dog, was deferred till another meeting.

Sir ROBERT MORAY presented from Sir ROBERT HARLEY, for the society's repository, 1. A young tiger's skull. 2. Four Indian arrows of that kind, which is called poisonous. 3. Some strange American flies. 4. An ape's skull. 5. Two fish-scales, in part silver-coloured. 6. Two nuts, one of which, bared of its scale, had the likeness of an ape's face. 7. An excellent colour made of the American Rocou-tree, with a leaf of that tree.

[z] Register, vol. iii. p. 187,—189, and 192. See Philos. Transact. n° 25. p. 451.

Sir

Sir ROBERT MORAY preſented alſo from the lord CLENOLEU a pair of bellows, all of wood, without leather, uſed in Sweden for great works, giving a greater blaſt, and being cheaper than common bellows.

Sir GEORGE ENT was called upon to give the ſociety an account of what had been done by the committee appointed at the laſt meeting to meet at his houſe to conſider of experiments to be made for the finding out what paſſages there might be from the ſtomach to the kidnies. He ſaid, that very few had met, and that little was done to that purpoſe.

It was thereupon deſired, that the perſons concerned would attend that meeting better; and the operator was ordered to carry ſome lobſters, flounders, or frogs thither; and Mr. HOOKE was deſired to be there, to make ſketches of what ſhould be obſerved.

Mr. HOOKE produced his model for brick-making, and promiſed to produce another at the next meeting.

He was put in mind to bring in his demonſtration for the curve-line to regulate the circular pendulum; as alſo to produce his method of making ſpherical-glaſſes bear great apertures without colours.

April 25. At the meeting of the COUNCIL were preſent

The Preſident

Mr. AERSKINE	Dr. GODDARD	Mr. COLWALL
Sir ROBERT MORAY	Dr. MERRET	Dr. CROUNE
Sir PAUL NEILE	Dr. CLARKE	Dr. BALLE
Dr. WILKINS	Mr. HENSHAW	Mr. OLDENBURG.

It was reſolved,

That in the petition to his Majeſty about the enlargement of the ſociety's charter, and the granting of Chelſea-college, the clauſe concerning a recorder for the ſociety be omitted; and that there be inſerted in this petition a power to be granted to the preſident alone to licenſe ſuch books as are publiſhed by any fellow of the ſociety, and to employ other printers beſides thoſe of the ſociety:

That the ſaid petition be preſented to the King by the preſident and ſuch others of the council, as the preſident ſhould take with him:

That the lord ARLINGTON, ſecretary of ſtate, be deſired to prepare and have ready a warrant concerning the particulars of the ſaid petition for his Majeſty's ſigning: and

That

That the committee for the additions to be made to the ſociety's charter meet on the Monday following about ſix of the clock at the preſident's houſe, to conſider of the ſtatutes to be inſerted in their *Hiſtory*.

N°. 24 of the *Philoſophical Tranſactions* was licenſed.

At the meeting of the SOCIETY on the ſame day,

Dr. PEARSON was admitted a member of the ſociety.

Mr. HOOKE produced a level, almoſt the ſame with that of the French, of which an account had been lately publiſhed in the *Journal' des ſcavans*. He was ordered to give a ſcheme and deſcription of it in writing.

He propoſed a way of meaſuring the circumference of the earth with a twelve foot glaſs and three ſtakes, to be practiſed in St. James's Park in a calm day. It was ordered to be put in execution as ſoon as might be.

Mr. THOMAS COXE's relation concerning a bone voided out of the bladder of Sir WILLIAM THROCKMORTON was read, and ordered to be regiſtered [a], as follows:

" Sir WILLIAM THROCKMORTON had from his youth upwards paſſed through " the various accidents of a ſoldier's life; and particularly, in his ſervice for the " King in the late civil wars, received many ſhots very dangerous; which occa- " ſioned the taking out of ſeveral ſplinters and fragments of bones, at divers and " conſiderable diſtances of time, ſince the receit of thoſe wounds. Some while " after this (remaining ſtill, as to all other reſpects, in a good condition of health) " he complained of a difficulty and ſharpneſs of urine, together with a dull pain " and ſoreneſs about the bottom of his belly, which by intervals remitted, and " again at times came more violently upon him, and ſo continued for many years " together, to come and go by fits. But ſome months ſince, it grew more than " uſually troubleſome to him, which cauſing a vehement ſuſpicion of the ſtone, " made thoſe about him perſuade him to be ſearched, which was done by an able " lithotomiſt, who, upon both the ways of exploration, aſſured him, that he had " a ſtone in his bladder, and that in the ſearch he had toucht upon it with his " catheter.

" After this, his pains preſſed upon him every day more and more, till at laſt, " with all the ſtriving and torment imaginable, he voided that (with ſome noiſe " and violence) into the urinal, which was taken for a ſtone, till the King (who " was pleaſed to view it with more curioſity than others had done) obſerved it to " be no other than the fragment of a real bone: which being, from that day " forward, obvious to every man's eye, gave ground to conjecture, that it had " been violently divided from the whole bone, by ſome ſhot he had received many

[a] Regiſter, vol. iii. p. 190.

" years before the voiding of this, forced by ſome ſecret violence of the bullet " through the ſubſtance of the bladder, and lodged in or about the neck of it, " which it had for ſo long a time vellicated and obſtructed, till it was diſcharged " through the urethra by this extraordinary conatus of nature. The greateſt ob- " jection to this probable conjecture may be the old tradition of the great diffi- " culty of healing the wound of the bladder, that the bone muſt be ſuppoſed to " have made in its penetration; which though HIPPOCRATES affirms to be incura- " ble, later authors aſſure us upon their repeated experience to have been healed " and cicatriſed.

" A parallel caſe to this may be read in TULPIUS's obſervations, Lib. 4. " cap. 29. pag. 340. of the Amſterdam edition.

" Some days ago this gentleman died of diſeaſes altogether different from what " has been here ſpoken of. His body ſcented ſo very ſtrong preſently after his " death, that it was impoſſible to make thoſe diſcoveries by diſſection, which other- " wiſe upon the account of this, and other inquiries, might have proved very ſa- " tisfactory to the ſpectators."

Sir THEODORE DE VAUX's hiſtory of making wax-candles was read, and ordered to be filed up.

Mr. HOOKE produced a letter to him from Mr. JOHN SELLERS dated at Wapping, April 12, 1667, and containing an anſwer to two magnetical queries printed in the *Philoſophical Tranſactions*, N°. 23. p. 423, 424. Which letter was ordered to be entered into the letter-book [b].

Mr. HOOKE was deſired to enquire of Mr. SELLERS, what method he uſed to make a needle turn north and ſouth without touching it with a loadſtone.

He remarked, that a drill, by making a hole with it in a piece of ſteel in a perpendicular poſition, would contract the verticity of north and ſouth.

Mr. BOYLE moved, that the following magnetical obſervations might be made, 1. Whether the dipping-needle does not in time vary in the ſame place. 2. Whether or no, when the dipping-needle is in that poſition, in which the inclination is found to be greateſt, and in which the circle is ſuppoſed to ſhew the magnetical meridian of the place, the diſtance of that circle in degrees and minutes &c. from the true meridian of that place, be the ſame with the declination of a magnetic needle horizontally poiſed, from the true points of north and ſouth.

Mr. HOOKE was deſired to cauſe to be made both horizontal and inclinatory magnetic needles, as exact as might be, and to have an inclinatory one hung up conſtantly.

[b] Vol. ii. p. 13. It is printed in the Philoſ. Tranſact. vol. ii. n° 26. p. 478. for June 1667.

Mr. OLDENBURG produced ſeveral letters and papers come to his hands from abroad. One from the earl of SANDWICH to the preſident dated March $\frac{16}{26}$, 1667, at Madrid [c], accompanying ſome celeſtial obſervations. Another from Mr. DESCALET at Suratte, dated Sept. 6, 1666, giving ſome account of the temperature of the air of that place, of the overflowing of the great rivers in thoſe parts, &c. with ſome obſervations made by him of the comet in 1664; which were ordered to be extracted from the letter. A third was a paper of Monſr. BULLIALDUS, containing ſome obſervations made by himſelf about the *Nebuloſa in cingulo Andromedæ*, and the ſtar *in collo cygni* [d]. A fourth a paper ſent by Mr. WILLIAMSON, dated at Crangen, March $\frac{18}{28}$, 1667, concerning ſome *parhelia* and odd inverted rainbows, lately ſeen in thoſe parts: which was ordered to be filed up. A fifth a paper ſent by Mr. OUDART, dated April 17, 1667, concerning the uſefulneſs of ſnakes in catching rats and mice at Tangier; which was likewiſe ordered to be filed up.

Dr. MERRET gave the ſociety an account of ſome obſervations made by him upon the ſtone called *oculus mundi*, which made him doubt, whether it be not an artificial ſtone made of cat's eyes. He was deſired to give in theſe obſervations in writing.

The experiments appointed for the next meeting were

1. Another method of Mr. HOOKE for making bricks:

2. The comparing of a ſix foot glaſs with his reflecting-box.

April 29. At a meeting of the COUNCIL were preſent

The Preſident

Mr. H. HOWARD of Norfolk	Mr. HOSKYNS
Mr. AERSKINE	Mr. COLWALL
Sir ROBERT MORAY	Dr. BALLE
Sir PAUL NEILE	Mr. OLDENBURG.
Dr. WILKINS	

Dr. WILKINS was deſired to be mindful of ſelecting upon every head of the matters hitherto done by the ſociety one or two inſtances to be offered to the council for their approbation, and then to be inſerted in the *Hiſtory*.

It was ordered, that Mr. HOOKE bring to Dr. WILKINS the ſeveral heads, which he had drawn up for that purpoſe: and

That the treaſurer do not call upon Mr. SMETHWICK for any admiſſion-money, nor the weekly payments.

[c] Letter-Book, vol. i. p. 406.

[d] Printed in the Philoſ. Tranſact. n° 25. p. 459.

May 2. At a meeting of the SOCIETY,

Dr. KING's paper giving an account of an experiment made by him upon a mangy dog was read, and ordered to be regiſtered *.

He was deſired to try the transfuſion of the blood of a dog or fox into a ſheep or lamb.

Dr. LOWER being introduced by Mr. BOYLE gave the ſociety an account of an experiment made by him at Oxford of breaking the *ductus thoracicus* in a dog under the ſubclavial veins; upon which the animal died the fourth day after. He promiſed to give the particulars in writing.

He remarked, that the channel lately found by Monſr. PECQUET at Paris was nothing but a lymphæduct from the kidnies to the receptacle of the chyle, not, as Monſr. PECQUET would have it, from the receptacle to the emulgent.

It was ordered, that Dr. LOWER's experiment ſhould be made by tying up the *ductus thoracicus*, to ſee what might be diſcovered by the regurgitation of the chylous matter; whether any new veſſels?

Mr. HOOKE having propoſed the experiment of meaſuring the circumference of the earth for the Monday morning following in St. James's Park at the canal; it was ordered, that the apparatus for it, viz. a teleſcope of 12 or 15 feet and ſome ſtakes, ſhould be made ready againſt that time.

May 9. PHILIP SKIPPON, eſq; was propoſed candidate by Dr. WILKINS.

HENRY and THOMAS HOWARDS, eſqs; the eldeſt and youngeſt ſons of Mr. HENRY HOWARD of Norfolk, were propoſed candidates by Sir ROBERT MORAY.

The brick-engine was produced again, and tried with ſome clay; but that being too ſtiff, the trial ſucceeded not.

The members diſcourſing afterwards upon the whole, and conſidering, that this way would require vaſt ſpaces of ground to lay the bricks upon thus made, thought beſt to lay it aſide.

Dr. KING gave an account of an experiment made by him of quite cutting off a piece of a dog's ſkin, and of ſticking it on again; and that he found it would not do, but that the ſkin mortified and was caſt off. He was deſired to cut off another piece of ſkin with the fleſh on, and preſently faſten it on again; which he promiſed to do.

* This paper does not appear in the regiſter.

He

He undertook alſo to make the experiments of cutting out a dog's ſpleen without tying up the veſſels; as alſo that of Dr. LOWER of breaking the *ductus thoracicus* in a dog.

Dr. CLARKE related, that he had cut out the ſpleen of a very lean dog, partly cutting, partly tearing the veſſels, and not tying them up again; and that the dog lived and did very well upon it, and was always very chearful and amorous; and being afterwards opened, when knocked on the head, the veſſels were grown faſt to the neighbouring parts, and the meſentery covered with fat. He was deſired to give all the particulars of it in writing, which he promiſed to do.

The operator was ordered to furniſh the anatomical committee, which was to meet again at Sir GEORGE ENT's houſe on the Monday following, with the apparatus mentioned at the meeting of *April* 18, viz. ſome lobſters, flounders, &c.

Sir ROBERT MORAY preſented the ſociety with AMBROSE PARE's works.

Mr. HOOKE was ordered to ſend to Sir GEORGE ENT's houſe the medical book lately preſented by Monſr. MENJOT, a Pariſian phyſician, in order that Sir GEORGE might peruſe it and give an account of its contents.

He was likewiſe ordered to procure ſome both dipping and horizontal needles as exact as could be got; as alſo to make the apparatus ready for obſerving the variation of the needle.

The experiments appointed for the next day were

1, The comparing of the reflecting tube with an ordinary one of ſix foot, by uſing the ſame object and eye-glaſſes in both.

2. To open the thorax of a dog, and to keep him alive with blowing into his lungs with bellows.

3. To make trials with the great load-ſtone formerly mentioned by Dr. COTTON.

4. To try in St. James's park between that and the following meeting, if it might be, the experiment of meaſuring the earth, and to give an account of the ſucceſs at the next meeting.

May 16. Mr. SMETHWICK was admitted.

Mr. SKIPPON was elected and admitted.

Monſr. BULLIALDUS's letter in Latin dated at Paris May 16, 1667, N. S. [f] acknowledging the favour of being elected into the ſociety, was read.

[f] Letter-Book, vol. ii. p. 25.

Mr.

Mr. OLDENBURG produced an algebraic propoſition ſent from Paris for reducing a biquadratic equation into two quadratic ones, that it may be effected in plain geometry. It was remarked by Dr. CROUNE from Mr. JOHN COLLINS, that this propoſition was already well explained in the High Dutch algebra of JOHN HENRY RHON, a ſcholar of Dr. PELL; which book was tranſlated into Engliſh, and then in the preſs [z].

Mr. HOOKE produced the two glaſs tubes, a common one of ſix feet, and another of the new way by reflection. Being compared by exchanging the glaſſes, the members judged the common one to ſhew the object more clear than the other did, though both ſhewed it of near the ſame bigneſs.

Upon conſideration it was found and declared by Mr. HOOKE, that the reflecting-box had ſeveral defects; 1. that the intermediate glaſs of it was too thick. 2. That the glaſſes were not ground ſmooth. 3. That one of the glaſſes was convex, the other concave. It was ordered, that theſe defects be remedied againſt the next meeting.

The great load-ſtone of ſixty pounds weight was tried, both the pieces of it being tied together. It moved a needle at about ſeven feet and a half diſtance; the great piece at about ſeven feet diſtance; the little piece at near ſix feet.

It was ordered, that it ſhould be tried again by Mr. HOOKE in private, and an account of what he had obſerved be brought in; as alſo that it ſhould be tried how far a good magnet moves iron.

Mr. BOYLE moved, that it might be tried ſomewhere in the ruins of London, what was the declination of the needle after the fire; ſince it was affirmed by authors, that after the burning of Veſuvius, the declination was altered in thoſe parts. It was ordered, that Mr. HOOKE ſhould take care to have this done.

It being inquired how the quick-ſilver ſtood about and during the time of the fire, Mr. HOOKE affirmed, that he had found it very high. Mr. BOYLE had not found his tube ſo.

Mr. COLWALL promiſed, that he would bring in an account of the obſervations made by himſelf, of the ſeveral ſtations of the quickſilver for ſeven months together, and of its ſtation at the time of the fire and after it.

It was again ordered, that the magnetic apparatus ſhould be made ready to obſerve the variation of the needle at Whitehall.

Mr. HOOKE obſerved, that he had a way of handling the needle ſo, as that it ſhould move without friction.

[z] It was publiſhed at London 1668, in 4to, under the title of *An Introduction to Algebra*. It was tranſlated out of High Dutch into Engliſh by THOMAS BRANKER, M. A. much altered and augmented by Dr. PELL.

Dr.

Dr. KING gave an account of having cut out the ſpleen of the dog, into which the ſheep's blood had been formerly transfuſed; and that he had done it without tying up the veſſels. The operator was ordered to carry this dog to the preſident's houſe; and Dr. KING was deſired to bring in an account of his experiment in writing.

The operator was ordered to have a dog ready againſt the next meeting for opening the thorax.

The other experiments for the next meeting were

1. The perfecting of the reflecting tube.

2. The magnetic needles.

3. The injection of wind into a dog, to ſee, what influence it hath upon reſpiration.

4. The experiment of Dr. LOWER of breaking the *ductus thoracicus*, delivered by him to Dr. CLARKE, to be called for and read.

Mr. BOYLE moved, that the experiment of injecting wind or air might be improved by injecting fumes.

May 23. At the meeting of the COUNCIL were preſent

The Preſident

Mr. AERSKINE	Mr. COLWALL
Sir ROBERT MORAY	Mr. HOSKYNS
Sir PAUL NEILE	Dr. BALLE
Mr. HENSHAW	Mr. OLDENBURG.
Dr. WILKINS	

It was reſolved, that the ducheſs of Newcaſtle [h], having intimated her deſire to be preſent at one of the meetings of the ſociety, be entertained with ſome experiments at the next meeting; and that the lord BERKELEY and Dr. CHARLETON be deſired to give notice of it to her Grace, and to attend her to the meeting on the Thurſday following.

It was ordered, that for the ſaid entertainment there be made ready the experiments of colours formerly mentioned by Mr. BOYLE; the weighing of air in an exhauſted receiver; the diſſolving of fleſh with a certain liquor of Mr. BOYLE's ſuggeſting, &c.

[h] MARGARET, daughter of THOMAS LUCAS of St. John's near Colcheſter, eſq; and ſiſter of JOHN lord LUCAS, well known for her writings upon various ſubjects.

It

It being moved again, that ſuch inſtances, as are to be inſerted in the Hiſtory of the Society, might be reſolved upon, it was ordered, that it ſhould be left to the preſident and Dr. WILKINS to agree upon ſuch, as they ſhould think fit for that purpoſe.

N° 25 of the *Philoſophical Tranſactions* was licenſed.

At the meeting of the SOCIETY on the ſame day,

THOMAS HARLEY, eſq; was propoſed candidate by the preſident.

The experiments appointed for this meeting were called for, but none of them being ready, order was given not to fail of having them ready againſt the next meeting.

The lord BERKELEY mentioned, that the ducheſs of Newcaſtle had expreſſed a great deſire to come to the ſociety, and to ſee ſome of their experiments; but that ſhe deſired to be invited. This was ſeconded by the earl of CARLISLE and Dr. CHARLETON, who preſſing, that it might be put to the vote accordingly, whether the ducheſs of Newcaſtle ſhould at her deſire be invited to be preſent at the meeting on the Thurſday following; it was carried in the affirmative.

The ceremonies and the ſubjects for her entertainment were referred to the council.

A paper of Dr. WILKINS, given him by Dr. KING, about the effects of corroſion upon a knife by cider, was read, and ordered to be filed up [1].

It was remarked by ſome members, that in Herefordſhire, a cider country, there was no complaint of the ſtone.

Sir GEORGE ENT mentioned, that the anatomical committee had begun to make ſome experiments at his houſe upon lobſters and ſcates; and that when they had made farther progreſs therein, they would give an account of them.

Mr. HOOKE moved, that ſome experiments might be made, to find whether it be the ſupply of freſh air, or the motion of the lungs, that keeps animals alive; which he ſaid might be done by cutting a hole in the thorax, and making an inciſion in the lungs, and blowing into them by the *aſpera arteria*. It was ordered, that the experiment ſhould be made as ſoon as it could conveniently be done.

He moved likewiſe, that the *inteſtinum rectum* in ſome animal or other might be cut off; which he thought could be as eaſily done as the taking out of a ſpleen: Which experiment was alſo ordered to be made.

[1] PRESS, D. D.

The operator was ſtrictly charged to provide dogs from time to time for the uſe of the ſociety, and of thoſe, who, at the deſire of the ſociety, had undertaken to make experiments of ſeveral kinds upon them.

The experiments appointed for the entertainment of the ducheſs of Newcaſtle were, 1. Thoſe of colours. 2. The mixing of cold liquors, which upon their infuſion grew hot. 3. The ſwimming of bodies in the midſt of water. 4. The diſſolving of meat in the oil of vitriol. 5. The weighing of air in a receiver, by means of the rarefying engine. 6. The marbles exactly flatted. 7. Some magnetical experiments, and in particular that of a terrella driving away the ſteel-duſt at its poles. 8. A good microſcope. Theſe experiments Mr. BOYLE and Mr. HOOKE were deſired to provide and take care of.

May 30. Mr. HARLEY was elected.

Monſr. PETIT's letter to the ſociety, dated at Paris May 27, 1667, N. S. [k], containing his acknowldgements for the honour of being elected into their body, was read.

This letter was accompanied with a paper containing ſeveral magnetical experiments, as that of Dr. GILBERT's terrella, and ſome of the variation of the needle.

Mr. HOOKE was put in mind of making ready the magnetical apparatus for obſerving the preſent variation of the needle at Whitehall; as alſo to obſerve that variation in the midſt of the ruins of London, according to the ſuggeſtion of Mr. BOYLE on the 16th of May.

A letter from Dr. POPE to Mr. HOOKE dated at Exeter May 25, 1667, was read, giving an account of worms in the ſtomachs of cormorants, which he ſuppoſed to be the cauſe of their voracity. It was ordered, that it be filed up [l], and that Dr. POPE be deſired to inquire, whether thoſe cormorants had worms in their ſtomachs at all ſeaſons of the year.

Another letter of his about grout-ale was produced, but the reading of it deferred till the next meeting.

Dr. CLARKE produced a paper of Dr. TURBERVILL concerning a man, whoſe ſpleen was cut out, and yet he ſurvived.

Dr. CLARKE was deſired to procure from the relator an account of the time when this was done, that being omitted in the paper.

The ducheſs of Newcaſtle coming in, the experiments appointed for her entertainment were made:

[k] Letter-Book, vol. ii. p. 30.

[l] It is entered in the Letter-Book, vol. ii. p. 29.

Firſt, that of weighing the air, which was done with a glaſs receiver of the capacity of nine gallons and three pints; which being exhauſted, and put into a ſcale, and then opened, and the air let in, weighed thereupon one ounce and ſeventy-one carats more than it did when exhauſted.

Mr. BOYLE ſuggeſted afterwards, that a gage might be employed to know how much air was left, which was ordered to be done.

Next were made ſeveral experiments of mixing colours.

Then two cold liquors by mixture made hot.

Then the experiment of making water bubble up in the rarefying engine, by drawing out the air; and that of making an empty bladder ſwell in the ſame engine.

Then the experiment of making a body ſwim in the middle of the water:

And that of two well-wrought marbles, which were not ſeparated but by the weight of forty-ſeven pounds.

After the ducheſs was withdrawn, Mr. HOOKE was put in mind of the experiment of meaſuring the earth in St. James's park, to be tried there on the Monday morning following.

Mr. COLWALL preſented his paper of thermometrical and baroſcopical obſervations; which was ordered to be regiſtered [m].

The anatomical experiments appointed at the preceding meeting were ordered to be made at the following one.

It was ordered likewiſe, that the reflecting box be preſented at that meeting, after the defects obſerved in it at the meeting of May 23, were rectified.

June 3. At a meeting of the COUNCIL were preſent

The Preſident

Mr. AERSKINE
Sir ROBERT MORAY
Sir PAUL NEILE
Dr. WILKINS
Mr. HOSKYNS
Dr. BALLE
Mr. OLDENBURG.

It was moved, that a fit perſon for another curator to the ſociety might be thought upon; and the council was deſired accordingly to take it into conſideration.

[m] It does not appear in the Regiſter.

Mention

Mention was made by ſome of Dr. WALTER NEEDHAM, by others of Dr. RICHARD LOWER. This matter was left to farther conſideration.

N° 26 of the *Philoſophical Tranſactions* was licenſed.

June 6. At a meeting of the SOCIETY,

Sir BERNARD GASCON was propoſed candidate by Mr. HENRY HOWARD of Norfolk.

WALTER NEEDHAM, M. D. was propoſed by Dr. WILKINS.

A letter of Dr. POPE to Mr. HOOKE concerning the way of making grout-ale was read, and ordered to be filed up.

The ſourneſs of this liquor gave occaſion to ſpeak of the cauſes of ſourneſs in general, and the ways of curing liquors of it. Some members mentioned, that vintners uſe to reſtore their wines beginning to grow ſour by quick lime and other calcined ſubſtances, which by precipitating the ſourneſs reſtore ſuch wines; though, when the wines are ropy, they are paſt recovery. Others remarked, that red lead put into vinegar would ſweeten it.

It was ordered, that the experiment ſhould be made at the next meeting of dulcifying vinegar with red lead, oculi cancrorum, oiſter-ſhells, crab's claws, chalk, &c. And that Mr. HOOKE take care of this experiment.

Mr. HOSKYNS mentioned, that the huſks of grapes were uſed to turn wine into vinegar; which he ſaid was alſo taken notice of by GLAUBER.

He ſuggeſted, that it were deſirable, that the ſecretary by his correſpondence in the Eaſt-Indies would learn the way uſed there of extracting ſpirit out of rice; which Mr. OLDENBURG undertook to do.

Mr. BALLE preſented his obſervations concerning the weather, but took the paper home with him in order to make a fair tranſcript of it.

Mr. HOOKE remarked, that ſix or ſeven hours before the beginning of the ſtorm of wind on the day preceding, the quick-ſilver in the wheel barometer had fallen very conſiderably, almoſt a quarter of a circle. Mr. COLWALL confirmed this by the obſervations made by himſelf.

Dr. KING gave an account of the experiment lately made by himſelf of transfuſing the blood of a dog into a ſheep, the ſheep being very ſick upon it, but ſomewhat relieved by taking away ſome of her blood; it being thought, that ſhe had received too much blood from the dog. He was deſired to give this account with all the circumſtances in writing [n].

[n] Regiſter, vol. iii. p. 194.

He related likewiſe, that the ſheep, into which formerly the blood of a calf had been transfuſed, and which was, after the experiment, turned to graſs, after three weeks time fell ſick, pined away, and died.

He was deſired to repeat this experiment at his conveniency, and to ſend the ſheep, on which the experiments were made, to Kenſington to Mr. HENSHAW's houſe, who was deſired to permit them to graze in his ground; which he promiſed to do.

Mr. HOSKYNS mentioned, that there was one Mr. WRIGHT, who had a ſtone like a ſlate taken out of a rock, which being thrown into warm water, and then put under a bed of earth, would produce muſhrooms upon it. He was deſired to produce ſome of this ſtone, which he promiſed to do.

Sir BERNARD GASCON took notice, that he knew alſo a gentleman in London, who had a kind of ſpongy ſtone, which being boiled in water would produce muſhrooms in it. He promiſed to procure ſome of theſe ſtones.

Dr. WHISTLER moved, that the experiment ſo much diſcourſed of might be made, of pulverizing muſhrooms, and infuſing them in water warmed, and of throwing ſuch water upon a bed of earth, to ſee, whether it would produce ſuch a quantity of muſhrooms, as was affirmed.

Mr. HENSHAW and Mr. EVELYN were deſired to try this experiment, which they promiſed to do.

Mr. HOSKYNS intimated, that the gentleman, who had the ſtone abovementioned, would not ſcruple to declare the place, where that rock was, that yielded it.

He deſired, that the Hungar's beer brewed in Holland without boiling might be inquired after, and the way of brewing it procured; which Mr. OLDENBURG undertook to do.

Mr. HOOKE was ordered to proſecute the experiment of meaſuring the earth in St. James's park. He named the Monday following for it. Mr. NEILE was deſired to ſpeak to Sir PAUL NEILE in the name of the ſociety, that he would obtain leave to make that experiment in the park.

Mr. HOOKE was put in mind to perfect his reflecting-box againſt the following meeting.

He intimated, that this ſort of teleſcopes would ſerve for a very convenient helioſcope, to look upon the ſun at all times, when it ſhines, without offence to the eye.

Dr.

Dr. KING being called upon to give account of what had been done at the laſt meeting of the anatomical committee at Sir GEORGE ENT's houſe, referred to Sir GEORGE himſelf, who was abſent.

June 13. The ſociety did not ſit.

June 20. Sir BERNARD GASCON was elected *nemine contradicente*, and preſently admitted.

Dr. WALTER NEEDHAM was likewiſe elected.

Mr. BALLE was deſired to make the magnetic experiment formerly diſcourſed of by Mr. HOOKE.

He acquainted the ſociety, that Dr. COTTON had, according to his promiſe, ſent to them a load-ſtone of about 160 pounds weight for a terrella, which he had choſen out of above twenty hundred weight of the ſame ſtone; and that it would move a needle at above ſix feet diameter.

Mention being made of the mines where load-ſtones are found, Mr. BALLE related, that the mine, whence theſe came, is in a little round hill in Cornwall, where is alſo an iron mine: That the water, that is in the mine, is of a reddiſh colour: That there is a mixture of greeniſh ſtones up and down in the mine; and that there is likewiſe found a ſhining ſtone of a kind of murrey colour, ſomething like an amethyſt.

Mr. HENSHAW related, that in Italy there was a magnet, whoſe ſphere of attraction reached above a foot, ſo as to hang one ſmall key by the contiguity of another.

The method of making the experiment of opening the thorax of a dog, and preſerving his life for ſome time by blowing into his lungs with a pair of bellows, being diſcourſed of, Mr. HOOKE reported a former experiment of his, that he had taken away all the ribs and the diaphragm, and left only the ſpine and great veſſels; and that the experiment had ſucceeded, ſo as the dog lived ſome hours by blowing into his lungs with bellows; but as he ceaſed to move the lungs, the dog preſently fainted, but revived upon a freſh agitation of the lungs. It was ordered, that Dr. KING be deſired to join with Mr. HOOKE to make this experiment before the ſociety at the following meeting.

Dr. KING related, that he had formerly taken out the heart, and cut off the head of a cat; and yet a good while after upon pinching the tail of the cat, ſhe would ſtir her body, and kick pretty ſtrongly with her hind legs.

Mr. HOOKE acquainted the ſociety, that a friend of his had made many experiments of reſpiration, which he was deſired to give them an account of at their next meeting.

Mr. Hooke tried the experiment, with which he had been charged at the meeting of June 6, of taking away the ſharpneſs of vinegar, and reducing it to a real ſweetneſs, by putting into a little quantity of vinegar ſome red lead in powder. The event was, that the ſharpneſs of the vinegar was much abated, but not wholly diſcharged.

While this experiment was making, Mr. Henshaw deſired, that ſince vinegar was ſuppoſed to be wine deprived of its ſpirits, the vial might be cloſe ſtopt, to diſcover, whether the acrimonious parts precipitated or evaporated, upon putting in the red lead.

Dr. Goddard obſerved, that a mixture of vinegar and red lead gently diſtilled would yield an inſipid liquor; but that if the fire be increaſed to a good hight, there would come laſt of all a very acid ſpirit. He alſo obſerved, that there was a kind of ſulphur in vinegar itſelf; and that ſaccharum Saturni diſſolved in roſe-water, while one's hand or a cloth is wet with it, will ſmell very ſweet of the roſes; but after it is dry, will ſmell like ſtrong vinegar.

Dr. Merret related, that he had long before given his ſon (then at St. Paul's ſchool) to drink a bottle of Rheniſh wine, wherein he had put ſome filings of ſteel; and that the youth forgetting to ſet it in a cellar, had put it on the teſter of his bed; and after ſtanding there about a month, it was as ſharp as very good vinegar; but being ſuffered to ſtand longer, to obſerve what other changes it might have, in about two years after he taſting it found, that it had recovered its former goodneſs in all things; only it was of the colour of claret-wine.

The experiments appointed for the next meeting were,

1. That of opening the thorax of a dog:

2. More experiments of infuſing ſteel and other metals in ſharp menſtrua; as alſo cruſtaceous things, ſuch as egg ſhells, oiſter-ſhells, crabs-eyes, coral, &c.

June 27. The experiment of opening the thorax of a dog, ordered at the preceding meeting, was deferred till the ſucceeding one, becauſe Dr. King, who was to aſſiſt in making the experiment, could not be preſent at this meeting.

Mr. Hooke made ſome experiments to dulcify vinegar, by infuſing the filings of lead, egg-ſhells, braſs, ſteel-duſt, and oiſter-ſhells, in ſeveral vials with vinegar; all which greatly deprived the vinegar of its acidity, and reduced it to ſome kind of vinoſity. It was ordered, that theſe experiments be farther proſecuted againſt the next meeting.

Mr. Balle was deſired to ſend the load-ſtone, lately preſented by Dr. Cotton, to Mr. Hooke, who was to take care to have it well wrought into a terrella.

The biſhop of EXETER related, that the miners in Devonſhire and Cornwall, upon their firſt diſcovery of the tin-ore, gueſs at the quantity to be had, and always obſerve, that thoſe mines run eaſt and weſt. This was confirmed by Mr. WILLUGHBY, who remarked, that coals and other minerals, as well as tin, lie in that poſition.

Dr. MERRET mentioned, that a correſpondent of his in thoſe countries had always obſerved the poſition of mines to be generally eaſt and weſt, except lead-ore; which hath not been obſerved to have any current or declivity of the vein, but is moſt commonly found north and ſouth by the miners.

Mr. WILLUGHBY obſerved, that moſt mines lie high in the weſt, and ſo deepen more and more the farther eaſt they run.

Mr. HOOKE reported, that he had obſerved cliffs of ſtone for near four miles together; that the natural poſition was horizontal, though in ſome places he had found them to lie much ſloping, and in others perpendicular; which, he thought, might fall into thoſe odd poſitions by ſome great earthquakes; and he was of opinion, that the great hills and mountains have been raiſed by earthquakes.

He mentioned a cliff in the Iſle of Wight, the bottom of which was waſhed by the ſea, wherein at a pretty depth below the top, and at many fathoms above the ſurface of the ſea, he had found ſhells of ſeveral ſorts; which he thought might poſſibly have been placed there by earthquakes removing the ſuperficial parts of the earth raiſing the bottom of the ſea, and ſinking the ſurface of the land.

The biſhop of EXETER ſuggeſted, that thoſe ſhells might be carried in by ſubterraneous canals.

Upon this diſcourſe of earthquakes ſome of the members were of opinion, that the great lakes might alſo be made thereby.

Mr. HOOKE related out of VARENIUS's geography, that in China, a lake of thirty leagues over was made by an earthquake, the earth then ſinking; and in another place, for the ſpace of forty leagues, the earth ſhook all at the ſame time.

Sir THEODORE DE VAUX mentioned, that a hill in Switzerland had been removed by an earthquake, with the vines and ſome trees ſtill growing upon it.

Dr. WREN mentioned, that in Italy there was a lake of ſalt water of near an hundred and fifty fathoms deep; and that being deep, the water might be ſalt from what is diſſolved of the earth. The biſhop of EXETER was of the like opinion with reſpect to the ſaltneſs of the ſea.

Mention being made of what Dr. KING had related at the preceding meeting, that he had taken out the heart and cut off the head of a cat, and yet ſome time after,

upon

upon pinching her tail, the body and legs would ſtir pretty ſtrongly, it was thought, that this motion was only convulſive, and not out of any ſenſe.

Some of the members had obſerved, that when the heart hath been taken out of eels and other fiſhes, they have moved for two hours after.

Mr. Hooke reported, that he had taken a whelp out of the uterus, and diſſected it in the evening, and that the heart beat the next morning, when he came to look on it again.

Dr. Wren had obſerved in flies, that if the head be cut off, the body will run away, and live a good while; and if the tail only be cut off, they will live a day; but if they are ſtabbed in the body, they will quickly die, all the muſcles lying ſo about the breaſt, as they do likewiſe in crabs and other cruſtaceous fiſhes.

He mentioned likewiſe, that the blood of flies and inſects was white; and that, though upon killing them, a red matter was ſeen, it was only excrement; and that he had obſerved, that one ſort of beetles die by a worm, that eats them continually. He had farther obſerved, that all inſects breed mites, when they are dead.

Mr. Boyle related, that he knew a man, who by a way uſed by him would undertake to be three hours at a time under water without any prejudice.

This gave occaſion to diſcourſe, what quality it was, that made the air fit for reſpiration. Some thought it became unfit by being clogged and entangled with graſs vapours. Mr. Hooke was of opinion, that there is a kind of nitrous quality in the air, which makes the refreſhment neceſſary to life, which being ſpent or intangled, the air becomes unfit.

He related an experiment long ſince made before the ſociety with a chafing-diſh of coals ſet in a cloſe box, wherein was a pair of bellows ſo contrived, as to blow the coals with that air only, that was included in the box: the air ſo kept had this quality, that after one whole day's time freſh fire would not burn in it, till the groſſer parts thereof were precipitated.

Mr. Henshaw related, that he had heard, that thoſe, who went to the top of mount Olympus and other hills, uſed to breath through a ſpunge dipt in oil.

It was propoſed by Mr. Hooke to have a rareſying engine made of wood big enough for a man to ſit in. This was approved of by Mr. Boyle. Mr. Hooke thought, that ſuch an engine might be made for five pounds; and was ordered to have one made as ſoon as poſſible.

He propoſed a contrivance, which he had, to make a veſſel to ſwim in under water, of any dimenſion, wherein he might paſs as faſt as in a wherry upon the Thames,

Thames, and at any depth he pleaſed with ſafety. He was ordered to compute the charge of ſuch an engine, and report it to the ſociety at the next meeting.

Mr. BALLE produced ſome ſpars and diamonds of ſeveral kinds, aſbeſtus, and ſome other ſtones of a murrey colour, taken out of the loadſtone mines; which were delivered to Mr. HOOKE for the repoſitory.

The experiments appointed for the next meeting were,

Mr. BALLE's of the loadſtone; the opening the thorax of a dog; and a farther account of the infuſions in vinegar.

July 4. The experiment of opening the thorax of a dog, ordered at the preceding meeting, being again called for, was deferred till the following one on account of the abſence of Dr. KING. Mr. HOOKE was deſired to join with any phyſicians of the ſociety, and to take care, that the experiment be then made without fail.

Some other experiments about dulcifying vinegar by diſſolving therein cruſtaceous ſubſtanees and metals, ordered alſo at the preceding meeting, were not made at this.

Mention being again made of the poſition of mines, that they generally lie eaſt and weſt, the lord BRERETON related, that, according to his obſervations, minerals have not any particular tendency that way, but ſpread themſelves all manner of ways; and that in a mine, which he had lately opened in Cheſhire, there were twenty five veins, which ran ſo many ſeveral ways.

His lordſhip likewiſe related out of MERIAN's book concerning the Alpes, written in High Dutch, that in *Gloſſa Bletchia*, one of the hills there, is a river, wherein is a matter like ice, which continually congeals into cryſtal. The author treating alſo of the growth of that hill and many other ſubjects worth notice, Mr. HAAK was deſired to tranſlate this book of MERIAN into Engliſh for the uſe of the ſociety, which he promiſed to do.

The lord BRERETON related alſo, that the river Weaver running from Nantwich to Northwich for about twenty miles had manifeſtly increaſed of late, and exceeded its banks, that did not uſe to be full: that upon digging a ſalt-pit thereabouts about two yards deep he found a pavement and Roman coins, and at a greater depth: that two miles off from that place upon digging was found at the depth of 21 feet (which was three yards and a half below the level of the river) the ſkeleton of a ſtag, which his lordſhip had then in his keeping.

Mr. HENSHAW remarked, that he had been told by Mr. JONAS MOORE, that in the great level of the fens, digging thirty-four feet deep, he had found a Roman cauſey.

Mr. COLWALL obſerved, that in that part of Lincolnſhire called Holland, the ſea had left the ſhore for a great diſtance.

Mr. BALLE remarked likewiſe, that by the river Ex coming to Exeter, the water was gone off ſome acres.

Dr. WILKINS produced an account printed at Paris of two experiments made by the Royal Academy of Sciences there of the transfuſing of blood*. The firſt was on a youth of fifteen or ſixteen years of age, who had a violent fever and a lethargy upon him, his memory being loſt, and little hopes of life. After he had been blooded at a vein conſiderably, he had the arterial blood of a lamb tranſfuſed into him: and though before that he would be ſo ſleepy, as ſcarce to be able to take ſuſtenance, yet the next morning after this operation, he got up, and went about his buſineſs before five of the clock, and continued lively and well. The other experiment was on a labouring man, from whom ten ounces of blood having been taken, twice as much from the crural artery of a lamb had been put into him. The event was, that though after the experiment the man did not repoſe himſelf, as he had been deſired, yet he was very well, and ſaid, that he found himſelf more light and lively than he had ever done in his life before; and offered, that they ſhould make that experiment upon him as often as they would.

Mr. HOOKE excuſed the want of experiments at this meeting, in regard he had ſpent great part of his time in examining an inſtrument, whereby to produce air out of water, which did not ſucceed; on which account he was of opinion, that little air is made out of water, but what may ruſh into the pipes together with it, as in the bellows at Fiale. Mr. HOOKE was ordered to bring in a deſcription of this inſtrument, and an account of the experiments in writing, at the next meeting.

Sir WILLIAM CURTIUS, knt. and bart. then in Germany, was propoſed candidate by the lord BRERETON, according to his deſire in a letter, in which he promiſed to ſerve the ſociety in any thing within his power in Germany, during his ſtay there.

Mr. HOOKE and Mr. BALLE were deſired to obſerve the convexity of the canal in St. James's Park, and to give an account of it to the ſociety at their next meeting.

The experiments appointed for the next meeting were,

1. That of opening the thorax of a dog:

2. More experiments for dulcifying vinegar and other ſharp liquors:

3. Mr. BALLE's experiment with the loadſtone.

* This account is probably that publiſhed at Paris in 4^to^ in 1667, under the title of *Lettre de* M. DENIS, *profeſſeur de philoſophie et de mathematique à* M. DE MONTMOR, *premier maiſtre des requeſtes, touchant deux experiences de la tranſfuſion faites ſur des hommes.*

July

July 11. Mr. Hooke deſiring to be excuſed from making the experiment of opening the thorax of a dog, Dr. Balle and Dr. King were requeſted to take care of it at the next meeting.

Mr. Hooke having made this experiment formerly was deſired to give ſome account of it; who related, that he had cut away all the ribs of the dog, taking out the diaphragm, and left only the ſpine and the great veſſels; and that blowing with a pair of bellows and a pipe thruſt into the windpipe of the dog, the heart continued beating, and the eyes very lively for the ſpace of two hours, which might have laſted much longer; but upon ceaſing to uſe the bellows, the heart grew convulſive and dying, which likewiſe would recover again as ſoon as the motion was renewed. He remarked, that he deſigned this experiment to underſtand the nature of reſpiration.

Sir Paul Neile related, that one day hunting in the biſhop of Winchester's [p] park at Farnham he ſhot a deer with a broad-headed arrow out of a ſteel-bow, which made a wound from the diaphragm to the haunch, clear open. He ſeeing the wound ſo great, ſet only an old dog to hunt the deer down, which purſued the deer ſo long through the buſhes in the park, till the dog was tired, and all over of a white foam with ſweating. When the deer fell, it was found to have loſt all its guts by running among the buſhes a very conſiderable ſpace of ground after it had received the wound.

Mr. Haak being put in mind of his late undertaking to tranſlate Mr. Merian's book on the Alpes out of the High Dutch into Engliſh, reported, that he had a ſon-in-law now dwelling in that country, from whom he could procure a more exact deſcription of Gloſſa Bletchia, and other remarkable things there, than he thought that book might afford; and he promiſed to write for an account as ſoon as he could.

Mr. Mercator's obſervations of the barometer from the 6th of December to the 7th of July were brought in by Mr. Hooke, and ordered to be entered.

The biſhop of Exeter remarked, that Mr. Mercator had acquainted him with his theory of longitudes, which conſiſted of three particulars, equation of time, libration of inſtruments, ſo that no motion might diſcompoſe them, and a defence from the air; and that it was to be performed with a pendulum-clock.

Mr. Hooke reported, that Dr. Croune had received from Richard Townley, eſq; Mr. Gascoyne's inſtrument for meaſuring the diameter of the ſtars with great exactneſs; which inſtrument was afterwards ſhewed to the ſociety, with the models of ſome others; and the improvement of the firſt invention.

[p] Sir Paul's father, Dr. Richard Neile, was biſhop of Wincheſter, from 1628 to his tranſlation to the archbiſhopric of York in 1631.

Mr. Hooke mentioned, that he had invented an inſtrument of this kind, but upon another principle, which would perform the ſame things better, with more certainty and more eaſe.

He related alſo, that he had a theory, which would ſolve all the unequal motions of the planets; which he was deſired to ſhew the ſociety at their next meeting.

He brought in the rarefying-engine, fitted with a wooden veſſel, large enough for a man to ſit in, which was tried; but not being ſufficiently tight, it was ordered to be fitted againſt the next meeting, and to be then tried.

The experiments appointed for the next meeting were,

1. That of opening the thorax of a dog:

2. Of the rarefying-engine:

3. An account of the convexity of the canal in St. James's Park:

4. Some magnetical experiments from Mr. Balle.

July 18. There being but a ſmall number of the ſociety met, the experiment of opening the thorax of a dog was made by Dr. King, but did not ſucceed, the apparatus not being fit. It was therefore ordered to be repeated at the next meeting, and Dr. King was deſired to bring in an account of that operation in writing, notwithſtanding the failure of it.

July 25. Mr. Balle preſented a little book, entitled, *Hiſtorical Applications and occaſional Meditations upon ſeveral ſubjects*, from an unknown hand, for the ſociety's library.

Mr. Hooke brought in Mr. Townley's inſtrument for meaſuring diameters to very minute parts, conſiſting of a ſcrew with indexes, &c. He reported, that Dr. Croune had a deſcription and ſcheme of the inſtrument from Mr. Townley himſelf, which was ordered to be brought in and entered in the regiſter [q]; as alſo, that the operator ſhould make one of the ſame kind to be kept in the repoſitory.

Mr. Hooke produced likewiſe an inſtrument of his own invention for the ſame purpoſe, but of more plain and eaſy uſe, it conſiſting of two threads and a ruler, whereby an inch is diagonally divided into five thouſand parts, and might be with the ſame eaſe divided into forty thouſand or more at pleaſure; to which was to be fitted part of a tube, whoſe circle is divided into 360 degrees, and a thread paſſing through the diameter, which would ſerve to find the true poſition of any ſtar, &c.

[q] It does not appear there.

It was ordered, that Mr. Hooke bring in an account of his inſtrument in writing, with a ſcheme of it, to be entered into the regiſter-book; and that one of the ſame kind be likewiſe made to be kept in the repoſitory.

Mr. Hooke mentioned, that he had another invention of an inſtrument to meaſure diameters with great exactneſs, which he promiſed to give an account of at the next meeting.

Report being made, that the great box fitted to the exhauſting-engine had not ſucceeded according to expectation, the air (as Mr. Hooke ſuppoſed) getting in at the braſs-ſucker, he informed the ſociety, that he had ſince fitted it with a wooden-ſucker inſtead of that; which would be ready againſt the next meeting.

Dr. Wilkins related, that by ſome experiments of this kind, which he had made long ſince at Oxford, it was found, that the air compreſſed in an engine would work through the pores of wood, though an inch thick; which he diſcovered by throwing water on the wood, wherein would appear many bubbles cauſed by the expreſſion of the air from within.

To prevent which in this box Dr. King adviſed, that it might be covered with a good ſear-cloth made ſo, that it might keep the veſſel tight enough to prevent any recourſe of air. But Mr. Hooke replied, that he thought he had ſtopt all poſſible paſſages of air with cement, ſo that it would now perform very well; and if this ſhould fail, he thought there was no better way than to have it covered with lead.

Col. Blount was of opinion, that a good Holland ſear-cloth might hold and laſt better than leather, and that if it were well ſized with glue, it might be to all intents as good as lead.

But it was objected by Mr. Henshaw, that all ſorts of ſear-cloth will ſtretch, and the pores be opened by that ſubtle force.

He inquired likewiſe, whether it were freſh air or vapours, that came in upon exhauſting the box? and was anſwered by Mr. Hooke, that at thoſe times, when he ſat in the box to make the experiment, all the difference, which he found, was only a little extraordinary heat.

Mr. Hooke moved, that ſince the cement about the engine was very ſubject to crack in the carriage from Greſham-college to Arundel-houſe, whereby it became defective, a committee might be appointed to ſee ſome experiments made with it at his lodgings in that college, and to report the ſame to the ſociety.

Dr. King brought in writing an account of ſeveral experiments made by him, viz. 1. Of bleeding a dog into a ſheep. 2. Of a lamb into a fox, with ſome queries upon the ſame. 3. Some additional obſervations to his former account of the production of ants. 4. Of a cat diſſected alive, to ſhew how long ſenſe will remain

remain after the head is cut off. 5. Of a dog ſtrangled, to be recovered by blowing into the aſpera arteria with bellows; which experiment did not ſucceed. 6. Of a bitch diſſected, which had been newly coupled with a dog. 7. Some obſervations in the late experiment of opening the thorax of a dog, which did not ſucceed. All theſe ſeveral experiments were ordered to be regiſtered[r], as follow:

"*May* 30, 1667. 1. Having prepared a ſheep and a dog for the experiment of "transfuſion, I took away blood from the ſheep till ſhe grew faint; then I ſup- "plied her with dog's blood, till ſhe was extream ſick, and, as we judged, had "received as much, if not more blood than ſhe loſt. Then we ſet her upon her "legs, but ſhe would not endure that poſture, but lay down in ſuch an agony, "that we all feared ſhe would die; and in regard we heard a violent clapping of "the diaphragm, we were apt to think ſhe was over ſtockt with dog's-blood, "which made us reſolve to let her blood, ten or twelve ounces, which we did, "and the diaphragm preſently ceaſed that vigorous clapping we heard before, and "ſhe took her breath much more freely; yet remained ſick, and ſo continued two "or three hours, but by the next morning was reaſonably well, and did eat hay. "So I ſent her to graſs, and ſhe eat and ſeemed well ſix or ſeven days, but did not "care to accompany with any other ſheep; but in three or four days more "droopt, and died. But by what I hear, her neck was ill looked to, and tainted, "by reaſon of the heat of the weather and the injury of the flies.

"I think it not amiſs, to tell you, that a great part of this blood was transfuſed "from the dog's vein firſt, but with ſix times the trouble and pains I ever had "before in this kind of experiment. The reaſon I take to be this: the day before "the experiment was made, the dog had loſt one of his jugular veins in another "experiment I had not time to finiſh; and I happened to prepare the dog's other "jugular vein firſt, which being done, both the external jugulars were uſeleſs to "him; which put him into ſo great a diſorder, that we feared he would have died "before the ſheep could be made ready to receive his blood; and when we came "to bleed him into the ſheep, he bled freely a good while, but afterwards the "blood was more apt to coagulate, than I had ſeen it; inſomuch we were forced "to open an artery to finiſh the experiment. Perchance the blood ſtaying ſo "long, as it were, impriſoned, did tend to coagulation before transfuſion.

"*June* 9, 1667. 2. I prepared a fox and a lamb for transfuſion: the fox "was but ſmall and very poor, ſo that I durſt not take above five ounces at firſt, "before he had received ſome: then I bled the lamb into him, till he was ex- "treamly ſhort winded; then for fear of ſuffocation, I ſtopt the current of lamb's "blood, and perceiving the fox to continue very ſick and ſhort-winded, I took "out about four ounces of blood more, of a much more florid colour, than the "fox's own blood was, before it was mixed. After that we fancied him fainter "than before, and bled into him again, till we thought him uncapable of receiv- "ing more without danger. But he continued very ſick, as curſt as before, and "more apprehenſive of being moleſted, a little after, than he was; and forſook

[r] Regiſter, vol. iii. p. 194.

"all

" all things he was uſed to eat or drink; yet if a ſtick was held to him, he " would bark and ſnap at it with great fury: but after twenty-four hours, he " fell into a great trembling and grew faint, and died, and had ſome blood " come out of his noſe when dead. Yet I think his vein was prepared with as " little trouble as any has been in any kind of experiment. Mr. BOYLE did me " the honour to be preſent at this experiment.

" Since I wrote this, I opened the fox, and contrary to expectation found the " thorax and abdomen half full of bloody water, or rather blood, and all the " veſſels very turgid, and the very coats of the inteſtines ſeemed inflamed: ſo " that I believe there was much more blood put in, than was taken out, " though we did not think ſo. Perhaps the conſideration of this great quan- " tity of blood, found in the thorax and abdomen, may prove worth the experi- " ment; viz.

" 1. Whether the lamb's blood did ſo alter the quality and conſiſtence of " the fox's blood, as to make it more thin and fine; and ſo conſequently make " his ſpirits more apt to fly away, whereby the tone of the veſſels might be much " injured either by a relaxation, or by a different heat; either of which perhaps " may weaken retention?

" 2. Which may be more probable, whether (the veins being over full) the " arteries did not force out this blood at their own extremities, the veins not being " able to receive it?

" 3. Whether the great turgency of both veins and arteries did not bereave " them of tightneſs and retention?

" 3. The ants I obſerved did not begin to have the film I formerly ſpoke " of, till towards the end of May; and then three or four hot days cauſed " the outward ſkin to dry and looſen from the body of the ſeeming maggot, " and become that bag, in which ſhe is transformed into an ant, as afore- " ſaid.

" 4. I repeated the experiment I ſpoke of, about a cat cut in two parts alive, juſt " croſs about the diaphragm, and the hinder part ſhall anſwer to touch as diſtinctly " (as if it was whole and the head on) for eight or ten times or more; being " pincht by the foot or tail, it ſhall kick and ſtruggle, and then lie ſtill, unleſs " you pinch or ſtrike it; and that many times diſtinctly, not accidentally. A dog " did the ſame.

" 5. I ſtrangled a dog, till I could feel his heart beat very freely; then I " clapt in the pipe of a bellows into the aſpera arteria, but could not recover " life. I ſuppoſe the blood was coagulated in the brain.

" 6. I

" 6. I diſſected a bitch three hours after ſhe had taken dog, but could not " find any appearance of it in the uterus; it was very dry, but her teſtes were " extremely ſwelled, and all the veſſels very turgid."

Col. BLOUNT related, that he had obſerved hog's waſh to be very good feeding for fiſh, and therefore had ordered, that what was made in his houſe ſhould be thrown into one of his ponds. But one time there being too much of it, the fiſh were ſuffocated, and ſome of them died; and he recovered the reſt by letting freſh water into the pond.

At another time he put a dead horſe into his pond, which putrefied the water ſo, that it killed above 300 tench; but he believed, that there might have been ſome drench or medicine in the maw of the horſe, that might rather have been the cauſe of it, than the fleſh itſelf. Thoſe fiſhes, that were not dead, were recovered by him by throwing chopt parſly into the pond.

He likewiſe mentioned, that a buſhel of lime thrown into a pond of two or three acres would deſtroy all the fiſh; but that a good way to make fiſh thrive in a pond is, to drain the pond, and let it lie for ſome; then to ſow wheat in the mud; and when that is grown to be about a foot high in the blade, to let in the water, and put in the fiſh, which will grow fat upon that feeding.

Dr. WILKINS remarked, that what is vulgarly called the ſtone in a carp's head ſupplies the place of lower teeth by rubbing their meat againſt it with their teeth, that are over it.

Mr. BALLE brought in one of the load-ſtones, which he had procured to be cut through in order to make it a terrella, which he was deſired to get finiſhed as ſoon as he could.

Dr. WILKINS related, that in his late journey to Exeter, meeting with Dr. COTTON, the latter told him, that he had found out a rock of load-ſtones in that country, and would furniſh the ſociety with one of any bigneſs they ſhould deſire.

Mr. BALLE undertook to ſpeak with Doctor COTTON about it, when he ſhould go into the country; and in the mean time he was deſired to bring in a particular account of all ſuch things in magnets, as the ſociety might have occaſion for in furniſhing a magnetical repoſitory. And Mr. HENSHAW, Mr. NEILE, and Mr. HOOKE were deſired to join with him.

Mr. HOOKE moved to have a deſcription of the place, where theſe load-ſtones were found, and to know how the poles lay in the earth, whether parallel to the axis, or after the manner of the dipping-needle, or parallel to any meridian; which might be known by taking the poſition of any ſtone there.

Mr. BALLE anſwered, that the place is twelve miles on this ſide of Plymouth in the road near Dartmouth, in a very high hill of near a mile aſcent: That the water

water ſtanding there is like that of ruſty iron: But with regard to the poſition of the poles, he had not thought of looking after that circumſtance.

Dr. WILKINS remarked, that it was ſaid, that the duke of FLORENCE's great magnet ſtanding long in an undue poſition, viz. not north and ſouth, had changed its poles.

Mr. HOOKE was of opinion, that metals and thoſe mines were at firſt thrown up by earthquakes, though there are metalline waters, that cryſtallize, as is ſeen in the various figures in antimony and other metals; but that gold is made by an extraordinary ſubterraneous heat, becauſe it is always found in metal, not in ore. To which it was anſwered, that there is gold to be found in all metals.

Mr. BALLE preſented a globous ſubſtance taken out of the ſtomach of an ox, which he had perforated, and found it, though hard without, yet to be full of hair within.

The lord BRERETON mentioned, that he had a ſtone, taken out of an ox, of ſubſtance like ſlate, ſolid and ponderous.

The experiment of opening the thorax of a dog made at the laſt meeting not having ſucceeded, it was ordered to be made again at the next; and Dr. KING was deſired to bring in writing an account of that whole operation, though it failed.

Mr. HOOKE and Mr. BALLE were earneſtly deſired to make the experiment of obſerving the convexity of the canal in St. James's Park, and not to fail of giving the ſociety an account of it at their next meeting; and Mr. NEILE was deſired to procure leave from the duke of ALBEMARLE under his hand.

Auguſt 1. The ſociety did not ſit, on account of the abſence of the preſident and vice-preſident.

Sept. 30. The meetings both of the council and ſociety having been intermitted for ſome time, the council met this day in order to ſummon the ſociety to return to their ordinary meetings, and for ſome other affairs. At this COUNCIL were preſent

The Preſident

Mr. HENRY HOWARD of Norfolk	Dr. MERRET
Sir PAUL NEILE	Dr. CROUNE
Dr. WILKINS	Dr. BALLE
Mr. COLWALL	Mr. OLDENBURG.

It was ordered, that the ſociety be ſummoned to meet again on the 3d of October following.

Mr. OLDENBURG acquainted the council, that in the name of the ſociety poſſeſſion had been taken of Chelſea-college [s] on the 27th of that month of September, by Mr. CHARLES HOWARD, Mr. BALLE, Mr. HOOKE, and himſelf; and that two men were placed there to keep poſſeſſion.

It being then mentioned, that a gardiner at Little Chelſea, a married man, was willing to live in the college, and to take care of the ſociety's concerns there, and was likely to be content with a very reaſonable allowance; it was ordered, that he ſhould be ſpoken with by Mr. HOOKE, who knew him.

Mr. CHARLES HOWARD, whoſe preſence at the council had been particularly deſired on this occaſion, received the thanks of the council for his favour of giving them a meeting, and was deſired to take ſuch order *pro tempore* about the houſe of Chelſea-college, and particularly about getting it fitted for a houſe-keeper, as he ſhould think.

Mention being then made of another curator, the conſideration of it was referred to the next meeting of the council.

Dr. WILKINS moved, that a committee both of the ſociety and council might be conſidered of, for raiſing contributions among the members of the ſociety, in order to build a college [t].

It was ordered hereupon, that Dr. WILKINS ſhould be deſired to preſent to the council at their next meeting a liſt of ſuch perſons, as he ſhould think proper for that purpoſe; which he undertook to do.

October 3. At a meeting of the SOCIETY,

There were preſented two books, one from Mr. BOYLE (then at Oxford) by the hands of Mr. OLDENBURG, being a ſecond edition of his treatiſe, intitled, *Of the Origin of Forms and Qualities*, with an appendix, containing, *Free Conſiderations touching ſubordinate Forms*: The other was from WALTER NEEDHAM, M. D. by the hands of Dr. WILKINS, intitled, *Diſquiſitio anatomica de formato fœtu* [u].

Sir MAURICE BERKELEY, knt was propoſed candidate by Sir PAUL NEILE.

Sir WILLIAM CURTIUS was elected.

Mr. HAAK propoſed a kind of maſtic, affirmed to be made by ants in Franconia, ſent out of Germany by Sir WILLIAM CURTIUS. It was wrapped up in two

[s] Dr. SPRAT in his *Hiſtory of the Royal Society*, p. 434, obſerves, that this college had a large incloſure, which was deſigned by the ſociety to ſerve for all experiments of gardening and agriculture; and that by the neighbourhood of the river they had excellent opportunity of making all trials, that belong to the water.

[t] Dr. SPRAT, *ubi ſupra*, takes notice, that this college was intended to ſerve for the ſociety's meetings, laboratory, repoſitory, and library, and lodgings for their curators.

[u] Printed at London 1667, in 8vo.

papers,

papers, one of which contained grains of that maſtic called by the preſenter *undigeſted*; the other termed by him digeſted. It was accompanied with a deſcription of both kinds, which was ordered to be regiſtered [x], as follows:

" In the two ſmall ſealed papers incloſed, I ſend you a ſpecimen of our ant-
" maſtic or frankincenſe, found hereabouts in *Sylva Ottonica*, which I gathered
" myſelf a few days ago upon a hill. That, which fell out new to my obſervation
" about it, was, that the *Materia prima ac indigeſta* lay on the top of the ant-
" hill, like unto a paſte, or a kind of manna; and therefore I did put that by
" itſelf, that you may the better try and compare it, as I did, with the true di-
" geſted or concocted maſtic or frankincenſe. Beſides this, and to my amaze-
" ment, I met with one huge heap, which, like unto a *Cippus exacte rotundus*, was
" raiſed about four foot and a half above ground and reached as far downwards
" into the ground, hollow: this I was loth to deſtroy or undo, intending here-
" after to procure an exact and geometrical dimenſion of it. Belike, this place,
" inhabited by myriads of myrmidonian chymiſts, may be a ſpecial magazine of
" their elaborate and fragrant commodity, far ſurpaſſing that which is frequently
" obvious elſewhere. Perhaps, they within this cippus are under a king of extra-
" ordinary forecaſt and induſtry, whereby they are more orderly imployed, both
" to make and ſecure this their proviſion, (variouſly uſeful, no doubt, as well to
" themſelves, as to men) within ſuch a capacious circumvallation; for there are
" abundance of ſmaller and lighter heaps to be met with in thoſe woods, affording
" but little ſubſtance; though one of my tenants tells me, that in another place,
" by following my direction, he lighted on a heap, where he got two large hand-
" fuls at once, which he made uſe of in his family, during the late contagion.

" So you ſee, Sir, there is no queſtion to be made, but ſuch a ſubſtance, viz.
" a kind of maſtic or frankincenſe is found in theſe parts, among theſe (how-
" ever abject and contemptible) inſects.

" As for the matter of it, I am perſuaded, it is no other but the gum, that
" ſweateth or is drawn out of fir-trees, abounding in theſe woods. The manner
" ſhould be inquired into; viz. whether this ſaid gum be digeſted or alembiced
" by a peculiar and innate aptneſs of theſe inſects; as we ſee and obſerve the bees
" have, for making their wax and honey: Or whether the gum comes to be thus
" coagulated by the warmth of their little cells and caverns; as in a petty kind of
" ſtoves. The chemical operators will beſt be able to trace the progreſs. *Vos*
" *omnia trutina exactiori et ingenioſiori penſabitis.* The firſt or rawer ſort doth hiſs
" in the fire, *et ita prodit partes aquoſas ibi reſtantes*; whereas the other refined
" ſort doth melt like the oriental maſtic; and for my part, I can diſcover but
" ſmall difference in either its ſmell and fumigation, or its operation; viz. that
" it induceth a gentle deſiccation."

Mr. OLDENBURG communicated two papers ſent him out of the country, one containing an account of the tin mines of Devonſhire and Cornwall by Mr. SA-

[x] Regiſter, vol. iii. p. 198.

MUEL COLEPRESSE; the other an account in Latin, dated Sept. 29, 1667, of ſeveral particulars given by Mr. JOHN BURTON of Scarning in Norfolk, viz. of a Turky hen having ſwallowed ſeveral pieces of Engliſh coin found very ſmooth in her maw; of a petrefying water in Norfolk; and of a moveable hillock in a ſtagnant water [y].

Mr. COLEPRESSE's papers about the tin-mines being large were given to be peruſed and conſidered by Mr. BALLE and Dr. CROUNE, and they were deſired, according as they ſhould find them, either to make an extract of them, or to recommend them to be read before the ſociety, as they were.

Sir THEODORE DE VAUX brought in a paper about the refining of ſugar, which was ordered to be regiſtered [z]; and Mr. HAAK and Mr. THOMAS COXE were deſired to join together for bringing in a full account of the hiſtory of the refining of ſugar; which they undertook to do.

Mr. CHARLES HOWARD ſuggeſted, that it might be conſidered, whether maiz might not yield a kind of ſugar, the ſtalks of it containing a very ſweet juice; and he deſiring, that he might be furniſhed with an account of the way of ordering the ſugar-canes for the making of ſugar, Mr. OLDENBURG offered an account of that ſubject, which he had been furniſhed with by an ingenious Engliſh merchant, Mr. DRAKE, who had lived in Barbadoes many years, and carefully obſerved himſelf the method of ſugar-making. This account was ordered to be communicated to Mr. HOWARD.

Mr. OLDENBURG produced a letter to himſelf from Signor MANFREDO SEPTALIO, a curious gentleman at Milan, dated there Aug. 1667, N. S. [a], containing ſome communications about cockle-ſhells digged out of a hill in Italy, and about quickſilver found at the root of the plant *Doronicum*.

This gentleman taking himſelf to be received into the ſociety upon a letter written to him by Mr. OLDENBURG 2d of June, 1667 [b], to invite him to a correſpondence, it was moved, whether he ſhould be propoſed for a candidate, he appearing ſo deſirous to be a member of the ſociety; but it was thought fit to defer this buſineſs till the next meeting.

Mr. OLDENBURG produced a box ſent him by Mr. COLEPRESSE, containing ſome curioſities, which were ordered to be put into the repoſitory, viz. a monſtrous chick; ſome black ſtones, which being lighted will flame, and the fume of which was affirmed to be medicinal for ſeveral diſtempers; two ſtones brought from the ſea-ſide full of little cells, and thoſe cells of little ſhell-fiſhes; and two warming ſtones, one ſmooth, the other rough, with an account of the improvement of their uſes. The deſcription of all theſe particulars was ordered to be filed up.

[y] Supplement to the Letter-Books, vol. ii. p. 71.
[z] It does not appear in the Regiſter.
[a] Letter-Book, vol. ii. p. 41.
[b] Ibid. p. 33.

Dr. CROUNE moved, that Mr. GASCOYNE's inſtrument, ſent by Mr. TOWNLEY, and produced at a former meeting before the ſociety, for the dividing of an inch into many thouſand parts, might be taken into farther conſideration; and that himſelf might be directed, what anſwer to return to Mr. TOWNLEY concerning it. Upon which it was ordered, that the inſtrument ſhould be produced again at the next meeting.

And Mr. HOOKE mentioning, that he had contrived an inſtrument for the ſame purpoſe, and performing it with more conveniency, and to be made with more eaſe and for leſs charge, he was deſired to produce that contrivance at the next meeting; which he promiſed to do.

Mr. PACKER moved, that an engine might be conſidered more convenient and proper to make cyder, than that which is now employed for that purpoſe; and mentioning, that he underſtood, that Mr. HOOKE had thought upon ſuch a one, capable by one motion to break the apples, to put aſide the huſks, and to cauſe the liquor to run out, the ſociety deſired Mr. HOOKE, that, if he had ſuch a contrivance, he would bring in a model of it as ſoon as he could: which he promiſed to do.

The experiment appointed to be made at the next meeting by Mr. HOOKE was the opening of the thorax of a dog, to blow with bellows into his lungs, and thereby to keep him alive: which experiment might conduce to the diſcovery of the nature and uſe of reſpiration. The operator was ordered to provide a dog for this purpoſe.

Mr. HOOKE was likewiſe ordered to proſecute the experiments in the rarefying engine capable of holding a man; as alſo to endeavour to make the experiment for meaſuring the compaſs of the earth, moved ſo long ago, and preſſed ſo often, to be performed in St. James's Park.

Octob. 10. Mr. JOHN COLLINS, accountant to the exciſe-office, and RICHARD LOWER, M. D. were propoſed candidates by the biſhop of Saliſbury [c], and Col. BULLEN REYMES by Mr. EVELYN.

Dr. WILKINS preſented from Mr. SPRAT *the Hiſtory of the Royal Society* [d]; and hearty thanks were ordered to the author for his ſingular reſpect to the ſociety ſhewed in that book.

The

[c] Dr. SETH WARD, tranſlated from the biſhoprick of Exeter to that of Saliſbury, 12 Septemb. 1667.

[d] Mr. OLDENBURG in a letter to Mr. BOYLE dated at London, Nov. 24, 1664, (printed in Mr. BOYLE's works, vol. v. p. 325. had, upon reading the manuſcript of this *Hiſtory*, remarked, that "he knew not whether there was enough ſaid "in it of particulars:" and in a letter of the 1ſt of Oct. 1667, (Mr. BOYLE's works, p. 367.) he has another paſſage on that ſubject after that *Hiſtory* was printed, and ready for publication: "There is a certain gentleman, a florid writer, "one of our royal collegiates, who intends to "print ſhortly ſome paralipomena relating to the "hiſtory of our ſociety; wherein he means to "take more notice of the performances of ſome "eminent members thereof, than hath been done "by

The experiment of opening the thorax of a dog was made by Dr. LOWER and Mr. HOOKE, which ſucceeded well, as it had done formerly, according to the account already regiſtered of it. Sir GEORGE ENT reflecting upon this experiment, ſaid, that it ſhewed what was not the uſe of reſpiration, but not what it was: that the lungs not beating at all, but only kept extended with freſh air blown in by bellows, ſhewed, that the lungs did not ſerve to promote by their agitation the motion of the blood. Mr. HOOKE conſidered, that the dog being continually ſupplied with freſh air was kept alive, but was ready to die, if either he was left unſupplied, or his lungs only kept full with the ſame air; and thence conceived, that the true uſe of reſpiration was to diſcharge the fumes of the blood.

Dr. CROUNE produced Mr. GASCOYNE's aſtronomical inſtrument ſent by Mr. TOWNLEY for the view of the ſociety, who judged it to be a very ingenious and uſeful contrivance, and deſired the doctor to requeſt Mr. TOWNLEY to leave it

" by Mr. SPRAT, and farther to recommend " and vindicate the modern experimental philo- " ſophers, by repreſenting the advantages of this " way of trials, both for light and uſe, above " that of former times. It had been extant, I " find by his letter, ere this; but that he ſtayed " for Mr. SPRAT, to ſee what room he would " leave for his thoughts, and finding now, that " he hath not throughout prevented him, he " ſeems reſolved to purſue his deſign, though it " will not make above half a dozen ſheets, and " therein to acknowledge ſome grand contribu- " tions to philoſophy, that have been omitted by " the other. This is but juſt, and hath therefore " received encouragement from me, together with " the ſuggeſtion of ſome particulars, which this " author could not be acquainted with ſo well as " the ſuggeſtor." This author was evidently Mr. JOSEPH GLANVILL, rector of the great church of St. Peter and St. Paul in Bath; and the book, which he was compoſing, his *Plus ultra: or, the progreſs and advancement of knowledge ſince the days of* ARISTOTLE; *in an account of ſome of the moſt remarkable late improvements of practical uſeful learning*, printed at London 1668 in 8vo. This treatiſe and Mr. SPRAT's *Hiſtory of the Royal Society* gave great offence to Mr. HENRY STUBBE, the phyſician, of Warwick, who took occaſion thence to attack that ſociety with uncommon virulence and ſcurrility of language, charging the members not only with bringing contempt upon antient and ſolid learning, eſpecially the Ariſtotelian philoſophy, but likewiſe with undermining the univerſities, deſtroying the eſtabliſhed religion, and introducing popery in its ſtead. Theſe charges he attempts to ſupport in his ſeveral pieces againſt Mr. SPRAT and Mr. GLANVILL, with the titles of which the readers of the preſent age will perhaps be fully ſatisfied. Againſt the former he publiſhed *Legends no Hiſtories: or, a Specimen of ſome Animadverſions upon the* Hiſtory of the Royal Society, London 1670, in 4to. *Cenſure on certain Paſſages contained in* The Hiſtory of the Royal Society, printed at Oxford the ſame year in 4to. *Campanella revived: or, an Inquiry into* The Hiſtory of the Royal Society: London 1670, in 4to. And *a Reply unto the letter written to Mr.* HENRY STUBBE *in defence of* The Hiſtory of the Royal Society: Oxford 1671, in 4to. His pieces againſt Mr. GLANVILL are intitled, *The* Plus ultra *reduced to a* non plus: *or, a Specimen of ſome Animadverſions upon the* Plus ultra *of Mr.* GLANVILL, *wherein ſundry errors of ſome virtuoſi are diſcovered, the credit of the Ariſtotelians in part re-advanced, and enquiries made about the advantages of the antient education in England above the novel and mechanical, &c.* printed at London 1670, in 4to. *A Preface againſt* ECEBOLIUS *(alias* JOSEPH) GLANVILL, *fellow of the Royal Society*, printed at the end of his *Reply unto a letter written to Mr.* HENRY STUBBE. Even in his letters to Mr. BOYLE, to whom he was greatly obliged, and for whom he profeſſed a high eſteem, he could not forbear his invectives againſt the Royal Society, as appears from three of thoſe letters written in Decemb. 1669, and in May and June 1670, printed in *the life of Mr.* BOYLE prefixed to his *works*, and reprinted in 8vo. Mr. GLANVILL replied to him in his *prefatory anſwer to Mr.* HENRY STUBBE, *the doctor of Warwick, wherein the malignity, hypocriſy, and falſhood of his temper, pretences, and reports, &c. in his animadverſions on* Plus ultra *are diſcovered:* London 1671, in 8vo. And in *A farther Diſcovery of Mr.* STUBBE *in a brief Reply to his laſt Pamphlet againſt* JOSEPH GLANVILL: London 1671, in 8vo.

with them, and to procure ſuch another to be made at their charge by the ſame artiſt, who made this.

Mr. HOOKE produced likewiſe his inſtrument for the ſame purpoſe, but made with far leſs charge, and performing the ſame thing with more eaſe. He was ordered to have ſuch a one made for the ſociety, and to bring in a deſcription of it, and its uſe.

Mr. BALLE being called upon for Mr. COLEPRESSE's papers concerning the tin-mines referred to him and Dr. CROUME at the laſt meeting, ſaid, that the doctor having been out of town, they had not yet had the opportunity of conſidering them together. Dr. MERRET mentioning, that he had caſt an eye upon them, moved, that they might be compared with thoſe papers, which had been already given in upon the ſame argument. He was deſired therefore to undertake that taſk, and having compared the ſeveral accounts together, to inform the ſociety how far they agreed, and wherein they differed, and which of them was the fulleſt; and in caſe there was any diſagreement, to extract the particulars of it for farther inquiry. Dr. MERRET promiſed to do this, and the amanuenſis was accordingly ordered to let him have the regiſter-book, wherein thoſe papers concerning the ſaid mines are entered.

Sir THEODORE DE VAUX produced three ſeveral papers concerning ſugar; one of ſugar-candy; the other about the refining of muſcovade, and reducing it into loaves; the third containing ſeveral queries about ſugar. The papers were delivered to Mr. HAAK and Mr. HOOKE to peruſe them, and to conſider of what uſe they might be for the hiſtory of ſugar-woks.

He gave in likewiſe a paper concerning the way of making both ſoft and hard ſoap; which was recommended to the peruſal of thoſe members, who had undertaken to bring in the hiſtory of ſoap-making; and of whom Mr. HOOKE was one.

Sir THEODORE deſiring, that the papers formerly brought in by him about coloration might be called for, and the members, who had undertaken the tranſlation of them into Engliſh, ſpoken to about it, Mr. OLDENBURG ſaid, that ſome of thoſe papers were already tranſlated; but that thoſe, which were committed to the care of Dr. QUATREMAIN and Mr. DANIEL COXE, were not yet accounted for; and that Dr. QUATREMAIN being ſince dead, thoſe perſons, who knew how his effects were diſpoſed of, might be deſired to inquire after that part of the ſaid papers, which was referred to him.

It was deſired likewiſe, that thoſe perſons, who had formerly engaged in the bringing in of the hiſtories of trade, would be mindful of their engagements; as particularly Mr. CHARLES HOWARD of tanning, both the old and new way; Mr. HOOKE of ſoap-boiling and hat-making; Mr. HILL of paper-making; Mr. HOOKE and Mr. THOMAS COXE of ſugar-refining, &c.

Mr.

Mr. OLDENBURG produced a paper ſent him by Mr. GLANVILL about the Mendip-mines, in anſwer to ſome of the printed queries about mines: which paper was read, and ordered to be regiſtered [e], and Mr. GLANVILL was deſired to proſecute thoſe inquiries.

Dr. LOWER offered to make at the next meeting the experiment of breaking the nerves of the diaphragm in a dog, to make him broken-winded; and the operator was ordered to provide a dog for that purpoſe.

It was ordered, that Dr. BALLE, Mr. COLLINS, and Mr. OLDENBURG take care of making a catalogue of the library of Arundel-houſe.

Octob. 17. Sir MAURICE BERKELEY, colonel REYMES, Dr. LOWER, and Mr. COLLINS were elected; and Dr. LOWER likewiſe admitted.

Sir NICHOLAS STEWART, bart. was propoſed candidate by the biſhop of Saliſbury; HENRY CLARKE, M. D. by Mr. GRAUNT; and Monſr. THEODORE DE BERINGHEN by Mr. AERSKINE.

The experiment ordered at the laſt meeting to be made at this was made accordingly by Dr. LOWER, who by piercing both ſides of a dog, and cutting two nerves paſſing towards the diaphragm, made the dog broken-winded. He was deſired to bring in at the next meeting a full deſcription of this experiment, which he promiſed to do.

Some reflections being made on this experiment, it was taken notice, that as this trial ſhewed one of the cauſes of ſhort-breathing, ſo there was another, viz. the ſtoppage of the lungs by a viſcous humour in the pipes.

The experiment made at the former meeting, of preſerving a dog alive by blowing into his lungs with bellows, and keeping the lungs extended by a conſtant ſupply of freſh air, being again conſidered of, it was obſerved by Mr. HOOKE, that this experiment ſeemed to ſhew, that an animal might be kept alive without any motion of the lungs, only by a continued ſupply of freſh air; and that the motion of the lungs did not contribute to the circulation of the blood. He was deſired to bring in an exact deſcription of this experiment, as it was now improved.

It was alſo moved, that it might be conſidered, whether it was the emiſſion and diſcharge of fumes, or the intromiſſion of freſh air, that preſerved the animal alive.

[e] It does not appear in the regiſter, but is printed in the Philoſ. Tranſact. n° 28. p. 525. for Octob. 1667.

Several

Several members were put in mind of the taſks undertaken by them of bringing in hiſtories of trades; and Mr. HILL being called upon among others promiſed to bring in an account of paper-making at his next attendance at the ſociety.

The tranſlation of Sir THEODORE DE VAUX's paper about refining of ſugar was ordered to be brought in at the next meeting.

The paper about ſoap-making given in by Sir THEODORE DE VAUX was delivered to Mr. HOOKE, who undertook to give an account of that trade.

It was ordered, that Dr. MERRET be called upon at the next meeting for Mr. COLEPRESSE's account of tin-mines, which he promiſed to compare with thoſe formerly given in to the ſociety.

Mr. OLDENBURG moved, that the experiment of transfuſion of blood might be proſecuted and conſidered, in order to try it with ſafety upon men, it having been already practiſed at Paris. This was recommended by the preſident to the conſideration of the phyſicians.

The experiment appointed for the next meeting, upon the ſuggeſtion of Mr. HOOKE, was that of making the blood of an animal paſs from one ſide to the other out of the vena arterioſa into the aorta, without paſſing through the lungs. Dr. LOWER and Mr. HOOKE were deſired to take care of this experiment.

Octob. 24. Dr. THOMAS WILLIS and Mr. COLLINS were admitted.

Sir NICHOLAS STEWART and Monſr. THEODORE DE BERINGHEN were elected and admitted.

Dr. HENRY CLARKE was elected.

A magnetical experiment was made ſeeming to ſhew, that the poles of the magnet attract as well as direct: and it was ordered to be repeated at the next meeting in a larger box cloſed with glaſs; and an account of it was directed to be brought in by Mr. HOOKE.

Dr. LOWER's account of the experiment of making a dog broken-winded was read, and ordered to be regiſtered [f]; and he was deſired to try, whether the bare perforating the diaphragm would not have the ſame effect.

Mr. HOOKE's account of the experiment of keeping a dog alive by blowing into his lungs, and even without the motion of his lungs, only by keeping them extended with a conſtant ſupply of freſh air, was read, and ordered to be regiſtered [g].

[f] Regiſter, vol. iii. p. 200. It is printed in the Philoſ. Tranſact. n° 29. p. 544. for Nov. 1667.

[g] Regiſter, vol. iii. p. 203. It is printed in the Philoſ. Tranſact. n° 28. p. 539.

Mr. HENRY HOWARD preſented to the ſociety for their repoſitory an excellent mummy.

Dr. LOWER related the ſucceſs of the experiment, which he had both invented and actually tried, of giving a dropſy to a dog in a very few hours by tying up the vena cava. He was deſired to give an account of it to be regiſtered, and likewiſe to make it before the ſociety at their next meeting, Dr. KING aſſiſting him in it.

The method of transfuſing blood into a man, as it was contrived by Dr. KING was read, and ordered to be regiſtered [h].

It being moved, that the experiment might be made accordingly, as it had been done already in foreign parts, Sir GEORGE ENT ſuggeſted, that he thought it moſt adviſeable to try it upon ſome mad perſon in the hoſpital of Bethlem. This being ſeconded by divers other phyſicians of the ſociety, Dr. LOWER, Dr. KING, Mr. THOMAS COXE, and Mr. HOOKE were deſired to ſpeak with Dr. ALLEN, phyſician to Bethlem, about the execution of this trial, and to let him know the opinion declared in the ſociety concerning it; which they undertook to do.

Mr. COLLINS preſented the ſociety with an excellent double horizontal dial, containing ſome new additions to that inſtrument; as alſo ſeveral books, of which he was the author, viz. 1. *A Treatiſe of Geometrical Dialing* [i]. 2. *The Sector on a Quadrant: or, a Treatiſe containing the deſcription and uſe of four ſeveral quadrants, &c.* [k] 3. *The Mariners plain Scale new plained* [l]. 4. *An Introduction to Merchants Accounts* [m]. 5. *The Doctrine of decimal Arithmetic, ſimple Intereſt, &c. as alſo of compound Intereſt and Annuities, generally performed for any time of payment, &c.* in one printed ſheet in 8vo [n]. Beſides theſe he preſented REMMELINI's anatomical cuts. He was deſired to give in writing an account of what was peculiar in the horizontal dial, which he promiſed to do.

Dr. MERRET gave an account of Mr. COLEPRESSE's papers on the tin-mines, declaring, that they contained divers conſiderable particulars, concerning which ſome remarks had been communicated before, with which Mr. COLEPRESSE's agreed; and that others were new, and deſerved to be read before the ſociety.

Mr. POVEY promiſed to ſend in the ſkeleton mentioned by him formerly, and to give in writing the method of laying on colours with eggs beaten up with any part of a fig-tree.

The experiments appointed for the next meeting were,

[h] Regiſter, vol. iii. p. 205. It is printed in the Philoſ. Tranſact. n° 28. p. 522.
[i] Printed at London 1659.
[k] Printed at London 1658 in 4to.
[l] London 1659 in 4to.
[m] London.
[n] London 1664.

1. The

1. The magnetical experiment, mentioned above, to be reported by Mr. HOOKE.

2. The blood of a dog to be paſſed out of the vena arterioſa into the aorta, without paſſing through the lungs, by Mr. HOOKE.

3. To give a dropſy to a dog by tying up the vena cava; firſt to be tried privately, and then in public.

4. To pierce the diaphragm of a dog, to ſee whether that alone would make him broken-winded.

5. The rarefying-engine.

Octob. 31. WILLIAM AGLIONBY, M. D. was propoſed a candidate by Sir ANTHONY MORGAN.

JOHN WRAY *, M. A. was propoſed a candidate by Dr. WILKINS.

Mr. EVELYN preſented the ſociety with his wooden tables, having the veins and arteries of human body fixed on them.

Dr. LOWER gave an account of the experiment, which he had again made, of tying up the vena cava of a dog, and thereby giving him the dropſy; whereupon the animal died in four or five hours after. He was deſired to give this account in writing, in order that it might be regiſtered, which he promiſed to do.

Dr. CLARKE took notice, that Dr. LOWER had alſo made an experiment of tying both the external jugulars of a dog, and thereby making his head ſwell exceedingly, and look very clear: which experiment Dr. LOWER was deſired to make before the ſociety.

Dr. KING related, that having, upon Dr. LOWER's ſuggeſtions, tried the experiment of tying up the vena cava of a dog, it ſucceeded not with him, it being his firſt trial of this experiment; and that the dog dying the next day, and being opened, he found the cava but half tied. He was deſired to bring in an account in writing of this experiment, and of the obſervations, which he diſcourſed of to the ſociety upon this experiment, as they were hinted to him by Dr. LOWER.

Dr. LOWER mentioned, that the breaking of the receptacle of the chyle would make the lungs adhere to the ſides of the animal in leſs than a day's time. He was deſired to ſhew this to the ſociety.

Mr. HOOKE produced two inſtruments of his own contrivance; one called by him a perfect wheel-work, ſo made as equally to communicate the ſtrength of

* He afterwards diſcarded the initial W in his name, and wrote it RAY, about the year 1670. See his letter to Dr. LISTER 22 Auguſt, 1670, among his Philoſophical letters, p. 72.

the firſt wheel to the laſt, the teeth of it being always taking, ſo as before one tooth had done taking, it was paſſed a good way into another. The other was an inſtrument for obſerving the diameters, poſitions, and angles of the ſtars, conceived to be more plain, eaſy, and leſs chargeable than that of Mr. TOWNLEY. He was deſired to bring in an account of both in writing, and to take care, that Mr. TOWNLEY, who had before communicated to the ſociety an inſtrument for the like purpoſe, might be made acquainted with this new contrivance.

The magnetical experiment, which was tried at the laſt meeting with a ſeeming ſucceſs, was tried again at this, but did not ſucceed at all. Mr. HOOKE was deſired to give an account of this in writing, the unſucceſsful experiments being as well to be regiſtered, as thoſe that ſucceeded.

Mr. COLLINS brought in a narrative of the making of ſalt in Cheſhire, which he ſaid was imparted to him by a perſon very well experienced in that practice. It was read, and a copy of it ordered to be given to the lord BRERETON, to be peruſed by him, and enlarged with ſuch obſervations, as he formerly promiſed to communicate to the ſociety upon the ſame ſubject.

Mr. COLLINS likewiſe moved, that ſome queries might be drawn up concerning this matter, which he would recommend to the perſon, who had given the account abovementioned, and whom he thought very well able to anſwer whatever ſhould be inquired of upon that ſubject. Mr. HOOKE was deſired to draw up ſuch queries.

A report being made of Dr. ALLEN's ſcrupling to try the experiment of tranſfuſion upon any of the mad people in Bethlem-hoſpital, it was ordered, that he ſhould be deſired by Mr. HOOKE to give a meeting at Sir GEORGE ENT's houſe on the Monday following to ſome of the phyſicians of the ſociety, as Sir THEODORE DE VAUX, Dr. CLARKE, Dr. LOWER, Dr. BALLE, and Dr. KING, to conſider together, how this experiment might be moſt conveniently and ſafely tried.

Mr. SKIPPON preſented a kind of ſcaribæus brought from Turky, where falling into a veſſel of turpentine, it was thereby preſerved.

The experiments appointed for the next day were

1. That of paſſing the blood of a dog from one ſide to the other, without its motion through the lungs.

2. Of tying up both the jugulars of a dog, to make his head ſwell.

November 5. At the meeting of the COUNCIL were preſent

The

The Preſident

Mr. AERSKINE
Sir ANTHONY MORGAN
Dr. WILKINS
Dr. MERRET
Dr. CLARKE
Mr. COLWALL
Mr. HOSKYNS
Dr. BALLE
Mr. OLDENBURG.

Sir ANTHONY MORGAN gave an account of the ſtate of the patent concerning the grant of Chelſea-college, viz. that the buſineſs ſtuck at the commiſſioners of the treaſury. It was ordered hereupon, that the ſolicitor of this buſineſs ſhould be addreſſed by Sir ANTHONY MORGAN to Sir PAUL NEILE, and he be deſired to employ his intereſt with the lord ASHLEY for a diſpatch.

The buſineſs of the houſe of Chelſea-college being taken into conſideration, it was agreed upon, that Mr. CHARLES HOWARD ſhould be deſired by the ſecretary to agree about a yearly allowance with the man formerly recommended by Mr. HOOKE as a fit inhabitant of the ſaid houſe; as alſo to give order for ſuch reparations, as ſhould be by him thought neceſſary to lodge the ſaid houſe-keeper conveniently.

The buſineſs of voluntary ſubſcriptions for contributing towards the carrying on of the ends of the inſtitution of the Royal Society being conſidered of, it was after debate and mature deliberation unanimouſly agreed upon,

That it was now a ſeaſonable time for ſuch ſubſcriptions; and that they were to be made firſt by ſuch of the council and of the ſociety, as were both willing and able, and afterwards by ſuch other well diſpoſed perſons not of the ſociety, as ſhould come in by the ſolicitation of a committee to be nominated by the council out of their own number, and out of the fellows of the ſociety; which contributions ſhould be employed in promoting the ends of the ſociety, and particularly to the building of a college, as the moſt probable way of the ſociety's eſtabliſhment.

In order to this, a form of ſubſcriptions was drawn up as follows:

" We, whoſe names are underwritten, being ſatisfied of the great uſefulneſs of " the inſtitution of the Royal Society, and how requiſite it is for attaining the " ends deſigned thereby, to build a college for their meetings, and to eſtabliſh ſome " revenue for diſcharging the expences neceſſary for trial of experiments, do " heartily recommend it to the bounty of all generous and well-diſpoſed perſons " for their aſſiſtance to a work of ſuch public uſefulneſs; and we do each of us, " for ourſelves, hereby promiſe to contribute to thoſe good ends the reſpective " ſums ſubſcribed by each of us, at four diſtinct quarterly payments, to be made " to ſuch perſons, as ſhall be authoriſed under the ſeal of the Royal Society for " the receit thereof; the firſt payment to begin at———."

This

This form was committed to Sir ANTHONY MORGAN and Mr. HOSKYNS to make it obligatory in law.

They were likewiſe deſired to draw up a deed of gift of the library preſented to the Royal Society by Mr. HENRY HOWARD of Norfolk.

It was moved by Mr. COLWALL, that ſome effectual way might be taken by the council to oblige the fellows of the ſociety to pay their arrears: Whereupon it was ordered,

That Mr. COLWALL the treaſurer ſhould write to the ſeveral members of the ſociety, who were in arrears, and ſignify to them, that their poſitive anſwers concerning their payments were expected by the council within one month from the time of the receipt of the reſpective letters ſent to them for that purpoſe, or from the time of their being left at their reſpective houſes or lodgings: And that, in caſe of failure, the council would think themſelves obliged, after ſo long delays, to proceed with them according to ſtatute, and ſo to leave them out of the liſt of the ſociety.

It was mentioned by Mr. OLDENBURG, that Sir PAUL NEILE had ſpoken to him, that Mr. ADRIAN MAY had deſired, that the ſociety would give order for a good thermometer for the uſe of the Queen. It was ordered, that the operator ſhould make as good a one as he could.

The buſineſs of cataloguing the ſociety's library being ſpoken of, Dr. BALLE acquainted the council, that in a ſhort time that catalogue would be perfected.

It being repreſented to the council, that it was very neceſſary to have another curator, and Dr. LOWER being propoſed as a perſon very fit to be a curator in anatomical experiments *, Dr. WILKINS was deſired to ſpeak with him about it.

It being moved, that a boy might be allowed to Mr. HOOKE, fit to be employed by him on ſuch occaſions, as concerned the ſervice of the ſociety, it was agreed upon by the council, that Mr. HOOKE ſhould find out ſuch a boy, and that fifteen pounds a year ſhould be allowed him towards the keeping of him.

Dr. WILKINS moved, that Mr. COLLINS might be declared exempt from the payment of admiſſion-money and the weekly payments, he having but a ſmall revenue, and being capable and willing to do the ſociety very good ſervice. The council declared him exempt accordingly.

* Mr. HOOKE in a letter to Mr. BOYLE dated at Greſham college Sept. 5, 1667, and printed in Mr. BOYLE's works, vol. v. p. 548, ſays, "I "hope I ſhall prevail upon Dr. LOWER, and for "him, ſo as to get him anatomical curator to "the ſociety. He has moſt incomparable diſ-"coveries by him on that ſubject, and a moſt "dextrous hand in diſſecting. Some of his diſ-"coveries, I underſtand, will be publiſhed in "the next edition of Dr. WILLIS's book *de* "*Cerebro*."

Mr.

Mr. OLDENBURG read the Latin letter, which he had drawn up to be ſent to Prince LEOPOLD of Florence; which was approved of, and ordered to be ſent to the ſaid Prince in the name of the ſociety, ſubſcribed by Mr. OLDENBURG [p], and addreſſed to Sir JOHN FINCH [q], and accompanied with a copy of the *Hiſtory of the Royal Society*, as a preſent from them to the Prince.

Mr. OLDENBURG had leave to ſend a copy of that hiſtory to Mr. HEVELIUS, another to Mr. WINTHROP in New England, and a third to Monſr. AUZOUT and Monſr. PETIT at Paris.

A committee conſiſting of the preſident, both the ſecretaries, Mr. HOSKYNS, and Mr. BALLE, was appointed to examine the treaſurer's accounts; who was deſired to ſtate them as ſoon as he could.

November 7. At a meeting of the SOCIETY,

Col. REYMES and Dr. HENRY CLARKE were admitted:

Mr. WRAY was elected and admitted:

Dr. AGLIONBY was elected.

Dr. LOWER made the experiment of tying up both the external jugulars of a dog, whereupon the animal after a little time ſomewhat drivelled and wept. He remarked, that a dog being well fed before, theſe effects would be much more remarkable, and the dog would die about two days after the experiment was made upon him, with his head ſwelled, and looking clear, if it be an old dog; for in a young one it would not ſucceed.

This experiment was ordered to be repeated in private two days before the next meeting of the ſociety, that the dog might then be produced dead, to ſee that ſwelling and tranſparency.

It was likewiſe ordered, that the experiment of piercing the diaphragm of a dog, without cutting any nerves, be made at the next meeting by Dr. LOWER, to ſee, whether that alone would render him broken-winded.

Mr. HOOKE ſpeaking again of his experiment of paſſing the blood of an animal out of one ſide to the other without its paſſing through the lungs, and ſhewing his contrivance for performing it, was ordered to try it firſt in private; and leſt there ſhould fall too much air upon the blood, moving openly into the porrenger from one ſide to the other, it was ſuggeſted, that a kind of cover ſhould be prepared for the porrenger to regulate the quantity of the air.

[p] It was dated 25 Nov. 1667, and is entered in the Letter-Book, vol. ii. p. 105.

[q] Mr. OLDENBURG's letter to Sir JOHN FINCH dated 26 November 1667, is entered in the Letter-Book, vol. ii. p. 104.

Mr. COLEPRESSE's obſervations on the tin mines of Devonſhire and Cornwall were read, and ordered to be regiſtered [r].

Mr. COLLINS communicated his deſcription of the double horizontal dial, which he had preſented to the ſociety October 24, and it was ordered to be read at the next meeting, and the dial itſelf then brought to the ſociety.

He preſented likewiſe two ſheets of printed quadrants.

It being moved, that the ſcheme and deſcription of Mr. TOWNLEY's aſtronomical inſtrument ſhould be brought in by Mr. HOOKE, and entered, anſwer was made, that both were ready and in the hands of the ſecretary, who promiſed to produce it at the next meeting.

Mr. HOOKE being called upon for the ſcheme or model of the new inſtrument for making cyder, and not having it ready, was deſired to produce it at the next meeting.

Dr. BALLE preſented an eagle-ſtone, and an helmet-ſtone for the repoſitory.

Dr. LOWER being called upon for the written account of the experiment of giving a dog a dropſy by tying up the vena cava, excuſed the not bringing it in, by alledging, that he intended ſhortly to give a large account of it by the preſs [s].

Dr. KING likewiſe being called upon for his account of what he mentioned at the laſt meeting to have been tried of the like nature by Dr. LOWER's directions, referred himſelf to what Dr. LOWER intended to diſcourſe on that ſubject.

Sir THEODORE DE VAUX brought in a paper giving an account of the practice of making and refining ſalt, which was read, and a copy of it ordered to be communicated to the lord BRERETON for his peruſal, enlargement, and (if he ſhould ſee cauſe) correction.

November 4. Dr. AGLIONBY was admitted.

Sir CHARLES BERKLEY, knight of the Bath, was propoſed candidate by Dr. WILKINS; WILLIAM SOAME, eſq; by Sir ANTHONY MORGAN, and NICHOLAS OUDART, eſq; by Sir THEODORE DE VAUX.

Mr. OLDENBURG communicated a letter to him from Mr. HEVELIUS dated at Dantzick October 21, 1667 [t], wherein the writer gave notice of his *Cometographia* being almoſt finiſhed; and expreſſed his deſires, both of having one of the longeſt teleſcopes, made in England, provided for him, and of being gratified with a full

[r] Regiſter, vol. iii. p. 206. This paper is printed in the Philoſ. Tranſact. vol. vi. n° 69. p. 2096. for March 1671.

[s] He did not execute his intention in that reſpect.

[t] Letter-Book, vol. ii. p. 53.

deſcription, formerly promiſed him by Mr. Hooke, of the way of applying teleſcopical ſights to ſextants, thereby the better to regulate and aſſiſt the ſight in the menſuration of the diſtances of ſtars. Which requeſts of his the ſociety thought ſhould be complied with as far as poſſible; and particularly deſired Mr. Hooke to be mindful of his promiſe concerning thoſe ſights.

Dr. Lower gave an account of his having two days before, according to a former order, made the experiment of tying up both the external jugulars of a dog, to ſee whether his head would ſwell and look clear, and the dog die two days after. But he ſaid, that the dog being young, the experiment did not ſucceed, as he had foretold it would not. Whereupon it was ordered, that the operator ſhould provide an old dog for the Tueſday following, ſuch a one being eſteemed a proper ſubject for this experiment, in regard his veſſels were hard, and not liable to ſtretch, as thoſe of young animals.

He gave an account of the experiment of perforating the diaphragm of a dog without cutting any nerves, and remarked, that after this was done, the animal breathed as well as before, the wound being ſewed up.

He mentioned another experiment, which he had tried of making the blood circulate another way, viz. from the jugular artery to the jugular vein on the ſame ſide, which, he ſaid, ſucceeded ſo well, that the blood being thus made to circulate, the dog continued well. This experiment was ordered to be tried before the ſociety at their next meeting.

Mr. Hooke related, that his experiment of making the blood of a dog paſs from one ſide to the other, without paſſing through the lungs, had not ſucceeded in the way hitherto contrived by him; but that he had thought of another method, which he would farther conſider of.

He was deſired to give in writing all the particulars of the operation, and what hindered the ſucceſs.

Dr. Lower was likewiſe deſired to bring in writing an account of his three experiments abovementioned.

Dr. Lower's account of his experiment, tending to prove, that the ductus chyliferus is the only paſſage, by which the chyle is conveyed out of the ſtomach and inteſtines into the heart, was read, and ordered to be regiſtered [a], as follows:

" Hæc quidem via ſola eſt, quâ chylus è ventriculo et inteſtinis in ipſum ſan-
" guinem et cor infunditur, neque enim alius ei aditus a naturâ datur. At ſiqui-
" dem celebres aliqui viri in eo adhuc errore verſantur, ut venas meſaraicas (quò
" antiquum ſanguificationis munus hepati aſſerant) aliquam chyli partem ex in-
" teſtinis excipere ſtatuant; ut de hâc re certior fierem, ſeriam aliquando impendi

[a] Regiſter, vol. iii. p. 224.

" operam, atque experimento tandem mihi conſtitit, totum chyli penu per ductus " tantùm chyliferos et nullibi aliter in ſanguinem infundi, eique commiſceri. Si " enim curſus ejus per vaſa thoracica impediatur, animal, qualicunque licèt cibo " ſaginatum, intra paucos dies fame penitus interibit, quod quidem in duobus " canibus, diverſo licèt modo, expertus ſum: ſiquidem in altero, thorace dextri " lateris juxta ſpurias coſtas aperto, digitum immiſi, et commune receptaculum " chylo valde turgidum perfregi et laceravi, ut chylo, in cavitatem thoracis, exitu " dato, tranſitus ejus in ductus thoracicos penitùs interciperetur. Quo facto, con- " ſuto et curato vulnere, animal hoc, cibo bis aut ter in die ſatiavi; die quarto " expiravit; ſtatim autem diſſecui, ventriculum et inteſtina valde repleta, quin- " etiam venas lacteas omnes chylo plenas inveni; nihil autem ejus in toto ductu " thoracico apparuit: verùm in eo pectoris latere, in quo commune receptaculum " diſruptum eſt, ferè duæ libræ chyli repertæ ſunt, unde certò conſtare arbitror, " ob præpeditum chyli tranſitum animal hoc, ventriculo licet cibis referto, fame " utcunque periiſſe.

" Quod tamen ut certius redderem, alium canem ſimili modo, ſed in adverſo " et ſiniſtro latere intra tertiam et quartam coſtam ſuperiorem perfodi, è cujus " regione ambo ductus chyliferi in unum truncum coeunt, qui deinceps ex latere " œſophagi inferiore verſus venam ſubclaviam incedit. Immiſſo itaque in vulnus " digito, unguis apice velut in ferram refecto, ductum iſtum diffregi, quo quidem " diſrupto chylus in cavitatem thoracis effluere, ulterius vero penetrare neutiquam " potuit. Quare vulnere, ut prius, curato canem per tres vel quatuor dies bene " paſtum detinui, ex quo tempore elangueſcere cœpit, ac paulo poſt obiit. Cùm " vero thoracem ejus diſſecarem, pectoris latus illud, ubi ductus iſte diſruptus fuit, " chylo repletum, et lobos omnes pulmonis intra hanc cavitatem ab inundante " chylo compreſſos et lateri agglutinatos inveni. Quò autem certior fierem, cana- " lem iſtum uſque adeo diſruptum eſſe, ut nihil chyli ulterius transferre potuerit, " commune receptaculum chylo adhuc diſtentum compreſſi, atque exinde chylus " omnis in pectoris cavitatem effluxit: quin et aqua per ſyphonem in ductum " chyliferum inferius injecta, ultra quam canalis iſte diſruptus eſt, penetrare non " potuit, quin in thoracem pariter exiliit: claro argumento (uti videtur) cùm ani- " mal hoc ex chyli per vaſa thoracica tranſitu impedito interiit, per venas meſa- " raicas non intrare, neque ullam aliam dari viam, quâ ſanguini miſceatur. Quin " et hoc denique ante omnia confirmat, chylum, poſtquam ductus chyliferi ita " perrupti ſunt, in ſanguinem per venas meſaraicas non tranſire; quia, ſi ſanguis " ab animali ita tractato ex arteriâ carotide aut vena jugulari adimatur, nihil ta- " men chyli in illo apparebit, licèt prius optimè paſtus fuerit; quod aliter omnino " fieri debuit, niſi hoc modo fluxus ejus interciperetur, prout alibi oſtendi."

Mr. HOOKE's deſcription of an inſtrument contrived by Mr. TOWNLEY for dividing a foot into many thouſand parts, and thereby meaſuring the diameters of planets with great exactneſs, was read and ordered to be regiſtered [x].

[x] Regiſter, vol. iii. p. 227. It is printed in the Philoſ. Tranſact. vol. ii. n° 29, p. 541, for November 1667.

It was ordered, that one of the aſtronomical inſtruments for dividing a foot into many thouſand parts, as it was contrived by Mr. HOOKE, ſhould be made for Mr. HEVELIUS, at the charge of the ſociety, and ſent to him, as from them, by Mr. OLDENBURG.

Mention being made, that on the 20th of the preſent month of November there would be an horizontal eclipſe of the moon, it was ordered, that Mr. BALLE and Mr. HOOKE ſhould make obſervations accordingly.

Mr. COLLINS having given an account, by word of mouth, of what was peculiar in the double horizontal dial formerly preſented by him to the ſociety, it was ordered, that this being ſufficient for their information, his written account concerning it, together with the printed deſcription of Mr. OUGHTRED's horizontal dial, ſhould be put by Mr. HOOKE's into the ſociety's library.

Mr. COLLINS preſented the ſociety with a printed folio ſheet of the reverſe of the ſaid dial, fit to be paſted on a copper-plate, and to be varniſhed over, and ſo to ſerve as an engraven one with far leſs coſt.

Occaſion being given to ſpeak of varniſhes, Mr. OLDENBURG mentioned, that he had ſeveral receits of them from Mr. COLLINS, which he would communicate.

November 16. At a meeting of the COUNCIL were preſent

The Preſident

Mr. H. HOWARD of Norfolk	Dr. CLARKE
Mr. AERSKINE	Mr. COLWALL
Sir PAUL NEILE	Mr. HOSKYNS
Sir ANTHONY MORGAN	Dr. BALLE
Dr. WILKINS	Mr. OLDENBURG.

Mr. CHARLES HOWARD having been particularly deſired to be preſent at this council to inform them of the ſtate of Chelſea-college, he declared to them the neceſſity of ſome reparation of it, to prevent the falling of the roof. The council thereupon conſidered, that the grant of it not having yet paſſed the great ſeal, before which time they thought it not fit to be at expences about it, reſolved, that ſuch reparations ſhould be deferred, till they had a legal poſſeſſion of the houſe; and that for the ſame reaſon no conſtant indweller ſhould be agreed with for the preſent.

Upon a motion made this day, it was agreed upon, that when the draught for ſubſcribing contributions to carry on the work of the ſociety ſhould be brought in by Sir ANTHONY MORGAN and Mr. HOSKYNS, to whom it was formerly referred, it ſhould then be offered promiſcuouſly to able and willing perſons, as well without as within the ſociety.

It was voted, that there ſhould be no preface to the bill to be ſubſcribed for the purpoſe abovementioned; and that it ſhould be a ſingle obligatory bill to this purpoſe.

" I A. B. acknowledge to owe to the Royal Society the ſum of ——— " to be paid, &c."

It being intimated, that the ground of the wardrobe was yet undiſpoſed of, and that it was probable, that the King upon the motion of ſome of the council would not be unwilling to beſtow it upon the ſociety for the raiſing of a college upon it; the preſident was deſired by the council to take an opportunity to break this matter to his Majeſty; which his lordſhip promiſed to do.

It being moved, that it might be conſidered, whether the obligation ſubſcribed by the fellows of the ſociety, as it now is, hath not a legal validity, Sir ANTHONY MORGAN was deſired to conſider it accordingly, which he undertook to do; and the ſecretary was ordered to cauſe a copy to be made of the ſaid obligation, and of the ſtatutes relating thereto.

Dr. WILKINS being aſked, whether he had ſpoken with Dr. LOWER about the curatorſhip, he informed the council, that he had, and found him very willing to ſerve the ſociety to the beſt of his power; but that on account of ſome buſineſs, in which he was at preſent engaged, he could not immediately undertake that office.

Mention being made, that a ſecurity might be provided for ſuch inventions or notions, as ingenious perſons might have, and deſired to ſecure from uſurpation, or from being excluded from having a ſhare in them, if they ſhould be lighted on by others; it was thought good, if any thing of that nature ſhould be brought in, and deſired to be lodged with the ſociety, that, if the authors were not of their body, they ſhould be obliged to ſhew it firſt to the preſident, and that then it ſhould be ſealed up both by the ſmall ſeal of the ſociety, and by the ſeal of the propoſer; but if they were of the ſociety, then they ſhould not be obliged to ſhew it firſt to the preſident, but only to declare to him the general heads of the matter, and then it ſhould be ſealed up, as mentioned before.

The buſineſs of the library of the ſociety preſented to them by Mr. HENRY HOWARD of Norfolk being diſcourſed of, and particularly the donor's deſire to have it return to his family, in caſe of failure of the ſociety; Mr. HOSKYNS moved, that thoſe books, which remained unchanged, and thoſe which were changed for others, be ſet down in two diſtinct catalogues; and that ſuch catalogues being finiſhed, whoever ſhould have the cuſtody of them and of the library for the ſociety, be ordered to be delivered up to Mr. HOWARD or his aſſigns, in caſe the ſociety be at any time diſſolved.

Sir ANTHONY MORGAN moved, that Dr. AGLIONBY might be diſpenſed with for his admiſſion-money and weekly payments; and the council complied ſo far with.

with his motion, as that the admiſſion-money ſhould be remitted him altogether, and the weekly payments for one year after his admiſſion.

N° 29 of the *Philoſophical Tranſactions*, was licenſed.

It was mentioned, that it had been deſired by the ſociety at their laſt meeting, that the council would conſider of the entering of the letters, which concerned the ſociety, into their letter-book; viz. that all ſuch letters, as were written by the ſociety, or by any member of the ſociety, upon a philoſophical account, and the anſwers to them, read before the ſociety (except thoſe, that ſhall be excepted upon being read) are to be filed up, or put into a book, and thence to be tranſcribed into a letter-book appointed for that purpoſe. This was referred to another meeting of the council.

The committee made the following report to the council concerning the treaſurer's accounts.

" *At a committee of the council of the Royal Society for auditing the treaſurer's accounts*
" *November* 11, 1667,

" Upon examination of Mr. COLWALL's accounts we find him Debtor

	l.	*s.*	*d.*
" To the arrears due to the ſociety for their quarterly payments to " this 11th day of November, 1667	992	18	6
" To money he hath received for admiſſions	23	10	6
" To the balance of his laſt account (in money) ending 5 Nov. " 1666	73	2	4
	1089	11	4

" We alſo find him Creditor

" By money he hath paid for the uſe of the ſociety, as by bills and " order	203	11	11

" By arrears of ſuch perſons, as have been omitted by order of " council dated Octob. 29, 1666, viz.

	l.	*s.*			
" Lord LUCAS	9	2			
" Sir JOHN DENHAM	14	15			
" Dr. SCARBURGH	11	18			
" Mr. DRYDEN	9	19		67	4 0
" Mr. VERMUYDEN	11	15			
" Mr. SCHROTER	9	15			

" By

" By arrears owing by ſeveral members deceaſed, viz.

		l.	s.		l.	s.	d.
" Mr. RICHARD BOYLE	—	7	7				
" Sir KENELME DIGBY	—	5	17				
" Dr. HOARE	—	11	11		43	2	0
" Lord MASSARENE	—	14	9				
" Dr. QUATREMAIN	—	3	18				

" By arrears owing by the reſt of the fellows yet unpaid — 697 18 9

" By balance reſting in caſh now in his hands, ſeventy-ſeven pounds
" fifteen ſhillings and five pence, beſides one hundred pounds in
" the cheſt — — — 77 15 5

1089 11 4

" BROUNCKER, P. R. S.
" JOHN WILKINS
" PETER BALLE
" JOHN HOSKYNS."

Nov. 21. At a meeting of the SOCIETY,

Monſr. LEVONBERG, reſident from the King of Sweden, propoſed by Sir THEODORE DE VAUX, was elected and admitted.

Mr. SOAME was elected and admitted.

Count CHARLES UBALDINI of Monte-Feltri propoſed by Mr. OLDENBURG was elected.

Sir CHARLES BERKLEY and Mr. OUDART were elected.

The ſtatute giving notice of the approaching day of the anniverſary election was read: as alſo the ſtatute for nominating and balloting a committee of the ſociety to audit the accounts of the treaſurer. The vice-preſident in the preſident's abſence nominated Dr. LOWER, Dr. KING, Mr. WRAY, Mr. HOOKE, and Mr. COLLINS for auditors; and they being put ſingly to the ballot were choſen, and appointed for their meeting the Thurſday following at Arundel-houſe before the meeting of the ſociety.

Dr. LOWER having acquainted the ſociety, that one ARTHUR COGA[y] was willing to

[y] Mr. OLDENBURG in a letter to Mr. BOYLE, dated at London Nov. 25. 1667, and printed in Mr. BOYLE's works, vol. v. p. 371, 372, obſerves, that this Mr. COGA was looked upon as *a very freakiſh and extravagant man*; that he had ſtudied at Cambridge, and was ſaid to be a batchelor of divinity;

to ſuffer the experiment of transfuſion to be tried upon himſelf for a guinea, it was reſolved, that the offer ſhould be accepted, and the phyſicians of the ſociety be deſired to be preſent at the operation to be performed on the Saturday following, the 23d inſtant about ten or eleven of the clock in the morning, at Arundel houſe; and that Dr. LOWER and Dr. KING particularly ſhould be deſired to manage the experiment; who were deſired accordingly, and undertook the operation.

Dr. POPE produced a piece of the rock called the ſoapy rock in Cornwall, which feels like ſoap, but does not diſſolve in water. Several of the members ſuppoſed it to be talk. The doctor intimating, that he had formerly given a piece of it to Mr. BOYLE to examine it, it was ordered, that Mr. BOYLE ſhould be deſired to inform the ſociety of what he had obſerved in it.

Dr. POPE having likewiſe informed the ſociety, that he had agreed with a friend of his in Cornwall to preſerve for their repoſitory whatever fiſhes and birds were to be met with in theſe parts; he was deſired to ſee what fiſhes and birds of that country there were already in the repoſitory, and to acquaint his friend therewith, deſiring him at the ſame time to furniſh the ſociety with as many of thoſe, that were wanting, as he could.

Several anatomical experiments formerly ordered to be tried, not being ready, the trial of them was appointed for the next meeting; as 1. That of making the blood in a dog circulate between an artery and a vein on the ſame ſide, to ſee, how it would alter the circulation in the reſt of the body; or what would become of the dog, if the blood could ſo quickly paſs to the heart. 2. That of making the blood paſs from one ſide of a dog to the other, without paſſing through the lungs.

The experiment of tying up both the external jugulars of a dog was again appointed to be made by Dr. LOWER on the Tueſday following upon an old dog, and an account of the ſucceſs to be laid before the next meeting.

Mr. BALLE and Mr. HOOKE being called upon for their obſervations of the horizontal eclipſe of the day before, they ſaid, that they could not obſerve any thing, the weather not being favourable.

Nov. 28. Count UBALDINI and Sir CHARLES BERKLEY were admitted.

JAMES DU MOINLON, M. D. was propoſed candidate by the lord BERKLEY, and

WILLIAM LE HUNT, eſq; was propoſed candidate by Dr. WILKINS.

divinity; and that he was *an indigent perſon*. And Dr. KING in a letter to Mr. BOYLE, dated the ſame day from Boſwell court, London, (ibid. p. 638.) remarks, that Mr. COGA was about thirty-two years of age; that he ſpoke Latin well, when he was in company, which he liked; but that his *brain* was *ſometimes a little too warm*.

Mr.

Mr. COGA, the firſt perſon in England, on whom the experiment of transfuſion was made on the 23d inſtant, by order of the ſociety, and by the management of Dr. LOWER and Dr. KING [z], according to the method brought in by the latter, Octob. 24, 1667, and entered in the regiſter-book, preſented himſelf before the ſociety, and produced a Latin paper of his own, giving an account of what he had obſerved in himſelf ſince he underwent the ſaid experiment: which was ordered to be filed up, and Dr. LOWER and Dr. KING were deſired to give in their accounts of the experiment.

It was ordered likewiſe, that Mr. COGA being willing to have the experiment repeated on him, it ſhould be tried again accordingly, when the phyſicians of the ſociety ſhould judge it ſeaſonable.

Mr. HOOKE being called upon for an account of the experiment which he undertook to try in private, of paſſing the blood of a dog from one ſide to the other without its paſſing through the lungs, ſaid, that he had attempted it, but that it did not ſucceed ſo well as he wiſhed; but that he thought he had now deviſed a method of making it ſucceed as he deſired, of which he hoped to give the ſociety a good account at the next meeting.

Mr. OLDENBURG acquainted the ſociety, that he had received ſome new experiments about light and air from Mr. BOYLE to be communicated to them; which were read, and ordered to be regiſtered [a].

It was ordered, that theſe experiments (which were ſeveral phænomena of rotten ſhining wood incloſed in a receiver of the rarefying-engine, and having the air ex-

[z] Mr. OLDENBURG in his letter to Mr. BOYLE of the 25th of November, cited in the preceding note, takes notice, that this experiment was performed at Arundel-houſe in the preſence of many ſpectators, among whom were Mr. HENRY HOWARD and both his ſons, the biſhop of SALISBURY, four or five phyſicians, ſome parliament-men, &c. and that Dr. KING performed the chief part of it with great dexterity, and ſo much eaſe to the patient, that he made not the leaſt complaint, nor ſo much as any grimace, during the whole time of the operation: that he found himſelf very well upon it, his pulſe and appetite being better than before; his ſleep good, his body as ſoluble as uſual, it being obſerved, that the ſame day he had three or four ſtools, as he uſed to have before. On the morning of the date of Mr. OLDENBURG's letter, the lord viſcount BROUNCKER, who on account of very preſſing buſineſs could not be preſent at the operation, and Mr. OLDENBURG went to ſee Mr. COGA pretty early, and found him in bed, very well, as he aſſured them, and more compoſed, as his hoſt affirmed, than before. Dr. KING likewiſe in his letter written the ſame day, and cited above, remarks, that after the operation the patient was well and merry, and drank a glaſs or two of Canary, and took a pipe of tobaco in the preſence of forty or more perſons; then went home, and continued well all day, having three or four ſtools, as he uſed to have, his pulſe being ſtronger and fuller than before, and he very ſober and quiet, more than before, as the people of the houſe ſaid, who thought, that he had only been let blood. In the night he ſlept well, but ſweat two or three hours, and next day was very well, and ſo remained, and was very willing to have the experiment repeated, his arm being, he ſaid, well. A perſon aſking him, why he had not the blood of ſome other creature inſtead of that of a ſheep transfuſed into him, he anſwered, *Sanguis ovis ſymbolicam quandam facultatem habet cum ſanguine Chriſti, quia Chriſtus eſt agnus Dei.*

[a] Regiſter, vol. iii. p. 239. They are printed in the Philoſ. Tranſact. n° 31. p. 581. for Jan. 166$\frac{7}{8}$.

hauſted)

hauſted) ſhould be proſecuted at the next meeting, by providing ſuch wood, and putting it into a cloſe veſſel; as alſo by placing ſome in the compreſſing-engine.

Mr. CHARLES HOWARD preſented for the repoſitory an earth ſmelling very ſweet like tragoriganum, taken up near London.

Mr. BALLE preſented likewiſe for the repoſitory a piece of rotten maple-wood having many maggots, covered with theca's and leaves, within the heart of it.

Dr. SMITH took from hence occaſion to mention, that at Ancona there is a kind of ſhell-fiſh found in great clay-ſtones. The ſtones, as alſo the number and growth of the fiſh, are diſcerned by certain little holes, which increaſe proportionably with them; yet are never big enough for the fiſh (eſpecially the ſhell) to get out. When the ſtones are taken out of the water, the fiſh will often thruſt their heads to the mouth of the holes, and then ſuddenly retiring into them again ſquirt the water near a foot high, like ſo many *jets d'eau*. They are in ſubſtance and taſte like oiſters, and being bruiſed ſhine in the dark like rotten wood. They are there commonly called *ballari del mare* from their figure.

Mr. SKIPPON confirmed this relation by aſſuring the ſociety, that ſuch like fiſhes were alſo bred in rocks upon the coaſt of Languedoc; and that this was mentioned by RONDELETIUS.

Dr. POPE farther confirmed this account, and remarked, that the like were found in Cornwall on the ſea-ſhore.

The preſident produced a letter written to him from Briſtol by one Mr. METREDONE SPEED, dated Nov. 20, 1667 [b], giving an account of an artificial Spa-water made of ſteel, eſteemed as medicinal as the natural, together with ſome extracts of St. Vincent's water, commended as highly efficacious in curing ſeveral ſtubborn diſeaſes. This letter being read, it was ordered, that the powder ſent with it ſhould be divided, and the one half ſent to Mr. BOYLE at Oxford, and the other half delivered to Dr. WILLIS now in London [c], (both by the care of Mr. OLDENBURG) to examine theſe ſubſtances, and to give the ſociety their thoughts of it.

Mr. OLDENBURG produced a letter written to him by RENATUS FRANCISCUS SLUSIUS, canon of Liege, dated there 24 Novemb. 1667, N. S. [d] giving an account of his method of reducing an equation of the fourth degree or biquadratic into two quadratic equations, by a circle and a parabola; and expreſſing his great reſpect to the ſociety. It was ordered, that the ſecretary ſhould return him the thanks of the ſociety [e], and that Mr. HOOKE and Mr. COLLINS ſhould have a

[b] Letter-Book, vol. ii. p. 84.

[c] He had removed from Oxford and ſettled in St. Martin's-lane, Weſtminſter, after the fire of London in 1666.

[d] Letter-Book, vol. ii. p. 95. See Mr. BOYLE's works, vol. v. p. 372.

[e] Mr. OLDENBURG's letter to Mr. SLUSIUS was dated 25 Nov. 1667. Letter-Book, vol. ii. p. 102.

copy of the letter to conſider, whether Mr. SLUSIUS had effected what he had undertaken.

Mr. OLDENBURG communicated another letter, written from Oxford by Dr. WALLIS, and dated Novemb. 16, 1667[f], containing a rule of his to find the number of the Julian period for any year aſſigned; the cycle of the ſun and that of the moon, and the Roman indiction being given. It was ordered, that the doctor ſhould be deſired to ſend his demonſtration, and to conſider, whether this rule could not be made more eaſy and leſs operoſe.

Mr. COLLINS declared, with what eaſe this had been performed by Father DE BILLY the Jeſuit in a letter dated at Dijon, the 22d of Aug. 1666, and printed in the *Journal des Sçavans*[g]. Mr. OLDENBURG having that journal by him, that part of it, which concerned this particular was read, and approved of; whereupon Mr. COLLINS undertook to give the demonſtration of this rule not yet publiſhed by the French, and to bring it in at the next meeting.

Nov. 30. Mr. OUDART was admitted.

Dr. WILLIS preſented his book, intitled, *Pathologiæ cerebri et nervoſi generis ſpecimen, in quo agitur de morbis convulſivis et ſcorbuto*[h].

The lord biſhop of SALISBURY acquainted the ſociety with a preſent made them by Dr. COTTON of a good quantity of load-ſtones digged up in Cornwall.

A report was brought in of the accounts of the treaſurer for the laſt year to the ſatisfaction of the ſociety, as follows:

" *At a committee for auditing the accounts of* DANIEL COLWALL, *eſq; treaſurer to the* " *Royal Society, November* 28, 1667,

" It appears, that Mr. COLWALL is Debtor

	l.	*s.*	*d.*
" To the arrears due to the ſociety for their quarterly payments " from 5 Nov. 1666, to 11 Nov. 1667	992	18	6
" To money he received for admiſſions	23	10	6
" To balance of his laſt account	73	2	4
	1089	11	4

" Of which it appeareth he hath received

[f] Letter-Book, vol. ii. p. 98.
[g] N° 36. Sept. 6, 1666. p. 699. edit. Amſterd. 1679.
[h] Printed at Oxford 1667, in 4to.

" Upon

	l.	s.	d.
" Upon the quarterly payments	184	14	6
" More for admiſſions	23	10	6
" And the balance of his laſt account	73	2	4
	281	7	4
" It alſo appeareth, that he hath paid			
" Particular bills by order to the uſe of the ſociety amounting to	203	11	11
" And that he hath reſting in caſh in his hands	77	15	5
	281	7	4

" Examined and approved by

" RICHARD LOWER
" EDMUND KING
" JOHN COLLINS
" ROBERT HOOKE."

This being the anniverſary day for electing the council and officers of the Royal Society for the year enſuing, this election was performed according to the rules preſcribed by the charter and ſtatutes, there being this day preſent fifty-nine fellows.

The eleven, who were elected to be continued of the COUNCIL, were

The lord viſcount BROUNCKER
The lord biſhop of SALISBURY
HENRY HOWARD of Norfolk
Mr. AERSKINE
Sir ROBERT MORAY
Sir PAUL NEILE
Sir ANTHONY MORGAN
Dr. WILKINS
Mr. COLWALL
Mr. HOSKYNS
Mr. OLDENBURG.

The ten new members of the COUNCIL were

The lord ASHLEY
The lord BRERETON
Mr. CHARLES HOWARD
Mr. BOYLE
Sir JOHN LOWTHER
Sir GEORGE ENT
Sir PHILIP CARTERET
Mr. THOMAS NEILE
Mr. HAYES
Mr. CREED.

The officers choſen were

The lord viſcount BROUNCKER, preſident.

Mr. COLWALL, treaſurer.

Dr. WILKINS,
Mr. OLDENBURG, } ſecretaries.

The new members of the COUNCIL ſworn,

The lord BRERETON
Mr. CHARLES HOWARD
Sir GEORGE ENT
Sir PHILIP CARTERET
Mr. CREED.

The other five were abſent.

Between this and the former anniverſary election died one of the firſt members of the ſociety, ABRAHAM COWLEY, who was born in the year 1618 [i], in Fleet-Street near the end of Chancery-lane [k]. His father, who was a grocer, dying before his birth, his mother by the intereſt of her friends procured him at a proper age to be admitted one of the King's ſcholars in Weſtminſter-ſchool. The occaſion of his firſt inclination to poetry was his caſual lighting on SPENSER's *Fairy-Queen*, when he began to read, and take ſome pleaſure in it; and he had read that great poet all over before he was twelve years old [l]. And his love of learning appeared ſo early in him, that while he was very young, he uſed, inſtead of playing with his ſchool-fellows on holy-days, to ſteal from them, and walk into the fields, either alone with a book, or with ſome one companion, if he could find any of the ſame temper. He was at the ſame time ſo much an enemy to all conſtraint, that his maſters could never prevail on him by any perſuaſions or encouragements, to learn without book the common rules of grammar [m], in which they diſpenſed with him alone, becauſe they found, that he performed the uſual exerciſe out of his own reading and obſervation. Before he left Weſtminſter-ſchool he publiſhed at London in 1633 in 4to his *Poetical Bloſſoms*, when he was only in his ſixteenth year. Being ſent to the univerſity of Cambridge, he was elected ſcholar of Trinity-college there in 1636; and two years after were printed at London in 8vo his *Love's Riddle, a paſtoral comedy*, written while he was at Weſtminſter-ſchool, and his Latin comedy, intitled *Naufragium joculare*, acted in Trinity-college Feb. 2, 1638. The firſt occaſion of his being engaged in public buſineſs was his elegy on the death of Mr. WILLIAM HARVEY [n], who died at Cambridge Sept. 23, 1657. This brought

[i] Dr. SPRAT's life of Mr. COWLEY, prefixed to Mr. COWLEY's works, edit. 1669 fol.
[k] WOOD Faſti, Oxon. vol. ii col. 120.
[l] COWLEY's Eſſays, eſſay 11.
[m] Ibid. But Dr. SPRAT imputes it to the *defect of* Mr. COWLEY's *memory, that his teachers could never bring it to retain the ordinary rules of grammar.*
[n] Second ſon of Sir WILLIAM HARVEY of St. Edmondſbury in Suffolk, by SUSAN, daughter of Sir

brought him acquainted with Mr. JOHN HARVEY, brother of his deceaſed friend, and afterwards treaſurer to Queen CATHARINE, conſort to King CHARLES II. and by this gentleman's recommendation he was introduced into the ſervice of the lord JERMYN, afterwards earl of St. Albans [o]. In the beginning of 1643, he being maſter of arts was, among many others, ejected from his college and univerſity, on account of his attachment to King CHARLES I. upon which he retired to Oxford, ſettled in St. John's college there [p], and under the name of a ſcholar of Oxford publiſhed the ſame year in 4to *a ſatyr, the Puritan and Papiſt*. Here he proſecuted his ſtudies with the ſame ſucceſs as before; nor was wanting to his duty in the war itſelf, being preſent and in ſervice in ſeveral of the King's journies and expeditions; by which means, and the reputation of his genius, he ſoon grew familiar with the chief men of the court and the gown, whom the fortune of the war had drawn together, and particularly the lord viſcount FALKLAND [q]. He left Oxford a ſhort time before the ſurrender of it to the parliament in June 1646, and went to Paris [r], where he attended on Queen HENRIETTA, wife of King CHARLES I. and ſpent ten [s] years of his abſence from his native country in bearing a ſhare in the diſtreſſes of the royal family, or in labouring their affairs, by maintaining the conſtant correſpondence between the King and Queen, and by performing ſeveral dangerous journies into Jerſey, Scotland, Flanders, Holland, or wherever elſe the ſervice of CHARLES II. required his attendance. In the year 1656 [t] he returned to England, and while he lay hid in London was ſeized, examined and confined, but at laſt obtained his liberty upon Dr. SCARBURG's giving a thouſand pounds bail for him [u]. Complying afterwards with ſome of the men then in power he procured an order for creating him doctor of phyſic in the univerſity of Oxford Decemb. 2, 1657; on which account [x], and on that of a paſſage in the preface to one of his books written while he was a priſoner, he incurred the ſuſpicion and ill-will of the royal party. However upon the confuſions, that followed the death of OLIVER CROMWELL, he went back into France, and remained in the ſame ſtation as before, till near the time of the King's reſtoration [y]. Upon that event not meeting with the preferment, which he expected, and being diſappointed of the maſterſhip of the Savoy, promiſed him by both the Kings CHARLES I. and II. [z] or from a diſinclination to public life, he determined on a private one in the country, where he ſpent his laſt ſeven or eight years, having obtained a plentiful eſtate by the favour of the earl of St. ALBANS and the bounty of the duke of BUCKINGHAM [a]. This was a leaſe of a farm held of the Queen dowager at Chertſey in Surrey [b], where he appears to have ſettled in the ſpring of the year 1665 [c]. At the firſt meetings of the Royal Society before its eſtabliſhment he was named

Sir ROBERT JERMYN, of Ruſhbrook in that county, grandfather of Sir HENRY JERMYN, earl of St. Albans.

[o] SPRAT and WOOD, *ubi ſupra*.
[p] WOOD, *ubi ſupra*.
[q] SPRAT, *ubi ſupra*.
[r] WOOD, col. 120.
[s] Dr. SPRAT is miſtaken in ſaying *twelve*.
[t] WOOD, col. 120.
[u] Dr. SPRAT, *ubi ſupra*.
[x] WOOD, col. 120.
[y] Dr. SPRAT.
[z] WOOD, col. 120. See Mr. COWLEY's 11th eſſay, intitled *Of myſelf*.
[a] Dr. SPRAT.
[b] WOOD, col. 120.
[c] See a letter of his to Dr. SPRAT dated at Chertſey

named as a proper perſon for the deſign of it [d]; and on the 13th of February 166$\frac{6}{7}$ was propoſed as a candidate, and on the 6th of March elected a member. About June 1661 he publiſhed in 8vo his *Propoſition for the advancement of experimental philoſophy, dedicated to the honourable ſociety of Greſham-college.* But his reſidence in the country preventing him from attending the meetings of the ſociety, he was not rechoſen into it after the paſſing of the ſecond charter of April 22, 1663. He died at a houſe called the Porch-houſe, towards the weſt end of the town of Chertſey, July 28, 1667, in the 49th year of his age, and was interred on the 3d of Aug. in Weſtminſter-Abbey, where in May 1675 a monument was erected to him by the duke of BUCKINGHAM, the epitaph on which was written by Dr. SPRAT [e], who has done juſtice to his memory in the account and character of him prefixed to his works.

Another member, whoſe name being printed in the liſt of the ſociety in 1666, and omitted in that of 1667 ſhews, that he muſt have died in that interval, was WILLIAM QUATREMAINE, M. D. who was educated at Pembroke college, in the univerſity of Oxford, where he took the degree of doctor of phyſic June 23, 1657 [f], and about the beginning of the year following was ſent for in the name of King CHARLES II. then in Flanders to be his phyſician, being recommended by the marquis of ORMONDE to Sir EDWARD HYDE in very ſtrong terms [g], having been very uſeful to the marquis in managing his return to France after a ſecret journey made by his lordſhip into England in January 165$\frac{7}{8}$ for the ſake of his Majeſty's intereſts. Theſe few circumſtances to Dr. QUATREMAINE are the only ones known to me, except that he was honoured with the friendſhip of Sir EDWARD NICHOLAS, ſecretary of ſtate, as appears from ſeveral of his letters to Sir EDWARD extant among the papers of the latter. He had been propoſed candidate for election into the ſociety January 23, 166$\frac{6}{7}$, and being choſen March 20, was admitted and ſubſcribed his name June 26, 1661.

Dec. 5. Dr. DU MOLIN was elected and admitted.

JOHN DOWNS, M. D. was propoſed candidate by Dr. CROUNE.

Dr. KING brought in his written account of the tranſfuſion of ſheep's blood into a vein of Mr. COGA, which was ordered to be regiſtered [h].

There were produced two great pieces of the ſweet earth, mentioned at the meeting of Nov. 28. dug up at Hoxton. Dr. CROUNE having infuſed ſome ſpirit of wine upon ſome of the earth, the ſpirit was found to have received both a ſtrong taſte and ſmell from the earth, but no tincture.

Chertſey May 2, 1665, printed by Mr. FRANCIS PECK in his *Collection of hiſtorical pieces*, p. 81. at the end of his memoirs of OLIVER CROMWELL, edit. 1740 in 4to.

[d] See vol. i. p. 4.

[e] WOOD, col. 120, 121.

[f] WOOD Faſti, Oxon. vol. ii. col. 116.

[g] Letter of the marquis of ORMONDE to Sir EWARD HYDE, in CARTE's collection of original letters, vol. ii. p. 123. edit. London 1739, in 8vo.

[h] Regiſter, vol. iii. p. 233. It is printed in the Philoſ. Tranſact. vol. ii. n° 30. p. 557. for Decemb. 1667.

Some of the members were of opinion, that if the place, where this earth was found, were ſearched, there would probably be found ſome ſpring of petroleum.

It was ordered, that the operator ſhould carry one of the pieces in the name of the ſociety to Monſr. LE FEBURE, to examine it by diſtillation; and that Dr. CLARKE ſhould be deſired to confer with Monſr. LE FEBURE, about the beſt way of diſtilling it.

Mr. OLDENBURG communicated a letter written to him by Mr. RICHARD NORWOOD from the Bermudas iſlands, dated June 18, 1667 [i], giving an account of ſeveral particulars propoſed to him by Mr. OLDENBURG in a letter of October 24, 1666 [k], concerning the courſe of the tides there, wells both ſalt and ſweet dug near the ſea, the whale-fiſhing there practiſed anew, and the ſperma ceti whales.

Mr. OLDENBURG produced likewiſe a great packet of letters and other papers ſent to him by Mr. HEVELIUS from Dantzick and ſeveral other places on the Baltic, that from Mr. HEVELIUS being dated November 15, 1666, N. S. [l] Theſe letters and papers contained divers anſwers to queries formerly ſent thither concerning ſuccinum, the effects of cold, the method of making pot-aſhes, the obſervables about ſal gemmæ, &c. To which were added ſeveral relations of other particulars communicated by ſome learned men at Dantzick and other places adjacent, of their own accord, concerning trials made of injecting liquors into human veins, an odd birth of twins, and a ſuggeſtion of new materials for teleſcopical glaſſes, &c. [m].

Of theſe papers only that on the trials of injection [n] was read at this meeting, and the reſt referred to the next.

In the mean time it being taken into conſideration, how the letters, which belonged to the ſociety, might be well preſerved, it was reſolved, that the council ſhould be deſired to take care, that all letters, which are written by and to the ſociety, or by and to any of their members, be put up together in a book, and thence tran-

[i] Letter-Book, vol. ii. p. 37. It is printed in the Philoſ. Tranſact. n° 30. p. 565.

[k] Letter-Book, vol. i. p. 352.

[l] Letter-Book, vol. ii. p. 58.

[m] Ibid. p. 58,—84. Mr. MICHAEL BEHM's letter to Mr. HEVELIUS, concerning ſome chemical, medicinal and anatomical particulars, is printed in the Philoſ. Tranſact. n° 34 p. 650.

[n] This paper, which does not appear in the regiſter-books, contained, according to Mr. OLDENBURG in a letter to Mr. BOYLE of December 10, 1667. (Mr. BOYLE's works, vol. v. p. 375.) an account of three perſons, upon whom injection into the veins had been tried, of whom two received great benefit, but the third died, though through his own neglect. Upon hearing this account read, a certain phyſician then preſent, a learned and ingenious man, "was to my great grief, "*ſays Mr.* OLDENBURG, ſo precipitate, as to ſay, "That he would engage, that that one, viz. with "the ill ſucceſs, was the only true, but the other "two both falſe. I could not but take him afterwards aſide, and repreſent to him, how he "would reſent it, if he ſhould communicate "upon his own knowledge an unuſual experiment "to the curious at Dantzick, and they in public "brand it with the mark of falſhood: that ſuch "expreſſions in ſo public a place and in ſo mixed "an aſſembly would certainly prove very deſtructive to all philoſophical commerce, if the curious abroad ſhould be once informed, how their "ſymbolas were recived at the Royal Society."

ſcribed

ſcribed into the Letter-book appointed by ſtatute for that purpoſe; except ſuch letters, or ſuch particulars in them, as ſhall be ordered by the ſociety not to be entered.

Mr. OLDENBURG brought in the ſequel of Mr. BOYLE's experiments about light, ſeveral of which were read, and the reſt referred to the next meeting.

Mr. HOOKE was put in mind of preparing for the experiments of this kind to be made as ſoon as might be, according to the particulars appointed at the meeting of November 28.

Mr. AUBREY produced a new method, communicated to him by Mr. FRANCIS POTTER, of meaſuring time by an air-ſtrainer; which Mr. HOOKE was deſired to conſider, and to give his thoughts of it at the next meeting.

Mr. WYLDE mentioned, that he knew of a way of meaſuring time like that produced by Mr. AUBREY; and that he had it from Mr. SMETHWICK, who acknowledged to have received it from Sir EDWARD LAKE *, chancellor of Lincoln.

It was thought deſirable to have the deſcription of theſe inſtruments delivered in writing.

It was ordered, that the experiment of transfuſion be made at the next meeting, and that Dr. LOWER and Dr. KING be deſired to manage it, as they did before; and that the operator do not fail to prepare things neceſſary for that purpoſe, eſpecially good ſcales to weigh the emittent animal in both before and after the operation.

December 9. At a meeting of the COUNCIL were preſent

The lord biſhop of SALISBURY
The lord BRERETON
Mr. H. HOWARD of Norfolk
Mr. AERSKINE
Sir ANTHONY MORGAN
Sir GEORGE ENT
Sir PHILIP CARTERET
Dr. WILKINS
Mr. HOSKYNS
Mr. CREED
Mr. OLDENBURG.

The buſineſs of Chelſea-college being conſidered of, upon debate it was reſolved,

1. That Mr. COLE ſhould have one hundred pounds, to ſecure the poſſeſſion of the land and houſe at Chelſea-college to the ſociety, during ſo much of the term of the leaſe of forty years granted to Mr. HOWARD, as was yet un-expired.

* He was created a baronet after the Reſtoration, according to Mr. WOOD, Athen. Oxon. vol. ii. p. 323.

2. That

2. That this agreement be executed before the paſſing of the ſeal for the reverſion.

3. That Mr. COLE's covenant and bond be taken for ſecurity.

Theſe votes being paſſed, Sir PAUL NEILE and Sir ANTHONY MORGAN were deſired to go to Mr. COLE, who was without, attending this buſineſs, and to acquaint him with theſe reſolutions; which they did accordingly, and reported, that he was ſatisfied with them.

Sir ANTHONY MORGAN and Mr. HOSKYNS reported concerning the legal validity of the obligation ſubſcribed by the fellows of the ſociety, that the ſtatutes had already ſpecified the penalty for non-obſervance, viz. expulſion; and that thereby other penalties were precluded.

N° 30. Of the *Philoſophical Tranſactions* was licenſed.

December 12. At a meeting of the SOCIETY,

Dr. DOWNS was elected and admitted.

The ſecond experiment of transfuſion was made by Dr. KING upon Mr. ARTHUR COGA, by taking from him eight ounces of blood, and tranſmitting into him, by gueſs, about fourteen ounces of ſheep's blood. Dr. KING was deſired to bring in an account of it to be regiſtered. This experiment being made in a great crowd of ſpectators, which would not admit of that exactneſs, which was deſigned, the phyſicians of the ſociety were requeſted to take an opportunity of making this experiment more exactly by weighing the emittent animal before and after transfuſion.

The reſt of Mr. BOYLE's experiments about light were read, with great ſatisfaction to the ſociety; who ordered, that all ſhould be regiſtered, and that Mr. HOOKE ſhould take care of having the like experiments tried before the ſociety, as ſoon as he could procure any ſhining rotten wood or fiſh.

Mr. DANIEL COXE brought in an account of the ſweet earth lately dug up at Hoxton, which was ordered to be regiſtered [p].

Mr. AERSKINE acquainted the ſociety, that Monſr. LE FEBURE having received from them ſome of this ſweet earth, in order to examine it by diſtillation, had told him, that he hoped to give an account of it at their next meeting.

Dr. WILLIS in a letter to Mr. OLDENBURG, dated Decemb. 12 [q], ſent (as he had been deſired to do) his thoughts of a powder for making artificial Spa-water; as alſo ſome extracts of St. VINCENT's water ſent to the preſident by Mr. SPEED; in

[p] Regiſter, vol. iii. p. 235.

[q] Letter-Book, vol. ii. p. 84.

which paper he obſerved, that the powder was either vitriolum Martis at beſt, or, as he rather thought, only common Engliſh copperas dried and powdered: and that with regard to the extracts, each of them being a ſeveral calx of mineral water evaporated, there was no uſe of them, nor any thing worth inquiry to be inſiſted on about any of them. But the doctor referring the ſociety to what he ſhould make out when he ſhould come himſelf, the conſideration of this particular was deferred till that time.

Mr. HOOKE being called upon for giving an account of what he thought of the method of meaſuring time, brought in at the laſt meeting by Mr. AUBREY and Mr. WYLDE, ſaid, that though the inventions were ingenious, and, as he thought, new; yet that by reaſon of the inequality of the air, cauſed by the various degrees of its rarefaction and condenſation, as alſo of its drineſs and moiſture, it would not be fit for pocket-watches, nor of that exactneſs and uſe, that pendulums were.

Mr. WYLDE produced his inſtrument for meaſuring time, which, according to his and Mr. SMETHWICK's relation, was due to Sir EDWARD LAKE. It was a cylinder with air, deſcribed by Mr. SMETHWICK; which deſcription he was deſired to bring in writing at the next meeting, to be regiſtered.

Mr. AUBREY was alſo deſired to give an account in writing of the meaſure of time produced by him, being a watch to go with a pair of bellows, inſtead of wheels; which he promiſed to do.

Dr. CROUNE mentioned, that ſome ſuch inventions were taken notice of by the jeſuit SCHOTTUS in his *Technica curioſa*; which book he was deſired to peruſe, and to extract out of it for the uſe of the ſociety what he ſhould meet with there of this kind worth obſervation; which he undertook to do.

Mr. OLDENBURG produced more of the papers lately ſent by Mr. HEVELIUS, and read ſome of thoſe, which contained relations concerning amber, pot-aſhes, and ſal gemmæ. It was ordered, that thoſe, which anſwered the inquiries about cold, formerly ſent to Dantzick, ſhould be read at the next meeting.

He brought in an algebraical problem ſent to him from Paris, as propoſed by Monſr. DE LAURENS, which was ordered to be communicated for ſolution to Mr. COLLINS.

Mr. HOOKE and Mr. COLLINS were put in mind of giving an account of Monſr. SLUSIUS's theorem, committed to them on the 28th of November, in order to be examined by them.

Mr. COLLINS communicated his demonſtration of the numbers for finding the Julian period, the reading of which was deferred till another meeting.

Mr.

Mr. Hooke was called upon for the experiment of circulating the blood of an animal out of the veins into the arteries through an open veſſel, without paſſing through the lungs. He ſaid, that he would prepare it as ſoon as he could.

Dr. Lower was put in mind of the experiment of tying up the external jugulars in an old dog, in order to make his head ſwell and become tranſparent, ſo that it would kill him in two days.

December 19. Edward Brown, M. D. was propoſed candidate by Dr. Croune.

Mr. Coga being introduced gave an account of the effects of the experiment of transfuſion repeated upon him, viz. that he found himſelf very well at preſent, though he had been at firſt ſomewhat feveriſh upon it; which was imputed to his exceſs in drinking too much wine ſoon after the operation. An account thereof in writing was deſired to be brought in by the managers of that ſecond experiment.

For the proſecution of experiments of that kind, Dr. Croune was deſired to ſpeak with Dr. Terne, phyſician to one of the hoſpitals in London, that he would try the experiment, as he had opportunity, upon ſuch patients there, as he and others of the phyſicians of the ſociety ſhould think proper ſubjects for it.

Dr. Willis ſuggeſted, that this experiment might be proper to make uſe of upon rotten ſheep.

Mr. Povey communicated his account of the way of laying on colours by means of eggs mixed with any part of a fig-tree beaten therein; which was ordered to be regiſtered [r], as follows:

" Amidſt the many remarkable varieties, which are obſervable in the art of " painting, there is one, which hath been delivered over to us by the ancients, " which hath in it a ſecret of great aſſiſtance in the art of painting, and which " carries in it a myſtery worthy the inquiſition of a philoſopher.

" Before the art of painting had advanced to the more late invented practice of " mingling the colours in oil, we find, that there was, among many others, a " certain ſort of diſtemper, (for ſo we now diſtinguiſh other liquid colourings from " that of oil) which I know not by what chance, or felicity, or revelation, was " diſcovered and made practicable, it ſeeming at firſt overture to be an extrava- " gant compoſition, not at all probable or rationally proper to what was deſigned, " and what it doth familiarly produce.

" The painter takes three or four eggs (the freſher the better) breaks them into " a porringer, or ſome ſuch little veſſel (ſometimes ſeparating the white, and

[r] Regiſter. vol. iii. p. 259.

" uſing that alone) and afterwards puts into them one or two ſmall pieces of a " green fig, or of the branches of that tree, of about an inch in length or leſs, " or the leaf itſelf, which being infuſed a few minutes, the juice or milk thereof " ſo prevails upon the egg, which in its own diſpoſition is viſcous and ropy, that " it becomes inſtantly thin and fluid, as water; and although the yolk and white " be confounded together, yet themſelves impart ſo little tincture, that the painter " uſeth it as he doth oil, without any further addition or improvement, and laying " it upon his pallet, and mingling all ſorts of colours with it, (even the pureſt " white) he works and finiſheth his piece.

" The experiment being by accident diſcourſed by me with ſome perſons of this " ſociety, was received with ſuch incredulity, that, for my own vindication, I " tempted ſeveral of the ſociety, with the preſident, to ſee the operation at Mr. " STREETER's, (a general and excellent maſter of the pencil) where Sir ROBERT " MORAY broke eggs into two little veſſels, and did then put two ſmall pieces " of the fig-tree into one veſſel only, and preſently ſaw the verity of what is before " deſcribed: And having ſeen Mr. STREETER mingle colours with it, and lay " them, they went afterwards to my houſe, where they ſaw a chimney-piece wrought " thus by DANKARTS in landſcape, who having ſtudied long in Italy, had ſeen " many things, which had been done this way, eſpecially a large cabinet in the " pope's palace.

" And ſince, by your appointment, I have looked ſomewhat curiouſly into the " ſecret of this converted matter of egg by the infuſion or touch of the fig or " fig-tree (whoſe milky juice is found by naturaliſts to be ſo corroſive by the " powerful ſalt lodged therein, and ſo apt to diſſolve all viſcous matter, that it is " ſaid to be one of the principal ingredients in the making of one ſort of mithri- " date) I may pardonably obſerve further to you, that it is generally agreed, that " this ſort of oil or diſtemper (for with leave it may be ſaid to be both, and nei- " ther, if we ſhould particularly deſcribe the differences and the agreements, which " are to be found in it) is probably as ancient as the emperors, though not ſo or- " dinarily uſed and familiarly underſtood in this latter age; and there are extant " ſome pieces finiſhed this way by CORREGGIO, which, I have heard perſons of the " higheſt judgment in painting ſay, are moſt valuable for their delicacy in work, " and beauty in colouring, and ſatisfaction in all things, that ſhould be perfect " in the moſt maſterly piece of painting; and that they were held not to be over- " priſed at one thouſand pounds each; they being indeed worthy of the utmoſt " price, that can be ſet upon painting, or the higheſt efforts of art; and were " conſidered as jewels, in the rich collection his late Majeſty had of the beſt " paintings.

" I here alſo further obſerved, that this oil of egg (if I may ſo call it) is ſo " much of the nature of diſtemper, that when the piece is ſet againſt the light, it " troubles not the ſight by gliſtening or glaring, which hinders us from looking " directly upon pictures in oil, if they be ſet directly oppoſite to the light; and " we find the painter hath more command on this mixture, becauſe it permits " him to neglect it, and take off his hand from his work, and return to it at " pleaſure,

" pleaſure, by reaſon that its drying quality renders the begun picture ready for " him at all times: So that he is at liberty to work it over as often as he pleaſeth, " until by his repeated touches he hath brought his piece to the utmoſt, that " time and his own art can reach to; it being demonſtrably true, that labour, " ſtudy, and often working-over pictures with this ſort of mixture by a ſkilful " hand infinitely improves the work, and makes the colouring approach very near " to that which is laid in oil: yet is this ſo much of the more tender nature of " ordinary diſtemper, that it is not to be expoſed to weather; but is alſo in ſome " conſiderations much above other ſorts of diſtemper, in that every accidental " daſh of water, or other ſlight injury, will not hurt it; but being with eaſy care " preſerved, it laſts almoſt for ever in its firſt freſhneſs (if the ſubſtance, upon " which it is laid, be durable) and will continue its colouring much better than oil: " ſome colours being apt to languiſh in oil, which will keep alive in diſtemper.

" This narrative being ſufficient to diſcharge thoſe commands given me by this " ſociety, I would have leave to add my advice, that a further inquiry be made " into this, and all other ſorts and ways of painting in oil, diſtemper, or dry co- " lourings; becauſe it may not perhaps be unworthy of your knowledge, to find " the differences, which ariſe from the ſeveral uſes of colours, and the mediums, by " which they are applicable; and it ſeems not unlikely, that ſomething yet new and " undiſcovered may ſpring up to further improvement, which ought to be, and " is the moſt honourable part of that you aim at; that you may not ſeem to en- " tertain yourſelves with curioſity and ſpeculation only, but may by that various " and univerſal learning, which meets here, as it were in council, leave ſomething " new or improved to the ſucceeding world; and ſtill go on to inflame this age, " by a generous emulation abroad, to envy and imitate what you have more hap- " pily firſt opened and eſſayed: that it may not be ſaid by the malicious, that you " diſcourſe and make flouriſhes, and ſubſiſt chiefly upon what is delivered to you " by them, that lived before you.

" Nor is the generous ſubject of painting unworthy of ſome part of your care " and reſearch, which hath been the ſtudy, delight and ornament of all ages and " nations, where peace or civility have not been abandoned; which hath hitherto " been deſcribed and diſcourſed of only in parts and fragments, by ſeveral perſons " in differing languages, and yet deſerves an entire hiſtory, to be conducted by " ſuch an influence as yours, out of thoſe various authors and traditions of the " ancients, and the more modern experience: by which rendezvouz of the beſt in- " telligence and information, we may depoſit and find in one volume a ſufficient " hiſtory of all the parts relating to this almoſt divine art, which not only imitates " but approacheth very deceivably, even to the giving life itſelf.

" By ſuch a hiſtory, warily and faithfully extracted out of what is or hath been " materially obſerved and collected, and now to be written in one ſtile and order, " we may eaſily and pleaſingly inform ourſelves of the firſt lines and footſteps of " this art; the names and characters of the moſt eminent maſters; their manner " and ſeveral ways of working; the degrees of improvement of this art; the va- " riety of their colours, their natures and mixtures; ſometimes drawn out of mi-

" nerals,

" nerals, leaves of trees and flowers, and ſeveral juices and berries, and many " other accidental ways of obtaining and applying of colours.

" But this deſired volume, and all that it ſhall offer, as authentic, muſt have " its firſt and laſt authority, ſpirit and confirmation from you, as well as the " conjunction of ſome ſelect perſons of your number, who may have meetings with " the chief maſters of theſe times, whom I have found with joy and candid open- " neſs ready to aſſiſt a work ſo apparently tending to the honour and advantage of " their profeſſion, and their own perſonal fame, who may deſerve to be regiſtered " therein as eminent maſters. It is acknowledged by all, that no proper genius hath " been engaged on this general work; for what hath been writ by painters, doth " ſhew that their pen hath not been ſo good as their pencil: And what hath been " undertaken by men contemplative only, hath not given full ſatisfaction; becauſe " perhaps they have diſdained to conſult ſufficiently with painters, or to ſubmit " their own imagination and conceit of things to the judgment and experience of " thoſe, whom practice hath made more competently and aptly learned, and more " adequate to the work of aſſiſting, and informing, towards the making compleat " and perfect ſuch a hiſtory, as is here wiſhed and propoſed.

" And although painting be as the chief and ſovereign, yet there are many leſſer " arts, proper and worthy to attend and be of the train, and to appear as an ap- " pendix in the ſame volume; which are, the ſeveral ſorts of vernice; browning; " ſtaining; graving; etching, and perhaps ſome other neceſſary curioſities not " foreign to this greater ſubject: All which being collected from the ſeveral per- " ſons of ingenuity, who have particularly ſtudied, practiſed and experimented " them, may be re-examined and atteſted by you, and become no inconſiderable " adherents to this entire hiſtory of the arts of painting; which being thus ac- " companied and finiſhed, will ſurely be received and welcomed into the world, " as a thing moſt uſeful and deſirable."

Mr. Povey renewed his former ſuggeſtion, that ſome members of the ſociety would meet together. and conſider of the particulars to be inquired into concerning the curioſities in the art of painting, and then confer about it with ſome of the beſt maſters of that art living in London, as Mr. Lely, Mr. Cooper, and Mr. Streeter, they having already declared their willingneſs to ſerve the ſociety in what they could in this matter.

It was ordered hereupon, that Mr. Povey, Sir Philip Carteret, Sir Theodore de Vaux, Mr. Evelyn, Mr. Henshaw, Dr. Croune, Mr. Hoskyns, Mr. Wylde, and Mr. Hooke ſhould be deſired to meet accordingly for that purpoſe.

Mr. Povey produced a letter of Mr. Alexander Marshal to himſelf, dated at Caſtle-Aſhby November 30, 1667, concerning colours, which was read, and an extract of it ordered to be made and preſerved [a], as follows:

[a] Letter-Book, vol. ii. p. 93.

From

" Caſtle-Aſhby Nov. 30, 1667.

" SIR,

" I Had anſwered yours, had it come to my hands ſooner. I am very willing " to ſatisfy in part your deſire concerning my colours, but how to expreſs the " handling of them I know not; for practice puts me in a new way every day. " One colour may ſet out the other by compoſition or tranſparence, which " leaves the beauty, as the flower or other things require. I thought ſeven years " ago, that I knew much, but I find, that practice ſhews me daily more than I " knew before; but the laſt week I tried one colour, and calcined it in three ſeve- " ral pots, and in one fire together: the pots being cold, I found in them three " ſeveral colours, which was but one at firſt; the one was red, the other yellow, " and the other amber, and all very good for uſe. As for the colours I make " out of flowers, or berries, or gums, or roots, they are more ſubtle, and have " not ſo great a body, as minerals, which I turn into lakes, or dry them in ſhells, " which I temper with ſuch waters, as I make fit for them and my uſe. The " ſearch of colours has coſt me much time in finding out, and to know, which " would hold colour in water, and mix well; elſe I had not uſed them in my " book; and, am ſure, will be as freſh a hundred years hence, as when you ſaw " them laſt. The truth is, they are pretty ſecrets, but known, they are nothing. " Several have been at me to know, how; as if they were but trifles, and not " worth ſecrecy. To part with them as yet I deſire to be excuſed. I have in a " manner given over water-colours, finding it tedious and forcible to the eyes, " which has put me upon the practice in oil, and I am in good hopes, that my " colours will ſhew themſelves as beautiful in oil as water: though many will ſay, " that it is needleſs for oil-colours to be ſo orient or beautiful in painting. In my " opinion 'tis a great prejudice to painters alſo, to paint careleſly with any colours, " that will ſtarve, and become nothing, by a ſalt, that is in them. Certainly " BRUEIGEELH and ELSHMER, and other maſters, had a way in cleanſing and " curing their colours, which as yet is to be ſeen in their ſmall curious works as " freſh as ever they were; for ſalt and oil cannot agree long, and ſo were parted " by thoſe maſters, that their fame might laſt as well for their colours as work. " Sir, I beg your pardon, not knowing whether my abrupt diſcourſe does an- " ſwer your deſire; and ſo I reſt,

" SIR,

" Your humble and moſt

" obliged Servant,

" ALEX. MARSHAL."

Monſr. LE FEBURE brought in two liquors drawn from the ſweet earth dug up at Hoxton: one was a phlegm well ſcented; the ſecond an oil reſembling petroleum. Both theſe being drawn from one pound of that earth, there remained, as

Monſr. LE FEBURE obſerved, fifteen ounces and a half of ſediment or *caput mortuum*. He was deſired to give in the account of the whole proceſs in writing, which he promiſed to do.

Dr. MERRET produced a paper, wherein firſt he mentioned, that three ſkulls with the hair on and brains in them were lately found in Black-friars in pewter veſſels in the midſt of a thick ſtone-wall, with certain obſcure inſcriptions: ſecondly, he gave an account from one Mr. LOVELL of a very rich lead ore in Wales: thirdly, his thoughts of the four mineral powders or ſalts ſent by Mr. SPEED from Briſtol to the preſident: fourthly, ſome experiments of the ſmectis or ſoap-ſtone, found on the ſea-ſide in the weſt of England. This paper was ordered to be regiſtered [t], and the author deſired to inquire more particularly after the three ſkulls, and to endeavour to get one of the pots, wherein they were found.

Dr. CLARKE confirmed that part of this paper, which mentioned the lead ore in Wales, and promiſed to bring in a relation concerning it from Dr. WALDRON.

Mr. HOOKE communicated an account of an experiment tried by him in the preſence of Dr. LOWER upon a maſtiff-bitch big with puppies, to ſee, whether fœtus's live in the womb by their own or the mother's reſpiration. It was ordered to be regiſtered [u], and was as follows:

"In proſecution of the former inquiry about reſpiration, to know whether "the life of the fœtus in the womb were continued without its own reſpiration, "by means of the ventilation of the blood of the dam by its reſpiration; upon "Wedneſday the 18th of Dec. 1667, Dr. POPE and myſelf tried the following "experiment. We took a large maſtiff-bitch, that had gone about ſeven weeks "with puppy, and binding her down on a table, we opened the right ſide of the "belly about the middle, between the ſpine and the middle muſcle of the "belly, and through that perforation taking out one of the horns of the uterus, "and opening it, we took out one of the whelps, that was large and luſty, and "ſeemed to be almoſt ready to be whelped. Then before he had taken in any "breath, we opened the throat, and diſcloſed the aſpera arteria, and running a "needle and thread ſuddenly under it, we tied it ſo faſt, that nothing of air could "paſs in or out by it; then wrapping up the fœtus in warm linnen cloaths, we "laid it by the fire, but it ſurvived but ſome few minutes, and then died. Then "we took out another, and, inſtead of taking it out of its incloſed ſkins, as we "had done the former, we made a gentle ligature about the neck upon the "amnion, including the head of the whelp, as it were in a bladder, of its own "natural liquor, ſo as neither air, or any other liquor, but the liquor of the "amnion could come to the mouth. Then we ſuffered it to lie in water warmed "to about the ſame heat with the natural heat of the womb of the bitch; but "neither did this long ſurvive; but we took notice, that the whelp within a minute "or thereabouts, after he had been ſeparated from the dam, began to gape and "ſtrain as it were to take in breath, and after a little while died. We tried "likewiſe a third, by keeping his head and mouth all the while till we

[t] It does not appear in the Regiſter.

[u] Regiſter, vol. iii. p. 265.

" had, according to the former method, tied up his aſpera arteria; then keeping him " warm in cotton wool warmed and laid by the fire-ſide we found him moveleſs " within ſome few minutes. A fourth we tried by ſuffering it to lie in its own " bags and liquors without making any ligature at all, either by a band about its " neck, or by a tying about the aſpera arteria: this alſo we found as ſubject to " fate as the reſt, for he ſeemed to be dead as ſoon as any of the reſt, though it " was expected, that it would have lived a very long time. So that upon all " theſe obſervations we found, that none of them would ſurvive ten minutes of " time meaſured by a pendulum-watch.

" Theſe experiments ſeem to hint, that the fœtus in the womb has its blood " ventilated by the help of the dam; and that it is not the want of the motion " of the blood through the lungs, or the imaginary ſtopping of it there, that " kills the fœtus; ſince we have no reaſon to believe, that the foramen ovale was " ſhut in theſe whelps, before they had taken in any air into their lungs. Nor " can we imagine any other cauſe of the ſo ſudden death of them, ſave only the " want of the ventilation of the blood, or whatever other operation reſpiration " may be proved to work on the blood: and methinks alſo it may ſeem very " manifeſtly to prove the continual and neceſſary communication of the blood of " the dam with that of the fœtus, and of the immediate dependance of the one " upon the other.

" One thing by the way we took notice of, which was not to be paſſed by, " and that was, that in one of the cells of the womb we found a fœtus dead, " which ſeemed to have lain ſo in that place for above a month; which we gueſs'd " by its bigneſs, that was very ſmall in compariſon of the other, which we had " taken out alive; which ſeemed to ſhew a very great providence of nature, for " the keeping of that dead fœtus in the womb without at all prejudicing of it, " until the time of the birth of all the reſt."

Mr. OLDENBURG mentioned, that an offer was made to him by Monſr. AUGUSTINI BOUTENS, a curious perſon at Antwerp, in a letter dated December 3, 1667*, to tranſmit a conſiderable quantity of the ludus Helmontii, with an intire deſcription of its medicinal vertues; as alſo of its ſituation in the ground, &c. and that he would ſend for a hundred pounds weight or more of it, if any members of the ſociety would make experiments with it. He was deſired to ſend for a good quantity, as there would be no want of perſons to take it off.

Dr. CROUNE produced an inſtrument for gathering and contracting wind, otherwiſe imperceptible, ſo as to extend a tender ſail. The operator was ordered to make another model, that might go as tenderly as poſſible, againſt the next meeting.

Mr. OLDENBURG acquainted the ſociety, that he had received an account printed in French of the ſpots lately diſcovered in MARS by Signior CASSINI in Italy, pro-

* Supplement to the Letter-Books, vol. ii. p. 78.

bably inferring the revolution of that planet about its axis. The Engliſh tranſlation of this account by Mr. OLDENBURG was read, and ordered to be regiſtered.

Dec. 26. The ſociety did not meet.

January 2, 166$\frac{7}{8}$. At a meeting of the COUNCIL were preſent

The Preſident

The lord biſhop of SALISBURY	Mr. HAYES
HENRY HOWARD of Norfolk	Mr. HOSKYNS
Sir PAUL NEILE	Mr. CREED
Sir JOHN LOWTHER	Mr. OLDENBURG.
Dr. WILKINS	

Sir JOHN LOWTHER and Mr. HAYES were ſworn as members of the council.

It was ordered, that the preſident, the biſhop of SALISBURY, Sir PAUL NEILE, and Dr. WILKINS be deſired to ſpeak on the Monday following with the commiſſioners of the treaſury about Chelſea-college, and to meet for that purpoſe at Sir PAUL NEILE's lodgings.

Mr. PANTON appearing before the council, and expreſſing his deſire for their aſſiſtance in promoting his deſign to eſtabliſh a royal academy for educating of young gentlemen in good manners, languages, arts and ſciences, and generous exercifes; the council upon deliberation returned this anſwer, that though they well approved of this deſign, and were very deſirous to promote it, each for himſelf; yet as they were a body, it was not their practice to intermeddle with any buſineſs, but ſuch as either aroſe from among themſelves, or came to them by way of reference.

The buſineſs of voluntary contributions for building a college being moved again, it was upon debate thought good,

That thoſe, who had a mind to contribute, ſhould not be obliged to ſubſcribe their reſpective ſums till the total of the ſubſcriptions amounted to one thouſand pounds: and that thoſe of the council, who had moſt intereſt to engage others both of the ſociety, and without it, ſhould be deſired to employ the ſame in ſpeaking to perſons of both ſorts, and to learn the ſums of their intended contributions, thereby to make an eſtimate what the total was likely to amount to.

At a meeting of the SOCIETY on the ſame day,

Dr. BROWN was elected and admitted.

The earl of CONWAY being propoſed by Sir ANTHONY MORGAN was immediately elected.

Sir

Sir MAURICE EUSTACE was propoſed candidate by Sir ANTHONY MORGAN.

CHARLES HOTHAM, eſq; was propoſed candidate by Mr. HENRY SLINGESBY.

Dr. CROUNE reported, that Dr. TERNE was willing, at the deſire of the ſociety, to try the experiment of tranſfuſion upon morbid perſons, as he ſhould ſee opportunity, in the hoſpital, to which he was phyſician.

The meeting of the committee of the ſociety with ſome of the painters in London being again ſpoken of, it was ordered, that Mr. POVEY ſhould be deſired to take care of putting that meeting into a method, by which it might be made effectual for the purpoſe intended: as alſo, that Sir PHILIP CARTERET, Mr. HOSKYNS, and Mr. WILDE ſhould be added to that committee.

Dr. CROUNE acquainted the ſociety, that Mr. TOWNLEY preſented the ſociety with his aſtronomical box for dividing a foot into many thouſand parts; and that he expreſſed his deſire to try the experiment of tranſfuſion, if he might be furniſhed with the neceſſary apparatus for it. It was ordered hereupon, that ſuch ſilver pipes, as had been uſed by the ſociety in this experiment, ſhould be forthwith beſpoken, and when made, ſent to him: and Dr. KING was deſired to take care of having the ſaid pipes made, which he undertook to do.

Dr. CROUNE likewiſe mentioned, that he had underſtood of Mr. TOWNLEY, that he was now employed in turning of optic-glaſſes by a lathe, and hoped ſhortly to ſend one of them to the ſociety.

Mr. HOOKE produced a piece of clock-work, ſaid to ſerve always to promote a pendulum ſtrait, without any check at all. It not being yet complete, it was ordered to be produced again at the next meeting with the addition of what was neceſſary to perfect it.

He was put in mind of his new cyder-engine, and ordered to get a model of it made, as ſoon as conveniently he could.

He produced a paper giving an account of a way deviſed by him of diſcovering the various preſſures of the air at ſea, to predict the alteration of weather, and to foreſee ſtorms. It was ordered to be regiſtered [y]; and Mr. HOOKE was deſired to get ſuch a weather-glaſs made, as was deſcribed in this paper, as ſoon as he could.

He was put in mind of making the experiments with ſhining wood and fiſh, both in the exhauſting-engine and in a cloſe glaſs, with the ſame air always remaining: of circulating blood in an open pipe, without its paſſing through the lungs: of the experiments in the rarefying-box, and that in the Park, when the weather ſhould ſerve; and of ſwelling the head of an old dog by tying up the external jugulars.

[y] Regiſter, vol. iii. p. 278. It is printed in Mr. BOYLE's works, vol. v. p. 379.

Dr. CROUNE was put in mind to take care of having his wind-gathering veſſel made ready by the operator againſt the next meeting, if poſſible.

Some more of the papers ſent by Mr. HEVELIUS from Dantzick were read, containing anſwers to inquiries concerning cold, amber, &c. formerly ſent thither. Theſe papers being large, Dr. CLARKE and Dr. CROUNE were deſired to meet Mr. OLDENBURG at his houſe, to peruſe and conſider of them, and to report to the ſociety; which they promiſed to do, appointing to meet together on the Tueſday following at two of the clock at the place above-mentioned.

Mr. HOOKE produced a Latin letter ſent him from a Bohemian with a little book in the German tongue. The letter was ordered to be read at the next meeting, and the book to be delivered to Mr. OLDENBURG, that he might peruſe it, and give an account of it at the next meeting.

Sir THEODORE DE VAUX produced a letter to himſelf from Mr. JOSEPH WALSH, dated Decemb. 29, 1667[z], giving an account of ſeveral earths or clays, found in Worceſterſhire, good for ſcouring of cloth, and for fetching greaſe out of ſilk; intimating alſo, that there were half a dozen ſorts of clays in his ground. Sir THEODORE was deſired to ſend for ſamples of thoſe clays to be examined; which he promiſed to do.

January 9. Sir MAURICE EUSTACE was elected.

Mr. CHARLES HOTHAM was elected and admitted.

Dr. KING brought in the ſilver pipes ordered to be made for Mr. TOWNLEY to make experiments of transfuſion therewith; and the operator was ordered to deliver them to Dr. CROUNE, who had moved the ſociety for them on Mr. TOWNLEY's behalf.

Dr. KING communicated his written account of the experiment of transfuſion, as it was the ſecond time made on Mr. COGA; which was ordered to be regiſtered[a].

Dr. CLARKE made a report concerning the papers ſent from Dantzick to Mr. OLDENBURG, viz. that the anſwers to the queries, which had been ſent thither, and the account of the monſtrous twin-birth, ſeemed to him fit to be regiſtered: and there being two letters from Monſr. BEHM, conſul of Dantzick, containing ſeveral good remarks both phyſical and anatomical, he deſired a copy of them, in order to conſider of ſome return to be made thereto, as he had already done to that of Dr. FABRICIUS concerning the injection of liquors into veins. With reſpect to the manuſcript about amber, that being written in the German tongue, it was deſirable, that a tranſlation of it into Engliſh might be made by thoſe members, who underſtood that language.

[z] Letter-Book, vol. ii. p. 115. [a] Regiſter, vol. iii. p. 280.

It was ordered hereupon, that thoſe anſwers, and that paper concerning the twin-birth ſhould be regiſtered accordingly [b]; and that a copy ſhould be made for Dr. CLARKE of thoſe letters named by him: and that Mr. HAAK and Mr. OLDENBURG ſhould be deſired to tranſlate the manuſcript about amber at their conveniency; the latter promiſing to do his part, Mr. HAAK being abſent.

Mr. OLDENBURG intimated, that Monſr. AUZOUT, having read Mr. SPRAT's *Hiſtory of the Royal Society*, and found mentioned in it, among other things, a new kind of level, had in a letter dated at Paris Decemb. 29, 1667, N. S. [c] deſired a communication of it. Mr. HOOKE was accordingly deſired to make a draught of it to be ſent to Monſr. AUZOUT.

The experiments appointed for the next and following meetings were

1. The weather-glaſs for meaſuring the preſſure of the air at ſea.

2. Dr. CROUNE's wind-gathering veſſel.

3. A model of a cyder-preſſing inſtrument.

4. The tying up the jugular veins of an old dog.

5. Experiments with ſhining fiſh.

6. Circulation of the blood without paſſing through the lungs.

7. The perfecting of the new clock-work for always promoting a pendulum ſtrait, without any checking of it.

It was ordered likewiſe, that Mr. HOOKE ſhould bring in a deſcription of his new aſtronomical inſtrument, anſwering to that of Mr. TOWNLEY for dividing a foot into many thouſand parts, and thereby obſerving with great exactneſs the diſtances of the parts; and that the copy of it ſhould be ſent to Mr. HEVELIUS.

Jan. 11. At a meeting of the COUNCIL were preſent.

The Preſident

HENRY HOWARD of Norfolk	Dr. WILKINS.
Mr. CHARLES HOWARD	Mr. HAYES
Mr. AERSKINE	Mr. COLWALL
Sir JOHN LOWTHER	Mr. CREED
Sir GEORGE ENT	Mr. OLDENBURG.
Sir PHILIP CARTERET	

It was ordered, that the preſident, the biſhop of SALISBURY, Mr. HENRY HOWARD, Sir PAUL NEILE, Dr. WILKINS, and as many more of the council,

[b] Letter-Book, vol. ii. p. 60. *& ſeqq.*

[c] Ibid, p. 117.

as

as could conveniently, should meet on the Monday following about ten in the morning at Whitehall at the lodgings of the lord almoner to her Majesty, to attend the lords commissioners of the treasury concerning Chelsea-college, to bring that business to an issue.

Mr. HOOKE was desired to bring in at the next meeting of the council a draught for the building of the society's college.

The list of the fellows of the society being read over, and the persons, who were thought both willing and able to contribute to the said building, taken notice of, it was thought fit, that a committee should be chosen to solicit those persons: and there were named

The President

The bishop of SALISBURY	Dr. WILKINS
HENRY HOWARD of Norfolk	Mr. EVELYN
Mr. BOYLE	Mr. HENSHAW
Sir ROBERT MORAY	Mr. HOSKYNS
Sir JOHN LOWTHER	Mr. OLDENBURG.

The president was desired to solicit

The earl of DEVONSHIRE	Capt. COCK
Sir ANTHONY MORGAN	Mr. PEPYS
Sir CYRIL WYCHE	Mr. AUSTEN.
Mr. SLINGESBY.	

The bishop of SALISBURY was desired to solicit

The archbishops of CANTERBURY and YORK	The earl of LINDSEY
The duke of ALBEMARLE	The bishops of LONDON and WINCHESTER.
The lord ROBARTES	

HENRY HOWARD of Norfolk to solicit

The marquis of DORCHESTER	The earl of CARLISLE
The earl of NORTHAMPTON	Sir THEODORE DE VAUX
The earl of DEVONSHIRE	Mr. POVEY.

Sir ROBERT MORAY to solicit

The earl of ARGYL	The earl of KINCAIRDIN
The earl of CRAFORD and LINDESAY	The earl of TWEEDALE
	The lord STERMONT.

Dr. WILKINS to solicit

The

The duke of Buckingham	Mr. Willughby
The earls of Devonshire and Carlisle	Mr. Henshaw
	Mr. Wylde
Sir William Petty	Dr. Willis
Dr. Cotton	Dr. Whistler
Mr. Matthew Wren	Dr. Smith.

Mr. Boyle to solicit

The lord Clifford	Mr. Richard Jones.

Sir John Lowther to solicit Sir Edward Bysshe.

Mr. Evelyn to solicit Mr. Packer.

Mr. Henshaw to solicit Sir Robert Paston.

Mr. Hoskyns to solicit Mr. Thomas Neile.

Mr. Oldenburg to solicit

The lord Annesley	Sir Robert Southwell
Sir James Shaen	Mr. Richard Jones. [d]

N° 31 of the *Philosophical Transactions*, was ordered to be printed.

A letter from Col. Blount to the president was read, desiring his discharge from being any longer a fellow of the society.

Jan. 16. At a meeting of the Society,

Mr. Hooke produced the two weather-glasses, one open, the other close, for observing the various pressures of the air at sea, in order to predict alterations of weather. He was ordered to see another made very accurately, to be recommended to some careful seamen to carry it to sea, and to make observations therewith.

[d] Mr. Oldenburg in his letter to Mr. Boyle, then at Oxford, dated January 14, 1667, and printed in Mr. Boyle's works, vol. v. p. 380, 381, giving an account of these proceedings of the council of the society, mentions, that Mr. Henry Howard intended to continue his generosity to it, either by contributing a great sum of money, or giving ground about Arundel-house to build upon. "They guess, adds he, there will "be four classes of contributions: some of an "100 l. some of 60 or 50, some of 40, some of "30. Our president hath already declared for "100; and I think the bishop of Salisbury "for the like sum: Dr. Wilkins for 50, Mr. "Hawes for 40, Sir Philip Carteret for 50, "and, if there be occasion, for more. We begin "with the council, and proceed to the society, "that when we go on to beg of others not of "our body, they may not object we would load "others, and draw our own necks out of the "yoke."

He

He produced a model of his new cyder-engine with the addition of a contrivance for cutting the apples. He was desired to consider of this, and to endeavour to add it to this contrivance.

The lord BRERETON took occasion from hence to mention, that all sorts of dried fruit, as raisins, figs, plums, prunes, &c. fermented with common water, would yield as much and better liquor than the same fruit being fresh. His lordship was desired to give in writing the particulars of the way of practising this; which he promised to do, when some of his domestics, who had been employed therein, should come to London. In the mean time he remarked, that six pounds of raisins, with a gallon of water, duly fermented, would yield a liquor as strong as sack, and keep good a twelvemonth.

Mr. HOOKE produced likewise his new contrivance of promoting the vibrations of pendulums, so as to prevent all checks, which he affirmed to have been provided against by no invention hitherto. He was desired by the lord BERKLEY to take care of having such a one made for him, and by the society to bring in, as soon as he could, the descriptions and schemes of this instrument, as well as the other two produced before, viz. that of the sea-weather-glasses, and the cyder-engine.

Dr. CROUNE mentioned, that Mr. TOWNLEY had intimated to him his desire of having engraven upon the astronomical instrument lately presented by him to the society, for dividing a foot into many thousand parts, &c. some words, that might preserve the memory of that donation, viz. RICHARDUS TOWNLEY *dono dedit regiæ societati die* 2 *Januarii anni* 1667. Upon which Mr. HOOKE was ordered to see this desire of Mr. TOWNLEY executed.

Mr. OLDENBURG communicated a letter written to him by Mr. SAMUEL COLEPRESSE, and dated at Plymouth 7 January, $166\frac{7}{8}$, giving an answer to the printed queries concerning the course of tides, and an account of the slate of that country and the several sorts of it, especially that most proper for covering of houses; with several experiments made by himself upon them. This letter was ordered to be entered [d]; and Mr. OLDENBURG was desired to write to Mr. COLEPRESSE to send some samples of three different sorts of slate, in order that the society might make the like trials with them.

Mr. OLDENBURG produced an account written to him by THOMAS ALLEN, M. D. dated January 16, $166\frac{7}{8}$, containing an accurate description of an hermaphrodite then in London; which was read, and ordered to be registered [e].

[d] That part of it relating to slate is entered in the Letter-Book, vol. ii. p. 138, and printed in the Philos. Transact. vol. iv. n° 50, p. 1009, and the other containing the observations on the tides in the Register, vol. iii. p. 287, and printed in the Philos. Transact. n° 33, p. 632.

[e] Register, vol. iii. p. 281. It is printed in the Philos. Transact. n° 32, p. 624, for February $166\frac{7}{8}$.

Mr.

Mr. OLDENBURG mentioned likewiſe, that he had received advice from Paris, that the perſon formerly ſaid to have undertaken the tranſlation of the *Hiſtory of the Royal Society* into French, had not yet begun it, and was willing to forbear, upon notice ſent him, that there was one in London, who would perform it. And Dr. DE MOLIN being the perſon, who had undertaken that work in England, and now preſent, was deſired by the ſociety to proceed in what he had begun with all poſſible care and diligence; which he promiſed to do.

The experiments appointed for the next meeting were,

1. Dr. CROUNE's wind-gathering veſſel.

2. Shining fiſh and wood to be tried both in the rarefying and compreſſing engine.

3. Some horſe-eyes for diſcovering the cauſe of blindneſs in horſes.

4. Tying up the external jugulars in an old dog.

5. Circulating the blood, without its paſſing through the lungs.

January 23. THOMAS ALLEN, M. D. was propoſed candidate by Mr. OLDENBURG.

The operator was ordered to haſten the making of a thermometer for the uſe of the Queen.

Dr. POPE preſented for the repoſitory a large roundiſh bone, ſuppoſed to be one of the vertebræ of a whale.

Mr. OLDENBURG produced a box, ſent him from Mr. SAMUEL COLEPRESSE, for the repoſitory, containing ſixty four ſorts of minerals, each ſort having annexed to it a deſcription of its kind and mixture; among which there was one piece of iron-ore, mixed with another ſubſtance, which was ſenſible of a magnet's approaching it.

Sir THEODORE DE VAUX produced a white ſoapy clay ſent him out of Worceſterſhire, with two letters, promiſing to ſend more of that clay, together with ſome other, written by Mr. JOSEPH WALSH, and dated Decemb. 29, 1667, and January 12, 166$\frac{7}{8}$ [f].

The lord BERKLEY acquainted the ſociety, that ſome ſhips being ready to ſail for the Eaſt-Indies, if the ſociety had any queries to ſend thither, he would recommend them. Upon which it was ordered, that the queries formerly drawn up for that purpoſe, and ſuch others, as Dr. POPE and Mr. HOOKE ſhould add,

[f] Letter-Book, vol. ii. p. 115 and 128.

ſhould be immediately got ready and delivered to the lord BERKLEY for his recommendation.

Dr. LOWER opened ſome horſe's eyes, to ſhew the cauſe of the frequent blindneſs in horſes proceeding from a ſpungy excreſcence, that grows out of the uvea of the eye of that animal. He was deſired to bring in a deſcription of this obſervation to be regiſtered; which he promiſed to do at the next meeting.

Mr. HOOKE made an experiment to diſcover, whether a piece of ſteel firſt counterpoiſed in exact ſcales, and then touched by a vigorous magnet, acquires thereby any ſenſible increaſe of weight. The event was, that it did not.

He propoſed an experiment to diſcover, whether any ſubſtance could be made heavier than gold. It was ordered, that the trial ſhould be made before the ſociety the next day.

He was ordered to take care, that the experiments concerning ſhining wood and fiſh be made at the next meeting, both in the compreſſing and rarefying engine.

He was deſired to bring in the deſcription both of his new engine for grinding and preſſing of cyder-fruit, and of his clock-work for promoting the vibration of a pendulum ſtrait, without any check; as alſo of his inſtrument for dividing a foot into thouſands of parts, for making exact aſtronomical obſervations.

January 25. At a meeting of the COUNCIL were preſent:

The lord biſhop of SALISBURY.	Dr. WILKINS
Mr. HENRY HOWARD.	Mr. HOSKYNS
Sir ANTHONY MORGAN.	Mr. OLDENBURG.
Sir GEORGE ENT.	

There was prepared (there not being a quorum ſufficient to make it effectual) an order for iſſuing twenty-five pounds towards the expences requiſite for paſſing the patent concerning his Majeſty's grant of Chelſea-college.

There was likewiſe prepared an order for providing a convenient room for Dr. LOWER to make anatomical experiments in for the ſociety.

The letter formerly ordered to be drawn up by Mr. OLDENBURG for Sir ROBERT MORAY about ſoliciting contributions in Scotland, was read; and it was thought fit, that ſomething ſhould be added, expreſſing Mr. HOWARD's bounty in giving the ground to build the college upon.

The buſineſs of contributions being again ſpoken of, Mr. OLDENBURG mentioned, that the earl of ANGLESEA had declared his willingneſs to enable his ſon to contribute; as alſo his own inclination to be of the ſociety, and further the work of

of building. Mr. OLDENBURG added, that Mr. BOYLE had expreſſed his readineſs to do his part.

Mr. HOWARD gave ſome account of his ſollicitations for contributions, viz. that Sir SAMUEL TUKE was ready, not only to pay his arrears, but alſo to contribute to the building according to his abilities; and that he thought the earl of DEVONSHIRE and Mr. POVEY would do their part.

Dr. WILKINS mentioned, that Mr. NELTHORP and Mr. SKIPPON would alſo contribute.

January 30, the SOCIETY did not meet on account of the ſolemn faſt; but the COUNCIL did, there being preſent

The Preſident

HENRY HOWARD of Norfolk	Mr. HAYES
Mr. AERSKINE	Mr. COLWALL
Sir PAUL NEILE	Mr. CREED
Sir JOHN LOWTHER	Mr. HOSKYNS
Dr. WILKINS	Mr. OLDENBURG.
Mr. THOMAS NEILE	

Mr. THOMAS NEILE was ſworn of the council.

It was ordered, that the treaſurer iſſue twenty five pounds towards the expences requiſite to paſs the patent concerning his Majeſty's grant of Chelſea-college, and deliver it to Mr. JEPHSON for that uſe, on account:

That Sir ANTHONY MORGAN be deſired by the ſecretary, to take care, that Mr. COLE give no interruption to the paſſing of the patent above-mentioned:

That the operator hire a ſmall room near Arundel-houſe, on the water-ſide, convenient for Dr. LOWER to make anatomical experiments in for the uſe of the ſociety: And

That Sir ANTHONY MORGAN be deſired by the ſecretary to attend Mr. HOWARD, to conſider with him of the beſt way of ſecuring to the ſociety his conveyance of the ground in Arundel-houſe for building a college upon, ſo as to make it valid in law by collateral ſecurity, or otherwiſe, if need be.

The form for ſubſcribing contributions to build a college for the ſociety was agreed upon, as follows:

" I ——— give unto the preſident, council, and fellows of the Royal So-
" ciety of London for improving natural knowledge, towards the building of an
" houſe or college for them upon the ground near Arundel-houſe, given for that
" uſe by the honourable HENRY HOWARD of Norfolk, the ſum of———

" and do hereby engage myſelf to pay the ſaid ——— within one year from " the date hereof, upon the uſual feaſts of Lady-day, Midſummer, Michaelmas, " and Chriſtmas, by even and equal portions. In witneſs whereof I have here- " unto ſet my hand and ſeal this —— day of ———.

" Sealed and delivered in the preſence of ———."

Two hundred copies of this form were ordered to be forthwith printed, but ſo, that in one hundred of them ſhould be left a blank after the words *feaſts of* unto the words *by even*, it being conſidered, that ſome ſubſcriptions were likely to be made after Lady-day ſhould be paſt.

The preſident ſubſcribed one hundred pounds towards the ſaid college: And

Mr. JAMES HAYES forty pounds.

Theſe two ſubſcriptions were left with Mr. OLDENBURG.

The letter intended to be written by the council to Sir ROBERT MORAY, and drawn up by Mr. OLDENBURG, was read again, with the addition ordered at the laſt meeting of the council; and the ſaid letter was approved of and ſigned by the preſident in the name of the council, with this ſuperſcription, *For the Right Honourable Sir* ROBERT MORAY, *knt. one of his Majeſty's commiſſioners for the treaſury of Scotland in Edinburgh.*

The letter was as follows[s]:

London, at a meeting of the council of the Royal Society, Jan. 30, 166$\frac{7}{8}$.

" SIR,

" THE council of the Royal Society having lately taken into ſerious conſide- " ration, what might be the moſt probable means to eſtabliſh the ſociety " and its deſign of improving uſeful knowledge to perpetuity; and having found " upon mature deliberation, that one of the ways moſt likely to effect the ſame " may be the erecting of a college fit to meet, and to make their obſervations and " experiments in; they have accordingly reſolved to endeavour to engage as many " of the members of the Royal Society, and of others alſo not of their body, as " are willing and able to promote ſo noble and uſeful a work: In purſuance of " which, they have already begun to ſolicit divers of the ſociety, and found no ill " ſucceſs in this undertaking; in which they are more eſpecially encouraged by " the ſignal nobleneſs and bounty of the honourable HENRY HOWARD of Norfolk, " moſt generouſly beſtowing on the ſociety a piece of ground in Arundel-houſe, " ſufficient to build ſuch a college on; the raiſing of which they intend, God " willing, to begin with this approaching ſpring; and if the deſign be ſeconded " by chearful contributions, hope to finiſh by Michaelmas next.

[s] Letter-Book, vol. ii. p. 132.

" And being perſuaded, that thoſe of the nobility of Scotland, whoſe names " are here inrolled in the liſt of the ſociety, are with many others ſatisfied of the " uſefulneſs of this inſtitution, and of the neceſſity of making ſuch an eſtabliſh- " ment as this, they thought fit to give you, of whoſe zeal for its proſperity they " are well aſſured, notice of this their intention, that ſo you may be invited, as you " have opportunity, to inſinuate this undertaking to thoſe of your noble countrymen, " as are of the ſociety, and to beſpeak the concurrence of their generoſity in con- " tributing with all convenient ſpeed, what they may, to further ſo good an " eſtabliſhment: Which being effectually done, as it cannot but redound to the " immortal fame of the contributors, ſo it will certainly add to the reputation you " have already ſo much gained and deſerved of this ſociety,

" BROUNKER, R. S. P."

February 6. At a meeting of the SOCIETY,

WILLIAM, earl of Strafford, was propoſed candidate by the earl of DEVONSHIRE, and immediately elected and admitted.

Dr. ALLEN was elected.

Dr. LOWER brought in his written account of the cauſe of the frequent blindneſs of horſes, which was read, and ordered to be regiſtered [h].

Dr. CROUNE produced his wind-gathering veſſel, which was examined and thereupon ordered to be improved, according to the ſuggeſtions of Mr. HOOKE, and to be brought in again thus improved at the next meeting.

Sir THEODORE DE VAUX communicated a letter from Mr. JOSESH WALSH, dated Jan. 20, 166$\frac{7}{8}$, giving an account of ſome uſeful clays found in Worceſterſhire, and ſent by him for the ſociety's repoſitory; which letter was read, and ordered to be regiſtered [i].

Mr. HOOKE produced a letter written from Balſora, near the Perſian gulf, by Mr. HENRY POWELL January 6, 166$\frac{5}{6}$, giving an account of a new ſtar and dreadful earthquakes in thoſe parts, which letter being read, was ordered to be entered in the Letter-Book [k].

Notice being given, that a veſſel was ready to ſail for the Bermudas, it was ordered, that what was deſigned to be ſent thither for Mr. NORWOOD, in anſwer to his letter of the 17th of June 1667, ſhould be recommended to the captain of that veſſel, Mr. THOMAS MORLEY, which Mr. OLDENBURG undertook to do [l].

[h] Regiſter, vol. iii. p. 284. It is printed in the Philoſ. Tranſact. n° 32, p. 613.

[i] Letter-Book, vol. ii. p. 129.

[k] P. 136. It is printed in Mr. HOOKE's Philoſophical experiments and obſervations, p. 29.

[l] Mr. OLDENBURG's letter to Mr. NORWOOD, dated Feb. 10, 166$\frac{7}{8}$, thanking him for his communications, and recommending other particulars to his care, is entered in the Letter-Book, vol. ii. p. 147.

Mr.

Mr. CHARLES HOWARD moved, that ſome particulars relating to the plants of the Bermudas might be in the ſame letter for Mr. NORWOOD; and he was deſired to ſpecify thoſe particulars [m], and to deliver them to Mr. OLDENBURG.

Mr. OLDENBURG produced NICHOLAS STENO's new book intitled, *Muſculi Deſcriptio Geometrica*, printed at Florence 1667, in 4to, which was delivered to Dr. CROUNE to peruſe it, and to give an account of it to the ſociety.

Mr. OLDENBURG communicated and read a printed letter ſent to him by the author JOHN DENIS, M. D. profeſſor of philoſophy and mathematics at Paris, relating to a late cure of an inveterate phrenſy by the transfuſion of blood [n].

The experiments appointed for the next meeting were,

1. To try whether gold can be made heavier than itſelf, by making quickſilver penetrate into the pores of it.

2. To cut away the tympanum of a dog's ear, to ſee the conſequences of it, as to the animal's hearing.

3. To compreſs air upon ſhining fiſh.

February 13. Dr. ALLEN was admitted.

Mr. LE HUNT was admitted.

Mr. FLOWER was propoſed candidate by Mr. OUDART.

ESSAY WARD, M. A. was propoſed candidate by Dr. WILKINS.

Mr. HOOKE gave ſome account of the experiment, which had been propoſed by him to be tried, of making a body heavier than gold, by putting quickſilver to it, to ſee, whether any of it would penetrate into the pores of gold. He related, that he had tried it, and found, by weighing the gold in water before and after the addition of mercury, that it had acquired ſomewhat a greater ponderoſity; but that he did not rely on that experiment, and would therefore try it again more exactly.

It was moved, that this experiment might be extended farther, viz. to try what metalline bodies penetrate into one another, in order thereby to make compound bodies to be heavier than the compounding parts are, weighed when aſunder: This trial to be made with lead and mercury, with tin and copper.

The experiment of cutting the tympanum of a dog's ear was tried, but without ſucceſs. It was ordered to be tried again in private, and then to be repeated

[m] Mr. HOWARD's paper is entered in the Letter-Book, p. 149.

[n] An extract of it is printed in the Phil. Tranſact. n° 32, p. 617.

before the ſociety; the member, who propoſed it, being deſired to take farther care of it.

Dr. CROUNE produced again his veſſel for rendering wind diſcernible, when it is not diſcerned by any ſenſe without it.

Mr. HOOKE exhibited another ſuch veſſel of another contrivance.

It was ordered, that they ſhould be both tried and compared, and an account of the effect given to the next meeting.

Dr. CROUNE gave an account of Mr. STENO's *Muſculi Deſcriptio Geometrica*, that the author pretended only to compoſe an eſſay on that ſubject, and reckoned up the deſiderata in the doctrine of muſcles; adding ſeveral good experiments, among which was one of tying up the artery deſcending from the head, and thereby depriving the animal immediately of all motion: Which experiment was ordered to be tried before the ſociety at the next meeting, by Dr. LOWER.

Dr. ALLEN gave an account of a perſon, who had lately loſt a quantity of his brain, and yet lived and was well.

He was deſired to bring this relation in writing to be regiſtered.

Dr. CLARKE ſeconded this ſtory, by mentioning, that Sir GERVASE SCROOP was an inſtance of the like nature; adding, that many had ſurvived the loſs of a part of their brain; but that none, whom he had ever heard or read of, whoſe ſpinal marrow was hurt, were cured.

Mr. HOOKE related, that Sir WILLIAM STRODE had aſſured him, that he knew a man, who had a hole in his ſkull, through which it was ſeen, that his brain grew turgid at the full and flaccid at the new moon. He was deſired to bring the account of this in writing from Sir WILLIAM STRODE.

Mr. OLDENBURG produced a paper of Mr. BOYLE ſealed up, which had been ſent to him to be depoſited with the ſociety, containing ſome notion or invention of Mr. BOYLE not yet perfected. Mr. OLDENBURG was deſired to deliver it to the preſident, that he might lay it up [o], according to an order made by the council November 16, 1667, concerning the depoſiting of ſuch papers with the ſociety.

Mr.

[o] Mr. OLDENBURG in a letter to Mr. BOYLE of Feb. 18, 16⅔, printed in Mr. BOYLE's works, vol. v. p. 384, mentions, that the preſident not being at the meeting of the ſociety on the 13th, Mr. BOYLE's paper was ordered to be delivered to him, and that the preſident upon receiving it, two or three days after, put it in Mr. OLDENBURG's preſence in a box by itſelf, after he had written on it the day and year of his receiving it, as Mr. OLDENBURG had done the ſame minute it came to his hands. "One of the company, *adds* "*he*, though in another place, objected, that the "matter not being named of ſuch notions or in- "ventions, it might happen, that another might "light on the ſame thing, and not only have it "in his conception, but alſo bring it to perfec- "tion; and that in ſuch a caſe he ran the hazard "of loſing the honour of what he had done and perfected.

Mr. OLDENBURG produced a large account of the method of agriculture practiſed in Devonſhire and Cornwall, ſent by Mr. COLEPRESSE, and dated 6 Feb. 166$\frac{7}{8}$. It was ordered to be laid up with the reſt of the accounts of huſbandry.

This gave occaſion of reminding thoſe of the ſociety, who had formerly engaged to procure the like accounts from other parts of England, to diſcharge themſelves of their ſeveral engagements. The earl of Devonſhire undertook to procure an account of the agriculture uſed in Derbyſhire, and Mr. WALLER of that of Buckinghamſhire; and they both deſired to be furniſhed with the inquiries drawn up and printed for that purpoſe.

Dr. AGLIONBY deſiring to have the inquiries for the Eaſt-Indies, in order to ſend them into thoſe parts, for which he had now a good opportunity, it was ordered, that they ſhould be delivered to him.

Dr. CHARLETON preſented a mineral, which he thought to be a kind of gypſum or ſoft alabaſter, with long fibres. He was deſired to ſend for a larger quantity of it, to melt and make trials with it, of which Dr. GODDARD was deſired to take care.

The experiments appointed for the next meeting were,

1. The wind-gathering veſſel:

2. The cutting out the tympanum of a dog's ear.

3. Shining wood and fiſh.

4. Binding up the deſcending artery of a dog.

5. Weighing mineral bodies ſingle and compounded in the air and in water.

6. To bring in ſeveral deſcriptions, viz. of the new cyder-engine, of the new pendulum moving ſtrait without any checks; of the aſtronomical inſtrument dividing a foot into many thouſand parts.

February 17. At a meeting of the COUNCIL were preſent

" perfected upon the account, that another before " him had given a hint of the ſame thing. To " this I thought I could juſtly reply, that ſuch " notions and diſcoveries being ſealed up, and " thereby kept from coming to the knowledge " of others, if another ſhould light upon and " perfect the like, it would then be manifeſt to " all the world, the latter had it not from the " former; and therefore the ſociety would be ſo " juſt as to teſtify ſo much, and withal to add " upon occaſion, that the latter had not only " conceived ſuch and ſuch a thing without being " beholden to others for it, but alſo rendered it " complete or uſeful, according as the matter " may be."

The

The Preſident

Sir PAUL NEILE
Mr. AERSKINE
Sir GEORGE ENT
Dr. WILKINS
Mr. HOSKYNS
Mr. COLWALL
Mr. OLDENBURG.

It was ordered, that the preſident, the lord biſhop of SALISBURY, Sir PAUL NEILE, Sir ANTHONY MORGAN, and Dr. WILKINS be deſired to meet on the Wedneſday following, between nine and ten in the forenoon, in the painted chamber Weſtminſter, in order to ſpeak with the lord privy-ſeal about the buſineſs of taking the oaths of allegiance and ſupremacy.

Dr. WILKINS deſired leave to take from the ſtationer half a dozen copies of the *Hiſtory of the Royal Society*, to be preſented to ſome perſons, from whom he expected contributions; and leave was allowed him.

Mr. OLDENBURG moved the council to grant a letter recommendatory to Mr. SAMUEL COLEPRESSE, an ingenious and ſtudious perſon, ready to travel, who had furniſhed the ſociety with ſeveral very good and philoſophical accounts concerning mines, tides, and agriculture. This motion was conſented to, and Mr. OLDENBURG having a Latin draught of ſuch a letter ready, it was read and approved of, as follows:

" Cum præſentium lator Dr. SAMUEL COLEPRESSE, vir probus & eruditus, rerum-
" que naturalium perquam curioſus, præſtitutum animo habeat oras externas ſtu-
" diorum gratiâ inviſere, ibique doctorum et ſolertium virorum conſuetudinem
" ambire, rogaveritque præſidem & concilium ſocietatis regiæ à ſereniſſimo Magnæ
" Britanniæ rege Londini ad ſcientiam naturalem augendam inſtitutæ, ut literis
" ſuis commendatiis propoſitum ejus ornare & promovere dignarentur: prædic-
" tus præſes & concilium de ingenio & probitate lectoris ſatis ſuperque perſuaſi, id
" ipſi humanitatis officium lubentiſſime præſtare voluerunt, proindeque omnes
" literarum & literatorum amantes enixè rogant, ut præmemorato Domino SAMUELI
" COLEPRESSE favore & conſilio ſuo adeſſe, ſtudiáque & conatus ejus pro viribus
" juvare ne graventur. Quam gratiam utique præſes & concilium dictæ ſocietatis
" pari officiorum genere, pro re natâ, agnoſcere & redhoſtire annitentur. In cu-
" jus rei teſtimonium præſentes haſce ſigillo ſuo munire voluerunt. Script. Lon-
" dini anno Regni CAROLI II. auguſtiſſimi M. Britanniæ, Franciæ, & Hiberniæ
" Regis vigeſimo, æræ autem Chriſtianæ, MD. CLXVIII. die 17 Februarii."

It was ordered, that this letter be written fair on parchment for the next meeting of the council to have the ſociety's common-ſeal affixed to it.

The buſineſs of the conveyance of the land given by Mr. HOWARD was referred to the next meeting of the council.

Dr. WILKINS ſubſcribed fifty pounds, as a contribution for building the ſociety's college.

It was ordered, that Dr. WILKINS be desired to speak to Dr. CROUNE to draw up a letter to be sent by the president to the dutchess of NEWCASTLE, to desire her contribution to the building of a college.

Feb. 20. At a meeting of the SOCIETY,

Mr. WARD was elected and admitted.

Mr. FLOWER was elected.

Dr. CLARKE mentioned, that there was a poor distracted woman, who seemed to him a fit subject to try the transfusion upon; but that she not being provided for, it was to be feared, that she would lie upon the society's hands, after the experiment should be made upon her. He was therefore desired to speak with some of the officers of the parish, where she was then maintained, that in case they would continue to provide for her, the transfusion should be made upon her, as a means, which the physicians thought not unlikely to cure her.

Dr. WILKINS produced a paper sent by Dr. WREN, giving an account of a strangely diseased boy about Oxford, having a consumption of the bones about his head, which bones he pulled out in fragments, whereof some single ones weighed an ounce, though he was born of healthy parents, and had been healthy himself till of late. Some members inquired how the bones pulled out were coloured: others suggested, that information should be desired what nurse the boy had. Whereupon it was ordered, that Dr. POPE should be desired to write to Dr. MILLINGTON [p], and Mr. OLDENBURG to Dr. WREN, to be informed by them of those circumstances and such others as were remarkable in that patient; as also to learn, whether Dr. WREN, from whom the above mentioned account came, had himself seen the boy.

Mr. OLDENBURG procured a letter written to him from Paris February 18, 1668, N. S. by Monsr. CARCAVY, chief keeper to the French king's library and cabinet of medals and one of the principal philosophers of the Royal Academy of sciences in that city; in which letter Monsr. CARCAVY offered a correspondence [q]. It was ordered, that since this letter seemed not to be written in the name of that academy to the society, but only by a single member thereof, expressing his desire to correspond; Mr. OLDENBURG should only as from himself thank him for his offer, and entertain a correspondence with him upon philosophical matters [r].

[p] THOMAS MILLINGTON, M. D. afterwards knighted.

[q] Letter-Book, vol. ii. p. 153. See likewise Mr. OLDENBURG's letter to Mr. BOYLE of Feb. 25, 166$\frac{7}{8}$, printed in Mr. BOYLE's works, vol. v. p. 385.

[r] Mr. OLDENBURG in his letter last cited remarks upon this order; "This I was not very "well satisfied with. I see punctilio's retard and "obstruct much good both public and private: "but I must submit." Mr. OLDENBURG's answer to Monsr. CARCAVY was dated Feb. 24, 166$\frac{7}{8}$, Letter-Book, p. 157.

Dr.

Dr. WILKINS mentioned, that Mr. SMETHWICK had now made ready a teleſcope four feet long, with glaſſes not ſpherical, performing better than any ſpherical ones; and that he intended to ſhew them to the ſociety.

The wind-gathering veſſel was again produced, but being yet unfiniſhed, it was ordered to be perfected and produced again at the next meeting, after it had been tried in private.

The experiment of weighing tin and copper was made, ſo as two pieces of thoſe two metals were weighed, both aſunder and mixed, in the air and water; whereby it appeared, that the compound was heavier than the parts ſeparated. Mr. HOOKE was ordered to give an account of it in writing; as alſo to bring in the deſcription of the new cyder-engine, the aſtronomical inſtrument, and the new pendulum moving ſtrait without any check.

It was likewiſe ordered, that the experiment with ſhining wood and fiſh be made at the next meeting; and that Mr. SMETHWICK be ſpoken to by Dr. WILKINS to produce his new glaſſes at the next meeting[a].

Feb. 24. At a meeting of the COUNCIL were preſent

The Preſident

The lord biſhop of SALISBURY	Sir ANTHONY MORGAN
HENRY HOWARD of Norfolk	Dr. WILKINS
Mr. CHARLES HOWARD	Mr. HAYES
Mr. AERSKINE	Mr. HOSKYNS
Sir PAUL NEILE	Mr. OLDENBURG.

It was ordered, that the biſhop of SALISBURY be deſired to inquire of the lord ARLINGTON, whether the patent concerning his Majeſty's grant of Chelſea-college to the Royal Society and ſome additional powers to their charter, may not paſs by the King's immediate warrant, ſince the lord privy-ſeal required from the officers of the ſociety the taking the oaths of allegiance and ſupremacy:

That the operator of the ſociety conſtantly attend the preſident on Sundays, to receive his orders for ſummoning the council; and that he always ſummon the council the night before they are to meet, on the penalty of loſing the payment allowed him for ſummoning: and

That the recommendatory letter for Mr. COLEPRESSE, agreed upon at the laſt

[a] At this meeting of the ſociety of Feb. 20. were preſent Signor MAGALOTTI and Signor FALCONIERI, two philoſophers of the Florentine academy; but they came late, when the preſident was not in the chair, *whoſe ſingular dexterity*, ſays Mr. OLDENBURG to Mr. BOYLE, *in managing whatever is propoſed, you well know*. There was only made therefore before them the experiment of weighing tin and copper. See Mr. OLDENBURG's letters of Feb. 11, and 25, in Mr. BOYLE's works, vol. v. p. 383, and 385.

meeting of the council, be ſealed by the preſident with the common ſeal of the ſociety.

The lord biſhop of SALISBURY ſubſcribed one hundred pounds towards the building of the college.

Feb. 27. At a meeting of the SOCIETY,

There were admitted to be preſent the young Swediſh count DE LA GARDIE, and the two Florentine philoſophers, Signor LORENZO MAGALOTTI and Signor PAULO FALCONIERI.

Mr. SMETHWICK produced ſome optic and burning-glaſſes, which he affirmed to be of his own invention and preparation, to be of a figure not ſpherical, and which, as highly deſirable for the farther diſcoveries of nature, he had for many years together painfully ſearched after, now preſenting this invention of his to the judgment of the Royal Society, as being a member thereof [t].

Dr. ALLEN communicated the written account, promiſed by him February 13. of the loſs of a part of a man's brain without any conſiderable prejudice to the patient: which account was ordered to be regiſtered [u], as follows:

"December 14, 1667, THOMAS BARNOD, waterman, and ſervant to WALTER "HOLLOWAY, received a blow upon the temporal muſcle with a ſtretcher, which "immediately tumefied, and there followed the uſual ſymptoms of a fracture of "the cranium, viz. vomiting, bleeding at the noſe and ears, and a profound deli- "rium. The chirurgeon was ſent for (notwithſtanding his condition was thought "hopeleſs) who preſently came, and having opened a vein in his arm, made a "ſemicircular inciſion through the upper part of the ſaid muſcle, and dividing the "pericranium diſcovered the fracture; but fearing there might not be a ſufficient "breathing, made another inciſion, which was oblique, and afterwards a third, which "was ſemicircular, through the dependent part of the muſcle, ſo that the whole "muſcle was in a manner divided, and there was diſcharged about two ſpoonfuls "of the ſubſtance of the brain. I objected, that poſſibly it might have been pus; "but he well aſſured me, that in all probability there couldnot be any ſuppuration in "ſo ſhort a time, it not being above two days after the blow was given, that this "iſſued forth. Beſides, he told me it was of a different conſiſtence from pus. "The muſcle being thus divided, he found a large fracture and depreſſure of the "os ſquamoſum, and part of the os petroſum, ſo that one part rid over the "other, which he raſped off, and not knowing how to raiſe the depreſſed part, "applied the trepan upon the moſt ſound part, which was the moſt depending of "of the futura coronalis, and ſo with the elevatory gently raiſed the ſhattered "ſkull, upon which the former ſymptoms were moved, and ſome time after.

[t] The account of theſe glaſſes from the journal book of the Royal Society is printed in the Philoſ. Tranſact. vol. iii. n° 33. p. 631. for March 1667.

[u] Regiſter, vol. iii. p. 289.

" there was good digeſtion and ſeveral ſplinters of bones caſt forth. When Dr. " TERNE and I firſt viewed it, which was about a month ago, he was in a hopeful " condition, and in very good temper, and began to incarnate. The doctor was " ſo curious as to ſearch the depth of the wound with a ſilver probe, which, " without any force from his hand, paſſed an inch through both the meninges into " the ſubſtance of the brain. At this time he walks abroad, and is very hearty, " finding as yet no other inconvenience but that he hath not the freedom of his " ſpeech, nor quickneſs of apprehenſion as formerly; nor can he open his mouth " ſo well, nor chaw hard things."

Dr. BROWN of Norwich preſented to the ſociety a great petrified bone, a double gooſe-egg, the one included in the other, and a ſtone-bottle, which had been filled ſeven years before with Malaga ſack, and was well ſtopped, but now found almoſt empty, and the outſide covered all over with a moſſy coat [x].

The preſident, to whom Mr. JAMES GREGORY's book, intitled, *Vera Circuli et Hyperbolæ Quadratura in propriâ ſurâ proportionis ſpecie inventa et demonſtrata*, printed at Padua in 1667 in 4to [y] had been recommended, gave this account of it, that it was very ingenious and worthy to be ſtudied; that in it the author had delivered a new method for giving the aggregate of an infinite or indefinite converging ſeries; and taught a method of ſquaring the circle, ellipſis, and hyperbola by an infinite ſeries, calculating thence the true dimenſions as near as was deſired: and farther, that by the ſame method from the hyperbola he calculated both the logarithms of any natural number aſſigned, and *vice verſâ* the natural number of any logarithms given [z].

Mr. OLDENBURG produced another mathematical book, ſent him from Paris, intitled, *Specimina Mathematica* FRANCISCI DA LAURENS; which was likewiſe recommended to the peruſal of the preſident.

Mr. OLDENBURG read a letter written to him by Dr. JOHN PALMER, archdeacon of Northampton, dated at Ecton February 24, 166$\frac{7}{8}$, giving an account of his attempts of ſolving all algebraical queſtions by the *regula falſi*. He mentioned, that in the years 1638 and 1639, there had paſſed divers letters between Mr. JENNISON of Archeſter and himſelf on that ſubject, in which the doctor had avouched it to be probable, that the rule of falſe might do as much as the rule of algebra; but that he never profeſſed more than an opinion of that probability; and reſolved ſome of Mr. JENNISON's queſtions not ſolvable by common arithmetic, but others he could not ſolve. He then remarked, that what induced him to think the rule of falſe as competent as that of algebra, was, that the nature of the queſtions is the ſame (for in both the *numerus conſtructus* and the *modus conſtruendi* are given, and the *primus ſtructor* or *ſtructores* are ſought) and the rules are very like, though in the rule of falſe the extraction of roots be not commonly practiſed.

[x] An account of theſe is publiſhed in Dr. HOOKE's Philoſophical experiments and obſervations, p. 31.

[y] A few copies only were printed of this edition for the author's own uſe and that of his friends.

[z] Ibid. Philoſ. Tranſact. n° 33, p. 641.

His

His opinion was confirmed by PITISCUS, who *Trigon. lib. v. in append.* ſays, *regula falſi in trigonometria tam magnum uſum habet, ut diſcipulum ejus artis à tricis algebraicis prorſus liberare poſſit.* It was ordered, that Dr. PALMER ſhould be encouraged in his undertaking by a letter of thanks, and that his letter ſhould be entered in the ſociety's Letter-Book [a].

Mr. OLDENBURG read a letter written to him from Mr. COLEPRESSE dated at Underwood Feb. 22, 166$\frac{7}{8}$ [b], acknowledging the ſociety's favour in gratifying him a recommendatory letter in his foreign travels, and offering his ſervice in making inquiries of a philoſophical nature among intelligent men in foreign parts. It was ordered, that ſuch queries ſhould be ſent to him by Mr. OLDENBURG, as are uſually recommended to philoſophical travellers.

Dr. ALLEN related, that there was taken out of the bladder of Sir THOMAS ADAMS [c] lately deceaſed a ſtone ſaid to weigh twenty five ounces and three quarters, having in the midſt a gutter, through which the urine had probably paſſed. He added, that the patient had not been heard to make any great complaint of inconvenience till his laſt diſtemper, of which he died. He promiſed to endeavour to procure a ſight of the ſtone for the ſociety.

The experiment of compreſſing air upon a ſhining fiſh was made, which ſucceeded according to expectation; the light of the fiſh appearing more vivid after the compreſſion than before.

There was made likewiſe the experiment of compreſſing the deſcending artery in a dog, to ſee, whether thereupon the motion of the animal would quite ceaſe. Dr. LOWER, who had the care of the experiment, made this report, that he had only made the compreſſion of that artery with his finger, and had not found the effect related by Mr. STENO in his *Muſculi deſcriptio geometrica.* It was ordered, that Dr. LOWER ſhould be deſired to report the experiment at the next meeting by making a cloſe ligature, as Mr. STENO had done, and that by opening the abdomen; and Dr. CLARKE, Dr. CROUNE, and Mr. HOOKE, were deſired to aſſiſt in the experiment.

The new cyder-engine being again ſpoken of by Mr. PACKER, it was ordered, that Mr. HOOKE ſhould take care of having one made of that kind, not exceeding forty ſhillings.

Mr. HOOKE produced a more exact contrivance of ſcales for the weighing of bodies both in the air and water. It was ordered, that theſe experiments ſhould be proſecuted at the next meeting: and

That the veſſel for contracting of the wind, with the alterations formerly appointed to be made, be produced at the ſame meeting.

[a] Vol. ii. p. 158.
[b] Ibid. p. 155.
[c] Lord-Mayor of London in 1660.

March 5. Dr. LOWER made again Mr. STENO's experiment of opening the abdomen of a dog, and therein tying up very close the descending artery. But the animal, though appearing benummed and motionless in his lower parts, whilst bound fast, yet, when let go, went upon all four legs; though the said artery remained strictly tied. It was ordered, that Dr. LOWER should be desired to try the same experiment at the next meeting on the ascending artery; and that STENO's book should be again consulted, to see the circumstances there set down in the description of that experiment.

Dr. CLARKE moved, that the experiment might be tried in some large fish.

Sir GEORGE ENT communicated Mr. JOHN GREAVES's description of the manner of hatching chickens at Grand Cairo; which was read, and ordered to be registered [d].

Mr. HOOKE moved, that some ways might be considered of, to practise the hatching of chickens in England, without any animal; and having suggested the lamp-furnace, and a certain sweet substance keeping heat for many days (which he did not think fit to name then) he was desired to make the experiment in the best manner he could think of, and to give the society an account of its success.

The account of the performances of Mr. SMETHWICK's new optic-glasses being read, it was moved, that they might be tried once more, by comparing them with spherical glasses, before they passed abroad with the attestation of the society. This being approved of, Mr. HOOKE was desired to provide accordingly for the next meeting as good spherical glasses as he could procure, both for a telescope, reading and burning-glasses; which he undertook to do.

The wind-gathering vessel with some improvements was again exhibited, and appeared to be sensible of the least wind near it. It was ordered, that a description should be made of it, together with a scheme, and registered.

Mr. HOOKE suggested, that such a vessel as this might, by some variation, be turned into a good otacousticon: upon which he was desired to procure one to be prepared against the next meeting.

March 12. Mr. SMETHWICK's glasses were tried again; and his telescope being compared with another longer telescope, and the object-glasses exchanged, was still found to exceed the other in goodness; and his burning concave being compared with a spherical burning-glass of almost twice the diameter, and held to the fire, it burnt gloves, whereas the other spherical ones would not burn at all. Mr. SMETHWICK was encouraged by the society to proceed in this invention with all possible vigour; and because the sky was not at that time clear, it was desired, that the telescope might be produced once more at the next meeting.

[d] Register, vol. iii. p. 291. It is printed in the Philos. Transact. n° 137. p. 923. for January 1677. and Mr. GREAVES's Miscellaneous works, vol. ii. edit. London. 1737.

Mr.

Mr. HOOKE made a propoſal of a new way of his to grind optic-glaſſes, which he was deſired to give in writing.

Sir ROBERT SOUTHWELL being lately returned from Portugal, where he had been ambaſſador from the king, and being deſired to acquaint the ſociety with what he had done with reſpect to the inſtructions, which he had received from them before his departure from England, related, that he had lodged the aſtronomical quadrant, which the ſociety had ſent to Portugal to make obſervations with there, with a body of men at Liſbon, who had applied themſelves, among other kinds of literature, to mathematics; and among whom a gentleman, named Don ANTONIO ALVAREZ DA CUNHA, had deſired him to procure for him the honour of being received into the ſociety: whereupon he was put to the ballot, and elected.

There was preſented to the ſociety by Signor MAGALOTTI and Signor FALCONIERI in the name of prince LEOPOLD of Tuſcany, and as a mark of his highneſs's eſteem of the ſociety, the book of experiments of the academy *del Cimento* at Florence, intitled, *Saggi di Naturali Eſperienze fatte nell' Academia del Cimento in Firenze*, printed in that city in 1667 in fol.

The heads of this book being read, the preſenters received the ſolemn thanks of the ſociety [e], together with an intimation, that a letter of thanks ſhould be written to the Prince for his ſingular favour to the ſociety; which letter Mr. OLDENBURG was deſired to draw up in Latin.

It was likewiſe ordered, that Dr. MERRET and Dr. BALLE ſhould be deſired to peruſe this book, and to give the ſociety an account of the contents of it, and the manner of treating the ſeveral ſubjects in it.

An attempt was again made of the experiment of tying up the artery of a dog; but not ſucceeding it was referred to a private trial.

Mr. HOOKE brought in a deſcription of the wind-gathering veſſel, but took it home again, promiſing to return it at the next meeting.

Sir THEODORE DE VAUX read part of a letter to himſelf from Mr. JOSEPH WALSH, mentioning pieces of a rock in England, upon which were found moſs, fern, ſticks, a piece of wood, blackberries and wild raſberries, all petrified. It was deſired, that ſome pieces of this rock, on which thoſe things were found, might be ſent for; which Sir THEODORE undertook to do.

The experiments of weighing bodies of two mixt metals, made heavier than the metals apart, both weighed together, ſhould be proſecuted at the next meeting.

[e] Which Mr. OLDENBURG was ordered by the preſident to deliver in Latin, as appears from his letter to Mr. BOYLE of March 17, 166$\frac{7}{8}$, printed in Mr. BOYLE's works, vol. v. p. 388.

March

March 19. Some account was given by Dr. POPE and Mr. HOOKE of the book of the experiments of the academy *del Cimento*, which was, that the many ſubjects and experiments treated of in it had alſo been conſidered and tried in England, and even improved beyond the contents of that book; but that they were delivered in it with much accuracy and politeneſs, and ſome of them with an acknowledgment of the origin, whence they were derived.

It was ordered, that Dr. MERRET and Dr. BALLE, to whom the peruſal and examination of this book had been referred at the preceding meeting, ſhould be deſired to give in likewiſe their thoughts of it [f].

It being mentioned, that in the ſaid book there was related an experiment of making organ-pipes ſound in an exhauſted receiver, by blowing them there with bellows; it was ordered, that Mr. BOYLE, as the perſon, who had been the firſt known to have ſuggeſted this experiment, ſhould be deſired to make it; or, if he had already made it, to acquaint the ſociety with the ſucceſs of it.

Dr. POPE remarked, that the Florentine academy had delivered in their book an experiment, whereby they found, that ſounds moved equally ſwift with and againſt the wind, though not equally ſtrong or audible; and that they moved an Italian mile in five ſeconds.

It was remarked hereupon, that Mr. ROOKE had made trial of the latter experiment, and found, that ſounds moved five Engliſh miles in twenty ſeconds, which is one mile in four ſeconds; where it is to be conſidered, that an Engliſh mile is ſomewhat longer than an Italian.

Dr. POPE read the letter ſent by Dr. MILLINGTON from Oxford about the ſtrangely diſeaſed boy, mentioned at the meeting of Feb. 20, 166$\frac{7}{8}$; and it was ordered to be entered in the Letter-Book. But Dr. POPE did not deliver the letter, excuſing it, that there were private particulars in it.

Mr. OLDENBURG delivered a book ſent by the author, Mr. JAMES GREGORY, from Padua, to the honourable HENRY HOWARD of Norfolk, to be preſented to the ſociety, intitled, *Vera Circuli et Hyperbolæ Quadratura*; of which an account had been given on the 27th of Feb. by the preſident, who had a copy of the book ſhewn him by Mr. COLLINS.

A deſcription of an inſtrument for collecting the wind, or for making the ſlower motions of the air more ſenſible, contrived by Mr. HOOKE, was read, and ordered to be regiſtered [g], as follows:

[f] Dr. MERRET in a viſit to Mr. OLDENBURG on the 24th of March 166$\frac{9}{7}$, informed him of his deſign to read that book thorough with attention, and to compare it with what he knew to have been already done in England. See Mr. OLDENBURG's letter to Mr. BOYLE of that day in Mr. BOYLE's works, vol. v. p. 390.

[g] Regiſter, vol. iii. p. 294.

" It was contrived by Dr. CROON, to include a fan in a cylindrical veſſel, and " to divide the whole circumference thereof into thirty-two or more equal parts, " and at thoſe ſeveral diviſions, to cut ſlender ſlits for the air to be admitted by " thoſe narrow paſſages into the cavity of the cylindrical box; as ſuppoſing the " air moved affected to move ſwifter through any narrow crevice: but upon con- " ſidering the matter, I found, that a contrivance of that kind did very much " ſhroud and ſhelter the fan, placed in the center of the cylindrical box, from " being moved by the motion of the air, and not in the leaſt conduce to the " making it ſenſible. To remedy therefore this inconvenience, I contrived an " inſtrument after ſuch a manner, that the boxes and cells thereof ſhould collect " as great a quantity of air in motion, as could enter a ſquare hole every way " as big as the greateſt diameter of the inſtrument, and contract it into as ſmall " a paſſage as was deſired; by which means it is poſſible to make the ſloweſt and " moſt imperceptible motion of the air to be equal to the greateſt and moſt ſwift.

" The contrivance, in ſhort, was this: I cauſed two hollow tin cones *a*, *b*, *c*, *d*, *e*, " and *a*, *f*, *g*, *b*, to be inverted and meet each other in the common vertex or point " *a*: then dividing the limb of each into 32 equal parts, I cauſed to be cut ſo " many triangular valves or partitions *a*, *b*, *f*, *a*, *i*, *u*, *a*, *p*, *q*, *a*, *i*, *k*, *a*, *e*, *g*, *a*, *l*, *m*, " *a*, *n*, *o*, *a*, *r*, *g*, *a*, *d*, *b*, &c. as there were diviſions, cutting off only an equal " triangular bit at the top of them, or towards the center *a*, as that they might " leave a cylindrical hole in the center of this inſtrument, fit to contain a ſmall " vane or weather-cock. Theſe valves or partitions were ſoldered on between " the two cones, in the manner expreſt in the figure; by which means, all the " air, that was moved againſt the ſide of the cylinder *f*, *b*, *e*, *d*, *b*, *g*, was collected " to paſs through the narrow ſmall holes, making up the little ſquare at *a*, and " thereby conſequently the motion of the air through the holes, or outlets, to the " motion of the air through the greater mouths or entries, was in reciprocal pro- " portion to the area of thoſe holes; that is, as the area of the greater holes or " inlets, to the area of the leſſer holes or outlets, ſo the velocity of the motion of " the air in the ſmaller holes, to the motion of the air in the greater. By " this contrivance, it is eaſy to make a ball at the top of a ſteeple-turret, &c. " that by the air's blowing of a pipe contrived in it, the quarter and ſtrength of " the wind may at all times, either by night or day, be eaſily diſcovered. By " ſomewhat a like contrivance alſo may be made an inſtrument for collecting the " ſounds diſperſed in the air, into one ſmall channel or pipe, to be applied to the " ear, by which means the hearing may be much augmented and bettered."

It being mentioned in this deſcription, that by a ſomewhat like contrivance there might be made an inſtrument for collecting the ſounds diſperſed in the air into one ſmall pipe, to be applied to the ear, to ſerve for an otacouſticon, it was ordered, that Mr. HOOKE ſhould cauſe a great glaſs-receiver to be made for that purpoſe.

Mr. HOOKE produced his newly contrived cyder-engine, which being tried, but found not to go cloſe enough for expreſſing out all the juice of the apple at once, it was ordered, that it ſhould be made to go cloſer againſt the next meeting.

The

The buſineſs of improving optic-glaſſes being again ſpoken of, Mr. HOOKE obſerved, that Mr. COXE had affirmed to him, that he would make a ſpherical glaſs of the ſame power with thoſe of Mr. SMETHWICK, declared not to be ſpherical, which ſhould perform the ſame effects, of taking in as great an angle, and repreſenting the object as diſtinctly and truly, as Mr. SMETHWICK's glaſſes It was ordered, that Mr. COXE ſhould be deſired by Mr. HOOKE to make good his affirmation.

Dr. KING informed the ſociety, that he had made the experiment of tying up the artery in a dog, according to Mr. STENO's ſuggeſtion, but without ſucceſs. He was deſired to bring in this account in writing.

Mr. OLDENBURG produced two ſmall anatomical tracts written by REGNERUS DE GRAAF and JOHN VAN HORNE, both phyſicians at Leyden, the former intitled *Epiſtola de nonnullis circa partes genitales inventis novis*; and the latter, *Obſervationum circa partes genitales in utroque ſexu prodromus*; both printed at Leyden in 1668, in 16°, and pretending to contain ſome new diſcoveries about the parts of generation, as that the *teſtes* are not *glandular*, but a *compages* of ſtrings, rendering them capable to be wholly drawn out into length; and that the *teſtes mulierum* are like the *ovaria* in fowl, &c. It was ordered, that Sir GEORGE ENT ſhould be deſired to peruſe theſe books, and to give his thoughts of them to the ſociety.

Mr. HOOKE produced a lamp-furnace for hatching of eggs in it. The experiment was ordered to be tried without delay.

Mr. OLDENBURG read the Latin letter [h], which he had drawn up by order of the ſociety, for returning their thanks to Prince LEOPOLD of Tuſcany, for the book of Florentine experiments preſented to them in his name: Which letter being approved of, the preſident was deſired to ſeal it in council, according to the order of the charter.

The experiments appointed for the next meeting were

1. The glaſs-receiver to increaſe the ſound for better hearing.
2. The weighing metalline bodies, both mixt and aſunder.

1668, *March* 26. At a meeting of the COUNCIL were preſent

The Preſident

The lord biſhop of SALISBURY	Mr. COLWALL
Mr. CHARLES HOWARD	Mr. CREED
Mr. AERSKINE	Mr. OLDENBURG.

The Latin letter of thanks to Prince LEOPOLD for his preſent of the book of the Florentine experiments was read, ſigned by the preſident, and ſealed; and

[h] Letter-Book, vol. ii. p. 177.

Mr. OLDENBURG was desired to deliver it to Signor MAGALOTTI and Signor FALCONIERI, who had presented that book to the society from the Prince.

It was ordered, that Mr. HOOKE at his first leisure attend Mr. CHARLES HOWARD to view the reparations made in Chelsea-college, and make a report thereof to the council.

At the meeting of the SOCIETY on the same day,

The president produced his own method of squaring the hyperbola by an infinite series of rational numbers; which was ordered to be registered [i].

Dr. ALLEN produced the stone lately taken out of the bladder of Sir THOMAS ADAMS, which being weighed before the society, was found to weigh twenty-two ounces and three eighths Troy weight. Mr. HOOKE was ordered to take the dimensions and draw the figure of it; and Dr. ALLEN was desired to procure an account in writing of all the observables, that occurred about this stone, when it lay yet in the bladder, and was taken out; as also of the accidents observed in the patient during his life-time, and particularly, whether it were true, that he did not complain of any great inconvenience from the stone till a few days before his death.

The president produced a relation communicated to him by the lord HERBERT, concerning a live toad found in a sound ash-tree, and in the solid part thereof, lying in a hole no bigger than a just mould for the body. It was ordered to be filed up.

Dr. CHRISTOPHER WREN communicated a letter written to him from Oxford March 19, $166\frac{7}{8}$, by Dr. THOMAS JAMESON, concerning the strangely diseased boy, of whom Dr. POPE had given in at the last meeting an account in writing. This letter was ordered to be inserted in the society's Letter-Book [k].

Mr. OLDENBURG informed the society, that one Mr. HAY had given him notice, that a friend of his residing at Rome had by a letter signified to him, that he could and was ready to procure for the society a correspondence through all parts of the world, by means of the Romish missionaries; but that it would require some expence for letters. It was ordered, that the gentleman, who offered to procure this commerce, should be thanked for his respect to the society, as well as Mr. HAY for acquainting them with it; and that the offer should be embraced; the charges of foreign letters relating to the society being taken off in England by the favour of the lord ARLINGTON.

Dr. MERRET being called upon for an account of the book of Florentine experiments, desired some longer time, and alledged, that he intended to compare the

[i] It does not appear in the Register, but is printed in the Philos. Transact. vol. iii. n° 34, p. 645, for April 1668.

[k] Vol. ii. p. 184.

contents thereof with what had been performed and publiſhed in England on the ſame ſubjects.

It being mentioned again, that the Florentines had affirmed, that ſounds move equally ſwift againſt and with the wind, it was ſuggeſted by the preſident, that the experiment might be conveniently enough made between Deal and Dover, and that he would deſire the governor of Deal-caſtle to take care of it.

Mr. HOOKE gave a hint of making glaſſes, by which one might ſee and read in the dark. He was deſired to think farther of it, and to make ſome trials accordingly.

The experiments appointed for the next meeting were the ſame, that ſhould have been made at this, but were not.

Mr. OLDENBURG preſented his ſecond volume of the *Philoſophical Tranſactions* to the ſociety.

April 2. Sir JOHN COLLADON was propoſed candidate by Mr. POVEY.

Dr. KING brought in an account in writing, that the experiment, which he had made in private, of tying the deſcending trunk of the aorta in a dog, ſucceeded no more with him, than it had done, when made in public before the ſociety. It was ordered to be regiſtered[1], only to ſhew, that the experiment being made after ſuch a manner, did not ſucceed. The account was as follows.

" In order to your commands concerning Mr. STENO's experiment about " tying the deſcending trunk of the aorta: I opened the ſide of a dog, and " divided two ribs from the back-bone, ſo that I could ſee plainly the great " artery: then I put a packthread about it, and drew both ends through a " tobacco-pipe (the dog being looſe tied) I pulled with my right hand the " ſtrings, and preſſed down the end of the pipe with my left hand, that by " that way, I could ſtop the motion of the blood, &c. in the artery, and " give way again at pleaſure: And I do believe for the time I held it in the " foreſaid poſture, that the blood, &c. was as much ſtopt, as in the hardeſt " knot I can tie: Yet I could not obſerve, that, as Monſr. STENO would have " it, the dog loſt the motion of the hinder parts. Afterwards I peirced a hole " through, on the other ſide, and drew a thread under the ſpine, and got it " about the artery, and drew as faſt a knot as I could about the artery, and I " found the dog had motion, till all was forced to ceaſe, by reaſon of the ſuffoca- " tion of the whole."

Mr. HOOKE produced a glaſs receiver for the improvement of hearing. Being tried by holding the neck of it to the ear, it was found, that a ſtronger ſound was conveyed

[1] Regiſter, vol. iii. p. 296.

by

by it, than would have been without it. It was ordered, that at the next meeting there ſhould be brought a better and larger receiver for hearing.

He mentioned, that there was a perſon, who offered his ſervice to the ſociety for diving; which offer was accepted of, and Mr. HOOKE ordered to conſider againſt the next meeting of the apparatus for it, and of the experiments to be made by it.

Mr. POVEY informed the ſociety, that there was an acquaintance of his going by land to Perſia and farther into the Indies, who was ready to do the ſociety what ſervice he could in his travels. It was ordered, that the queries proper for thoſe countries, printed in n° 23 of the *Philoſophical Tranſactions*, ſhould be recommended to him; and they were accordingly delivered to Mr. POVEY for him.

Mr. OLDENBURG produced and read a letter written to him by Mr. SLUSIUS from Leige, March 29, 1668, N. S. containing a general deſcription of the country of Leige, and an offer of a particular one, if deſired. It was ordered, that Mr. OLDENBURG ſhould ſuggeſt ſubjects to him for a more particular account, and that his letter ſhould be entered in the Letter-Book of the ſociety [m].

Occaſion being given by Mr. POVEY diſcourſing of ſome Indian ſerpents, Dr. POPE related, that Sir ANDREW KING had aſſured him, that he had met in Spain in his own lodgings, with ſeveral amphiſbæna's, and opened both mouths of them, and taken ſeed out of them.

Dr. GODDARD remarked, that perhaps theſe ſerpents might be monſtrous, compoſed of two imperfect ſerpents growing together in the middle.

Captain SILAS TAYLOR preſented the ſociety with ſeveral ſmall pieces of good ſuccinum taken up on the ſhore at HARWICH [n]; as alſo with a piece of wood perfectly petrified.

It was remarked, that the like amber was frequently taken up on the coaſts of Suffolk and Norfolk; whether natural to that ſea, or accidental by ſhipwreck; was doubtful.

Mr. OLDENBURG read a Latin letter of Dr. WALLIS to himſelf, dated at Oxford March 7, $166\frac{7}{8}$, concerning the higheſt annual tides happening in the intermediate times between the perigee of the ſun and the equinoxes: Which letter was ordered to be regiſtered [o].

[m] It does not appear there, but an extract of it is cited in Mr. OLDENBURG's letter to Mr. BOYLE of March 30, 1668, printed in Mr. BOYLE's works, vol. v. p. 392.

[n] Where he was keeper of the King's ſtore-houſes, WOOD Athen. Oxon. vol. ii. p. 624.

[o] Letter Book, vol. ii. p. 163. It is printed in Engliſh in the Philoſ. Tranſact. n° 34, p. 652, for April 1668.

The

The experiments appointed for the next meeting (beſides the abovementioned receiver for hearing, and the diving experiments) were the cyder-engine, the weighing of metalline bodies, the glaſs for ſeeing in the dark, and Mr. COXE's teleſcopical glaſſes equal to thoſe of Mr. SMETHWICK.

April 9. Mr. HOOKE produced two receivers, one of which was of lattin, and of a conical figure, the other of glaſs and round, both ſharp at one end. Being applied to the ear, the former was judged beſt for the increaſing of ſounds: Mr. HOOKE was ordered to take them home, and try them farther by himſelf, and particularly during the ſilence of the night, and to bring in an account of their effects.

Mr. CHARLES HOWARD preſented the ſociety with two boxes of various ſeeds ſent him from Padua. He was deſired to ſow ſome of them, and the amanuenſis ordered to copy the liſt of them.

Mr. OLDENBURG produced a paper in Latin by Don ANTONIO ALVAREZ DA CUNHA, dated at Liſbon, 11 Feb. 1668, N. S. giving power to Sir ROBERT SOUTHWELL to procure him to be admitted into the Royal Society, and offering his ſervice for the promotion of their deſigns [p]. This gentleman having been already elected a fellow, on the 12th of March, it was thought proper to ſend him a diploma, giving public notice, that he was ſo, and a form of ſuch a one being prepared by Mr. OLDENBURG, it was read, approved, and ordered to be ſealed with the common-ſeal of the ſociety.

The form was as follows [q].

" Præſes, concilium, & ſodales Regalis Societatis Londini ad ſcientiam naturalem promovendam inſtitutæ omnibus & ſingulis, ad quos præſentes pervenierint, ſalutem.

" Cum virtute & variarum rerum experientiâ, nec non mathematicis ſcientiis clarus Dominus ANT. ALVAREZ DA CUNHA, villæ Taboæ dynaſta, ſereniſſimi Luſitaniæ regis archidapifer, in ordine Chriſti commendatarius commendæ S. MICHAELIS de Nogueira, urbanæ legionis è quatuor in præſidio Olyſſiponenſi tribunus, ejuſdem civitatis generoſorum academiæ à ſecretis, ſingularem ſuum in ſocietatem regalem affectum, ejuſdemque ſtudia juvandi promptitudinem humaniſſimis ſuis literis Olyſſipone d. 11 Febr. anno 1668, datis uberrimè fuerit teſtatus, inque iiſdem generoſum equitem Dominum ROBERTUM SOUTHWELLUM, ſereniſſimi Magnæ Britanniæ, &c. Regis CAROLI ſecundi in Luſitaniam ablegatum, nec non dictæ ſocietatis regalis conſortem benè meritum poteſtate ampliſſimâ inſtruxerit collegæ in cœtu iſto locum & jura ipſi impetrandi; dicta proinde ſocietas egregia laudati Domini ANTONII DA CUNHA in rem literariam & philoſophicam merita, ut par eſt, ſecum expendens, ipſum die 12 Martii, 1668,

[p] Letter-Book, vol. ii. p. 151. [q] Ibid. p. 181.

" in

" in ſolenni conſeſſu, conſpirantibus omnium ſuffragiis, in ſodalium ſuorum album " cooptavit, nullatenus dubitans, quin allectus hic in curiam ſuam novus ſocius " tanti nominis menſuram, tum prolixâ voluntatis propenſione, tum aſſiduâ " ſtudiorum conſociatione ſit impleturus. In cujus rei teſtimonium dicta ſocie- " tas ſigillum ſuum præſentibus hiſce affigi curavit. Scriptum Londini die " 9 Aprilis anno æræ Chriſtianæ MD.CLXVIII. Regni CAROLI II. auguſ- " tiſſimi Magnæ Britanniæ, &c. Regis, dictæ ſocietatis fundatoris & patroni, " viceſimo."

Mr. HOWARD preſented for the repoſitory a large ſtony ſubſtance, that was ſuppoſed to be earth petrified, which formerly filled up the ſhell of a nautilus.

Sir THEODORE DE VAUX preſented ſome petrified ſubſtances, ſuppoſed to have been plants.

Dr. CHARLETON likewiſe preſented two birds of the rarer kinds, called ſitta and phœnicurus.

Mr. OLDENBURG produced a paper of Mr. HENRY PHILIPS's addreſſed to Dr. WALLIS, giving an account of his obſervations concerning the true time of the tides; which was read, and ordered to be entered in the Letter-Book [r].

Mr. HOOKE being called upon to declare what apparatus he had thought upon for the experiments of diving, to be tried by the diver, who offered himſelf, ſaid, that there were formerly made diving-boxes, which he would put in order; and that the experiment neceſſary to be made firſt of all for this purpoſe was to try, which way the diver could continue a good while under water, ſo as to work there freely; which being once contrived ſo as to ſucceed, there would then offer themſelves a great number of experiments to be made under water.

Dr. CLARKE produced a paper containing a very particular account of the ſeveral ways of making alum; which was ordered to be copied [s] and compared with that formerly [t] given by Mr. COLWALL.

The experiments appointed for the next meeting were

1. Thoſe of weighing metalline bodies.
2. The cyder-engine ordered to be perfected.
3. Optic-glaſſes, both of Mr. COCKS in Long-acre, and of Mr. HOOKE, for ſeeing in the dark.

April 13. At a meeting of the COUNCIL were preſent

[r] It does not appear there. [s] It is extant preſ. B. B. vol. &c. [t] Aug. 21, 1661.

The

The Preſident

The lord biſhop of SALISBURY	Sir GEORGE ENT
HENRY HOWARD of Norfolk	Dr. WILKINS
Mr. CHARLES HOWARD	Mr. HAYES
Mr. AERSKINE	Mr. COLWALL
Sir PAUL NEILE	Mr. OLDENBURG.
Sir ANTHONY MORGAN	

The care of the conveyance of the ground given by Mr. HOWARD to build a college upon for the ſociety was again recommended to Sir ANTHONY MORGAN, who promiſed now to employ himſelf about it.

It was ordered, that the treaſurer iſſue out thirty pounds in part of payment of the bills brought in by the workmen, employed by the council of the ſociety in making the houſe of Chelſea-college tenantable:

That the preſident be deſired to ſignify to the ſociety, that conſidering the want of experiments at their public meetings, the council had thought proper to appoint a preſent of a medal of at leaſt the value of twenty ſhillings to be made to every fellow, not curator by office, for every experiment, which the preſident or vice-preſident ſhall have approved of; and that the preſident be likewiſe deſired to adviſe with Mr. SLINGESBY about the impreſs of ſuch medals:

That the lord BERKLEY and the lord biſhop of SALISBURY be deſired to ſpeak, as they ſhould ſee occaſion, in the houſe of peers to the biſhops of the ſociety for contributions to the college: And

That the preſident and HENRY HOWARD of Norfolk be deſired to ſpeak to the temporal lords of the ſociety for the ſame purpoſe.

HENRY HOWARD of Norfolk accordingly took a liſt of ſeveral lords and gentlemen, in order to ſolicit their contributions for that purpoſe.

The preſident and Dr. WILKINS promiſed to meet together, in order to ſpeak to Mr. MATTHEW WREN and Mr. WILLIAMSON for the like contributions; and the preſident undertook to ſolicit Sir ROBERT PASTON and Sir CYRIL WYCHE for the ſame.

Mr. COLWALL ſubſcribed one hundred pounds for the building of a college.

The council licenſed Dr. WILKINS's book, intitled, *An Eſſay towards a real Character and philoſophical Language*, and n° 34 of the *Philoſophical Tranſactions*.

It was ordered, that the amanuenſis cauſe to be bound a book in folio with vellum leaves, to contain the names of the benefactors to the ſociety, together with the particulars of their reſpective donations: And

That Mr. HOOKE complete the printed liſt of the collection beſtowed by Mr. COLWALL on the ſociety; and that this liſt be inſerted in the next edition of the *Hiſtory of the Society.*

April 16. At a meeting of the SOCIETY,

Sir ERASMUS HARBY, bart. was propoſed candidate by Sir PETER WYCHE.

Sir ROBERT SOUTHWELL preſented to the ſociety divers curioſities, to the number of thirty ſix, and ſeveral relations and anſwers to inquiries to the number of eleven; among the former of which was a very curious carpet wrought of the barks of trees in Angola. Some of the latter being written in the Portugueſe language, viz. thoſe concerning the Nile, the unicorn, the variety and uſes of palm-trees, the weed of the Red-ſea, which dies the Pintadoes, and the emperor of Abyſſinia, Sir PETER WYCHE was deſired to tranſlate thoſe papers into Engliſh, which he promiſed to do.

Mr. OLDENBURG produced a letter written to him by PAUL RYCAUT, eſq; dated at Smyrna, November 23, 1667, containing anſwers to the queries concerning Turky, recommended at his departure from England; which letter was read, and ordered to be inſerted in the Letter-Book [a], and was as follows:

" Worthy Sir,

" I Have ever ſince my laſt return into Turky greatly deſired to ſatisfy you in " the matter of thoſe inquiries, you delivered me in England, in behalf of the " Royal Society; but I was prevented at firſt by a dangerous ſickneſs, contracted " by contagion of the air, or the people; which ſeemed the more long and tedious " to me, in regard it was the firſt violent diſtemper I ever knew, or ever inter- " rupted the courſe of my health by a confinement to my bed.

" But when I ſeriouſly conſidered, that this was the ſevereſt effect of mortality, " that had fallen upon me, in the ſeven years I had been a ſojourner in Conſtanti- " nople, a climate ſubject to no diſeaſes but the peſtilence, and malignant fevers; " (conſumptions, gouts, ſtone, dropſies and ſcurvy, being rarely or never found " there;) I did not ſo much repine, or wonder at my preſent ſickneſs, as I bleſſed " God, that the epidemical contagion had not ſeized me ſooner, when my body " was yet freſh, and unaccuſtomed to the temperature of that air.

" For Conſtantinople hath been always greatly afflicted with the plague, eſpe- " cially in June, July, and Auguſt, more than any other part of the world, which " is the reaſon, that Hippocrates, born in the iſland of Coos, preſcribes to the " Grecian emperors ſo many rules againſt the contagion in their imperial city. " And now by reaſon of that principle of predeſtination, the contagion encreaſes " amongſt the Turks together with the heats, and no rules or remedies applied to

[a] Vol. ii. p. 85.

" prevent

" prevent it; by which means the peſtilence is become ſo univerſal, that unleſs " one dies of old age, or a violent death, the diſeaſe, if mortal, without further " inquiry, is for the moſt part concluded to be peſtilential.

" The reaſon, that Conſtantinople is thus ſubject to the plague, is attributed " to divers cauſes. Some ſay, that the multitude of ſlaves brought yearly by the " Black-ſea, and their hard diet, beget this corruption. Others ſay, that the " commonalty being for the moſt part nouriſhed in the ſummer time by cucumbers " and melons, drinking water upon them, and uſing no helps to correct the cru- " dities, fall into malignant and peſtilential fevers. But moſt phyſicians there " conclude, that the air of Conſtantinople is infected by the north-eaſt winds, " which blow commonly for three months, beginning about the ſummer-ſolſtice, " ariſing from unwholeſome marſhes in Moſcovy and Tartary, and paſſing over " the Black-ſea, a place known to abound with fogs and miſts, do bring with " them certain diſpoſitions tending to corruption, which working upon bodies " prepared already by bad diet (as ſaid before) may well be judged to be the " cauſes of this diſtemper.

" I ſhould alſo have been more ready, and ſpeedy in my anſwers to the inqui- " ries; but that much of my time hath been taken up in my late ſettlement in the " conſulate of Smyrna; ſo that if I am not ſo exact in my reſolves, as were to be " wiſhed, you will be pleaſed to pardon me for the preſent, upon aſſurance, that " I ſhall be more diligent for the future, eſpecially in giving you an account of " the antiquities and ruins of the ſix other churches of Aſia, to which places from " hence I deſign to journey, ſo ſoon as I am freed from the attendance on her " excellency the counteſs of Winchelſea, who now honours my houſe with her " preſence, intending to embark ſpeedily for England.

" But that I may for the preſent reſolve, as well as I can, your queries, I an- " ſwer to the firſt.

" 1. That, which you call ruſma, called by the Turks chruſma, is employed to " no other uſe, that I can hear of, than to take away hair. It was told me, when " I firſt demanded, where that earth did ariſe, and from whence it was brought, " that it came by way of the Black-ſea from Mengrelia, and Chircaſſia: but I " have learned now better, and underſtand, that it is a compoſition of lime, and " auri pigmentum, of which, according to your deſire, I have ſent you a ſmall " quantity by the hand of this bearer, who alſo will inform you the ſame.

" 2. The uſe of opium is become now very common amongſt the Turks; ſuch, " as in their youth were accuſtomed to wine, growing into years, leave it off, as " being eſteemed a greater diſgrace of old age, and wine to be the vice of young " men. But howſoever, not to loſe altogether their kiefe, as they call it, which " is the pleaſure of intoxication, they fall to eat opium, accuſtoming themſelves to " it by degrees, proceeding from ſcruples to drachms; the greateſt quantity, I ever " heard any man hath taken, is 5 drachms. I never remember to have heard, " that it was ever given to camels, or dromedaries; but in Arabia it is common

" to cure their horſes by it of a griping in the guts, giving them a ſmall quan-
" tity of it in water at the noſe, mixed with bears gall. I have obſerved, that
" thoſe men, who uſe it, become ſtrangely ſottiſh; for when the opium is digeſted,
" and hath done working, they ſeem to be void of all life, or ſoul, having a
" ſtrange deadneſs, or ſuffocation on their animal ſpirits: And when again they
" renew their doſe (as they are forced to do often) they fly out either into a kind
" of phrenſy, or into the wild actions of drunken perſons.

" 3. Mummies are certainly found in the ſands of Arabia, that is, the fleſh of
" men dried and hardened by the ſun, and drineſs of the ſands. But it is poſi-
" tively held in Egypt, that they have not the ſame virtue with thoſe, which are
" embalmed.

" 4. I am informed from ſome, who have lived at Damaſcus, that there is in
" that country a ſort of tree, called by the Arabs mouze; it grows about nine or
" ten foot high, it is cut cloſe by the root every year, and ſhoots up again; the
" leaves are about a foot long, and half as broad; it bears a yellow bloſſom, the
" fruit in the form of a cucumber, ſomewhat tart, and ſouriſh to the taſte.

" 5. I cannot receive any information of the grapes without grain in the moſt
" ſouthern parts of Arabia Felix. But we have here in Anatolia a ſmall ſort of
" wild grapes, black and very ſweet without grains: alſo I have ſeen the like in
" Hungary, and on the confines of Boſnia, of which the people make a liquor;
" but the Turks give it not the name of wine, that ſo they may drink it without
" ſin, or ſcandal, but call it hard ale, of which I have taſted myſelf, and obſerved,
" that though it ſeems to be a wine of little ſpirit, yet drank in a quantity it will
" inebriate. But I have thought it worthy your knowledge to acquaint you, that
" I have ſeen in theſe parts a ſort of vine called by the Turks *yedi veren*, and by
" the Greeks ἑφθα χειλὸ, which ſignifies, that which brings forth ſeven times; it is
" ſo great a bearer, that they are forced to ſupport the vine by poſts in the form
" of an arbour, and I have ſeen at the ſame time grapes in the bud, green and
" ripe. I have ſent Mr. CHARLES HOWARD ſome ſlips of it by this bearer.

" 6. I have ſpoken with ſome, that have paſſed by mount Caucaſus, but never
" over it, but being men, who travelled for neceſſity, they were able to render me a
" weakaccount of it, as to its poſition, or temper, more than that it is exceeding
" high, craggy, and horrid, caſting a ſhadow a day's journey from it.

" 7. The water runs out of the Euxine ſea into the Propontis with a wonderful
" ſwiftneſs, which is the more admirable in regard of the depth of the Boſphorus,
" being in the channel fifty or fifty five fathom water, and along the land in moſt
" places, ſhips may lie aſhore with their heads, and yet have twenty fathom water
" at their ſterns. Here are no tides to be obſerved, nor that the water either riſes
" or falls above a foot or two at the moſt, nor could I ever learn certainly, which
" were the Euripi; I conjecture, they may be ſome rocks at the mouth of the
" Boſphorus, which have diverſity of tides, according to the winds.

" 8. I never did hear from any, who could inform me, that the Caſpian ſea " doth empty itſelf into the Euxine by any paſſage whatſoever. I believe it only " a conjecture of the virtuoſi in Chriſtendom, and perhaps not without reaſon: " but the Turks and Greeks, who ſail the Black-ſea, are ſo incurious in ſuch diſ- " coveries, or obſervations, that as yet they have not been able to draw ſo much " as a ſea-chart or map of the promontories, bays or cape-lands of the Euxine, " much leſs able to give us light in ſo hidden a ſecret, as this.

" 9. Conſtantinople is not now ſo ſubject to earthquakes, as reported in " former times; there having not happened in the laſt ſeven years, in which I " have been an inhabitant there, above one, of which I have been ſenſible: but " within theſe laſt twenty days in Smyrna fell out an earthquake, which dange- " rouſly ſhook all the buildings, but did little or no harm; the ſhips in the road, " and others at anchor above three leagues from hence, were ſenſible of it. It " is reported here, that this city hath been devoured already ſeven times by earth- " quakes, and it is propheſied, that it ſhall be ſo again, ſo ſoon as the houſes " reach the old caſtle upon the top of the hill, on the ſide of which remain the " ruins of the old city, and the tomb of St. POLYCARPUS, St. JOHN's diſciple, " ſtill preſerved by the Greeks in great veneration. The north-eaſt winds at Con- " ſtantinople for the moſt part bring a clear ſerene air, eſpecially in the winter; " the ſouth winds bring a thick ſuffocating air, extreamly offenſive to the head, " and the north-weſt conſtantly bring a ſtorm, but never continuing above an hour " at the moſt, by reaſon of the violence of it.

" 10. I have obſerved, that the leather dreſſed in Turky is nothing ſo ſtrong " and ſerviceable as that in England; a certain proof whereof we have in wearing. " I know that it is commonly reported, that the leather in theſe parts, though " thin and ſupple, will hold out water; but the truth hereof is, that in their boots, " between the lining and the leather, they put a ſear-cloth, which being curiouſly " ſewed in the ſeams, as they rarely work all things in leather, will hold out " water, though you ſet them in it twenty four hours together. In cleanſing of " their leather they uſe lime and album græcum, and inſtead of bark of trees they " uſe valonia, which is a ſort of acorn growing on the oaks. I am perſuaded, " that our acorns in England would produce the like effect, and perhaps better; " for many times the valonia burns the leather ſo much, as makes it little ſer- " viceable; ſo that it may be ſuppoſed, that our acorns having leſs heat to pro- " duce them, may be more temperate and ſerve the turn better.

" 11. I have anſwered ſo fully to this inquiry in my book of the Ottoman " empire, that I ſhall not need make any anſwer thereof in this place.

" 12. The Turks are obſerved to be of ſo imperious a ſpirit in their families, " that they ſeldom admit of paſtimes, or recreations to their ſervants; and the " maſters themſelves being commonly of a reſerved ſullen temper, given to ſloth, " and pride, entertain themſelves with no paſtime, unleſs with the diſcourſes " of their neighbours, who often viſit the perſons of greater note; or when " they are pleaſed to retire themſelves into the apartments of their women,

" where

" where they admit of no diſturbance on the moſt important occaſions whatſo-
" ever.

" 13. Coffee is obſerved to work little effect, eſpecially in thoſe, that uſe it moſt;
" and yet becauſe moſt Turks die with a pain in the ſtomach, many phyſicians
" attribute it to their exceſs in coffee, which drank in great quantity ſouls and
" bakes in the pit or pylorus of the ſtomach. Often bathing makes both men and
" women to decay betimes. Shaving the head doth doubtleſs much refreſh thoſe,
" who uſe it: ſo that the Turks have no ſooner the leaſt heavineſs, or ach in
" their heads, but they have recourſe ſpeedily to their barber for the cure.

" 14. I ſhall ſerve you what is poſſible in the information of works of antiquity
" in theſe parts; but they are ſo hardly found, being ſtudiouſly deſtroyed by the
" Turks, in moſt places, where I come, nothing but confuſed ruins appearing;
" antient inſcriptions, that I have found in Greek, engraved in ſtones, being as it
" were purpoſely beaten out with hammers, and placed in walls of new building
" with the letters ſubverted; ſo that I fear I ſhall be able to render you but a
" lame account from hence in thoſe particulars. Howſoever what occurs in my
" journey to the churches of Aſia, worth your notice, I ſhall faithfully tranſmit
" to you after my return. The aqueducts near Conſtantinople, built by Solyman
" the Magnificent, I have often ſeen, and reviewed with great ſatisfaction, being
" the moſt ſtately of that kind I ever ſaw in any part of the world, though the
" meaſure of them, I muſt confeſs, I never was ſo curious as to take, and being
" at this diſtance now from thence, I conceive, that I ſhall never again have the
" opportunity to do it.

" The bearer hereof Signor PIETRO CESI, a perſon, who hath been a great tra-
" veller, and rarely well verſed in the Arabick and Turkiſh languages, I earneſt-
" ly recommend to you; and that in regard his misfortunes have driven him to
" ſeek his bread in England, you would be pleaſed to afford him all civil courte-
" ſies, which you eſteem due to a ſtranger and an ingenious perſon. And ſo,
" Sir, wiſhing you all happineſs I remain,

" SIR,

" Your moſt aſſured humble Servant,

Smyrna,
November 23, 1667.

" PAUL RYCAUT."

Upon occaſion of the account given in this letter of the way uſed in Turky of dreſſing leather with acorns, Mr. HOOKE was ordered to ſuggeſt the like trial to be made with the Engliſh acorns by the tanners of London.

The perſon, who brought this letter, called Signor PIETRO CESI, born in Perſia of Italian parents, being introduced into the ſociety received their thanks for his care of the ſaid letter, as alſo for the preſent of ſeveral curioſities of his own to the number of thirty ſix.

Mr.

Mr. HOOKE produced again the large conical tin-receiver for the magnifying of ſounds; which being tried was found to make words ſoftly uttered at a diſtance to be heard diſtinctly; whereas they could not be ſo heard without this inſtrument.

He produced a muſcle, to ſhew how it conſiſts of mere fibres or ſtrings lying cloſe togther, longwiſe, like the fibres of talc.

The experiments appointed for the next meeting were the ſame, which ſhould have been made at this, but were not.

April 20. At a meeting of the COUNCIL were preſent

The Preſident

The lord biſhop of SALISBURY	Mr. COLWALL
HENRY HOWARD of Norfolk	Mr. CREED
Sir GEORGE ENT	Mr. OLDENBURG.
Dr. WILKINS	

The preſident moved, that for the more effectual getting in of the weekly contributions, letters might be written to all thoſe, who were in arrears, not of the nobility, deſiring them to attend the council at certain days to be nominated, and then to declare their reſolutions concerning the payment of ſuch arrears.

It was ordered hereupon, that Mr. OLDENBURG draw up a form of ſuch letters againſt the next council.

It was reſolved, that the preſident, the lord BERKLEY, the lord biſhop of SALISBURY, HENRY HOWARD of NORFOLK, and Dr. WILKINS be deſired to take all opportunities of ſoliciting ſubſcriptions of the lords for building the college; and that the preſident do give notice the night before to the reſt of this committee, when his lordſhip can attend that buſineſs.

It being ſuggeſted, that LEWIS DU MOULIN, M. D. was willing to tranſlate *The Hiſtory of the Royal Society* into Latin, and that it was neceſſary to haſten this tranſlation, for fear it ſhould be done in Holland, to the prejudice of the author; it was ordered, that Mr. OLDENBURG ſhould be deſired to ſpeak to Mr. MARTYN, the ſociety's printer, and to let him know, that the council approved of the ſaid Dr. DU MOULIN, and that he, Mr. MARTYN, ſhould do well to agree with the doctor about the recompence for his pains, and to pay the ſame.

April 23. ROBERT earl of AYLESBURY was propoſed by Mr. OLDENBURG and elected.

Sir ERASMUS HARBY was elected.

THOMAS FLATMAN, eſq; was propoſed candidate by Mr. AUBREY.

The experiment to ſhew, that two metalline bodies weigh more in water, when mixed, than when weighed both together apart, was deferred, by reaſon that the beam of the balance was not well adjuſted, nor a ſet of weights, accurately divided, ready; which were ordered to be provided againſt the next meeting.

Dr. HOLDER brought in an account of an experiment made by himſelf concerning a cauſe of deafneſs from the want of a due tenſion of the tympanum of the ear; which was read, and ordered to be regiſtered [x].

Mr. OLDENBURG produced a letter written to him by Dr. WALTER NEEDHAM, dated March 10, $166\frac{7}{8}$, containing ſome animadverſions upon Mr. HOOKE's deductions from the experiment formerly made by him of preſerving animals alive by blowing through their lungs with bellows: which letter was read, and ordered to be entered in the Letter-Book [y], and ſent to Mr. HOOKE to conſider it; and it was ordered, that Dr. LOWER ſhould be deſired to make the experiment mentioned in that letter relating to the matter in debate, and Dr. KING to aſſiſt in it.

This gave occaſion to diſcourſe of reſpiration; whereupon Mr. DANIEL COXE ſuggeſted, that it was proper to examine and ſeparate the parts of the air, in order to know what there may be in it, that may make it ſo neceſſary for reſpiration. He being aſked, whether himſelf had not done ſomething in this particular, anſwered in the affirmative; and being deſired to communicate it to the ſociety, promiſed to do ſo, when he ſhould have proceeded ſomewhat farther therein, and brought it to more maturity.

Mr. AUBREY produced ſome mineral water from Milſom in Wiltſhire, about 80 miles from London, which yet kept its ſtrength ſo well, that when a little duſt of galls was poured on it, and ſtirred with it, it was preſently tinged into a dark red colour. The bottles containing this water were delivered to Dr. MERRET to examine it.

Mr. EVELYN preſented a ſmall box of ſhells found at the bottom of a chalk-pit about fifty feet deep near Brockley in Kent.

Mr. OLDENBURG produced ſeveral curioſities delivered to him from Signor PIETRO CESI, among which were ſome exotic ſeeds, and particularly of that papaver, whence opium is made. It was ordered, that ſome of each ſort of theſe ſeeds ſhould be delivered to Mr. CHARLES HOWARD, and that he be deſired to make ſuch trials with them, as he ſhould think fit, and to give the ſociety an account of the ſucceſs; and that the reſt of the ſeeds, together with the other particulars (being thirty two in number, according to the liſt delivered with them) be committed to Mr. HOOKE for the repoſitory.

[x] Regiſter, vol. iii. p. 301. It is printed in the Philoſ. Tranſact. vol. iii. n° 35. p. 665. for May 1668.

[y] Vol. ii. p. 166.

The

The experiments appointed for the next meeting were the two above-mentioned, viz. of the weighing of metalline bodies, and of making Dr. NEEDHAM's experiment mentioned in his letter.

April 27. At a meeting of the COUNCIL were preſent

The Preſident

The lord biſhop of SALISBURY	Dr. WILKINS
The lord BRERETON	Mr. COLWALL
Mr. BOYLE	Mr. CREED
Sir PAUL NEILE	Mr. HOSKYNS.
Sir GEORGE ENT	

Mr. BOYLE was ſworn of the council.

It was ordered, that ſuch of the fellows, as ſhall not pay their arrears due to the ſociety within one month after the demand thereof, ſhall be ejected, according to ſtatute:

That there ſhall be no ſtanding ſalary allowed to either of the ſecretaries:

That a preſent be made to Mr. OLDENBURG of fifty pounds: and

That Mr. COLLINS be deſired to aſſiſt in making a catalogue of the Arundelian library forthwith.

April 30. At a meeting of the SOCIETY,

Mr. FLATMAN was elected.

BENJAMIN WOODROFFE, M. A. was propoſed candidate by Mr. BOYLE.

Mr. AUBREY acquainted the ſociety with an obſervation made by him April 27, 1668, *hor.* 10. of a nubecula between cancer and caput hydræ; and he was deſired to continue to obſerve this phænomenon, as he had opportunity; and the ſcheme of it brought in by him was ordered to be regiſtered.

Mr. BOYLE being deſired by the preſident to acquaint the ſociety with ſome of the particulars, which he had entertained himſelf with during his late abſence, mentioned, that he had, among other things, employed himſelf in the proſecution of the experiments concerning air, which perhaps he might be induced to publiſh, when finiſhed, as an appendix to his former book upon that ſubject. And being requeſted to declare what heads of that argument he had chiefly purſued with experiments, he named theſe following; viz.

1. Experiments about different liquors, that contain air.
2. About the proportion of air latitant in water and other liquors.

3. About the effect of the abſence of air in ſoft bodies.
4. About the effect of the abſence of air upon living creatures.
5. About the generating *de novo* or extricating of air.
6. About the ways of examining, whether the ſubſtance thus generated or extricated be true air or not.

He being deſired to communicate ſome of theſe experiments to the ſociety, to be tried before them, promiſed to do ſo, and to produce ſome of his papers containing them at the next meeting; againſt which time Mr. HOOKE was appointed to cauſe the rarefying-engine to be made ready, that then it might be produced, if there were occaſion to make any of thoſe experiments therein; as alſo to provide ſome vipers for that time.

Mr. HOOKE read his anſwer to Dr. WALTER NEEDHAM's letter concerning the experiment of preſerving a dog alive by the wind of bellows, and by keeping the lungs diſtended with freſh air, though not moved. It was ordered, that the experiment mentioned by the doctor ſeeming to him to diſprove the conſequence deduced by Mr. HOOKE from his experiment, ſhould be made at the next meeting, the curators and Dr. KING, appointed at the laſt meeting to make it at this, being abſent; and that the operator ſhould again ſpeak to Dr. LOWER and Dr. KING to take care of the experiment at that time.

Mr. HOOKE propoſed an experiment, to ſee, whether the blood circulates, when the lungs are ſubſided. He was deſired to make it before the ſociety.

He remarked, that it had been obſerved, that blood, though of a dark blackiſh colour, would, when expoſed to the air, become preſently very florid, and that florid ſurface being taken off, and the ſubjacent part expoſed again, would acquire the like floridneſs; and that therefore it might be worth the obſerving by experiment, whether the blood, when from the right ventricle of the heart it paſſes into the left, coming out of the lungs, it hath not that tincture of floridneſs, before it enters into the great artery; which if it ſhould have, it would be an argument, that ſome mixture of air with the blood in the lungs might give that floridneſs.

Sir ROBERT HENSHAW preſented by the hands of Mr. HENSHAW an Eaſt Indian ſerpentine-ſtone, called *pietra de covre*.

Sir THEODORE DE VAUX communicated a letter of Mr. JOSEPH WALSH, dated April 26, 1668, giving an account of a cinereous ſubſtance found at Kencheſter-Walls, anciently a Roman ſtation, called *Aricomium*, in Herefordſhire: which letter was ordered to be inſerted in the Letter-Book [z], and Sir THEODORE deſired to procure ſome of thoſe cinders.

[z] It does not appear in that book.

The

The preſident took notice of a new book on mechanics, the author of which was Dr. WALLIS, then preſent, who was deſired by the ſociety to haſten its publication [a].

The experiments appointed for the next meeting were thoſe mentioned above, and that of weighing metalline bodies mixed and apart.

May 4. At a meeting of the COUNCIL were preſent

The Preſident

HENRY HOWARD of Norfolk	Dr. WILKINS
Mr. CHARLES HOWARD	Mr. COLWALL
Mr. AERSKINE	Mr. HOSKYNS
Sir PAUL NEILE	Mr. CREED
Sir ANTHONY MORGAN	Mr. OLDENBURG.
Sir GEORGE ENT	

It was ordered, that the preſident, Sir PAUL NEILE, and Sir ANTHONY MORGAN be deſired to ſpeak with the lord privy-ſeal, to ſatisfy his lordſhip, that the reſtraining the ſociety from the power of alienating what his Majeſty had given them in the grant of Chelſea-college, was ineffectual: and

That the preſident, Mr. HENRY HOWARD, and Dr. WILKINS, be deſired to meet on the Wedneſday following in the morning in Weſtminſter-Hall, to ſolicit the members of the ſociety, who were of the parliament, for contributions.

The preſident moved, that the building of the ſociety's college might be begun forthwith, there being already above one thouſand pounds ſubſcribed. In order to which Sir ANTHONY MORGAN was deſired, that the deed of the conveyance of the ground might be expedited: which Sir ANTHONY promiſed ſhould be done, as ſoon as the ground ſhould be ſurveyed, to know the bounds allotted for the ſaid building.

Dr. WILKINS was deſired to procure at the next meeting of the council Dr. WREN's draught of the building.

May 7. At a meeting of the SOCIETY,

Sir ERASMUS HARBY was admitted.

Mr. WOODROOFFE was elected and admitted.

JOHN COLWALL, eſq; was propoſed candidate by Dr. WILKINS.

[a] It was publiſhed at London 1670 in 4to.

Mr. BOYLE, at the desire of the society expressed at the last meeting, produced some of his papers, containing certain experiments tried in his rarefying-engine upon vipers and frogs; which being read and approved, the society desired the satisfaction of seeing some of these experiments made: whereupon it was ordered, as before, that the engine should be brought to Arundel-house, and vipers provided by the operator; and that the slow-worm produced at this meeting should be brought again at the next, first to be put in the engine, and then to bite a young dog or kitten, to which afterwards the stone, called pietra di covre, lately presented by Sir ROBERT SOUTHWELL, should be applied, to see its effect upon the wound.

Mr. BOYLE presented the society with a gage, proper for seeing how far a receiver is exhausted of air, and whether it keeps stanch; which is particularly proper in long pipes, wherein no other gage will enter.

Mr. OLDENBURG produced two letters sent him from Aleppo from the English consul, Mr. BENJAMIN LANNOY, and THOMAS HARPUR, M. D. dated Aug. 5, 1667, containing an answer to the inquiries for Turky, formely recommended to Sir ANDREW RICCARD, and by him sent to Aleppo: which letters were read, and ordered to be entered in the Letter-Book [b]. Mr. LANNOY in his letter to Mr. OLDENBURG mentioned, that he had sent the inquiries of Persia to the English agent at Ispahan, and had recommended those for Turky to his physician Dr. HARPUR. Mr. LANNOY's answer was as follows:

"Sir, Aleppo, August 5, 1667.

"I Lately received from my honoured friend, the worshipful NICHOLAS PENNYNG, a paper of inquiries, which you delivered him to send to me. Sir, "I recommended the inquiries to my physician, Dr. HARPUR, who hath done "his endeavour to answer your desires, which I send you here inclosed. I have "sent the paper to the English agent at Ispahan, and have requested him, as you "desired; whose answer, so soon as I receive it, shall be sent to you, and if I "may be further serviceable, I shall account it an honour to receive your com-"mands, and shall remain,

"Sir,

"your most humble servant,

"BENJAMIN LANNOY."

"Clarissime vir,

"EPISTOLAM tuam accepit consul noster BENJAMIN LANNOY, rogatus "à te, ut de veritate nonnullorum phænomένων te certiorem faceret: ipse "publicis domesticisque distractus negotiis hanc mihi provinciam delegavit, quam "lubentissimo animo accepi, licet tanto oneri impar. Cæterum nihil mihi opta-"bilius accidere poterat, quàm ut in aliqua re illi societati possem inservire, quam "totus literatorum orbis admiratur, vestra vestigia exemplaque jamjam sequutu-

[b] Vol. ii. p. 43.

"rus;

" rus; imo ſperat ipſa philoſophia, ſe tandem aliquando, vobis facem præferen-
" tibus, ex antiquis denſiſque tenebris in lucem emerſuram. Quid veſtra in phi-
" loſophando methodo clarius? quid ad exactam rerum cognitionem αὐτοψίᾳ et
" ſenſatione aptius? cùm apud omnes in confeſſo ſit, nihil eſſe in intellectu, quod
" non fuerit prius in ſenſu. Ego quidem pro viribus enitar, ut, ſiquid obſerva-
" tione in triplici regno dignum hic occurrerit, id vobis per me in poſterum inno-
" teſcat. Sed tria præſertim meis conatibus officere videntur. Primum eſt,
" quod paucis abhinc menſibus ex Italia huc acceſſi, adeò ut quæ vobis ſcribo, ab
" aliis, fide tamen dignis, confirmata ſint. Secundum, quòd indigenarum alii,
" lucro tantum et voluptatibus dediti, alii dura oppreſſi ſervitute, literis incum-
" bere, reſve naturales perſcrutari nec curent nec audeant: parum igitur vel nihil
" auxilii ab illis expectandum. At Europæi et advenæ mercaturam faciunt.
" Tertium, quod mihi praxim medicam exercenti vix tempus ſufficit, ut aliis
" negotiis vacare poſſim. Sed, cùm ſocietatis veſtræ, vel potius ipſius ſcientiæ
" res agatur, clariſſime vir, nihil intentatum relinquam, ut ex parte ſaltem officio
" veſtriſque votis ſatisfeciſſe videar. Hunc igitur conatum meum, qualiſcunque
" ſit, in bonam partem accipe, & in poſterum, ſi placuerit, tuis literis mandatiſ-
" que fac ut me honores. Vive diu et vale, veſtriſque faveat cœptis ipſe ſapientiæ
" fons et largitor.

" *Reſponſiones ipſæ ſequuntur.*

" Quæritur primò, *qualis ſit hic aeris temperies* &c.? Optima profectò eſt, et
" quæ corpora ad proſperam magis quàm adverſam valetudinem diſponat. Ca-
" lidior tamen foret, ni perpetuò in hac regione à menſe Maio ad Auguſtum
" uſque et ultra flarent Zephyri, adeò ut dum nunc hora quaſi meridianâ, et
" ardente ſirio, hæc ſcribo, multò minus caloris, quàm olim in Italia, perſentiam: ſed
" audio, rem non ita ſemper ſe habere ſingulis annis. Uno verbo, cœlum hic ita
" purum et tenue eſt, ut toto æſtatis tempore nec pluviæ nec nubes unquam ferè
" conſpiciantur.

" Quæritur 2^do^. *quibus morbis hæc regio præſertim ſubjaceat?* et quidem, quantum
" vel propriâ experientiâ vel aliorum narratione comprehendere hactenus potui,
" parum vel nihil à morbis Europæ endemiis, uno aut altero excepto, differunt.
" Frequentiores ſunt hîc dyſenteriæ et apoplexia; quod poſtremum à nimio Vene-
" ris et opii uſu proficiſci videtur. Febrium typus idem ut apud nos; duo tamen
" notatu digna; 1^um^ eſt, quòd in febribus acutis ſoder frigidus ſalutem, calidus
" mortem ut plurimum portendat. At HIPPOCRATES aph. 4° libro aph. 37.
" contrarium pronuntiavit. Alterum eſt, quod in iiſdem acutis nec pulſus inter-
" mittens periculum denuntiet. Lues Venerea rarior quàm in Europa; non deſunt
" tamen, qui hoc fœdiſſimo morbo tentantur. Lepra ſeu elephantiaſis, olim his
" regionibus familiare malum, vix nunc reperitur; audio tamen Damaſci noſo-
" comium huic morbo obnoxiis deſtinatum eſſe. Porrò ſupereſt, ut de malo
" Aleppino aliquid addam, ſic enim ab Europæis κατ' ἐξοχὴν nuncupatur *Il mal*
" *d'Aleppo*; eſtque huic regioni uſque ad urbem Bagdat proprium, et familiare;
" omni ætati, ſexui, advenis, indigeniſve commune. Apparet in cute puſtula
" parva, dura, rubicunda, cujus cacumem vix acus cuſpidem in principio magni-

" tudine

" tudine excedit; hæc poſtea grandior facta, quinque vel ſex radicibus ſeu fibris " innixa, per totos ſex menſes ad ἀχμὴν aſcendit, perque alios ſex menſes ad de- " clinationem pervenit, adeo ut totius morbi decurſus ut plurimum unius anni " ſpatio comprehendatur; unde etiam ab Arabibus *malum unius anni* nuncupatur: " Sed hæc puſtula neque in principio, nec in ſtatu, nec in declinatione medicamentis " cedit, quin potius iiſdem, veluti cancer, irritatur, etiamſi anodyna eſſent; ſed " ſi totum negotium naturæ committitur, nullus dolor vel moleſtia perſentitur: " et hic morbus non ſemel, ſed pluries, varias eodem tempore corporis partes in- " vadere poteſt; et ſi faciem occupet, ut ſæpe accidit, inſignem inducit cicatricem, " quæ poſtea ſenſim evaneſcit. Calculus et podagra non ita, ut apud nos, fre- " quentia, quod à rariore vini, frequentiore balnei uſu, procedere videtur. Hæc " ſunt quæ ad morbos ſpectant.

" Quæritur tertio, *quales ſint aëris cœlique varietates ſecundum diverſa anni et diei* " *tempora?* Ver temperantum fulgura, tonitrua, et pluviæ concomitantur, quæ " æſtate deſinunt, redeuntque poſtea ſub finem Auguſti; ſed hiberno tempore fri- " gus penetrans et acutum corpora per duos menſes (Decembrem et Januarium) " exercet, adeò ut plurimi hic tunc pellibus veſtiantur. De variis diei temporibus " nihil habeo quod dicam. Quod ad 4^tum^ quæſitum attinet, *an ſcilicet in Aleppo,* " *ut in Ægypto, circa mediam æſtatem abeat peſtilentia?* diſtinguendum eſt, et ita res " intelligenda, quod revera ſub feſtum D. MAGDALENÆ pauci vel nulli ferè " amplius moriantur; et quos deinde peſtis invadit, ut plurimum non opprimit; " remanent tamen et bubones et anthraces, ſed, ut jam dixi, non ita ut antea " lethales. Idem forſan de Ægypto dici poſſet.

" 5°. De meteororum generatione, ſpeciebus, ſtatiſque temporibus, de minera- " libus, animalibus, ſoli natura, ventis, montibus, eorumque ſitu, ac de aquis " thermalibus, lacubus, fluviiſque ita rem ſe habere intellexi: Et primo de fluviis, " *Cinga* fluvius (ſi tamen tale mereatur nomen) Aleppo præterfluit; Orontes, An- " tiochiam. Sed præter hæc duo ſunt et alia flumina, Ephrim, Euphrates, " Chobar, juxta Orpham (olim Niſibin, poſt Romanorum tempora, Edeſſe et " Charre) Abana et Pharphar, Damaſco proxima. Cinga, Euphrates, Abana et " Pharphar verſus Aquelonam et Auſtrum tendunt. Lacus 12. abhinc milliari- " bus Cingam, alterque, totidem à Damaſco diſtans, Abanam et Pharphar, reci- " piunt: in Sinum Perſicum fluit Euphrates. Orontes ab Euro-auſtro ad Euro- " aquilonem ſub ipſo Antilibano, non multum abhinc, originem ducens, poſtea " ad Seleuciam, Pieria olim, nunc Sudine dictam, decem infra Antiochiam " milliaribus in mare devolvitur; de fluvio Chobar nihil habeo quod dicam. " Ephrim in Syria Cyreſtica ortus, et prope radices civitatis Choros præterlabens " ab oriente in occaſum tandem in Orontem deſinit: hæc de fluviis. Nunc de " lacubus; inter quos primum locum tenet ipſum Orontis caput, 12. circiter " milliaria amplectens. 2°. Lacus Antiochenus, in ipſa Antiochena valle, ubi " olim DARIUS equorum greges alebat, 15. 16. ve milliaria ambiens, et propter " incredibilem anguillarum proventum percelebris. Eſt et 3^us^, Hadder dictus, in " quem Cinga noſter ſeſe exonerat. 4^us^, Valde celebris viginti abhinc milliari- " ribus Euro-Auſtrum verſus diffitus, vocaturque à noſtris *The Valley of Salt.*

" Hiberno enim tempore lacus eſt, ut æſtivo nihil aquæ, ſed ingens ſalis moles " apparet: parum abhinc DAVID cum HADEREZAR, SELIMUS cum CAMPHONE " GAURO pugnaverunt. In valle Antiochena ſex ſeptemve reperiuntur Therma- " lium aquarum fontes, qui ſulphur redolent, argentumque croceo tingunt calore. " Unus ex iſtis ad varia morborum genera ab incolis laudatur. Prope *Choron* " audio aquam inveniri, quæ pannum, ut olim murex Tyrius, purpureo colore " inficit. Inter has aquas, quæ nivi liquefactæ permixtæ à montium jugis præci- " pitantur, aliæ alvum laxant, dyſenteriaſque generant, ut Albana et Pharphar, " aliæ ſalubres, gratæque palato, turbidæ tamen, quæ poſt breve tempus claræ " evadunt. Prope Bylan, ſeptem à Scanderoon milliaribus, duo treſve reperiuntur " fontes, quorum aqua graviſſima eſt, clara tamen, naturamque cupri referens, " adeò ut bibentibus moleſtiam ſenſumque ponderis in ventriculo procreet, cujus " cauſa eſt, quòd omnes hi montes, per quos hæc aqua percolatur, ferro cupro- " que abundent. Nunc hæc pauca de montibus: primuſque occurrit mons " *Amanus*, ſuper alios à tergo Scanderoon eminens, qui inde continuo quaſi tractu " Ieroſolymam uſque, immo et ad montem Caſſium in Ægypto prope maris " littora porrigitur: in hoc tractu ſunt et alii montes Calbei, Libanus, Antiliba- " nus, Caſſius prope Antiochiam, quia eſt et alius Caſſius, ut jam dictum in " Ægypto. Hi omnes ſeptentrionem et Auſtrum præcipue ſpectant.

" De mineralium venis nihil certi, quia, dum princeps has negligit, ſubditi ten- " tare non audent. Juxta Bylam montemque Amanum cuprum ferrumque repe- " ritur; qualis autem harum venarum ſitus ac poſitus, neſcimus, deterret enim " inveſtigandi periculum.

" Ventus, ut jam dictum eſt, à menſe Maio ad Auguſtum uſque et ultra ſem- " per occidentalis, frigidus, ſalubriſque, ac omnium animalium in hac regione " ſalus et vita: aliquando à ſeptentrione, cum inſigni frigore, propter vicinitatem " cum monte Tauro, in Cilicia nivibus operto; aliquando ab oriente, cum " ingenti æſtu, ob arenoſum proximum deſertum; raro ab auſtro perflat. De " tonitu et fulgure jam dixi, quæ, dum autumno et vere pluit, ſunt frequentia; " nivis pauca, grandinis minor quantitas, utraque ad breve tempus permanent.

" Natura ſoli varia, hic pinguis, illic arenæ et calci permixta. Vix ullum ab " arte in agricultura auxilium. Subditi enim, dum in ſervitute vivunt, futuros " negligunt vel ignorant hæredes.

" Tritici hordeique ingens proventus; in valle Antiochena oryza; nullibi quod " ſciam, ſecale naſcitur. Ditior tamen multo eſt in omni frumenti ſpecie Italia, " quàm hæc regio, multiſque plantis ac herbis, nobis familiaribus, caret.

" Quod ad fructus pertinet, ficus præcox, malus Perſica, mora, melones, " Anguriæ ceu Citrulli, et uvæ in magna quantitate reperiuntur; pruna et ceraſa, " pyra pomaque noſtratibus minora deteriora ac rariora ſunt: hicque defectus ab " agricolæ potius negligentia et incuria, quàm à ſoli ſterilitate dependet.

" Nutrit

" Nutrit camelos, bubulos, mulos, aſinos, equoſque generoſos, & innumeros " gazel ſeu antilopum greges: in montibus non deſunt urſi, lupi, tigres, jackales " (mixtum inter vulpem et canem verociſſimum animal) hiſtrices &c. quibus " Anglia caret; capris, ovibus ac bobus abundat. Serpentum ſat magnus hic " numerus, in valle Antiochena quaſi infinitus. Viperis, credo, quod careat. " Inter inſecta unum eſt memorabile, medii digiti craſſitiem et longitudinem ſu- " perans, 44. hinc inde ſuffultum pedibus, unde ab incolis *orba orbain*, quod 44. " ſonat, nuncupatur; horridum aſpectu animalculum, et denticulis duobus, ve- " nenóque hominibus infeſtum. In Italia, quod ſciam, non reperitur, eſtque ut " plurimum ædium veterumque ædificiorum incola. Terræ motus hic rari, con- " tinguntque ut plurimum autumno, cum ſumma aeris tranquillitate; ad breviſſi- " mum durant tempus, aliquando tamen ſat violenti; unde et ædes et arbores " manifeſtæ contremiſcunt, et tunc Turcæ ad preces proni devolvuntur.

" Secretum tingendi ſeu durius reddendi ferrum Damaſci periit; eſt tamen unus " hic, qui, oblatâ pecuniâ, hanc artem ſe docere velle profitetur. Quod ad ruſma " pertinet, non eſt nativum, ſed ex calcis vivæ partibus quatuor, et auripigmenti " parte una componitur; nec ad alios uſus apud Turcas, quam pro pſilothro " uſurpatur. Hujus ſat magnam maſſam in Angliam, juſſu veſtræ ſocietatis, " miſit D. HARTOPPE, quod in cauſa fuit, ut nihil ad vos tranſmiſerim.

" And now, Sir, give me leave to write two lines to you in my mother-tongue, " in which I had anſwered your queſtions, but that I thought the Latin more " proper and expreſſive for that ſubject; and to entreat you to honour me here " with your commands; as alſo, that whenſoever your illuſtrious and excellent " wits produce any new fruits of their learning, as, I hear, they daily do, to let " me have a taſte of them. You may imagine, how pleaſant they will be in " Syria. So I remain,

" Sir,

" your moſt humble ſervant,

THOMAS HARPUR."

Mr. HOSKYNS and Mr. HOOKE were deſired to conſider againſt the next meeting of ſome farther particular queries for Turky to be ſent thither by the next opportunity.

Some members ſuggeſted the following queries for Aleppo:

1. What figured ſtones have been caſt up in thoſe parts by earthquakes?

2. Whether Mount Sinai is known to have ever been a vulcano? and whether there be any vulcano's in thoſe parts?

3. Whether Aleppo be ſo much ſubject to ſhaking palſies, as ſome report?

4. Whether the ſcimitars were not made in Perſia?

5. Whether

5. Whether the perſon, who in Dr. HARPUR's letter is ſaid to pretend to have the old way of hardening ſteel, may not be prevailed with to teach it? and what reward he demands for it?

6. To deſire, that the odd inſect mentioned in that letter may be ſent over; and to ſuggeſt, that it may be conveniently done by putting it in rectified ſpirit of wine; and, in caſe that could not be had, in good brandy?

7. Whether the *mare mortuum* hath any vent?

Mr. OLDENBURG produced an experiment ſent him from Paris, ſhewing, that when the picture of an object falls juſt upon the optic-nerve, there is no viſion. The experiment itſelf was made and ſucceeded. Mr. OLDENBURG was deſired to tranſlate the French diſcourſe upon it into Engliſh againſt the next meeting.

The experiment ſuggeſted by Dr. WALTER NEEDHAM in his letter of March 10, $166\frac{7}{8}$, to prove, that an animal died rather for want of the blood's motion, than for want of a ſupply of freſh air, was ordered to be tried firſt in private by Dr. KING and Mr. HOOKE, who agreed to meet for that purpoſe on Saturday morning following, and to give an account of the ſucceſs thereof at the next meeting.

It was likewiſe ordered, that the experiments of weighing metalline bodies both apart and mixed ſhould be preſented.

Dr. WILKINS preſented the ſociety with his book, intitled, *An Eſſay towards a real Character and a Philoſophical Language*[c].

May 11. At a meeting of the COUNCIL were preſent

The Preſident

Mr. BOYLE	Mr. HOSKYNS
Mr. AERSKINE	Mr. CREED
Sir PAUL NEILE	Mr. OLDENBURG.
Dr. WILKINS	

Mr. HOSKYNS was deſired to confer with Sir ANTHONY MORGAN for drawing up the reaſons, whereby it may appear, that the clauſe ſuggeſted by the lord privy-ſeal, for reſtraining the ſociety from alienating Chelſea-college, will not be good in law; and that the inſerting of ſuch a clauſe would only put the ſociety to new charges, as the additional patent was already ingroſſed: and that this paper be drawn up againſt the next meeting of the council intended to be ſummoned for the Monday following, and that it be given to the lord ASHLEY by the preſident and Sir PAUL NEILE to diſcourſe the buſineſs with the lord privy-ſeal.

[c] Printed at London 1668, in fol.

Mr. HOOKE was desired to bring in his draught for the building of the college, and an estimate of the charges thereof, on the Monday following.

Sir PAUL NEILE was desired, that in case he should see Dr. WREN between that time and the Monday following, he would endeavour to engage him to attend the council at their next meeting, and to bring with him his draught for the said building.

May 14. At a meeting of the SOCIETY,

Mr. JOHN COLWALL was elected.

Dr. KING brought in his account of the experiment ordered to be made by himself and Mr. HOOKE in private, of filling the lungs of a dog with air, and keeping the same air without any admission of fresh air: which account was ordered to be registered [d], as follows:

"May 9, 1668, in order to your commands, we made the experiment of filling "a dog's lungs full of air, and keeping the same air without any admission of "fresh air, in this manner.

"First having placed and tied the dog in a convenient posture, and being furnished with a large bladder, that had a short brass tube fastened to it, we filled "the bladder with air by the help of a pair of bellows, (the air being kept in "by two ligatures, one at each end of the bladder;) then we cut off the aspera "arteria, as near as we could conveniently to the epiglottis, and held it out by a "thread: then we inserted our brass-pipe into the aspera arteria, and tied it very "fast in; which done, we immediately slipt the running-knot from about the "bladder, that the air might have a free passage from thence into the lungs, which "we presently perceived was sucked into the lungs by the elevation of the dog's "thorax, and its return, upon contraction of the thorax, into the bladder again: "but when the thorax was dilated, we compressed the bladder, that we might fill "the lungs with as much air, as they were capable to hold, by such a force. "In the mean time, the dog made the same endeavours for breathing with the "same motions, as is usual; though with more difficulty and violence, (as to the "force of contraction;) for I could not continue my hands many minutes compressing the bladder, the air pressing so forcibly into it. After about three or "four minutes, the dog began to struggle violently, and to repeat his endeavours "for breath very frequently, with a nimble motion of the heart, but no convulsions; yet, after about six minutes, his strength failed a-pace; his motions of the "breast and belly were less frequent; his pulse languid and slow, but equal enough; "and then he began to be convulsed; and at the end of about eight minutes, we "could see no signs of life (though unbound) only now and then a feeble pulse: "then concluding him very near death or just suffocated, we immediately slipt "the other knot, and made room for the bellows to play again, to fill the lungs "with fresh air, (cutting a little hole in the bladder to let out the air, that had

[d] Register, vol. iii. p. 297.

"been

" been ſo long impriſoned in the dog's lungs and the bladder) and within leſs " than a minute, the dog, by our moving the thorax firſt and continual blowing, " recovered motion in his breaſt, and his pulſe did riſe ſtrongly, he opened his " eyes, and, in a little time more, got ſtrength again, and breathed freely: ſo " then we ſewed up his throat, leaving the mouth of the aſpera arteria open, and " ſet him down, and he walked away. Then we untied his mouth, and he pre- " ſently fell to licking of himſelf, as not much concerned: but we all concluded, " that if we had ſtayed but one minute more, before we let in freſh air, in all " probability the dog's life would have been quite loſt."

Dr. KING and Mr. HOOKE were deſired to repeat this experiment, and then let the dog lie two or three minutes longer, when they ſhould judge him as much dead, as they did at this time, that ſo the trial might be beyond exception.

Mr. HOOKE made an experiment of ſtatics, to ſhew the penetration of liquors: firſt, there was a ball of glaſs poiſed in the air, and then it weighed three hundred and two grains and a half: the ſame ball in fair water weighed one hundred and fifty grains and ſeven eight parts: in oil of vitriol twenty four grains: in a mixture of an equal quantity of oil of vitriol and fair water ſeventy three grains and a half. It was ordered, that a full account of this be brought in by Mr. HOOKE.

It was moved by Mr. BOYLE, that a mixture might be made of oil of annifeeds and ſalad oil; as alſo of vitriol and rectified ſpirit of wine, and of mercury and aqua fortis: and he mentioning, that he had formerly made divers experiments of this nature, was deſired to communicate ſome of them to the ſociety, which he promiſed to do.

The dedication of Dr. WILKINS's *Eſſay towards a real character and a philoſophical language* being read, it was moved by the preſident, that a committee might be nominated to examine and conſider of that book, and make a report of it to the ſociety; and accordingly the following perſons were named, viz.

The lord biſhop of SALISBURY	Dr. MERRET
The lord BRERETON	Mr. HENSHAW
Mr. BOYLE	Mr. BALLE
Mr. AERSKINE	Mr. WRAY
Dr. WALLIS	Mr. HOSKYNS
Dr. HOLDER	Dr. POPE
Dr. CHRISTOPHER WREN	Mr. HAAK
Mr. WILLIAM NEILE	Mr. HOOKE,

or any three or more of them, to be a committee for the purpoſe above-mentioned, and to meet at times and places, as they ſhould think convenient.

The rarefying-engine being called for to try the experiment appointed at the laſt meeting to be made in it, but found not to have been brought, the operator was ſtrictly charged to bring it in at the next meeting, and to fit it ſo as to make it

ſtanch for the experiments to be tried in it; as alſo to provide a ſlow-worm or viper to make trial upon.

Mr. HOSKYNS being aſked, whether he had prepared his queries for Aleppo, produced ſome, which were delivered to Mr. OLDENBURG to be ſent by him accordingly.

May 18. At a meeting of the COUNCIL were preſent

The Preſident

HENRY HOWARD of Norfolk	Mr. COLWALL
Mr. CHARLES HOWARD	Mr. HOSKYNS
Mr. BOYLE	Mr. OLDENBURG.
Mr. AERSKINE	

Mr. HOSKYNS was deſired to ſpeak to Sir ANTHONY MORGAN to make a draught of the conveyance of Mr. HOWARD's ground for building a college againſt the next meeting of the next council; and to ſpeak to Sir ANTHONY about an attorney, who might appear for the defence of the ſociety's poſſeſſion of Chelſea-college.

Mr. HOSKYNS produced and delivered to the preſident the memorial for perſuading the lord privy-ſeal of the ineffectualneſs of adding a clauſe againſt alienating Chelſea-college.

Mr. HOOKE was deſired to bring in at the next meeting of the council an account of the number of books of the Arundel-library, and to meet with Dr. BALLE on the Saturday following for the completing of the catalogue of that library.

The dimenſions for the great meeting room of the college were propoſed to be twenty eight feet broad, forty two feet long, and twenty five feet high.

May 21. At a meeting of the SOCIETY,

Mr. JOHN COLWALL was admitted.

He preſented the ſociety, in a paper ſigned by him, with eighty pounds towards the building of a college.

Col. THOMAS COLLEPEPYR was propoſed candidate by the honourable HENRY HOWARD of Norfolk.

Mr. HOOKE brought in his account of the ſtatical experiment of the penetration of liquors made at the preceding meeting; which was ordered to be regiſtered [c], as follows:

"This experiment was made with a very good pair of ſcales, which would

[c] Regiſter, vol. iii. p. 304.

"turn

" turn with a ſmall part of a grain, though the difference of weight was ſenſible " enough to be diſcovered by a more groſs and unaccurate beam. The manner " of the experiment was this: there was taken a ſmall ball of glaſs, ſomewhat " bigger than an inch in diameter; this was made heavy enough, by white lead " put within it and ſealed up, to ſink in ſtrong oil of vitriol. This was ſuſpended " by a very fine wire, under one of the ſcales, and the weight of it exactly taken " in the open air, which was found to be $302\frac{1}{2}$ grains. After this, a glaſs of fair " water was put underneath it, and the ball ſuffered to ſink into it, and being " again exactly counterpoiſed, whilſt in this medium, it was found to weigh $150\frac{7}{8}$ " grains. Then the water was removed, and, inſtead thereof, a glaſs of oil of " vitriol was underplaced, in order to examine the gravity of the former ball in " this liquor, and it was found to be 24 grains. Then taking an equal quantity of " oil of vitriol and fair water, they were by degrees put together, which working " upon each other, cauſed a very great heat, till both of them were incorporated " and perfectly united into one liquor: then, being ſuffered to cool, they were " put into one of the former glaſſes, and ſet under the end of the ſcale, and the " ſame ball was ſuffered to ſink into it, and was then exactly counterpoiſed, and " found to weigh $73\frac{1}{2}$ grains; whence the proportion of the weights of the water, " oil of vitriol, and mixture were as $151\frac{1}{2} . 278\frac{1}{2} . 229$: Which is a certain expe- " riment, that liquors are porous, and that they can penetrate each other, ſo that " both of them put together take up a much leſs room, than when ſeparate; for " whereas, according to the former experiments, it ought only to have weighed " $215\frac{1}{16}$ grains, if there had been no incorporating of theſe two liquors, it was " now found to weigh $13\frac{15}{16}$ grains heavier in ſpecie, than it would have done, if " there had been no penetration. This kind of experiments may be of great uſe, " and afford an excellent clue to lead one further into the receſſes of nature, and " to inform us of the internal texture and component parts of bodies: For the " proſecuting of which enquiry, it were very good to examine the weight of ſeve- " ral ſorts of liquors, both mingled and apart; to examine the weight of " liquors, both before they have diſſolved metals, ſtones, juices of ſeeds, " plants, &c. and when they are impregnated with the newly mentioned ſub- " ſtances, and by ſome other liquors, whoſe comparative gravity has been alſo " examined, to precipitate thoſe diſſolved ſubſtances; and to examine the weight " of that compounded liquor that remains. For by ſuch examinations, great " light may be obtained for the finding out the nature of diſſolving and precipi- " tating liquors, and other liquors, that penetrate each other."

Mr. Boyle propoſed an experiment of glutting aqua fortis with as much mercury, as it would take in, without making it ſhoot; and it was ordered to be made at the next meeting.

The preſident moved, that a trial might be made of mixing ſalt with water, to ſee how much it would be heavier, when incorporated with water, than the two ſubſtances apart. Mr. Hooke finding a difficulty of weighing ſalt in water, Mr. Boyle ſuggeſted a way of performing it by weighing ſalt in rectified oil of turpentine; and by knowing the difference between the weight of the two liquors, oil of turpentine and water, will be known how much that ſalt weighs in water. This was ordered to be tried.

Mr.

Mr. BOYLE mentioned, that he had weighed ſublimate, and finding how much mercury and how much ſalt there was in it, he thereby knew how good the ſublimate was.

He took notice likewiſe, that he had made ready a baroſcope for Aleppo, which he would bring in at the next meeting.

Mr. OLDENBURG read a Latin letter written to him from Venice by Signor FRANCESCO TRAVAGINO, dated May 1, 1668, N. S. giving an account of his progreſs in his new ſyſtem of experimental philoſophy; and delaring, that if the ſociety ſhould think fit to name to him any phænomena of nature for rendering the cauſes of them, he would undertake to perform it.

It was ordered hereupon, that this letter ſhould be entered in the Letter-Book [f], and the writer thanked for his reſpect to the ſociety; but as for particulariſing of effects to be explained, it was thought proper, that the ſecretary, as from himſelf, ſhould mention to that philoſopher ſome effects; upon which the ſecretary intimated, that perhaps he might name gravity, magnetiſm, the elaſticity of bodies, and the riſing of water in ſmall tubes open at both ends [g].

The experiment made at this meeting was another ſtatical one with aqua fortis and iron. Mr. HOOKE coming late, the experiment, which required much time, could not be finiſhed, and therefore was referred to the next meeting.

Mr. COLLINS produced a paper containing a receit for making a varniſh of gum lac, which was ordered to be entered [h].

May 28. Col. COLLEPEPYR was elected.

Sir THEODORE DE VAUX ſubſcribed twenty five pounds for his contribution to the building of the ſociety's college.

The preſident produced an Italian letter written to himſelf as preſident of the ſociety by the Prince and Cardinal LEOPOLD DE MEDICIS, dated at Rome May 5, 1668, N. S. in anſwer to the letter written to him in the name of the ſociety, March 26, 1668, acknowledging the favour of his eminence's preſent of the Florentine experiments. The cardinal's letter was read and ordered to be entered in the Letter-Book [i], and the favour and reſpect to the ſociety expreſſed in it to be acknowledged on a proper occaſion.

Mr. OLDENBURG communicated a Latin letter to him from Amſterdam by JOHN AMOS COMENIUS, dated 17 May, 1668, N. S. accompanying a preſent to the ſociety of his book, intitled, *Via Lucis veſtigata & veſtiganda:* Which letter was

[f] Vol. ii. p. 193.
[g] Mr. OLDENBURG's anſwer to Signor TRAVAGINO was dated 10 June, 1668. Ibid. p. 223.
[h] It does not appear in the Regiſter-Book.
[i] Vol. ii. p. 201.

read, and ordered to be entered into the Letter-Book [k], and the ſecretary was deſired to return the ſociety's thanks to the writer.

Mr. BOYLE brought in his travelling or portable baroſcope invented by himſelf, to compare by the help thereof the weight of the atmoſphere at the ſame time, not only in different parts of the ſame countries, but likewiſe in different regions of the world: Which was thus contrived, that the veſſel containing both the ſuſtained and the ſtagnant mercury was all of one piece of glaſs, of a like bigneſs, and placed, when filled, in ſuch a frame, as might be eaſy to be tranſported with ſafety to the glaſs, and without its being liable to be eaſily broken by the violent motion of the quickſilver contained in it. He offered to direct the operator how to fill it, who was ordered thereupon to attend Mr. BOYLE for that purpoſe, that he might be able forthwith to prepare ſome inſtruments of this kind to be ſent into ſeveral parts of the world. Mr. BOYLE ſuggeſted, that this inſtrument might be made uſe of at ſea in great calms, and when the ſeamen go on ſhore any where, for the obſerving of the ſtate of the atmoſphere of ſuch countries, as they ſhall come into.

Dr. KING acquainted the ſociety, that he with Mr. HOOKE had repeated the experiment appointed to try, what time a dog would live without freſh air, obſerving the direction given at the laſt meeting about it; and that it had killed the dog; as alſo that he had tried another anatomical experiment in private, of both which, at the ſociety's deſire, he promiſed to bring in a written account at the next meeting.

Mr. BOYLE ſuggeſted, that it were not amiſs to try, whether air might not be made fit for the reſpiration of animals; and intimating, that himſelf had made ſome trials of this nature, and committed them to writing, he was deſired to communicate his notes, which he promiſed to do.

Mr. OLDENBURG produced a propoſition made in writing by PETER DU MOULIN, D. D. prebendary of Canterbury, dated in that city May 20, 1668, about reforming the year. It was read, and recommended to the conſideration of the aſtronomical committee; and the doctor's letter was ordered to be entered in the Letter-Book [l].

The experiment ordered at the laſt meeting concerning the dilatation of bodies with aqua fortis glutted with mercury, was tried. The weight of the aqua fortis employed was three ounces and three quarters, with which was mixed half that weight of mercury. The weight of the glaſs ball in the air was five drachms and ſeven grains; and of the ſame ball in the aqua fortis alone was an hundred grains; and of the ſame in the mixture twelve grains. Mr. HOOKE was ordered to bring in at the next meeting a full account of this experiment in writing.

[k] Vol. ii. p. 202. [l] It does not appear there.

Mr.

Mr. HOOKE was ordered likewiſe to try in private the experiment of the floridneſs of the blood, when paſſed from the right ventricle of the heart through the lungs into the left ventricle; and Dr. KING was deſired to join with him in it.

Mr. OLDENBURG communicated a letter to him from Dr. BEAL of May 23, 1668[m], containing obſervations made near Briſtol by Captain SAMUEL STURMY about the variation of the needle, that there June 13, 1666, it declined weſterly, 1 deg. 27 min. and June 13, 1667, about 6 minutes more; as alſo that at the ſame place and time the captain intended to make the like obſervations in the ſame company, in which he had made the former, wiſhing, that the like might be done about London. To which he annexed his promiſe of giving an exact account of the tides about Briſtol, according to the directions given in the *Philoſophical Tranſactions*.

Hereupon it was deſired, that thoſe members of the ſociety, who had conveviency and proper inſtruments, would take care of making the like obſervations in London in the approaching month of June; as alſo to obſerve the ſolſtice; to the doing of which the preſident, Sir PAUL NEILE, Mr. BALLE, and Mr. HOOKE were particularly deſired to attend.

Mr. DANIEL COXE produced his papers, containing a ſcheme prepared by him for compoſing and publiſhing an hiſtory of vegetables; and he intimated, that he had already written about an hundred ſheets on this ſubject, requeſting the ſociety to favour him in this attempt with their aſſiſtance, and declaring his readineſs, if any other member of the ſociety had the like deſign, and had made a farther progreſs in it than himſelf, to conſign his own labours to ſuch a perſon. It was ordered, that theſe papers ſhould be read at the next meeting, and that Mr. CHARLES HOWARD ſhould be deſired to peruſe them in the mean time.

Mr. SKIPPON mentioning, that Mr. WRAY had likewiſe beſtowed much of his thoughts and labours upon this ſubject, he was deſired to acquaint him with Mr. COXE's deſign, and in the name of the ſociety to deſire his aſſiſtance in this noble undertaking.

The experiment of precipitating mercury in aqua fortis by putting in ſome white ſalt, was tried, but in that ſhort ſpace of time it did not precipitate.

It was ordered, that this experiment and the ſtatical ones ſhould be proſecuted at the next meeting; as alſo, that the rarefying engine ſhould be brought thither, and the experiments formerly propoſed tried therein.

May 30. At a meeting of the COUNCIL were preſent

[m] Entered in the Supplement to the Letter-Book, vol. i. p. 453, and printed in the Philoſ. Tranſact. vol. iii. n° 37, p. 726, for July 1668.

The Preſident

The lord BRERETON	Sir ANTHONY MORGAN
Mr. H. HOWARD of Norfolk	Sir JOHN LOWTHER
Mr. CHARLES HOWARD	Mr. COLWALL
Mr. AERSKINE	Mr. HOSKYNS
Sir PAUL NEILE	Mr. OLDENBURG.

The preſident gave notice, that Mr. HENRY HOWARD had ſet out the ground for building the ſociety's college upon, viz. an hundred feet one way, and forty feet the other. Hereupon Sir ANTHONY MORGAN was deſired to draw up the conveyance of that ground, and to have it ready for the next meeting of the council; which he promiſed to do.

The lord BRERETON and Mr. HOSKYNS were deſired to ſpeak with Mr. CHEYNEY of Chelſea, and to requeſt him to let them ſee his conveyance of the manor of Chelſea; which they promiſed to do.

Sir ANTHONY MORGAN and Mr. HOSKYNS were deſired to appear on the Tueſday following in Weſtminſter-hall, to defend the poſſeſſion taken by the ſociety of Chelſea-college againſt the pretenſions of Mr. COLE.

It was reſolved, that the lord BRERETON, Mr. HENRY HOWARD, Mr. AERSKINE, Sir PAUL NEILE, Sir ANTHONY MORGAN, and Sir JOHN LOWTHER meet on the Tueſday following at the preſident's houſe at ſix in the morning, and together with his lordſhip attend the lord privy-ſeal about the diſpatch of the patent, endeavouring to ſatisfy his lordſhip in the point of non-alienation.

Mr. HOOKE acquainting the council, that he had now met with a man fit to be employed in the labour of making experiments for the ſociety's ſervice, who would be contented with twenty pounds a year for it; and declaring alſo, that if he had the ſervice of this man, he would not fail to bring in three experiments every meeting; the council ordered thereupon, that Mr. HOOKE ſhould take this man for a quarter of a year's trial after the rate of the ſum expreſſed; and that the ſaid ſervant ſhould be employed not only by him, but alſo by ſuch other fellows, as ſhould have occaſion for him upon the account of the ſociety, in making of anatomical or other experiments.

It was ordered, that Mr. OLDENBURG write a letter to Dr. WREN, to deſire him to attend Mr. HENRY HOWARD at Oxford about the draught of the ſociety's building.

To this letter Dr. WREN returned the following anſwer from Oxford June 7, 1668 [n].

[n] Letter-Book, vol. ii. p. 220.

" SIR,

" WHEN I waited upon his honour, HENRY HOWARD of Norfolk, he " took delight to ſhew me ſome deſigns he had thought of himſelf for " your building, and commanded me to trace out to him what I had conſidered, " the ſame in effect I ſhewed you at London. But this at firſt appearance ſeemed " to him too chargeable a deſign, but afterwards he acquieſced in the reaſons I gave " him; and having taken the ſketch with him, and delivered your letter with his " own hand, he enjoined me to give you an account of it. The deſign is indeed " ſomewhat greater than was propoſed, as being 100 feet long and 30 feet broad; " which length Mr. HOWARD doth not ſcruple to allow you.

" It contains in the foundations firſt a cellar and a fair laboratory; then a little " ſhop or two, for forges and hammer-works, with a kitchen and little larder. " In the firſt ſtory it contains a veſtibule or paſſage-hall leading through from both " ſtreets; a fair room for a library and repoſitory, which may well be one room, " placing the books after the modern way in glaſs preſſes; or, if you will divide " the room with pillars, it will the better ſupport the floor of the great room " above it, and ſo place the preſſes for rarities in the other. Upon the ſame floor " is a parlour for the houſe-keeper; and from the veſtibule the great ſtairs lead " you up to the ante-chamber of the great room, and not higher.

" The great room for the meeting is 40 feet long, and two ſtories high, " divided from the ante-chamber by a ſkreen between columns, ſo that the whole " length, in caſe of an entertainment, may be 55 feet. Upon the ſame floor is " the council-room, and a little cloſet for the ſecretary.

" In the third ſtory are two chambers with cloſets for the curators, and back " ſtairs by them, which lead from the bottom to the top; one of the chambers " being over the ante-room, looking down into the great room, very uſeful in caſe " of ſolemnities.

" The fourth ſtory is the timbers of the roof; which being 30 feet wide, and " to be leaded, cannot be firm without bracing it by partitions to the floor below. " Theſe partitions are ſo ordered, as to leave you a little paſſage-gallery the whole " length of the building, for trial of all glaſſes and other experiments, that re- " quire length. On one ſide of the gallery are little ſhops all along for operators: " on the other ſide are little chambers for operators and ſervants. The platform " of lead is for traverſing the tubes and inſtruments and many experiments. " In the middle riſes a cupola for obſervations, and may be fitted likewiſe for an " anatomy theatre; and the floors may be ſo ordered, that from the top into " the cellar may be made all experiments for hight.

" As for the charge of this fabric, I confeſs it is my opinion, that a fair build- " ing may eaſier be carried on by contribution, with time, than a ſordid one. " And, if I might adviſe, I could wiſh the foundations were laid of the whole: " but then you need not build more than one half at preſent; and this may be

" done

" done for two thouſand pounds, and will contain the neceſſary rooms, and ſo " you will leave yourſelves an opportunity of inlarging hereafter upon the ſame " model. If you think to have a model made, I will willingly take care to have " it done. I have ſo folded the papers, as to ſhew you what part I would have " at preſent built; together with an extempore ſtair-caſe of deal boards and " laths. The cupola may be left till the finiſhing.

" SIR,

" I am your humble Servant,

" CHR. WREN."

June 4. At a meeting of the SOCIETY,

Mr. JAMES GREGORY [o] was propoſed candidate by Mr. COLLINS, who from him preſented the following treatiſes:

1. *De infinitis ſpiralibus inverſis & infinitis hyperbolis*; *authore* STEPHANO DE ANGELIS.

2. *Dialogus Opticus*; *authore* FRANCISCO ESCHINARDO.

3. *Centuria problematum opticorum*; *authore* FRANCISCO ESCHINARDO.

4. *Lettere Aſtronomiche di* GIO. DOMEN. CASSINI *ſopra la Varietá delle macchie oſſervate in Giove.*

5. *Ephemerides Bononienſes Mediceorum Syderum ex hypotheſ. & tabulis* DOM. CASSINI.

6. *Noviſſimæ Motuum Solis Ephemerides ex recentioribus tabulis* DOM. CASSINI.

7. *Martis circa Axem proprium revolubilis Obſervationes à* DOM. CASSINI *habitæ.*

8. *Spina Cæleſtis, Meteore oſſervate da* DOM. CASSINI.

9. MICHAELIS ANGELI RICCI *Exercitatio Geometrica de Maximis & Minimis.*

Dr. KING brought in a writtten account of two anatomical experiments; one repeated in compliance with the order of the ſociety, which was of faſtening a bladder to the aſpera arteria of a dog, formerly ſuggeſted by Dr. WALTER NEEDHAM; the other of his own contrivance, ſhewing, that a dog, on whom the former experiment is tried, may by ſlow breathing be made to live at leaſt five times as long. The Doctor was deſired to repeat the latter of theſe experiments in private, and both of them were ordered to be regiſtered [p], as follow:

[o] He wrote his name GREGORIE.

[p] Regiſter, vol. iii. p. 307.

" The 26th of May 1668, we repeated the experiment of faſtening a bladder " to the aſpera arteria of a dog, and followed the ſame method as before, in all " material circumſtances; and we found, that all anſwered our expectations; and " as to the time of finiſhing the experiment, by the death of the dog, in what " we expreſſed in our account, we were not miſtaken the third part of a minute.

" For, as we ſuppoſed then, when the dog, at the end of eight minutes, ſeemed " dead, only a feeble motion of the heart being left, we revived him again with " freſh air; yet we were confident, if we had let him alone but two minutes more, " his life had been paſt our recovery; ſo in this experiment we found the ſame to " happen in this dog, that at the end of about eight minutes, he was ſeemingly " dead: yet, according to the commands we received, we let him lie two minutes " more; and then our endeavours for life were all in vain, for he was paſt our re- " covery, notwithſtanding we made the ſame endeavours for life, as before, when " the other did recover.

" Since that I repeated this experiment with ſome alterations, thus: I ordered " a tube to be made with ſo ſmall a canal, that the dog was forced to be three " times as long in filling his lungs out of the bladder, as in either of the two " other experiments, and ſo by conſequence as long in returning the air again.

" My obſervation was, that as I deſigned to keep the air cooler in the bladder " than before in the other experiment, by cauſing a ſlow motion of the thorax; " ſo my expectation was anſwered, and the bladder was not ſo warm in above " 20 minutes, as it was before in five; and the dog moved his thorax by this " means 40 or 50 minutes before he was ſo ſeemingly dead as the other was in " eight minutes. And then with freſh air we recovered him again to a regular " motion of the thorax, and ſtrength of limbs."

Mr. DANIEL COXE read his paper, containing a ſcheme of the Hiſtory of Vegetables, deſigned by him for the public; which was ordered to be regiſtered [q]; and the ſociety encouraged the author to endeavour to perform his undertaking, and exhorted other members, addicted to the ſtudy of vegetables, to aſſiſt in that comprehenſive ſubject.

Mr. OLDENBURG read another part of the obſervations made by Mr. HENRY STUBBE in a voyage to Jamaica; and the whole was ordered to be filed up [r].

The ſociety being put in mind to give order for the making of portable baroſcopes, contrived by Mr. BOYLE, to be ſent into ſeveral parts of the world, the operator was ordered to attend Mr. BOYLE, to receive his directions for filling them aright; and that being done, to make ſome of them forthwith, to be ſent not only into the moſt diſtant places of England, but likewiſe by ſea into the Eaſt and Weſt Indies, and other parts, particularly to the Engliſh plantations, as Bermudas, Jamaica, Barbados, Virginia, and New England; and to Tangier, Moſcow,

[q] It does not appear in the Regiſter.

[r] Theſe obſervations are printed in the Philoſ. Tranſact. n° 27, p. 494, n° 36, p. 699, and n° 37, p. 717.

St.

St. Helena, the Cape of Good Hope, and Scanderoon; in which laſt place it ſhould not only be tried in the town itſelf, which is very unhealthy, but alſo on the top of the neighbouring hill, whither, it was reported, that travellers ſoon retire, after they have diſpatched their buſineſs in the town, finding themſelves well on that hill.

Mr. HOOKE not being preſent, the experiments appointed for this meeting were referred to the next.

He was ordered to bring in a written account of the experiment made May 28, with aqua fortis glutted with mercury.

Mr. BOYLE was put in mind of looking out his notes about making air fit for the reſpiration of animals.

Mr. BALLE was deſired to take care of obſerving the ſolſtice, and to engage what aſſiſtance he could in it; as alſo to bring in his obſervations of the late horizontal eclipſe of the moon.

He was likewiſe put in mind of making in this month obſervations concerning the declination of the needle.

Mr. OLDENBURG read a letter to him, dated at Paris June 6, N. S. from Signor MAGALOTTI, containing Mr. STENO's method of making the experiment of depriving a dog of all ſenſe and motion, without depriving him of life. Dr. KING was deſired to try in private the experiment, according to this method, which he promiſed to do. The letter was ordered to be entered in the Letter-Book as far as concerned this ſubject [s].

June 11. Mr. JAMES GREGORY was elected and admitted.

PETER COURTHOPE, eſq; was propoſed candidate by Dr. WILKINS.

JAMES ARDERN, M. A. was propoſed candidate by Dr. DOWNS.

Sir ROBERT SOUTHWELL preſented the ſociety with fifty pounds towards the building of their college, in a bond ſigned by him, and delivered in by Mr. OLDENBURG.

Mr. HOOKE brought in a written account of the ſeed of moſs, obſerved by him to be of that exceeding ſmallneſs, that above ſeven hundred and ſeventy millions are required to make the weight of one grain; the method of computing which he explained. This paper was ordered to be regiſtered [t], as follows:

"Since the publiſhing of my Micrography, I have met with an obſervation, "which, though it be of one of the ſmalleſt compound bodies I have hitherto taken "notice of, yet does afford an hint of very great concern in natural philoſophy;

[s] It does not appear in the Letter-Book. [t] Regiſter, vol. iii. p. 309.

"and

" and it does ſeem to make clear the cauſe of a phænomenon, that has appeared " dubious, not only to me, but to many other more knowing naturaliſts. I have " often doubted, I confeſs, whether moſs, muſhrooms, and ſeveral other ſmall " plants, (which the earth ſeems to produce αὐτομάτη) were the offspring of a " ſeed or grain, and have been apt to believe, that they were rather a ſecundary " production of nature; being ſomewhat the more inclined to be of that opi- " nion, becauſe having formerly examined the ſmall knots of ſeed-cods of moſs " with a ſingle microſcope, I could not perceive any thing in them, that I could " imagine to be ſeeds, at leaſt not ſo great a quantity, as ſeemed neceſſary to " maintain ſo numerous a progeny, as was every where to be found of it; that, " which then came out of them, ſeeming to be rather a pulp or pith, than any " thing like the ſeeds in other ſimilar cods. But being ſince ſomewhat more in- " quiſitive, I did examine ſeveral of the above-mentioned knobs or ſeed-veſſels, " and found, that there were ſeeds in them, no leſs wonderful for the greatneſs of " number, than for the ſmallneſs of bulk. Taking then ſome of the ripe and " brown or reddiſh ones of them, and preſſing them pretty hard, I found, that " there was a ſmall duſt went out of them, which ſeemed to vaniſh in the air. " Preſſing and ſqueezing others of theſe upon a black plate, and examining " the powder with a microſcope, I found it to be a great heap of exceeding ſmall " ſeeds, globular, and pretty tranſparent: it is the ſmalleſt, I confeſs, I have yet " ſeen, and, it may be, that has hitherto been diſcovered. And unleſs that be a " plant, which I diſcovered growing on the blighted leaves of roſes, and that " thoſe ſmall bodies be ſeed-veſſels; or unleſs thoſe knobs, I have diſcovered on " the top of mould, be the like, I cannot preſently imagine, where there ſhould " be found a ſmaller. For I find, that there will need no leſs than thirty-ſix " hundred of them to be laid one by another in a line, to make the length of an " inch, in the ſame manner as three barley-corns are laid to meaſure an inch: " and to cover a ſuperficies of an inch ſquare, there will need no leſs than nine " hundred and threeſcore thouſands, beſides twelve millions of ſingle ſeeds: and " the number in a grain weight of them cannot be leſs than ſeven hundred and " ſeventy ſeven millions beſides ſix hundred thouſand ſingle grains. And though " this may ſeem a moſt incredible narration, yet I would deſire ſuch, as are apt to " be too cenſorious, to take the pains to gather a few of thoſe ſeed-veſſels, and exa- " mine them as I have done, and then ſpeak what they find, and believe no more " than their own ſenſe and reaſon will inform them; and they may eaſily ſee, that " what I have aſſerted, will be rather ſhort of, than exceed the real numbers. " Now if this ſhell of the ſeed be thus ſmall, how much ſmaller muſt needs the " rudiment of the plant, that lies incloſed within it, be? and how eaſily may " ſuch ſeeds be drawn up into the air, and carried from place to place even to the " top of the higheſt towers, or to places moſt remote, and be ſowed by the paſſing " air, or falling drops of rain, on the bows or branches of trees, ſides and tops of " walls, houſes or ſteeples? And it is not in the art of man, to leave earth expoſed " to the common air, and to exclude the entrance, or prevent the ſowing of " theſe imperceptible ſeeds; and therefore it is not to be wondered at, that, if any " earth, though never ſo pure, be expoſed to the air and rain, though at the top " of a ſteeple, it will produce moſs. Farther inquiry may poſſibly inſtruct us, " that there may be ſeeds of muſhrooms, mould, and other vegetables of as ſmall,

" if

" if not ſmaller, bulk, which may be diſperſed and mingled with the air, and car-
" ried to and fro with it, till waſhed down by the falling drops of dews or rains,
" which, if they chance to light on a convenenient ſoil, do there vegetate and
" ſpring up; but die and periſh, if the ground, they light on, be not natural and
" agreeable. But whether this conjecture hit right, farther obſervation muſt de-
" termine."

Mr. WRAY being deſired by the ſociety to aſſiſt Mr. DANIEL COXE in the compoſing of his intended hiſtory of vegetables, promiſed, that he would contribute to it what he could.

Mr. HOOKE ſuggeſted, that it was worth inquiry, whether there were any valves in plants, which he conceived to be very neceſſary for conveying the juice of trees up to the height of ſometimes 200, 300, and more feet; which he ſaw not how it was poſſible to be performed without valves as well as motion.

He brought a written account to ſhew the dilatation of bodies, whereby they are made to fill a larger ſpace than they did before, not only when they are hot, but when perfectly cold. It was ordered to be regiſtered [*], as follows.

" I have formerly given an account of an experiment I made before this il-
" luſtrious ſociety, to ſhew the reducing of bodies into a more condenſed ſtate, as
" to the poſition of their conſtituent parts; namely, in the experiment of the
" corroſion of water by oil of vitriol; which diſſolvent being heavier than the
" body diſſolved, we find, that the compound was heavier in proportion, than it
" ought to have been, if it had been only a ſingle mixture. I now come to
" give an account of an experiment, to prove the apertion, expanſion, or rare-
" faction of bodies, whereby they are made to occupy and fill a larger ſpace than
" they did before; and this, not only when they are hot, but when perfectly
" cold: ſo that they muſt needs have acquired a new tone or texture of their con-
" ſtituent parts, and ſuch a one, as (if rarefaction proceeds from diſperſed va-
" cuities) muſt needs contain void ſpaces, greater either in quantity or number,
" than their former texture admitted. And this is, where the menſtruum is
" lighter than the ſubſtance to be diſſolved. The experiment was this; the com-
" parative weight of aqua fortis was found by the glaſs ball and ſcales formerly
" mentioned; after which, half the weight of mercury was diſſolved by it, and
" then the comparative weight of that mixture was tried by the ſame means, and
" the weights were found theſe that follow:

" Ball in air	307 grains.
" An equal quantity of aqua fortis	207 gr.
" A quantity of water equal in bulk to the ball	152 gr.

[*] Regiſter, vol. iii. p. 306.

" A quantity of ☿ equal in bulk to the ball; ☿ being to } 2728 grains.
" water as 14. to 1. ——— ——— }

" Therefore a quantity of the liquor compounded of aqua } $300\frac{9}{14}$ gr.
" fortis and half the weight of ☿ ſhould have been }

" But it was found to be only ——— ——— 285 gr.
" which is 15 grains lighter than it ought to have been, if, at leaſt, the propor-
" tion between water and quickſilver be as 14. to 1."

An experiment was made of the poroſity of ſand, being firſt well ſhaken and preſſed together, to ſee, how much water it would take in afterwards. The ſand was white hour-glaſs ſand, and the quantity here uſed weighed nine ounces ſix drachms. The ſand and water imbibed weighed both together eleven ounces one drachm and a half.

Mr. HOOKE was ordered to bring in writing a full account of this experiment, and to try the like about the poroſity of aſhes at the next meeting; as alſo the experiment of weighing ſal-gem in oil of turpentine.

The experiment formerly ordered to be made by Dr. KING of tying up the deſcending artery in the manner of Mr. STENO, being not yet tried, it was ordered, that Dr. KING now abſent ſhould be ſpoken to by the operator to take care of it againſt the next meeting.

It was queried, whether Mr. STENO in his experiment might not take in the vein as well as the artery, and ſo take away ſenſe and motion by ſtopping the circulation of the blood.

Mr. BALLE being aſked what he had done about the obſervations of the ſolſtice, deſired further time; aud Mr. GREGORY was deſired to aſſiſt him in the obſervation.

Mr. BALLE was deſired to obſerve the preſent variation of the needle affirmed by ſeveral perſons in England to be now weſtward above a degree.

Beſides the experiments already ordered for the next meeting, Mr. HOOKE and the operator were put in mind of having at length the rarefying-engine brought to try experiments therein, eſpecially that with glow-worms.

The operator was again ordered to attend Mr. BOYLE, to ſee his method of filling the portable baroſcope.

Mr. HOOKE was reminded of making the experiment concerning the floridneſs of the blood in the arteries, after it had paſſed through the lungs.

Mr. SLINGESBY produced ſome golden-coloured ſkains brought from the Eaſt-Indies; ſome of which were delivered to Mr. BOYLE, and ſome to Mr. DANIEL COXE, to examine whether they contained any metal.

June 18. Mr. ARDERNE was elected and admitted.

Mr. COURTHOPE was elected.

Mr. OLDENBURG preſented for the repoſitory from Sir ROBERT SOUTHWELL a ſkull of an executed perſon with the moſs grown on it in Ireland.

Mr. OLDENBURG preſented likewiſe from Mr. JOSEPH GLANVILL, the author, a book intitled *Plus ultra: or the progreſs and advancement of knowledge ſince the days of* ARISTOTLE, *in an account of ſome of the moſt remarkable late improvements of practical uſeful learning, to encourage philoſophical endeavours. Occaſioned by a conference with one of the notional way*[x].

Mr. GODOLPHIN acquainted the ſociety, that he was ſhortly to go again into Spain; and mentioning in particular, that there were ſome books publiſhed in Spaniſh concerning mines, he was deſired to procure them for the ſociety; and as to thoſe inquiries, which had been formerly recommended to him for that country, he was again requeſted to endeavour to obtain anſwers to them; which he promiſed to do.

An experiment was made of mixing ſal-gem with water, to ſee how much it would grow heavier thereby. There were taken one part of ſal-gem and four parts of water by weight:

	oz.	gr.
The ſalt weighed in air —— ——	1 $\frac{3}{4}$	10 $\frac{1}{2}$
The ſame weighed in oil of turpentine ——	$\frac{3}{4}$	47
The glaſs ball weighed in the mixture of the ſaid ſalt and water	$\frac{3}{4}$	17 $\frac{1}{2}$
The ſame ball weighed in oil of turpentine ——	$\frac{1}{4}$	53 $\frac{1}{2}$

[x] It was printed at London 1668 in 8vo. The conference, which gave occaſion to this book, was between Mr. GLANVILL and Mr. ROBERT CROSSE, vicar of Great Chew in Somerſetſhire, a zealot for the Ariſtotelian philoſophy, who had maintained in that conference, that ARISTOTLE had more advantages for knowledge than the Royal Society, or all the preſent age, had or could have; aſſigning this reaſon for it, becauſe ARISTOTLE did *totam peragrare Aſiam*. The 12th chapter of Mr. GLANVILL's book treats of the Royal Society, and ſhews the reaſons, nature, and deſign of their inſtitution; and to the queſtion, *What have they done?* returns an anſwer ſufficient to ſatisfy ſober and candid men. But with regard to thoſe, who would have had the ſociety give them the great elixir, the perpetual motion, the way to make glaſs malleable and man immortal, or who objected, that they had done nothing, Mr. GLANVILL obſerved, that their *impertinent taunts were no more to be regarded, than the little chat of ideots and children*. Mr. CROSSE wrote an anſwer to Mr. GLANVILL, at the inſtigation of Mr. STUBBE, but it was rejected by the licenſers both at Oxford and London on account of its ſcurrility. See Mr. GLANVILL's *Prefatory anſwer*, p. 2.

Mr. Hooke was ordered to calculate the proportion of theſe weights, and to bring in a written account of the whole at the next meeting; as alſo that of another experiment formerly made of this nature.

Another experiment made was of a new kind of barometer, filled partly with quickſilver, partly with water, to the end, that the variations thereof might be rendered more ſenſible than they are in thoſe glaſſes, which are filled with quickſilver alone. Mr. Hooke was deſired to bring in the deſcription of this barometer in writing.

It was remarked by him, that the liquor in this kind of barometer will ſometimes riſe to thirty four inches; of which he did not yet ſee the reaſon.

The preſident was deſired to get ſuch a barometer as this prepared, and to make obſervations; which his lordſhip promiſed to do.

Mr. Boyle propoſed barometers to be filled with an amalgama of mercury and tin, or of mercury and gold: which altering the uſual ſtandard with mercury alone evince, that the whole matter of baroſcopes depends merely on weight.

The ſmallneſs of moſs-ſeed being again ſpoken of, and Mr. Hooke being deſired to explain farther what method he uſed in computing, that the weight of above 777 millions of thoſe ſeeds makes no more than the weight of one grain, he added to what he had already ſaid in his written account of it, that he reckoned, that two inches ſquare of Venice-paper weighed one grain; and the length of thirty ſeeds laid cloſe by one another equalled the thickneſs of Venice-paper: which being calculated after the manner deſcribed in his written account would amount to the ſum above-mentioned.

Mr. Hooke being aſked what kind of moſs it was, the ſeed whereof he had thus examined, ſaid, that it was of that ſort, which he had deſcribed in his *Micrographia*.

Mr. Charles Howard was deſired to bring in what capillary plants he had for Mr. Hooke to view with a microſcope the backs of the leaves of them, in order to obſerve what ſubſtances they are, that grow on them.

Dr. Wilkins moved, that Mr. Hooke might be ordered to try, whether he could by the means of the moſs-ſeed ſhewn by him make moſs grow on a dead man's ſkull.

Dr. Clarke related, that a friend of his, a curious perſon, had written to him from Oxford, that the leaves of cardamine, commonly called cucko-flower or lady's-ſmock, being put into the ground, would take root, even when cut into ſeveral pieces.

Mr.

Mr. CHARLES HOWARD and Mr. EVELYN were desired to try this, and to give the society an account of the success, which they promised to do.

It being moved, that a room might be provided to make anatomical experiments in, the president thought fit to refer this to the consideration of the council, and accordingly ordered the secretary to mention it at the next meeting of the council.

The experiments appointed for the next meeting were,

1. Mr. STENO's experiment to be made in public by Dr. KING.

2. To bring in two baroscopes to be constantly in the meeting-room; one filled with an amalgama of quicksilver and tin, the other with quicksilver alone.

June 19. At a meeting of the COUNCIL were present

The President

HENRY HOWARD of Norfolk	Mr. COLWALL
Mr. CHARLES HOWARD	Mr. HOSKYNS
Sir PAUL NEILE	Mr. OLDENBURG.
Sir GEORGE ENT	

Mr. HOSKYNS was desired to attend Mr. HENRY HOWARD between that and the next meeting of the council, to consider with him of the best way of giving a collateral security for the ground, where the college was to be built; and to make a report of it to the next meeting of the council.

Mr. HOOKE promised to bring in a complete draught for the building of the college on the Monday following.

N° 36 of the *Philosophical Transactions*, was licensed.

June 22. The COUNCIL met again, there being present

The President

HENRY HOWARD of Norfolk	Mr. COLWALL
Mr. BOYLE	Mr. HAYES
Sir PAUL NEILE	Mr. HOSKYNS
Sir GEORGE ENT	Mr. CREED
Sir JOHN LOWTHER	Mr. OLDENBURG.
Dr. WILKINS	

Mr. HOSKYNS reported, that he had conferred with Mr. HENRY HOWARD concerning the security of the ground given by him to build upon; and that Mr. HOWARD was willing to enter into a bond of six thousand pounds for performance of covenants forthwith, and into another of six thousand pounds more, that he

would within a twelvemonth either procure an act of parliament to enable him to make eſtates of the ground belonging to Arundel-houſe, notwithſtanding the act of 3 CAR. I. that had intailed it; or other good and indefeaſible title for the ſociety; or elſe give them collateral ſecurity by conveying land to them.

The draught of the building being examined and agreed upon, Mr. HOOKE was ordered to get a model of it made with one door, and to conſider of the buying of the materials, and of contracting with workmen, to be paid by meaſure for ſo much a rod and ſquare: as alſo to find out a perſon to be conſtantly preſent; and to ſee the workmen do their duty.

It being moved by the preſident and Dr. WILKINS, that Mr. GREGORY and Mr. WRAY might be excuſed from payment, it was ordered, that the treaſurer ſhould forbear to call upon them for payment till farther order of the council.

It was ordered, that the treaſurer pay to Mr. HOOKE fourteen pounds ten ſhillings for fitting the place in Greſham-college for the ſociety's repoſitory, according to his bill:

That Mr. OLDENBURG deliver the obligations hitherto ſubſcribed by the fellows of the ſociety for contributions to the building of their college, to the treaſurer, taking from him a receit for the delivering of them: and

That the treaſurer begin to collect what is due by the ſaid obligations.

Mr. HENRY HOWARD hearing, that the ſociety wanted a room to make anatomical experiments in, offered one in Arundel-houſe for that purpoſe, which the council accepted of.

It was ordered, that Mr. HOSKYNS be deſired to draw up againſt the next meeting of the council a draught of ſuch ſecurity, as Mr. HENRY HOWARD offered to give.

June 25. At a meeting of the SOCIETY,

Col. COLLEPEPYR was admitted.

The apparatus for the experiment of tying up the deſcending artery after Mr. STENO's way, for depriving a dog of all ſenſe and motion in the parts beneath the ligature, not being ready, it was referred till the next meeting; and the operator was charged to have what was neceſſary in readineſs, and Dr. KING deſired not to fail of performing the operation, who related, that he had again made the experiment in private, and found, that it ſucceeded after the method uſed and communicated by Mr. STENO; as alſo that without tying up the ſaid artery, though the nerves were tied, the motion did not ceaſe.

Mr. HOOKE brought in a microſcopical obſervation concerning the texture of

wood, tending to ſhew the manner of the juices aſcending to the top of tall trees by a kind of valves: But the ſociety not being ſatisfied with the obſervation made this day by a microſcope of a piece of wood, it was ordered, that it ſhould be referred to a clearer day, and that a better microſcope ſhould be provided for that purpoſe: as alſo that Mr. HOOKE ſhould look on a bullruſh, to obſerve how the texture of that appears to be.

The preſident related, that he had made an experiment with mercury and water in a tube after the Torricellian way, and found, that the proportion of mercury to water was not as 14 to 1, but as 9 to one. His lordſhip was deſired to obſerve, whether in this caſe there were not a bubble of air on the top of his barometer, wherein the experiment was made.

An experiment was made in the rarefying-engine with a ſlow-worm, which upon the exſuction of the air was found to ſwell.

Dr. BALLE mentioned, that near Smyrna was found an earth (ſome of which was to be had in London) which was made uſe of at Smyrna, inſtead of pot-aſhes, to make ſoap. He promiſed to produce ſome of it at the next meeting.

Sir THEODORE DE VAUX produced a draught of the old ruins lately diſcovered under ground in old Areconium or Kencheſter in Herefordſhire, ſent by Mr. WALSH, referring to a letter of his dated April 26, and read on the 30th of that month. The conſideration of this was referred to the next meeting, againſt which time Mr. OLDENBURG was deſired to look out that letter.

Mr. OLDENBURG preſented the ſociety with a little piece of the ſtone called *Iudus Helmontii*, dug up near Antwerp, out of the earth on the river's ſide, together with a deſcription of the ſituation of the ſaid ſtone under ground.

Mr. OLDENBURG read a Latin letter to him from Mr. HEVELIUS, dated at Dantzick 13th of June 1668, N. S. giving notice to the ſociety, that his *Cometography* was now printed, and a copy of it in the way for them, which he ſubmitted to their judgment. This letter containing ſome exceptions to what had been formerly communicated to him by Mr. HOOKE about teleſcopical ſights as much better than the common ones for quadrants, ſextants, and levels, and eſpecially for all kinds of celeſtial obſervations; it was ordered, that a copy of that part of the letter ſhould be given to Mr. HOOKE, to declare himſelf farther about it; and that the letter itſelf ſhould be entered in the Letter-Book [y].

Mr. OLDENBURG read likewiſe a letter to him from Monſr. AUZOUT, dated at Paris June 26, 1668, N. S. deſiring the ſociety to honour him with their commands in his journey, which he was going to take into Italy. It was ordered, that the ſecretary ſhould thank him for his reſpects to the ſociety, and let him know, that it would be very acceptable to them, if he would communicate ſuch philoſo-

[y] Vol. ii. p. 225.

phical-

phical obſervables and curioſities, as he ſhould meet with in thoſe parts, whither he was going. His letter was ordered to be entered in the Letter-Book [z].

The experiments appointed for the next meeting were

1. That of Mr. STENO above-mentioned.
2. The mixture of mercury in aqua fortis, to ſee whether the weight of the whole be different from the ſum of the particular weights of thoſe bodies before mixture.
3. To bring in the two barometers appointed at the laſt meeting.

June 29. At a meeting of the COUNCIL were preſent

The Preſident

Mr. HENRY HOWARD of Norfolk	Dr. WILKINS
Mr. CHARLES HOWARD	Mr. COLWALL
Sir PAUL NEILE	Mr. HOSKYNS
Sir GEORGE ENT	Mr. OLDENBURG.
Sir JOHN LOWTHER	

Mr. HOSKYNS being called upon for the draught of Mr. HOWARD's ſecurity, ſaid, that he had delivered it to Mr. HOWARD's ſollicitor to be conſidered.

Mr. HOOKE was ordered to bring in at the next meeting of the council an eſtimate of the charge both of the materials and workmanſhip of the building.

Dr. WILKINS and Mr. HOOKE were deſired to ſpeak with Mr. NELTHROP about timber.

It was ordered, that Dr. CLARKE and Dr. LOWER be deſired by Mr. OLDENBURG, to make a liſt of the particulars neceſſary for the making of anatomical experiments.

The order ſigned in council for the payment of thirty pounds ten ſhillings for the repairs of Chelſea-college was delivered to the treaſurer.

July 2. At a meeting of the SOCIETY,

A Latin letter was read from Sir WILLIAM CURTIUS to the ſociety, dated at Umbſtad June 5, 1668, giving them thanks for the honour done him by electing him into their body, and promiſing to communicate ſuch philoſophical obſervables, as he ſhould meet with. It was ordered, that this letter ſhould be entered in the Letter-Book [a], and that the ſecretary ſhould acquaint Sir WILLIAM with the ſenſe, which the ſociety had of his reſpect for them, and of his readineſs to promote their deſigns.

Sir ROBERT MORAY preſented the ſociety with ſome curioſities, which he had brought with him out of Scotland, viz. 1. a kind of lapis aſbeſtus, but

[z] Vol. ii. p. 232. [a] Ibid. p. 217.

altogether ſtony and very ponderous. 2. A piece of a bone grown out of a horſe's head. 3. An egg laid by a Schetland hen, as ſmall as a pigeon's egg, which he ſaid was the ordinary ſize of the eggs of that country, laid by the hens there, which are very ſmall.

Dr. BALLE preſented ſome of the ſoap earth, mentioned by him at the laſt meeting, uſed at Smyrna inſtead of pot-aſhes, and digged from under a cliff near that city. It was infuſed in water, and found to yield a lixiviate taſte.

He preſented likewiſe a branch of an ivy with white leaves on it, from a tree on a hill in Devonſhire.

Some of the ſoapy earth was ordered to be given to Mr. BOYLE, to examine the qualities of it more particularly.

Mr. OLDENBURG preſented from the author, Monſr. DE CORDEMOY, a ſmall French book, intitled, *Diſcours Phyſique de la parole* [b], and gave ſome account of the particulars contained in it, and mentioned, that it was tranſlating into Engliſh.

He produced and read ſome inquiries and progreſſes made by Mr. GREGORY of the weight of bodies mixt, of the accelaration of deſcending bodies, of the increaſe of gravity by load-ſtones, of the reflection of falling bodies, of the refraction of bodies ſhot at ſeveral inclinations into wooden veſſels full of liquor, &c. Mr. GREGORY was deſired to think upon experiments proper to anſwer theſe queſtions. In the mean time Sir ROBERT MORAY was deſired to recommend to Col. TITUS the trial of ſhooting with a gun upwards and downwards, to ſee, whether the bullet penetrates to an equal depth in the earth. And Mr. HENSHAW was deſired to try the ſame with a croſs-bow, which he ſhould be furniſhed with by the operator.

The experiments appointed for this meeting not being prepared by reaſon of the operator's indiſpoſition, it was ordered, that on the like occaſion another perſon ſhould be hired and made uſe of *pro tempore* to do the manual part, that the ſociety might not be deſtitute of experiments.

Theſe experiments were again ordered to be prepared for the next meeting, viz. STENO's experiment, the mixing of mercury and aqua fortis, and the examining of the texture of wood by a good microſcope.

July 6. At a meeting of the COUNCIL were preſent

The Preſident

Mr. HENRY HOWARD	Mr. HAYES
Mr. CHARLES HOWARD	Mr. COLWALL
Sir ROBERT MORAY	Mr. HOSKYNS
Dr. WILKINS	Mr. OLDENBURG.

[b] Printed at Paris in 12°. See an account of it in the Philoſ. Tranſact. vol. iii. n° 37, p. 736.

It

It was ordered, that Mr. HOOKE make a draught for the building of the college, repreſenting the front thereof to the Thames, and to draw it with the windows, Mr. HOWARD having declared, that it was indifferent to him, which way it ſtood, ſo it might be contrived for the conveniency of the ſociety.

Mr. HOOKE was again ordered to prepare the workmen, and to look after materials; as alſo to make an eſtimate of the charges, according to this laſt poſition of the building.

The preſident and Sir ROBERT MORAY undertook to ſpeak with the lord privy-ſeal about paſſing of the new patent.

The treaſurer was deſired to endeavour to get in ſuch portions of the ſums ſubſcribed, as were then due.

July 9. At a meeting of the SOCIETY,

The experiment of mixing mercury and aqua fortis together was made.

The mercury weighed	—— ——	1 ½ ounce
The aqua fortis weighed	—— ——	4 ½ ounces
The ball in aqua fortis weighed	—— ——	131 grains.

The ſolution of mercury laſted too long to make an end of the experiment at this meeting; and therefore the iſſue of it was referred to the next.

The other experiments ordered at the laſt meeting were alſo deferred to the next.

Mr. HOOKE propoſed an experiment to try in an inſtrument for compreſſing the air, how much longer a bird would live in the compreſſed air of a glaſs, than in the ordinary air of it. Accordingly a bird was put into the glaſs with ordinary air at ſix minutes paſt five o'clock, and taken out at thirty minutes, when it began to be ſick. Being taken out and recovered, it was put in again at forty minutes, and three quarters of the air was compreſſed upon it in the ſpace of eleven minutes by the gage. The bird was kept in this condenſed air for thirty three minutes, and ſeemed to be very well. But the inſtrument not being ſtanch, it was ordered, that the experiment ſhould be repeated at the next meeting, ſo as to provide divers glaſſes of ſeveral dimenſions, and ſome birds of the ſame kind, to ſee, whether there would be an equal proportion between the time of the bird's life, and the quantity of air in the glaſſes.

Mr. HOOKE affirmed, that an experiment had been formerly made by order of the ſociety, as would appear by their Journal, where a burning lamp laſted much longer in compreſſed than uncompreſſed air. The amanuenſis was ordered to conſult the Journal for that purpoſe againſt the next meeting.

Mr.

Mr. OLDENBURG produced and read a letter to him from THOMAS WRIGHT, esq; a justice of the peace of Downham in Suffolk, dated July 6, 1668, containing an exact account of the sand-flood in that country, and the damage done by it, together with some remedy successfully employed to reduce it to *terra firma*. To which were added some observations about improving a barren heath by marling. This letter was ordered to be entered [c], and the writer desired to continue his communications.

Mr. SKIPPON mentioned, that there were the like moving sands about St. Ives in Cornwall, and was desired to procure an account of them.

Sir THEODORE DE VAUX produced a scheme and description of some old ruins lately discovered under ground, in old Areconium or Kenchester in Herefordshire.

He was desired to give Mr. JOSEPH WALSH, who sent this paper, the thanks of the society; and it was ordered, that it with the letters accompanying it should be filed up.

Mr. HOSKYNS produced two tortoises's eggs about the size of pigeon's eggs; one of which was taken by the president to be hatched by a hen; and the other given to the curator for the repository.

Sir ROBERT MORAY presented the society with an old very curious almanack, wherein THOMAS à BECKET was the youngest saint.

Mr. OLDENBURG read the Latin letter, which he had drawn up, according to a former order, to Sir WILLIAM CURTIUS; which was approved of, and ordered to be sent, and a copy of it entered in the Letter-Book [d].

July 13. At a meeting of the COUNCIL were present

The President

HENRY HOWARD of Norfolk	Sir GEORGE ENT
Mr. CHARLES HOWARD	Dr. WILKINS
Sir ROBERT MORAY	Mr. HOSKYNS
Sir PAUL NEILE	Mr. OLDENBURG.

There were examined two draughts for the building of the college, both fronting to the water, one of Mr. HENRY HOWARD, the other of Mr. HOOKE. The determination, which of them should be followed, was referred to the next meeting of the council, at which Mr. HOWARD was desired to bring in his design of ordering the whole plot of his ground,

[c] Letter-Book, vol. ii. p. 254. It is printed in the Philos. Transact. vol. iii. n° 37, p. 722, for July 1668.

[d] Vol. ii. p. 235.

The preſident and Sir ROBERT MORAY were put in mind of ſpeaking to the lord privy-ſeal about paſſing the patent.

July 16. At a meeting of the SOCIETY,

The experimont of Mr. STENO was tried, according to his method, before the ſociety by Dr. KING, and ſucceeded, ſo as the dog, upon whom it was made, was ſeen to be deprived of all motion below the part, where the deſcending artery was tied, which was upon the top of the ſpine by a needle paſſed through between the 8th and 9th ribs.

Mr. HOOKE produced a new kind of level invented by himſelf, with a piece of glaſs bent into a curve, having this advantage above other levels, that it is of a true figure; other levels made with glaſs canes not being ſo. But becauſe the water and bubble of air in the water is ſubject to rarefaction and condenſation, it was thought neceſſary, that another liquor ſhould be employed, that is not ſo. It was ordered, that one of thoſe levels ſhould be made for the repoſitory, and a deſcription thereof brought in for the regiſter.

Mr. OLDENBURG produced a paper in Latin of Dr. WALLIS, dated at Oxford July 8, 1668, commending Mr. NICHOLAS MERCATOR's *Logarithmo-technia* [c], lately printed, and making the quadrature of the hyperbola univerſal to all hyperbolas, with a deſire, that ſince by this means the quadrature of the hyperbola was now ſo complete, as that ſcarce a better could be expected, and this work perfected by members of the ſociety, this letter might be entered in their Regiſter-Book, the more effectually to declare the invention their's. It was read, and ordered to be regiſtered accordingly [f].

Sir ROBERT MORAY communicated a letter to himſelf from Dr. WALLIS, dated at Oxford July 14, containing his thoughts of ſome experiments mentioned in BORELLI's book *de Vi percuſſionis*, and principally of this, that a pendulum ſtopped

[c] The whole title is, *Logarithmo-technia, ſive methodus conſtruendi Logarithmos nova, accurata, & facilis, ſcripto antehac communicata, anno ſc.* 1667 *nonis Auguſti: Cui nunc accedit vera Quadratura Hyperbolæ & Inventis ſummæ Logarithmorum. Auctore* NICOLRO MERCATORE *Holſato, è Societate Regiâ. Huic etiam jungitur* MICHAELIS ANGELI RICCII *Exercitatio Geometrica de Maximis & Minimis, hîc ob Argumenti præſtantiam & Exemplarium raritatem recuſa.* London 1668, in 4°, Dr. PELL was highly diſpleaſed with Mr. MERCATOR on account of this book, as appears from his orignal draughts of ſeveral letters to Mr. JOHN COLLINS, extant among the doctor's papers given to the Royal Society in July 1755. In his letter of Auguſt 29, 1668, he ſays: "RICCIO "will not thank thoſe, that coupled him with "MERCATOR. It may be, it will make him ſet "ſome body to write againſt him, for he will "not do it himſelf. I ſhall not wonder to ſee "ſome tranſmarine pen fly at him. If he print "not the ſame things in Engliſh, I ſhall let him "alone, till the incompoſits and their logarithms "bring him in my way." And in another letter, dated Sept. 16, he has this paſſage, "I have "known Mr. MERCATOR above 24 years, and "never had any cauſe to fall out with him, "much leſs to envy him. I hope you will not "ſuſpect, that my diſlike of his book aroſe from "ſome pique againſt his perſon." Dr. PELL made ſome remarks on Mr. MERCATOR's book, which are likewiſe extant.

[f] Regiſter, vol. iv. p. 1. It is printed in the Philoſ. Tranſact. vol. iii. n° 38, p. 753, for Auguſt 1668.

about the middle of its motion, the bullet ſwinging only to the lower half of the ſtring, ſhall ſpend the ſame time in finiſhing its excurſions, as if the ſtring had continued to move freely at its whole length: Which experiment the doctor deſired might be well tried. This letter was ordered to be entered in the Letter-Book [s]; and the preſident undertook at his leiſure to look on the place of the book itſelf cited by Dr. WALLIS.

The Journal of the ſociety was conſulted about the experiment formerly made concerning the longer duration of a lamp in compreſſed than uncompreſſed air; and it was found in the notes of January 25, 1664, that it was ſo as Mr. HOOKE had affirmed at the laſt meeting, which was, that a lamp laſted much longer in compreſſed than common air.

Mr. HOOKE produced ſome petrified bodies vitriolated, which he affirmed to be the teeth of ſharks.

He remarked likewiſe, that he had found many ſhells in Portland-ſtones; and that at that very time it might be ſeen in ſuch ſtones lying about the Royal Exchange.

Others, as Dr. BALLE and Mr. SKIPPON, took notice of ſhells plentifully to be found on the tops of hills, particularly on the Apennines, and likewiſe in England; which was conceived by ſome not poſſible to be ſolved but by earthquakes, though others thought it might be by the deluge.

Mr. HOOKE upon occaſion intimated, that he thought alkalis being expoſed to the air would arreſt the volatile ſalt, which is in the air, and turn it into nitre.

Mr. COXE offered it to the conſideration of the ſociety, whether the air added that nitrous ſubſtance to alkalis, or extricated it out of them?

It was conceived, that this might be beſt decided by weight, viz. weighing a certain quantity of oil of tartar before the expoſing it to the air and after.

Mr. COXE mentioned a way which he had, of ſo fermenting vegetables without additament, that being diſtilled, they would yield that in the form of a volatile ſalt, which, if the herbs were incinerated, would be an alkali.

The experiment of mixing aqua fortis and mercury, begun at the laſt meeting, could not be finiſhed at this, and was therefore referred to the next; as alſo the experiment of incloſing birds in divers glaſſes of ſeveral dimenſions, begun to be tried at the laſt meeting.

July 23. Mr. HOOKE preſented for the repoſitory ſeveral petrified teeth, ſaid to have been found in Sheerneſs, and there taken out of a rock on the ſea-ſide, conceived to have been the teeth of ſhark-fiſhes.

[s] Vol. ii. p. 238.

Mr. SKIPPON preſented likewiſe for the repoſitory the like teeth, and ſeveral other ſtones aud medicated earths, brought by him out of Malta.

Dr. MERRET was called upon for the account, which he had promiſed March 26, to give of the book of the Florentine experiments; and he excuſing himſelf, that the book had been ſent for by Mr. HOOKE, before he had made an end of peruſing it, Mr. HOOKE was deſired to return the book to the doctor.

Dr. MERRET produced a vinous liquor, which he affirmed to have been made of nothing but Engliſh plants. It was ſweetned with ſugar, and had the flavour of Malaga ſack. He was not willing to name the plants, but expreſſed his reſolution to improve the liquor firſt.

He remarked, that he thought it worth while to conſider the change of liquors into vinegar, and to procure the hiſtory of vinegar-making, both of wine and beer; as alſo to make the experiments for clearing up this matter.

Mr. OLDENBURG offered his ſervice in endeavouring to procure the way of making wine-vinegar in France, and the operator promiſed, that he would endeavour to learn the way of making beer-vinegar in London.

Dr. MERRET was deſired to deviſe and try ſome experiments proper to illuſtrate this ſubject, as by cloſing up wine, beer, &c. in glaſſes hermetically ſealed, by expoſing the like liquors to the ſun, &c.

The Swediſh reſident[h] mentioned, that he had ſeen mariners, when their beer was grown ſour, throw chalk into it, whereby the beer was recovered.

It was remarked by Dr. MERRET, that the liquor might be by that means freed of its acidity; but that it would be depauperated of its ſtrength.

Mr. HENSHAW affirmed, that ſome perſons being troubled with the heart-burning (cauſed perhaps by ſome extraordinary acidity in the blood about the heart) uſe to ſwallow chalk, and thereby cure themſelves.

The contents of Dr. WALLIS's letter to Sir ROBERT MORAY produced at the laſt meeting being ſpoken of, the preſident ſaid, that he had read BORELLI's propoſition, cited by the doctor, and conceived this to be the author's ſenſe, that the line of a pendulum being ſtaid by a pin or other thing in the perpendicular line any where, the bullet holds on its motion beyond the perpendicular (though in another circle) to near the altitude of the ſame horizontal line, from whence it fell, decreaſing after the ſame velocity, in which it before accelerated, moving like ſpaces in proportionable times, accounted from the perpendicular each way, where the circles unite.

[h] Monſr. LEYONBERGH.

Concerning

Concerning the other propoſition of BORELLI mentioned in the ſame letter, viz. that, which way ſoever a heavy body be violently caſt, the natural motion of deſcent by reaſon of its gravity (with which the motion of projection makes up its compound motion) is ſtill the ſame; it was conceived by the preſident, Sir ROBERT MORAY, and others, that it was truly ſo, *medio non impediente*; the experiments of ſounding, formerly made by ſome members of the ſociety, confirming the ſame, by which it appeared, that the ſounding-balls, whether they emerged obliquely in a ſwift ſtream, or perpendicularly in a ſtill water, roſe always in equal times.

The experiment of incorporating mercury and aqua fortis was proſecuted, and the ball being weighed in the mixture (which was four ounces) weighed fifty ſix grains, and in the tartar 168 ½ grains. After which there was put a quarter of an ounce of oil of tartar into the mixture to precipitate the mercury, but without any effect for want of room: for which reaſon it was ordered, that another mixture ſhould be made againſt the next meeting.

The experiment with the birds was alſo ordered to be tried at the next meeting.

July 30. EDWARD HOWARD, eſq; was propoſed candidate by his brother HENRY HOWARD of Norfolk.

The experiment of ſhutting up two finches in two glaſſes of different capacity was tried. The veſſels were cloſed with very good cement, the one containing about four and a half times the liquor of the other. The birds were both put in at the time of fifty five minutes paſt four. That in the ſmaller glaſs appearing ready to die, after it had been kept in for the ſpace of nineteen minutes, was taken out, but found dead, ſo that it could not be recovered. The other was kept in about an hour and twenty eight minutes, and appearing to be ſick, though not ſo very much ſo, was taken out, it being time for the ſociety to riſe; whereby it ſeemed, that the times and the quantities of the air neceſſary for reſpiration in theſe birds were almoſt in reciprocal proportion to one another.

This experiment was ordered to be tried in compreſſed air at the next meeting.

The propoſal made at the laſt meeting for trying the ways of making liquors acid being again ſpoken of, the operator was ordered to put wine, cider, and ale in ſeveral glaſs veſſels, and having ſealed them up, to expoſe them to the ſun, to ſee whether the liquors would grow ſour, though there was no avolation of parts.

Mr. OLDENBURG read part of a letter written to him from Monſr. JUSTEL dated at Paris July 25, 1668, N. S. [1] about the circulation of Juices in plants; concerning which it was ſaid, that ſome of the curious in France were apt to think, that the center of that circulation was in that place, where the roots of a plant united

[1] Supplement to the Letter-Books, vol. v. p. 122.

in ſhooting downwards and upwards, in regard that when that part was cut, the plant infallibly died, which it did not, though the roots about it were cut away, or though the trunk of a plant were cut off near the ground.

Some of the members ſaid hereupon, that this might prove the center of germination, but they ſaw not how thence could be concluded the pretended circulation.

Others ſuggeſted, that ſome plants grew only by a leaf or a ſprig put in the ground, without having any roots.

Dr. GODDARD affirmed, that he and ſome others had formerly made an experiment, in order to find out, whether there were any circulation in plants, tying them about very cloſe with a piece of leather; whereupon they had found, that after ſome time thoſe branches ſwelled conſiderably above as well as below the ligature.

The preſident remarked hereupon, that the tumor above the ligature was not a proof of a circulation, becauſe the juice being hindered from aſcending by degrees forcibly made its way by ſtretching in time the leather, and then paſſing through plentifully cauſed that ſwelling above the leather.

The operator related, that he had once bared a part of a top branch of an apple-tree, and put loam about the bared part, whereupon he had found, that at the fall of the leaf, the leaves below the loam being fallen off, thoſe above it ſtaid on, but withered.

Mr. HOOKE ſuggeſted, that it ſhould be tried, of what uſe the pith in plants might be, by ſtopping the pith, or cutting it.

He affirmed, that he had obſerved, that charring of wood ſhewed other kind of veſſels than the rotting of them did.

It was obſerved out of the deſcription of Surinam publiſhed by Mr. GEORGE WARREN, that though there be a conſtant verdure of plants in Surinam, and that held true, not only in all trees natural to that country, but alſo in tranſplanted vines; yet that an European apple-tree did always ſhed its leaves, and continued bare, as it doth in its native ſoil, all the winter-months, growing green again in the ſpring.

Sir THEODORE DE VAUX produced an account of the way of making copperas, as he had found it among Sir THEODORE MAYERNE's papers. It was read, and ordered to be compared with the accounts formerly brought in upon that ſubject by Sir ROBERT MORAY and Mr. COLWALL.

Sir

Sir ROBERT MORAY queried, what the iron did in the copperas-work; and he thought it desirable to try the work without iron, and therein to observe, both what quantity and what kind of copperas would then be produced.

Dr. BALLE said, that the addition of iron kept the copperas drier, and prevented its yielding to the air.

It was also queried, whether no other metal than lead would serve to boil the copperas in? Whether it had been tried in iron, or copper, or tin, or earthen vessels?

It was answered by some members, that all other materials would be corroded; and Dr. MERRET affirmed, that he knew a little stone, which being put into the copperas, when boiling, would make it corrode lead also.

Sir THEODORE DE VAUX offered to the society the perusal of certain papers about chemistry, which he had in his hands from Sir THEODORE MAYERNE. It was ordered, that they should be referred to the committee for chemistry, and as many of that committee be desired to meet, during the discontinuance of the meetings, as conveniently could, to consider thereof.

The experiments appointed for the next meeting were,

1. That above-mentioned of birds in condensed air.
2. The mixture of mercury and aqua fortis.

August 6. Mr. EDWARD HOWARD was elected.

A microscopical observation, devised by Mr. HOOKE, was made on a little lump of charcoal of fir-wood, in which appeared here and there interstices or partitions intersecting the great pores. Several of the members saw it, and were satisfied. Mr. HOOKE affirmed likewise, that some of the smallest pores had the same interstices; and added, that he was inclined to believe, that there were valves in wood, since it appeared not possible, that in trees of two or three hundred feet high (as there are such between the tropics) the sap should ascend to that hight by filtration, which carries liquor no higher than thirty six or forty feet.

Several queries were proposed about the texture of trees, in order to consider of their solution by experiments; as, whether the sap of trees runs out, when it is ascending, or descending, or at both times? Whether any sap ever descends? Whether there be any trees, which, being bared of all, even the innermost bark, will grow? Whether the pith being cut cross, a tree will grow?

It was thought desirable, that more queries might be thought of concerning this matter: whereupon the president, Mr. BOYLE, Sir ROBERT MORAY, Sir GEORGE ENT, Mr. HENSHAW, and Mr. HOOKE promised to draw up some: which being done, Mr. CHARLES HOWARD was desired to make observations to answer them.

Mr.

Mr. BOYLE preſented a piſtol-bullet, in part covered with a ſtony ſubſtance, ſaid to have been voided out of the bladder of a woman, who had five or ſix years before ſwallowed it for the twiſting of the guts [k]. It was thought by the members preſent very difficult to account how the bullet could come into the bladder.

Sir GEORGE ENT mentioned, that he knew, that a bodkin incompaſſed with ſtone had been found in the bladder of a woman, ſwallowed down, when one came behind her, on a ſudden, and ſurprized her by laying hold of her.

Mr. BOYLE related, that a Daniſh anatomiſt had lately acquainted him, that there had been found a cockle-ſhell of the ſize of an Engliſh ſixpence in the gall-bladder of a greyhound, who died after great pains perceived in him, and was opened to find his diſeaſe. He added, that the perſon, who wrote the account to him, was a good diſſector, and had been preſent when the ſaid ſhell was thus found. It was likewiſe thought difficult to conceive, how this ſhell could come into the gall-bladder.

An experiment of compreſſing air on birds was made twice with the ſame ſucceſs, viz. that a finch being put into a glaſs of the capacity of about a pint at 20 minutes paſt five o'clock, and the air being condenſed to one eighth part (which appeared by a gage) the bird was killed in 24 minutes.

Another bird of the ſame kind was cloſed up in a glaſs four times and a half as large as the former, and being left in the common uncompreſſed air, it appeared very ſick after the ſpace of an hour.

Mr. BOYLE mentioned, that he intended to try what operation the air had on the ſenſitive plant.

Mr. OLDENBUNG communicated a letter to him from Sir JOHN FINCH, the King's reſident with the Grand Duke, dated at Florence July $\frac{14}{24}$, 1668, acknowledging the receit of the ſociety's letter to Prince LEOPOLD Cardinal de Medicis; and of *the Hiſtory of the Society*, which was preſented by Dr. BAYNES to the Cardinal; and giving notice of a book of Dr. REDI, the Great Duke's phyſician, *de generatione inſectorum* almoſt printed off. This letter was ordered to be enter'd in the Letter-book [l].

Mr. OLDENBURG related, that at Vienna in Germany, the experiment of tranſfuſion had been made on ſeveral dogs with good ſucceſs; and that amongſt the reſt an old dog ſcarce able to go about for age, had been by the transfuſion of blood from a vigorous one reſtored to great vigor: and that it was reſolved there to proſecute the experiment, and to try it on men.

[k] An account of this is printed in the Philoſ. Tranſact. vol. iii. n° 40. p. 303. for Octob. 1668.
[l] Vol. ii. p. 265.

He

He related likewiſe, that he had received notice from Rome, that EUSTACHIO DIVINI had improved microſcopes, uſing two common object-glaſſes and two plano-convex eye-glaſſes joined together on their convex ſides, ſo as to meet in a point; the tube as big as a man's leg, and the eye-glaſſes little leſs than the palm of one's hand.

It was reſolved, that the meetings of the ſociety ſhould be intermitted for ſome time, many of the members being at this ſeaſon of the year in the country; and that the preſident ſhould be deſired to ſend about a ſummons, when he ſhould be informed, that there was a competent number of fellows in town again.

In the mean time Mr. HOOKE was ordered, during this vacation, to make the experiment in the Park for the menſuration of the earth; and that of obſerving the parallax of the earth's orb: and it was recommended, that the committees of the ſociety might meet as often as conveniently they could.

Auguſt 10. At a meeting of the COUNCIL were preſent

The Preſident

Sir ROBERT MORAY	Sir JOHN LOWTHER
Mr. AERSKINE	Mr. COLWALL
Mr. HENRY HOWARD	Mr. OLDENBURG.
Mr. CHARLES HOWARD	

It was reſolved, that the building of the college ſhould be deferred till ſpring, and in the mean time good materials be provided.

Mr. HOWARD promiſed, that he would endeavour to procure an act of parliament for letting of leaſes againſt that time.

Octob. 22. This day the ſociety, after the intermiſſion of their meetings for ten weeks, began to meet again; when there were produced ſome preſents, and read ſeveral papers, containing divers communications to the ſecretary for the ſociety ſince their laſt meeting.

There was preſented from Mr. HEVELIUS his *Cometographia*, wherein he taking particular notice of the ſociety in his addreſs to the reader, and ſubmitting the whole book to their judgment and cenſure, it was deſired by the preſident, that thoſe perſons, to whom the author had particularly preſented copies of his book, as he had done one to the whole body, would peruſe it, and bring in their thoughts upon it. Thoſe perſons were named to be the biſhop of SALISBURY, Dr. WALLIS, Mr. HOOKE, and Mr. OLDENBURG: and it was ordered, that the thanks of the ſociety ſhould be returned to Mr. HEVELIUS [m].

[m] Mr. OLDENBURG's letter for that purpoſe was dated Octob. 28, 1668, and is entered in the Letter-Book, vol. ii. p. 298.

Sir ROBERT MORAY preſented from Sir PHILIBERTO VERNATTI, governor of the Dutch Eaſt-India company at Batavia in Java Major, ſeveral curioſities of thoſe parts; viz. 1. The picture of a muſk-deer, drawn according to the life, whoſe navel was affirmed by Sir PHILIBERTO to be the only part, which gives or is the true muſk. 2. The pictures of ſeveral ſpices and other vegetables, as the clove tree with all its parts; the nutmeg-tree with its parts and ſeveral kinds, there being one ſort called *the thieving nutmeg*, of which there being but one mixed among a whole ſtorehouſe full of the good ſort, it will infect and corrupt them all. 3. The ſagewee-tree yielding a liquor far above that of the cocoa-tree. 4. The ſagou-tree, yielding bread in the Molucco's. 5. A nameleſs herb ſhaped like a can with its cover, which, if opened even in the hotteſt weather, is half full of water. 6. Three ſmall cans filled with Macaſſar poiſon, together with a deſcription of its uſe upon arrows. For the trial of which poiſon a dog or cat were ordered to be provided againſt the next meeting.

The earl of SANDWICH's obſervations made by himſelf during his embaſſy in Spain and Portugal, of the laſt comet ſeen by himſelf at Liſbon the firſt time on Feb. 25, $166\frac{7}{8}$, O. S. and of the eclipſe of the moon of May $\frac{15}{25}$, 1668, were produced, and ordered to be regiſtered [n].

Monſr. THEODORE DE BERINGHEN preſented the ſociety with Dr. REGNER DE GRAAF's book, intitled, *De virorum organis generationi inſervientibus* [o].

Monſr. DE BERINGHEN ſignifying his intention of returning to Paris, and expreſſing his readineſs to ſerve the ſociety there, he was thanked for this reſpect to them, and deſired to acquaint the Royal Academy of philoſophers there, how glad the ſociety would be of a good correſpondence and conjunction for the carrying on of the common deſign of advancing experimental philoſophy.

Mr. OLDENBURG read a letter written to him from Bermudas, dated July 16, 1668, by Mr. RICHARD STAFFORD, ſheriff of that iſland, containing divers particulars relating to the tides, whales, ſperma ceti, poiſon-wood, extraordinary webs of ſpiders, ſome rare vegetables, and the longevity of the inhabitants: which letter was ordered to be entered in the Letter-Book [p].

Mr. OLDENBURG produced the papers brought by Sir ROBERT SOUTHWELL from Portugal, written by Father JEROM LOBO, a Jeſuit, and an eye-witneſs of moſt of the particulars contained therein, which were, 1. A relation of the river Nile, its ſource, current, and inundation. 2. An account of the real exiſtence and the place of abode of the unicorn. 3. Of the Abyſſine emperor, vulgarly called Preſter JOHN. 4. Of the Red-Sea and the cauſe of its denomination. 5. A diſcourſe of palm-trees, their variety, fruit, uſefulneſs, proper ſoil, &c.

[n] Regiſter, vol iv. p. 15.
[o] Printed at Leyden 1668, in 12°.
[p] Vol. ii. p. 241. It is printed in the Philoſ. Tranſact. vol. iii. n° 40. p. 792. for Octob. 1668.

Theſe papers being originally written in the Portugueſe language, and having been thence tranſlated into Engliſh by Sir PETER WYCHE, it was ordered, that the tranſlation ſhould be preſerved upon the file.

Mr. OLDENBURG communicated ſome papers concerning the Mendip mines by Mr. GLANVILL, who affirmed in a letter accompanying theſe papers, dated Auguſt 15, 1668, that he had procured this account from very experienced mine-men. It was ordered, that this account be regiſtered [q].

Mr. OLDENBURG remarked, that he had ſeveral other letters and papers ſent him ſince the laſt meeting of the ſociety, from Seville, Milan, Paris, Briſtol, and Yeovil, all relating to philoſophical matters; the reading of which was referred to the next meeting.

It being conſidered what experiments ſhould be tried henceforth, the preſident mentioned, that he had underſtood, that Mr. HOOKE had erected a tube to try, whether he could obſerve to a ſecond minute the paſſing of any fixt ſtars over the zenith, and thence find a parallax of the earth's orb, in order to determine the earth's motion.

After this it being propoſed by Mr. HOOKE, that the experiments of motion might be proſecuted, thereby to ſtate at laſt the nature and laws of motion, the preſident deſired, that it might be conſidered, whether it were ſo proper or neceſſary to try this ſort of experiments, ſince Monſr. HUYGENS and Dr. CHRISTOPHER WREN had already taken great pains to examine that ſubject, and were thought to have alſo found a theory to explicate all the phænomena of motion.

It was ordered thereupon, that Mr. OLDENBURG ſhould be deſired to write to both thoſe perſons, and acquaint them with what had been ſaid in the ſociety of them, and of this matter; and to deſire them, that, if they did not yet intend to publiſh their ſpeculations and trials of motion, they would communicate them to the ſociety for their conſideration, and be aſſured, that they ſhould be regiſtered as their productions [r].

The preſident moved, that the perſons formerly deſired to peruſe and conſider the biſhop of CHESTER's *Eſſay towards a real character and a philoſophical language* ſhould be called upon at the next meeting to bring in their thoughts concerning that book.

Octob. 29. Mr. HOOKE produced an inſtrument for meaſuring a ſecond of time by the ſun, or for making the motion of the ſun to be perceived every ſecond. It not being yet perfect, he was deſired to make it ſo againſt the next meeting.

[q] Regiſter, vol. iv. p. 9. It is printed in the Philoſ. Tranſact. vol. iii. n° 38. p. 767. for Sept. 1668.

[r] Mr. OLDENBURG's letter to Monſr. HUYGENS dated Octob. 26, 1668, is entered in the Letter-Book, vol. ii. p. 293. and that to Dr. WREN dated Octob. 29, 1668. ibid. p. 302.

He acquainted the ſociety, that all the obſervations, that he could make of the late eclipſe of the ſun, which happened the 25th inſtant, was only to ſee the beginning of it, which was *h.* 11. 5′. *matut.* and a few ſeconds: whereas WING in his almanack had calculated the beginning *h. matut.* 11. 17′. 58″.

An experiment was tried of falling bodies in a glaſs-cane about four feet long, exhauſted of air, in which a feather let fall came down to the bottom in four ſeconds: but when the air was re-admitted, in ſix ſeconds. The glaſs not being well exhauſted, and too ſhort, it was ordered, that a longer glaſs ſhould be provided againſt the next meeting, and care taken, that it might be then better exhauſted.

Mr. HOOKE mentioned an experiment made by Mr. BOYLE of including bellows in a glaſs exhauſted of air, to ſee, what effect the bellows working would have on the ſubtile matter remaining in the veſſel; and whether it would cauſe any agitation therein.

It was ſuggeſted by the preſident, that it might be tried, whether a magnet would operate at a farther diſtance in a thinner than a groſſer air: and whether a very thick air would conſiderably leſſen the force of its operation.

Mr. HOOKE moved, that experiments might be made to ſee, whether all hard bodies, that rebound, do not ſo upon the account of having ſpringy particles in them; and that it might be inquired into, whether there be any body ſpringy upon any other ſcore, than that it has air in it.

He conceiving, that if there were to be had a body abſolutely hard, and deſtitute of all ſpringineſs, it would not rebound at all, and it being ſaid, that ſuch a body would not be eaſily found for making the experiment, he anſwered, that it might be tried comparatively.

He took notice, that glaſs was capable of condenſation and relaxation by preſſure, and by taking off that preſſure; and that the parts of glaſs may be put into a cloſer poſture, becauſe they contain air in them.

The biſhop of CHESTER related to the ſociety two experiments, which he had lately ſeen made at Exeter by Dr. THRUSTON: one was of transfuſion, in which they had cauſed a dog to be firſt weighed before the operation, and found his weight to be fifteen pounds and three ounces. Afterwards he was ſhut up tied for two or three hours, during which time he had ſpent in effluvia and otherwiſe about three ounces, as they found by weighing him again: then they let a ſheep bleed into him ſo liberally, that the dog being weighed again after that transfuſion was found to weigh ſeventeen pounds; whereupon he fell into a great diſorder and agony, and died. Being opened, his heart was found full of coagulated blood, and the ſtomach black and bloody, and all his veins exceedingly diſtended; which could not but ſtop the free motion of the blood, and ſuffocate the animal.

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The other experiment was, that after there had been found in the body of a perſon, who died of the ſtone in the kidneys, and was opened, great ſtones in the pelvis of each kidney, and in the parenchyma four white ſquare ſtones. There was taken a dog, by the biſhop's ſuggeſtion, and through one of his ſides a wound made in the convex part of the kidney, and the place of the outward incifion ſewed up again, without applying any thing to the inward wound. Whereupon though the dog was very ſick and feveriſh (doubtleſs from the extravaſated blood, and refuſing to feed for ſeveral days) yet he afterwards recovered. But it was thought proper to kill him a while after, to ſee, what alteration might have been made in that kidney, which was found quite healed up, ſo that no ſcar could be ſeen in it.

This experiment, in the biſhop's opinion, might prove uſeful for the cutting men for the ſtone in the kidneys, as they are for that in the bladder. But it was obſerved by ſome members, that the ſtones in the kidneys being for the moſt part in the pelvis thereof, it was not at all probable, that a man could be cut ſo deep, as the pelvis, and not die.

Beſides the experiment ordered above to be made at the next meeting, the following were likewiſe appointed: 1. That of Dr. DE GRAAF deſcribed in his book *de virorum organis generationi inſervientibus*, of unravelling the teſticles, for which Dr. ALLEN, Dr. BALLE, and Dr. KING were deſired to be curators, and to meet on the Tueſday following about three in the afternoon in Arundel-houſe. 2. The Macaſſar poiſon to be tried on a dog. 3. The cutting the kidney of a dog.

Nov. 5. At a meeting of the COUNCIL were preſent

The Preſident

The lord BRERETON	Mr. CHARLES HOWARD
The lord biſhop of SALISBURY	Sir PAUL NEILE
The lord biſhop of CHESTER	Mr. HOSKYNS
HENRY HOWARD of Norfolk	Mr. OLDENBURG.

A committee was appointed to audit the accounts of this year, conſiſting of the preſident, Sir GEORGE ENT, Mr. HAYES, Mr. CREED, and Mr. OLDENBURG, and three of whom were to be a quorum. They agreed to meet on the 9th inſtant at ſix in the evening at the preſident's houſe.

The preſident was deſired to take the opportunity of a privy-council day to ſpeak with the lord privy-ſeal about the diſpatch of the patent.

Mr. HOSKYNS was deſired to ſpeak with Mr. COLE, and to endeavour to get a ſight of the writings, which Mr. COLE ſaid, that he had obtained from all thoſe, who pretended any title to Chelſea-college: and alſo to ſpeak to Sir ANTHONY MORGAN's clerk for the papers of the ſociety, that concerned the grant of the ſaid college.

At the meeting of the SOCIETY on the ſame day,

MAURICE lord viſcount FITZ-HARDING was admitted.

Mr. OLDENBURG read a letter from Dr. CHRISTOPHER WREN[s], in anſwer to what he had written to him, by order of the ſociety, to requeſt the communication of what Dr. WREN had done on the ſubject of motion: the ſubſtance of whoſe anſwer was, that he deſired time to try over again ſome of his experiments upon that ſubject, and that he then hoped to give an account to ſatisfaction. This letter was ordered to be preſerved.

The experiment of the Macaſſar poiſon was made upon a dog: the poiſon being mingled with ſome juice of lemon, the point of a knife dipt therein was ſtruck into the fleſhy part of one of the dog's hind legs, who appeared quite unaffected, when the ſociety broke up.

Mr. HOOKE made an experiment of letting a feather fall in a glaſs-cane of about ſeven feet long with a head upon it; which being well exhauſted, the feather fell down from the top to the bottom in about three ſeconds of time; but being again filled with air, the feather fell down in ſeven ſeconds and a half. Both experiments were repeated ſeveral times, with near the like effect.

Mr. HOOKE propoſed the trying of experiments to determine the queſtion concerning the communication of motion. For which purpoſe ſome trials had been made formerly[t] with three or more wooden balls, of which one of the lateral ones had been let fall againſt the middle-moſt, and impelled the other lateral one to the like hight, from whence the firſt was fallen, ſo that the middle-moſt ſtirred but very little. He promiſed to proſecute theſe experiments at the next meeting by employing more balls, and letting the exterior ones fall againſt the intermediate.

Capt. SALTER[u] was introduced and preſented the ſociety with a very curious piece of art, viz. the Queen's face turned with a turn-lathe by a medal. He ſaid, that, if he had good medals of their Majeſties, he would turn their faces much better, and intended to preſent the ſociety with another piece, in caſe he ſhould procure good medals to turn by; adding, that he would undertake to turn faces by a good picture, if he might but once well behold the original.

[s] The journal gives for the date of it October 26. but the Letter-Book, in which it is inſerted, vol. ii. p. 303. has it November 3, 1668.

[t] See the minutes of Oct. 17, and 24, 1666.

[u] of Norwich. He is recommended by NATH. FAIRFAX, M. D. to Mr. OLDENBURG in a letter dated at Woodbridge in Suffolk, January 29, 16$\frac{67}{8}$ (Supplement to the Letter Books, vol. iii. p. 196.) *as the moſt lucky turner in wood, ivory, and ſilver in Europe.* "He has now, *adds* Dr. FAIRFAX, an ivory cup by him of amazing workmanſhip, beautified, in the cover eſpecially, with flowers, and flower-pots of about fifty ſeveral makes (as I remember) all turn-work. And a little while ſince I ſaw him pretty forward in turning the King's picture embolſſed, as in the five pieces." In another letter of June 28, 1669, (ibid. p. 233.) Dr. FAIRFAX takes notice, that capt. SALTER died ſome time before of a dropſy in the pericardium.

Mr.

Mr. OLDENBURG acquainted the ſociety, that he had received a letter, which ſignified to him, that Monſr. AUZOUT had made in Italy, where he was then travelling, an obſervation about the variation of the magnetic needle, and found, that it then varied there one degree and a quarter weſtward.

This made ſome members reflect on what Mr. HENRY BOND [x] affirmed, that in this year 1668 the needle varied about London one degree and fifty ſix minutes weſtward: as alſo, that he had predicted how much the needle would vary for many years following, ſuitable to a certain hypotheſis, which he held concerning the cauſe of that alteration.

It was thought deſirable, that all ſuch, as had conveniency, and were furniſhed with an apparatus, would endeavour either to verify or refute theſe predictions by the beſt and moſt accurate obſervations, which they could make on this ſubject.

Mr. OLDENBURG remarked farther, that Monſr. AUZOUT had met at Milan in the repoſitory of Signor MANFREDO SETTALLA a little magnet weighing an ounce and a quarter, which Monſr. AUZOUT had ſeen take up ſeventy ſeven ounces, when it was held only in the hand, without any other faſtening.

Mr. OLDENBURG likewiſe intimated, that Dr. WALLIS had mentioned in a late letter written to Mr. HEVELIUS, that on the 26th of October preceding he had begun to obſerve again the new ſtar in Cete, which he had ſeen at a certain time of the year for many years paſt, anticipating every year about two or three and thirty days, according to BULLIALDUS's obſervation.

It was recommended to Mr. HOOKE and others, who could conveniently, to take notice of this phænomenon.

Notice was alſo given by Mr. OLDENBURG, that he had underſtood by a letter lately received, that at Paris they had begun, as Mr. TOWNLEY had done in England, to make good teleſcopical glaſſes with a turn-lathe [y].

Sir PAUL NEILE took occaſion from hence to mention, that he had ſeen a ſhort glaſs of CAMPANI's workmanſhip, brought out of Italy by Mr. NEVILL, which glaſs he thought very good. He was deſired to endeavour to procure for the ſociety a ſight of that teleſcope, which he promiſed to do.

[x] an intelligent mathematician and teacher of navigation, whoſe table of the variation of the magnetic needle is publiſhed in the Philoſ. Tranſ. vol. iii. n° 4. p. 790, for Oct. 1668. Sir CHARLES CAVENDESSHE, brother to WILLIAM marquis and afterwards duke of NEWCASTLE, in an original letter of his from Antwerp, Nov. 13, 1648, to Mr. JOHN PELL, then profeſſor of mathematics at Breda, mentions Mr. BOND as *an old mathematician* at London, *an humble man*, who "ſpeaks, *ſays he*, very meanly of himſelf, and "yet he found an eaſy and ſhort demonſtration "of that propoſition concerning ſpherical trian-"gles, which Mr. OUGHTRED demonſtrated firſt, "who told me, Mr. BOND's demonſtration was "ſhorter." Sir CHARLES adds, that Mr. BOND was in hopes of finding the longitude by the loud-ſtone; and his treatiſe on that ſubject intitled *The longitude found* was printed at London 1676, in 4to.

[y] See Philoſ. Tranſact. n° 40. p. 795.

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The three following experiments were appointed for the next meeting, 1. About the propagation of motion. 2. That of Dr. DE GRAAF concerning the ſubſtance of the teſticles. 3. Of cutting the kidney of a dog.

Nov. 12. The experiment of the communication of motion was tried by a contrivance, whereby three balls of the ſame wood, and of near equal bigneſs, were ſo ſuſpended, that either of the two extremes being let fall from a certain hight againſt the intermediate ball, the other extreme was impelled upwards to near the ſame hight, from whence the firſt was let fall, that in the middle moving but very little; of which the preſident conceived this to be the reaſon, that the intermediate ball, when ſtruck by one of the lateral ones, found the reſiſtance of the other lateral ball; but this other lateral ball met with no other reſiſtance than that of the air.

Mr. HOOKE was ordered to think upon other experiments for the making out this hypotheſis about motion, which is, that no motion dies, nor is any motion produced anew.

Sir ROBERT MORAY moved, that bodies might be provided of ſeveral degrees of hardneſs, and of the ſame matter and weight, as ſteel bodies, and the like, to ſee whether the harder they are, the more they will rebound.

Others moved, that bodies might be provided, that had no ſpringineſs, or but little, to ſee, how much that quality contributed to the rebounding.

It was alſo moved, that ſince the ſociety was upon the diſquiſition of the nature, principles, and laws of motion, all authors, who had written on that ſubject, and delivered their hypotheſes concerning it, might be conſulted and examined, and an account of their opinions brought in, to ſee, what had been already done in this matter. Whereupon Mr. COLLINS was deſired to peruſe ſuch authors, and particularly DES CARTES, BORELLI, and MARCUS MARCI: And Mr. OLDENBURG was deſired to write to Dr. WALLIS, that he would take a ſhare of this work.

Mr. OLDENBURG read a letter from Monſr. HUYGENS, dated at Paris Nov. 13, 1668, N. S. in anſwer to what he had lately written to him by order of the ſociety, deſiring him, that if he did not yet think fit to print what he had diſcovered on the ſubject of motion, he would impart to them his theory of it, together with ſuch experiments, as he grounded his theory upon. Monſr. HUYGEN's anſwer was, that he was ready to communicate to the ſociety thoſe rules and theorems, which he had found out in all the ſpecies of motion, not doubting but the ſociety would ſecure to him the honour of that diſcovery, by giving it place in their Regiſter-book, as coming from him. And as he deſired to know of what part of motion the ſociety would have him treat firſt, the ſecretary was ordered to acquaint him, that the ſociety left that to his diſcretion, not doubting, but that he had treated that ſubject methodically; and therefore would begin with ſuch particulars, as were ſimpleſt and cleareſt, giving light to what ſhould follow. His letter was ordered to be entered in the Letter-Book [z].

[z] Vol. ii. p. 321.

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The curators for examining the teſticles of animals made their report by the mouth of Dr. ALLEN to this purpoſe, that Dr. CLARKE, Dr. ALLEN, Dr. KING, and Mr. OLDENBURG had on the Tueſday preceding Nov. 10, met, and taken the teſticles of a buck-rabbet and thoſe of a dog, and having opened them, and put them into luke-warm water, found in all of them, that endeavouring to draw them out, they could not do it into any conſiderable length; and that thoſe little ſhort threads, which were drawn out, ſeemed not to have any firmneſs, like that of veſſels in them, but were like a mucous or ſlimy ſubſtance, converted all into the water or ſlime, when rubbed upon the hand. That farther, what was drawn out was not like any unravelling, but reſembled, as was juſt ſaid, a viſcous ſubſtance, firſt groſſer and thicker, and then by extenſion made thinner and ſlenderer. Beſides this, that one whole teſticle of a dog (which had juſt been ſtrangled) being put into luke-warm water, the greateſt part of the body was waſhed away, there remaining only a ſmall ſubſtance, that ſeemed to be membranous (which was produced by Dr. ALLEN dried up) and was ſent to Mr. HOOKE to be viewed in a microſcope, in order to ſee whether it was indeed a cloſe membranous or a reticular body; and that Mr. HOOKE had found it to be membranous and cloſe.

And ſince theſe experiments did not make out what Dr. DE GRAAF had aſſerted of the ſubſtance of the teſticles, though they neither refuted it, as there might be veſſels of ſo ſoft and delicate a texture, as to be diſſolved into a wateriſh body, for inſtance eels in vinegar, and the like; it was moved, that more experiments might be made about it, and particularly, that the teſticles of larger animals, as boars, horſes, &c. ſhould be examined; as alſo that ſome injection ſhould be made into the artery of the teſticles; and that the ſame curators ſhould be deſired to proſecute theſe experiments, the operator being ordered to take their directions for providing all neceſſaries for that purpoſe.

It was likewiſe ordered, that a dog ſhould be provided againſt the next meeting for the cutting of his kidney.

Sir PAUL NEILE acquainted the ſociety with a relation, which he had received from Sir GILBERT TALBOT (who alledged Sir THOMAS STRICKLAND as the informant) concerning a ſtrange diſeaſe of a poor man in Helperby in the county of York, who having a great ſwelling in his ſide, and that cut twice, it returning after the firſt opening and healing, there came out both times much corruption and a great quantity of bladders, ſome greater, ſome leſs, all full of matter; and that after the ſecond cutting and healing up, the patient vomited up ſuch bladders, and voided the like by his excrement and urine. It was added, that this account was communicated to the college of phyſicians in London, as, the paper mentions, it was intended; and Dr. CLARKE mentioned, that he had been preſent at the college with ſome other phyſicians, when the paper was brought thither; and that it had been conſidered, but they had reſolved nothing upon it. Sir PAUL NEILE was deſired to give a copy of this relation, in order that it might be entered; which he declared himſelf willing to do.

Dr. BALLE produced ſome phyſico-mathematical propoſitions, ſent from Italy, and publiſhed by Dr. DONATO ROSETTI, who pretended to demonſtrate them; viz.

1. What is the true phyſical cauſe of æquilibriums?

2. That the notion of ARCHIMEDES, viz. that a floating body ſinks ſo far under the level of the water, as that a maſs of water equal to the part ſunk weighs altogether as much, as the whole floating body, is falſe.

3. That it is very probable, that there is no æther; and conſequently, that there is a very great vacuum.

4. That there is a very eaſy, ſhort, and infallible way to know exactly, how great the full weight muſt be of the air, which is perpendicularly impending over a determinate place.

5. That with little leſs facility and brevity, and with the ſame certainty, may be weighed a part of the ſaid air, as, for inſtance, a cubic yard.

6. The only way of meaſuring the hight of the atmoſphere.

7. How it may be experimented, whether the light, at the diſtance of forty or more miles, is moved in any obſervable time.

Dr. BALLE was deſired, or any other member, who had conveniency, to write to Dr. ROSETTI, that he would firſt of all make good what he affirmed in his ſecond propoſition.

Mr. OLDENBURG produced a packet of curioſities ſent by Mr. NORWOOD from the Bermudas, which packet had been thought to be loſt, but was now retrieved. He produced alſo a letter and ſome rarities ſent from Aleppo and Iſpahan bythe conſul of the former, and the factor of the merchants at the latter. Both theſe were referred to the next meeting.

November 19. At a meeting of the COUNCIL were preſent

The Preſident

The lord biſhop of SALISBURY	Sir JOHN LOWTHER
The lord biſhop of CHESTER	Mr. COLWALL
The lord BRERETON	Mr. AERSKINE
Sir PAUL NEILE	Mr. OLDENBURG.

The committee of the council for examining the accounts of the ſociety for this laſt year made a report, which was approved of, as follows:

" At a committee of the council of the Royal Society for auditing the treaſurer's accounts, November 9, 1668.

" Upon examination of Mr. COLWALL's accounts we find him debtor

	l.	s.	d.
" To the arrears due to the Royal Society for their quarterly " payments, this 9 Nov. 1668. —— ——	1102	6	6
" To monies he hath received for admiſſions ——	29	10	6
" To the balance of his laſt account in money ——	77	15	5
	1209	12	5

" We alſo find him creditor

" By the monies he hath paid for the uſe of the Royal Society " by order of the council —— ——	264	5	5
" By money in arrear reſting unpaid by the fellows of the ſociety	847	1	6
" By balance reſting in caſh now in his hands ——	98	5	6
	1209	12	5

"" And in the caſh-cheſt of the Royal Society the ſum of one hundred pounds.

BROUNCKER, P. R. S.

JA. HAYES.

HENRY OLDENBURG, Secr.

Mr. OLDENBURG read a letter from the vice-chancellor of the univerſity of Oxford [a] to Mr. BOYLE, importing, that he would endeavour to procure an exchange of the manuſcripts now in the poſſeſſion of the ſociety, for ſuch books as were proper for their purpoſe. The conſideration of which was referred to another meeting of the council, where HENRY HOWARD might be preſent.

Upon the deſire of Sir PETER WYCHE, that the ſociety would licenſe their printers to print a tranſlation made by him at the requeſt of the ſociety, of a manuſcript in the Portugueſe language concerning the Nile, the Unicorn, the Red-ſea, PRESTER JOHN, and the variety of palm-trees, the council granted their licenſe to the printers for printing that tranſlation.

Dr. BALLE and Mr. COLLINS were deſired with Mr. HOOKE to expedite the catalogue of the Arundelian library.

At a meeting of the SOCIETY on the ſame day,

Sir KINGSMILL LUCY, knt. and bart. DANIEL FINCH, Eſq; [b] and Mr. JOHN

[a] JOHN FELL, D. D. Dean of Chriſt church.

[b] Son of Sir HENEAGE FINCH, and afterwards earl of NOTTINGHAM.

Looke were propoſed candidates, the two firſt by the biſhop of Chester, and the third by Sir Paul Neile.

The preſident, according to ſtatute, nominated five of the fellows of the ſociety to be a committee for auditing the accounts of this year, viz.

Sir Theodore de Vaux
Dr. Goddard
Mr. Balle
Dr. King
Mr. Collins.

Mr. Oldenburg produced the curioſities ſent from the Bermudas by Mr. Norwood and Mr. Stafford, which he had lately retrieved, after having been miſſing for ſeveral weeks, the captain of the ſhip, to whom they had been recommended, not remembering what was become of them. The particulars were, 1. Cedar-berries. 2. Palmetto-berries. 3. Oil-ſeeds or Palma-Chriſti-ſeeds. 4. Poiſon-weed. 5. Silk-ſpider's webs. Some of theſe berries and ſeeds were ordered to be given to Mr. Charles Howard, Mr. Evelyn, and ſuch others, as had the conveniency of planting them, to ſee how they would thrive in England.

Mr. Oldenburg was deſired to inquire in his anſwer to Mr. Norwood and Mr. Stafford [c], whether they themſelves had ſeen any of thoſe ſpiders work, whom they deſcribed as making their webs between trees ſeven or eight fathom diſtant; and to deſire them to ſend ſome of thoſe huge leaves mentioned in their letter; and to aſſure them, that the expences of what they ſhall ſend to the ſociety ſhall be ſatisfied.

Mr. Oldenburg produced and read a letter to him from Mr. Lannoy, conſul at Aleppo, dated there July 6, 1668, giving an account to the ſociety of what Mr. Stephen Flower, the agent for the Engliſh Eaſt-India company in Perſia, had done there, in order to ſatisfy the queries formerly ſent thither, and particularly thoſe concerning the ruſma and the ruins of Perſepolis. Mr. Lannoy's letter was ordered to be entered into the Letter-Book, as follows [d]:

"Honoured Sir,

"THE fifth of Auguſt laſt I gave you the trouble of a few lines, and inclоſed the anſwer to the paper of inquiries you ſent me; ſince which, I "have received ſeveral letters from Mr. Stephen Flower, who is agent for the "affairs of the honourable Eaſt-India company in Perſia, to whom, by your "order, I ſent a copy of thoſe papers, which you ſent me.

"To the 12th inquiry, whether any ruſma is to be found in Perſia, and how "uſed, he anſwers, that what is meant by ruſma, is called by the Perſians, *zer-"nick*, the French, *orpiment*, the Portugals, *fezador*. It is a kind of mineral, a "muſter whereof I herewith ſend, both crude and ground; it comes from Coſbein,

[c] Mr. Oldenburg's anſwers to Mr. Stafford and Mr. Norwood, dated Nov. 16, 1668, are entered in the Letter-Book, vol. ii p. 316 and 319.

[d] Letter-Book, vol. ii. p. 250.

"where

" where quantities are procurable, and is uſed by the Perſians only in their bag-
" nios, as in Italy, and painting as in England and France. It coſts in Perſia
" three abeſſes or four ſhillings the mandſhaw of twelve pounds, and that, which
" is in lump, four pence leſs. With the French it is a great commodity. There
" is alſo another mineral much like it, but more ponderous, called by the Perſians
" *mordeſang*, or the ſtone of death, which comes from Kirman; being inwardly
" taken is rank poiſon (as is the other) and is of a contrary nature to the other,
" becauſe cold; uſed outwardly both here and in India to take away all manner
" of heats under the arms and other parts, being ground upon a ſtone; a muſter
" whereof I ſend herewith; and is ſold for five abeſſes the mandſhaw, which is
" about ſix pence the pound.

" If either of theſe be that drug, which is called ruſma, you may have what
" quantity you pleaſe ſent you.

" To your query about the pictures and baſs relieves at Perſepolis and Chimil-
" nar, he anſwers, that at preſent there are no draughts extant; he had ſeen one
" taken by a Padre Carmelitan about four years ſince, who went for Rome, but
" very imperfect. In anno 1661, in company of agent BUCKRIDGE, who is now
" in England, M. FLOWER took a view of that piece of antiquity, which at pre-
" ſent is ſo greatly defaced by time, that there is hardly any thing diſcernible:
" however in compliance to the deſire of the Royal Society, which he eſteems as a
" command, he hath found a perſon ſkilful in the faculty of limning, and paint-
" ing, a Poloneſe by nation, an ingenious perſon, who hath ſerved the Kings of
" Perſia theſe 30 years, whoſe licenſe he hath procured, and contracted with him
" for 200 dollars, to accompany him to Chilmanar, and to take the draughts,
" which are moſt remarkable; and at his return to Spahaune to put them in
" colours.

" The 22d of November they arrived at Chahelmanar, alias Perſepolis, and
" went to the mountains called Norture ſtand, to the weſtward of Perſepolis a good
" league, where they took the ſeveral draughts of the four tombs, where the an-
" tient kings have been interred. They are all within a ſtone's caſt of each other,
" of the ſame form and work, carved out of the main rock of greyiſh marble;
" and although ſome are more perfect and leſs defaced by time than others, yet
" it is hard to judge which is more antient; their hight, and breadth, and length
" equal.

" A little diſtance to the weſtward of thoſe tombs is about twenty foot from
" the ground cut out of black marble, in the ſaid mountain, two horſes with
" their riders, which are ſuppoſed to be ALEXANDER, and RUSTRAM, a mighty
" man of the Gours, or Gabres, (of whom the Perſians have many ſtories) who
" are contending for a ring of iron, which each have hold of. On the thigh of
" each horſe before are engraven ſome characters, which he endeavoured, as many
" as were diſcernible, exactly to ſet on a paper, being only two lines; as alſo of
" another antient character, by none legible at this day. Part of each whereof I
" ſend you here encloſed: the laſt character being written at Perſepolis in no
" leſs

" leſs than 20 ſeveral places of black marble within and without, in a quadrangle " not above ten yards diſtance any ways; not one of them being intirely perfect, " but all more or leſs defaced by time and malice.

" After which they went to Perſepolis, now called *Meere Coſgoon*, and there " both without and within they began to take the ſeveral draughts, which the " limner thought to have performed only at a diſtance, but M. FLOWER did not " approve of that, being reſolved to take the exacteſt draughts, that hitherto hath " been taken, which the limner, perceiving Mr. FLOWER's reſolution, was deſirous " to be excuſed of the contract. But Mr. FLOWER having taken ſo much pains, " incouraged him to proceed, which will take him up, before he will be able to " finiſh it, at leaſt twelve months time, which he hopes, when finiſhed will ap- " pear an excellent work, and acceptable to all that ſhall ſee it. He hath ſupplied " the limner with money, a horſe, and a ſervant, that, after that he hath taken " the exact draughts, he may return to finiſh the work at Spahaune, where M. " FLOWER expects an order for the ſending of the ſaid draughts, &c. whether by " ſea or land for its greater ſecurity, and leaſt damage, deſiring to know, when " the work is perfected, what order will be taken for his reimburſements.

" To the other inquiries he hath not returned any anſwer, but promiſeth to do " it. I humbly crave leave, and remain

" SIR,

Aleppo. July 6, 1668.

" your humble Servant,

" BENJAMIN LANNOY."

It was ordered, that the ſpecimens of the curioſities accompanying this letter, viz. ſome ruſma, both crude and ground, and another ſubſtance, called mordeſang or ſtone of death, ſaid to be a rank poiſon, when taken inwardly, be put into the repoſitory: And that as to the draught of the pictures and baſs-relieves of Perſepolis, Mr. FLOWER ſhould be informed, that ſince that could not be made but with great charge, the ſociety would not give him any further trouble about it, eſpecially as thoſe things did not contribute to their main deſign, and their revenues was not ſo conſiderable as to enable them to be at great expences [e].

Mr. OLDENBURG produced a paper from Capt. SAMUEL STURMY, containing an account of ſome obſervations made by him this year in Hongroad, four miles from Briſtol, about the tides, by way of anſwer to the queries on that ſubject propoſed in N° 17 and 18 of the *Philoſophical Tranſactions*. The paper was read and ordered to be entered [f]; and the author was deſired to continue his obſervations, eſpecially thoſe of the annual ſpring-tides, viz. whether they are preciſely at the full and change of the equinoxes, or a little before and after them; as alſo thoſe,

[e] Mr. OLDENBURG's anſwers to Mr. LANNOY and Mr FLOWER, dated Nov. 21, 1668, are entered in the Letter-Book, vol. ii. p. 328 and 330.

[f] Regiſter, vol. iv. p. 21. It is printed in the Philoſ. Tranſact. vol. iii. n° 41, p. 813, for November 1668.

that

that relate to the degrees of the increaſe of the tides, whether indeed the velocity be greateſt at firſt, as he affirmed to have been obſerved this year, or whether it increaſes till mid-water, and then gradually decreaſes again.

Mr. OLDENBURG acquainted the ſociety, that he had lately received from Mr. RICHARD KEMP, an Engliſh gentleman, then living at Seville, an account of ſome obſervations made by him in the kingdom of Mexico, chiefly about the mines, and the ſeparation of them, in thoſe parts; the reading of which was deferred till the next meeting.

Dr. KING related, that he had proſecuted the experiment about the ſubſtance of the teſticles, and ſhewed the ſociety ſome of thoſe of a buck-rabbet, which ſeemed indeed to ſeveral of the members to be made up of veſſels, lying in little round folds in a kind of uniformity, through the whole ſubſtance, and reſembling little guts to the ſight; thought by the doctor to be tubular, and wrapt about with a very fine and curious embroidery of other veſſels, which he ſuppoſed to be veins and arteries, on account of the apparent redneſs in them. He was deſired to bring in the full account of it in writing; and the committee appointed for theſe obſervations was deſired to purſue them.

The experiments appointed for the next meeting were 1. Of motion, 2. Of cutting a dog's kidney.

November 23. At a meeting of the COUNCIL were preſent

The Preſident

The lord biſhop of SALISBURY	Sir JOHN LOWTHER
The lord biſhop of CHESTER	Sir GEORGE ENT
The lord BRERETON	Mr. COLWALL
Mr. CHARLES HOWARD	Mr. HOSKYNS
Sir ROBERT MORAY	Mr. OLDENBURG.
Sir PAUL NEILE	

It was ordered, that Mr. HOSKYNS be deſired to prepare a draught for finiſhing the buſineſs of the ſociety with Mr. COLE:

That the following perſons, viz. the preſident, the biſhops of SALISBURY and CHESTER, the lord BRERETON, Sir ROBERT MORAY, and Sir PAUL NEILE, be deſired to confer with the lord privy-ſeal concerning the terms, upon which his lordſhip will paſs the additional patent of the ſociety: And

That the preſident be deſired to try by a letter to Mrs. MORE, whether ſhe will deliver the papers, left with Sir ANTHONY MORGAN, concerning the affairs of the ſociety.

November 26. At a meeting of the SOCIETY,

EDWARD

EDWARD HOWARD, eſq; was admitted.

PETER COURTHOPE, eſq; was admitted.

Sir KINGSMILL LUCY, was elected.

Mr. LOCKE was elected and admitted.

DANIEL FINCH, eſq; was elected.

EDWARD CHAMBERLAYNE, eſq; was propoſed candidate by Mr. EVELYN.

The experiment deviſed and made this day by Mr. HOOKE was the impelling of wooden balls againſt both ſpringy and not ſpringy bodies, whereby he intended to evince, that the reflection of motion depends upon the ſpringineſs of bodies; ſo that where there is no ſpring, there can be no reflection.

But the experiment made not being ſatisfactory to the ſociety for the purpoſe declared, Mr. HOOKE propoſed another to be made at the next meeting, viz. with a metalline ſtring made more or leſs true, to ſee what the returns or reflections of it will be, according to its ſeveral degrees of tenſion.

Dr. CROUNE ſuggeſted, that it might be conſidered, whether the buſineſs of motion might not be made out without taking in the notion of the ſpringineſs of bodies.

Mr. OLDENBURG produced a paper of Dr. WALLIS, written by him Nov. 15, 1668, at Oxford, concerning the general laws of motion; which was ordered to be regiſtered [f].

Dr. KING gave an account of the progreſs made by him in the examination of the ſubſtance of the teſticles, and that he was confirmed in what he had ſaid of it at the laſt meeting.

Dr. CLARKE affirmed, that the notion of it had been ſtarted in England thirty years before by Dr. READ [g]; and that Dr. THOMAS WHARTON in his *Adenographica ſeu Deſcriptio Glandularum totius Corporis* [h] had remarked, that the teſticles were a *Congeries Fibrillarum*; though he, Dr. CLARKE, did not yet ſee, that the whole ſubſtance of that part ſhould be nothing elſe but veſſels, ſince a good part of it would diſſolve into water by a ſlight rubbing it; and ſince alſo it was neceſſary, that there ſhould be, beſides veſſels, ſomething intermediate for ſeparation.

[f] It does not appear in the Regiſter, but it is printed in the Philoſ. Tranſact. vol. iii. n° 43, p. 864, for January 1668.

[g] ALEXANDER READ, a Scotsman, who was created doctor of phyſic at Oxford, May 29, 1620, was afterwards fellow of the College of Phyſicians at London.

[h] Printed at London, 1656, in 4°.

It was ordered, thoſe members, who had already begun to examine this ſubject, ſhould be deſired to proſecute it, and particularly try what they could find in the teſticles of a boar or an horſe: Upon which Dr. ALLEN ſaid, that he intended to inject ſome liquor through the aorta into the artery of the teſticles of a horſe, to ſee what inflation there would follow in the pretended veſſels of that part.

Dr. ALLEN mentioned likewiſe, that he intended to open an old dog, broken-winded, to view the parts for reſpiration; and that he would alſo look into the kidneys of the ſame dog; it being believed, that old dogs commonly have ſtones in their kidneys, and often die of them.

It was agreed upon, that the committee for anatomical experiments ſhould meet on the Saturday following at Mr. HOOKE's lodgings in Greſham-college, in order to make an inciſion in the kidney of a dog, and to obſerve, whether it would heal up again.

Mr. OLDENBURG communicated a letter to him from Mr. COLEPRESSE dated at Leyden Nov. 20, 1668, accompanied with ſome factitious opal, made by rule at Delft, together with ſeveral pieces of glaſſes, ſhewing the different degrees, through which the glaſs paſſes, before it becomes opaline; and a ſmall piece of red glaſs, the method of making which had been lately diſcovered again in Holland, according to this letter, which was ordered to be preſerved [h].

Mr. OLDENBURG produced likewiſe a letter dated at Seville, Auguſt 28, 1668, and ſome papers of obſervations made in Mexico, ſent to him by Mr. RICHARD KEMP from Seville. Some particulars of theſe papers being read, viz. concerning a kind of leaf gold found plentifully on the roof of a cave near Mexico, and the whole method of ſeparating ſilver from the ore by mercury, it was ordered, that they ſhould be preſerved upon the file [i], and Mr. KEMP the author be deſired to continue his communications.

November 30. Sir KINGSMILL LUCY was admitted.

The committee for auditing the accounts of the ſociety made their report, viz.

" At a committee of the Royal Society for auditing the treaſurer's accounts, " Nov. 26, 1668.

" Upon examination it appeareth,

	l.	*s.*	*d.*
" That the treaſurer hath received in the quarterly payments of } " the ſociety ——— ——— }	255	5	0

[h] Supplement to the Letter-Books, vol. ii. p. 253.

[i] The letter is entered in the Supplement to the Letter-Books, vol. v. and part of the papers printed in the Philoſ. Tranſact. vol. iii. n° 41. p. 817. for Novemb. 1668.

	l.	s.	d.
" That he hath received more for admiſſions	29	10	6
" That he is debtor to the balance of his laſt account, made up Nov. 11, 1667.	77	15	5
	362	10	11
" It alſo appeareth,			
" That he hath paid to the uſe of the ſociety, as by bills and " orders	264	5	5
" That he hath now in money reſting in his hands ninety eight " pounds, five ſhillings and ſix pence. We ſay,	98	5	6
	362	10	11

" THEODORE DE VAUX
WILLIAM BALLE J. GODDARD
EDMUND KING.

There was preſented to the ſociety from Mr. BOYLE his book, intitled, *A Continuation of new Experiments phyſico-mechanical touching the ſpring and weight of the air* [k].

Sir ROBERT MORAY produced a preſent ſent to the ſociety by Sir PHILIBERTO VERNATTI from Batavia in Java Major, conſiſting of

1. A very fragrant and aromatic oil, drawn out of a bark of a tree called *Lawang*, a piece of which was ſent with the oil.

2. Some of the true oil of mace, preſſed as ſoon as it was ſeparated from the nutmeg.

3. Beans growing on the coaſt of Coromandel, having the virtue of clearing the moſt muddy water, were mentioned with the other things, but were miſſing.

4. A piece of wood called *garou*, a ſort of *aquila*.

5. Some of the blood of a fiſh called *bedille*, eſteemed excellent againſt fluxes.

Theſe things were delivered to Mr. HOOKE for the repoſitory; but the reading of the paper deſcribing them was referred to the next meeting.

The ſociety, of whom ſixty fellows were preſent, proceeded then to the election of a new council and officers.

[k] Printed at Oxford, in 4°.

Of

Of the old council were continued theſe eleven,

The lord BROUNCKER	Sir ROBERT MORAY
The lord viſcount BRERETON	Sir PAUL NEILE
The lord biſhop of SALISBURY	Sir GEORGE ENT
The lord biſhop of CHESTER	Mr. COLWALL
HENRY HOWARD of Norfolk	Mr. OLDENBURG.
Mr. AERSKINE	

Out of the ſociety were choſen into the council, theſe ten

The earl of SANDWICH	Mr. HENSHAW
The lord BERKLEY	Dr. GODDARD
Sir GILBERT TALBOT	Dr. CLARKE
Sir THEODORE DE VAUX	Dr. CROUNE
Mr. EVELYN	Dr. POPE.

The officers elected were

The lord viſcount BROUNCKER, preſident
DANIEL COLWALL, eſq; treaſurer
THOMAS HENSHAW, eſq;
HENRY OLDENBURG, eſq; } ſecretaries.

Of the ten new members of the council were now ſworn Sir GILBERT TALBOT, Sir THEODORE DE VAUX, Mr. HENSHAW, Mr. EVELYN, Dr. GODDARD, and Dr. CLARKE, the reſt being abſent.

Mr. HENSHAW was alſo ſworn ſecretary, being choſen in the place of Dr. WILKINS, now lord biſhop of Cheſter.

December 3. Mr. CHAMBERLAYNE was elected and admitted.

Sir JOHN BANKS, bart. was propoſed candidate by Dr. GODDARD.

The preſent ſent by Sir PHILIBERTO VERNATTI was opened; and the paper deſcribing the particulars, as alſo an anſwer to ſome queries, were read; both which were ordered to be regiſtered [1], and a copy of the deſcription of the curioſities to be given to Mr. HOOKE, to be kept together with them in the repoſitory.

It being, among the anſwers to the queries, affirmed, that the anſwerer himſelf had ſeen an amphibanæ with two heads, Dr. POPE and Mr. HOOKE ſaid, that Sir ANDREW KING had ſeen divers of them in Spain. Whereupon the ſecretary was deſired to write to Sir WILLIAM GODOLHIN from the ſociety, and to deſire him to takenotice of this animal, when he ſhould be arrived in that kingdom.

[1] Regiſter, vol. iv. p. 25 and 27. They are printed in the Philoſ. Tranſact. vol. iii. n° 43, p. 863, for January 1668.

Mr. OLDENBURG produced a letter to the preſident from Dr. WALLIS, dated at Oxford, November 4, 1668, wherein was ſtated the whole controverſy betwixt Monſr. HUYGENS and Mr. GREGORY concerning the book intitled, *Vera Circuli et Hyperbolæ Quadratura*, publiſhed by the latter. Part of it being read, and the preſident having ſignified, that the whole, though too long to be read then, was conſiderable, and very fit to be kept among the ſociety's papers, it was ordered to be entered into the Letter-Book [m].

Dr. KING gave an account of the experiment made upon an old dog by cutting his kidney through in ſuch a manner, that he thruſt a probe into the ureter; whereupon the dog fell, as it were, into a ſwoon, but recovered, and, the wound being ſewed up, walked up and down.

The operator was ordered to take care of this dog; and it being mentioned, that this animal was wind-broken, it was moved, that, if he ſhould die, he might be opened, and his lungs examined; which, in caſe he died, was ordered to be done.

Mr. OLDENBURG read an extract, which he had received from Paris, ſignifying, that it was moſt certain, that Dr. DE GRAAF had unravelled teſticles, and that one of them was kept by him in ſpirit of wine.

Some of the phyſicians preſent intimating, that the like had been attempted in England many years before, but not with that ſucceſs, that they could yet believe what Dr. DE GRAAF affirmed [n], Dr. KING expreſſed his hopes of making out that point in a ſhort time.

There was attempted the experiment to ſhew, that rebounding was cauſed by ſpringineſs, with a braſs-wire more or leſs tenſe. But the apparatus being defective, it was ordered, that the experiment ſhould be repeated at the next meeting.

The phyſicians appointed to examine the ſtructure of the teſticles were deſired to proſecute that ſubject, that they might give an account of it at the next meeting.

It was moved, that Mr. BOYLE's *Continuation of new experiments phyſico-mechanical*, lately preſented to the ſociety, might be peruſed by ſome of the members,

[m] Vol. ii. p. 303.

[n] A controverſy was carried on for ſome time on this ſubject by letters in Latin addreſſed to Mr. OLDENBURG by Dr. DE GRAAF and Dr. TIMOTHY CLARKE, and extant in the 2d and 3d volumes of the Supplement to the Letter-Books of the Royal Society. Dr. DE GRAAF's firſt letter is dated at Delft, October 5, 1668, vindicating his diſcovery of the texture of the teſticles againſt the objections of Dr. CLARKE and others, vol. iii. p. 410. Dr. CLARKE's anſwer is dated December 20, 1668, vol. ii. p. 272. Dr. DE GRAAF replied Feb. 22, 166$\frac{8}{9}$, vol. iii. p. 414. Dr. CLARKE rejoined May 10, 1669, vol. ii. p. 275. which occaſioned a letter of Dr. DE GRAAF of the 25th of July following, vol. iii. p. 420. Dr. CLARKE wrote on the 20th of December that year a letter, vol. ii. p. 282. recapitulating and clearing the diſpute, which Dr. DE GRAAF ſeemed to cloſe by one dated June 27, 1670, vol. iii. p. 428.

and

and an account given of it to the ſociety: whereupon Mr. HOOKE having the book in his hands was deſired to do this.

Decemb. 10. Sir JOHN BANKS was elected.

The experiment deviſed by Mr. HOOKE, to ſhew, how rebounding depends upon the ſpringineſs of bodies, was made by a ſpringy plate of braſs, bent in the form of an oval; which being cut or burnt aſunder reflected two wooden balls of different ſizes; ſo as that they were conceived to move in reciprocal proportion to their magnitudes. The experiment was ordered to be proſecuted at the next meeting.

Dr. KING brought in a human teſticle unravelled, and thus glued on a glaſs. He was deſired to bring in the proceſs of his operation in writing, which he promiſed to do.

Mr. HOOKE informed the ſociety, that Dr. ALLEN had examined the teſticles of a horſe, and found them to be made up of veſſels.

The dog, whoſe kidney had been cut through to the very ureter, was produced, and found pretty well, and was ſaid to eat, go about, and bark; which laſt he had not been heard to do a great while before.

Mr. OLDENBURG communicated three letters; one from Mr. HEVELIUS, another from Signor MALPIGHI, and the third from Dr. WALLIS. The firſt, dated November 20, 1668, N. S. gave an account of the late horizontal eclipſe of the moon on the $\frac{8}{18}$ November, 1668 [o]. The ſecond in Latin, dated at Bologna, April 1, 1668 [p], ſent by ſea with two books, one written by Signor MALPIGHI himſelf, intitled, *De Viſcerum Structura Exercitatio anatomica*, printed at Bologna 1666, in 4to; and the other intitled, *Penſieri Phyſico-mathematiche ſopra alcune eſperienze fatte in Bologna nell' academia philoſophica interno diverſi effetti de' liquidi in cannuccie di vetro &c. dal dattor Gemminiano Montaneri.* Signor MALPIGHI's letter ſhewed his regard for the ſociety, and his readineſs to correſpond with it, and to communicate to it philoſophical matters. The third letter, that of Dr. WALLIS, dated Decemb. 5, 1668 [q], contained an anſwer to ſome queries propoſed by Mr. WILLIAM NEILE, viz. 1. Whether quieſcent matter have any reſiſtance to motion. 2. Whether motion may paſs out of one ſubject into another. 3. Whether no motion in the world periſh, nor new motion be generated. 4. Whether different motions meeting deſtroy one another. Theſe three letters were ordered to be entered in the Letter-Book.

Mr. COLWALL produced a letter from Mr. HOBBES to Mr. BROOKES, dated at Chatſworth, October 20, 1668, concerning a young woman at Overhaddon in Derbyſhire, who had lived without any meat or drink ſince March preceding [r]. It was as follows:

[o] Letter-Book, vol. ii. p. 325.
[q] Ibid. p. 356.
[p] Ibid. p. 344.
[r] Letter-Book, vo'. ii. p. 286.

"Sir

" Sir,

" THE young woman at Overhaddon hath been viſited by divers perſons " of this houſe. My lord himſelf hunting the hare one day, at the " town's-end, with other gentlemen and ſome of his ſervants, went to ſee her on " purpoſe; and they all agree with the relation, you ſay was made to yourſelf. " They further ſay on their own knowledge, that part of her belly touches her " back-bone. She began (as her mother ſays) to loſe her appetite in December " laſt, and had loſt it quite in March following, inſomuch, as that ſince that " time ſhe has not eaten, nor drank any thing at all, but only wets her lips with " a feather dipped in water. They were told alſo, that her guts (ſhe always " keeps her bed) lie out by her at her fundament, ſhrunken. Some of the " neighbouring miniſters viſit her often; others, that ſee her for curioſity, give " her money, ſixpence or a ſhilling, which ſhe refuſeth, and her mother taketh. " But it does not appear they gain by it ſo much, as to breed a ſuſpicion of a " cheat. The woman is manifeſtly ſick, and it is thought ſhe cannot laſt much " longer. Her talk (as the gentlewoman, that went from this houſe, told me) " is moſt heavenly. To know the certainty, there be many things, that are ne- " ceſſary, which cannot honeſtly be pried into by a man. Firſt, whether her " guts (as it is ſaid) lie out. Secondly, whether any excrement paſs that way, or " none at all. For if it paſs, though in ſmall quantity, yet it argues food pro- " portionable, which may, being little, be given her ſecretly, and paſs through " the ſhrunken inteſtine, which may eaſily be kept clean. Thirdly, whether no " urine at all paſs, for liquors alſo nouriſh as they go. I think, it were ſomewhat " inhumane, to examine theſe things too nearly, when it ſo little concerns the " commonwealth; nor do I know of any law, that authoriſeth a juſtice of peace, " or other ſubject, to reſtrain the liberty of a ſick perſon, ſo far as were needful " for a diſcovery of this nature. I cannot therefore deliver any judgment in " the caſe. The examining, whether ſuch a thing as this be a miracle, belongs " (I think) to the church. Beſides I myſelf in a ſickneſs have been without all " manner of ſuſtenance, for more than ſix weeks together; which is enough to " make me think, that ſix months would not have made it a miracle. Nor do I " much wonder, that a young woman of clear memory, hourly expecting death, " ſhould be more devout than at other times: it was my own caſe: that, which " I wonder at moſt, is, how her piety without inſtruction ſhould be ſo eloquent, " as it is reported, &c.

" Chatſworth, Oct. 20, 1668."

Mr. HOOKE acquainted the ſociety, that he had lately made an obſervation of one of the eclipſes of Jupiter by the ſatellites, and that it had happened at the very time, aſſigned by CASSINI in his *Ephemerides Mediceorum.*

He moved, that Mr. OLDENBURG might be deſired to write to CASSINI, to learn, whether he had calculated other ephemerides of any year to come; and if ſo, to requeſt him to communicate them, in order that obſervations might be made in England as well as Italy, to find out the preciſe difference of meridians. Mr. OLDENBURG accordingly undertook to write to him for that purpoſe.

December 17. At this meeting were preſent two Italian gentlemen, the marquis RICARDI, and Signor ALEFRANDRO SEGNI, both introduced by Count UBALDINO. They acquainted the ſociety of the ſingular reſpect, which the Cardinal LEOPOLD DE MEDICIS had for them, and that he deſired to have his excuſe made for not having himſelf returned his acknowledgments for the *Hiſtory of the Society* ſent to him, which he had been hindered from doing by his lately received dignity of Cardinal; but that ſince that time he had deſired and already obtained the Pope's permiſſion to correſpond with the ſociety, of which he now intended to make uſe, to let them ſee the eſteem, which he had of them and their inſtitution.

The preſident thanked theſe gentlemen for acquainting the ſociety with ſo favourable an inclination of his Eminence to them, and deſired them to aſſure him of the deep ſenſe, which the ſociety had of his favour to them, and that they would ſtudy to entertain ſo noble and promiſing a correſpondence with all reciprocal ſervices, that might be acceptable to his Eminence.

An experiment was made in proſecution of the motion, that ſpringineſs is the cauſe of rebounding; viz. a wooden globe was let fall againſt wood, a gut-ſtring, and a braſs-wire. In the firſt caſe the rebounding was languid, and of a very ſhort duration: in the ſecond, it was much ſtronger, and more durable: in the laſt, ſtrongeſt and moſt durable of all. Which was conceived to proceed from the different degrees of the force of the ſpring in the ſeveral bodies employed.

Mr. HOOKE took occaſion to mention, that he thought, that air, next to quick-ſilver, gave the quickeſt and moſt forcible reflexion; and that the ſparkling of diamonds in rings proceed from the air left behind the ſtones.

Dr. WREN produced his theory of the colliſion of bodies, together with ſome papers containing the various trials made long before to verify that theory. It was read, and ordered to be regiſtered[a], the author affirming, that he had this hypotheſis ſeveral years before, when the ſociety began to be formed; and that Mr. ROOKE and himſelf made divers experiments before the ſociety to verify the ſame: which affirmation of his was ſeconded and confirmed by ſeveral of the members, who were eye-witneſſes of thoſe experiments, as the preſident, Sir PAUL NEILE, Mr. BALLE, and Mr. HILL.

Mr. HOOKE was ordered to take care, that the experiments be made before the ſociety, to verify the ſeveral caſes relating to the theory produced.

He was deſired to bring in what he had conſidered of the cauſe of ſpringineſs.

Dr. ALLEN reported, that the dog, whoſe kidney had been cut by Dr. KING, being dead, by being miſuſed, as he thought, after the operation, he had opened him, and found that kidney in good part well united again, yet with ſome *pus* in

[a] Regiſter, vol. iv. p. 29. It is printed in the Philoſ. Tranſact. vol. iii. n° 43, p. 867, for January, 166$\frac{8}{9}$.

it;

it; and that viewing his lungs, becauſe he had been broken-winded, he ſaw no defect in them.

Dr. ALLEN and Dr. KING were deſired to bring in writing an account, the one of the operation in cutting the kidney, the other of what was obſervable in it and in the lungs, after the dog was dead.

Mr. OLDENBURG produced a letter to him from Mr. HEVELIUS, dated at Dantzick, November 29, 1668, N. S. giving an account of the late eclipſe of the ſun, November 4, N. S. as alſo the deſcription of an engine, *quæ*, to uſe his words, *beneficio perpendiculi, loco indicis, regulam cum dioptris perpetuò & ſatis exactè ad ſolem ſtellaſve fixas obvertit.* This letter was ordered to be entered in the Letter-Book [t].

Dr. KING communicated his written account of the teſticles, which was read, and ordered to be regiſtered [u].

It was ordered, that the operator ſhould provide a luſty dog to repeat the experiment of cutting the kidney; and that the curators of the former experiment of this kind ſhould be deſired to take care likewiſe of this.

Dec. 24. The SOCIETY did not meet.

Dec. 31. Sir JOHN BANKS was admitted.

The operator being out of town, the experiments appointed for this meeting were deferred till the next.

Dr. WREN produced a veſſel contrived by himſelf to cure ſmoaking chimneys, which he affirmed had proved very effectual by divers trials. It was delivered to Mr. HOOKE for the repoſitory.

Mr. OLDENBURG produced a manuſcript lent him by one Monſr. MURALT of Swiſſerland, containing a conſiderable number of plants, which himſelf and ſome other curious perſons of his country had found and collected in the Helvetian Alpes.

Mr. HAAK brought in from Monſr. MURALT an account in Latin of the generation of cryſtals on the Alpes, which was read.

It was ordered, that Monſr. MURALT be deſired to give leave, that a copy of the plants might be taken, and that the paper about cryſtals might be kept on the file.

Mr. OLDENBURG read a Latin letter to himſelf from Sir WILLIAM CURTIUS, dated at Umbſtad, December 2, 1668, containing aſſurances of his willingneſs to

[t] Vol. ii. p. 332. [u] Regiſter, vol. iv. p. 39. It is printed in the Philoſ. Tranſact. vol. iv. n° 52. p. 1043. for Oct. 1669.

ſend what philoſophical communications he could out of Germany, and particularly from the Elector of Mentz and from the phyſician of the Landgrave of Heſſe-Darmſtadt. This letter was ordered to be entered in the Letter-Book [x].

Mr. OLDENBURG communicated likewiſe a letter written to him by EDWARD BROWN, M. D. from Vienna, December 6, 1668, containing his deſire to be employed in philoſophical matters for the ſociety's ſervice in Germany, Hungary, the Morea, &c. It was ordered, that this letter be entered in the Letter-Book [y], and the writer of it deſired to endeavour to procure a good account of the mines of Germany and Hungary, and particularly of the gold-mines of Hungary, and to bring over ſome of thoſe mineral veins, which have perfect gold in them; as alſo ſome of the beſt Hungarian vitriol.

It was moved, that ſome experiments might be made with pendulums in an exhauſted receiver, to ſee, what difference there is between their motion in ſuch a receiver, and in the open air: as alſo to make trial, whether motion could be made quite to ceaſe.

Mr. HOOKE affirmed, that he conceived, that the impediment given by the air or other fluids to moving bodies decreaſed in a continual proportion: which the preſident deſired might be made out by experiment.

January 7, 166$\frac{8}{9}$. Col. TILAS TITUS was propoſed candidate by the biſhop of CHESTER.

Mr. OLDENBURG produced a letter to him from Monſr. HUYGENS dated at Paris, Jan. 9 [z], 1669, N. S. and accompanied with ſome papers of his concerning motion. This letter and the other papers being read, it was ordered, that the former ſhould be entered in the Letter-Book, and the latter in the Regiſter [a]: as alſo that copies ſhould be made of thoſe papers, and given to ſuch members of the ſociety, as had conſidered that ſubject, viz. the preſident, the biſhop of SARUM, Dr. WALLIS, Dr. PELL, Dr. WREN, Mr. NEILE, Dr. CROUNE, and Mr. HOOKE.

Sir PAUL NEILE moved, that Dr. WREN's hypotheſis of motion, brought in December 17, 1668, might be printed in the *Philoſophical Tranſactions* of this month, which motion was approved, and Mr. OLDENBURG deſired to take care, that it be done accordingly [b].

Mr. HOOKE made an experiment to prove, that the ſtrength of a body moved is in a duplicate proportion to its velocity. But the experiment not ſucceeding, by

[x] Vol. ii. p. 341.

[y] Supplement to the Letter-Books, vol. ii. p. 104.

[z] The copy of this letter in the Letter-Book, vol. iv. p. 10. has the date January 5.

[a] Book iv. p. 31. They are printed in the Philoſ. Tranſact. vol. iv. n° 46. p. 925. for April, 1669.

[b] It is printed in the Philoſ. Tranſact. vol. iii. n° 43. p. 867. for January, 166$\frac{8}{9}$.

reaſon (as was ſuppoſed by Mr. HOOKE) of the froſt diſordering the inſtrument employed, it was ordered to be repeated at the next meeting.

He ſhewed a way, whereby a ſegment of a ſpherical glaſs may be made to magnify the object to the very edges, and ſo to perform the effect of a conic ſection. It was obſerved by ſeveral of the members, that it ſucceeded accordingly, it being performed by means of water poured upon the ſpherical glaſs. Mr. HOOKE was deſired to ſhew it again at the next meeting.

Dr. KING brought in his written account of the cutting the kidney of a dog; which was ordered to be regiſtered [c]; and he was deſired to make the experiment upon another dog, that was young and healthy. The account was as follows:

" *December* 3, 1668. I opened the ſide of a dog, that was ſaid to be twenty " years old, broken-winded, and could not bark nor hardly go. The intent " was, to draw out the kidney, and ſee if there were any ſtone in it; if not, " to put it in again, and ſee if it would heal up again. The manner of the " operation was thus; I tied the dog in a convenient poſture upon a form, " who perfectly ſwooned, and ſeemed dead before touched with a knife: " then I made a little hole into the cavity of the belly, juſt againſt the " right kidney, as near as I could gueſs; then I carefully took out the kidney " at the orifice, and cut through the whole length of the kidney to the pelvis; " then I opened it, one half, one way, the other, the other way; and put my " finger into the pelvis, and a probe into the ureter; then I gave the kidney an- " other oblique cut towards the end, and when I had done ſo, I returned the " kidney into its place again, and ſo ſewed up the orifice. This Dr. POPE and " others ſaw me do, as I have here related, and in the ſame manner: the dog " lived ten days after, and had recovered ſtrength ſtrangely, breathed better, and " could bark, &c. as I was informed; till he received a new hurt, which is " thought killed him; and afterwards was diſſected by Dr. ALLEN, who found " the kidney near wholly united again, and I ſuppoſe will give in his obſervations."

Mr. OLDENBURG read two letters to him by Mr. HEVELIUS, one dated Nov. 29, 1668, come by ſea, containing his obſervations of the late ſolar eclipſe, Nov. 4, 1668, N. S. the other *ipſo die ſolſtitii brumalis*, 1668 (as he expreſſed the date) containing an anſwer to ſome queries made by Mr. HOOKE concerning his *Cometographia* formerly ſent him. Both theſe letters were ordered to be inſerted in the Letter-Book [d].

Jan. 14. Col. TITUS was elected.

JAMES HOARE, eſq; the younger, was propoſed candidate by the preſident.

Mr. HOOKE ſhewed by two ſorts of experiments, that the force in moving bodies is in a duplicate proportion to their celerities, ſo that there is required a quadruple weight to double the velocity.

[c] Regiſter, vol. iv. p. 43.

[d] Vol. ii. p. 332, and 349.

The firſt ſort was made by a pendulum, made after the manner of a fly, counterpoiſed; which was ſeveral times repeated with the ſucceſs expected, there being made twelve vibrations with the weight of two ounces, and twenty four vibrations with eight ounces, and forty eight vibrations with two pound weight, all in the ſame time.

The other ſort was with running water, whereby it appeared, that the falling water was to be raiſed four times the hight to run out with double the celerity. This latter was ordered to be repeated at the next meeting, becauſe the veſſel leaking hindered ſomewhat the exactneſs of the experiment.

Mr. Hooke produced an inſtrument with a wheel to perform the ſame thing in an horizontal poſition: which was ordered to be tried at the next meeting.

Dr. Croune being called up to produce his hypotheſis of motion, promiſed to bring it in at the next meeting.

Mr. Oldenburg communicated and read three letters from foreign parts: 1. Of Mr. Hevelius to him, dated December $\frac{11}{21}$, 1668 [e], congratulating himſelf on the favourable acceptance, which his *Cometographia* had met with from the ſociety, and anſwering ſeven queries propoſed to him in a letter by the ſecretary from Mr. Hooke concerning his cometical obſervations. 2. Of Dr. Fabricius, a phyſician of Dantzick, written to Dr. Timothy Clarke, and dated October 20, 1668, relating ſeveral conſiderable and ſucceſsful experiments made by injecting liquors into veins, and curing divers diſeaſes, as the gout, the plica Polonica, ulcers and tumors, madneſs, &c. 3. Of Sir William Curtius to Mr. Oldenburg, dated at Umbſtadt, December 19, 1668, promiſing to ſend ſome of the Goſlarian vitriol, and an account of the way of ordering it; and likewiſe what he could learn of the way of ordering and preſerving wines in Germany [f].

It was ordered, that Dr. Clarke be deſired to haſten the publication of his book of the various experiments of injection.

Dr. Croune having moved, that the experiment ſo often mentioned of feeding a dog by blood alone, injected into him by a vein every day, might be made, it was ordered, that the phyſicians of the ſociety ſhould be deſired to take care of this experiment; and the operator was ordered to attend them for that purpoſe: as alſo, that the ſame perſons ſhould be deſired to conſider of the fitneſs of proſecuting the experiment of tranſfuſion; and having agreed what patients it is moſt proper to be tried upon, to ſuggeſt to the governors of hoſpitals to give leave for that practice.

The experiments appointed for the next day were, 1. To verify the caſes of Dr. Wren's theory of motion. 2. To ſhew again the ſpherical glaſs, magnifying as well as elliptical ones, by means of water poured upon it. 3. To ſhew the proportion of the reſiſtance of the air to bodies moved through it.

[e] Letter-Book, vol. ii. p. 349. [f] Ibid. p. 352.

Jan. 21. Mr. HOARE was elected.

ANTHONY HORNECK, M. A. was propoſed candidate by the biſhop of SALISBURY.

The experiment to ſhew, that water is to be raiſed four times as high, to run out with double the velocity, was repeated with this effect, that the water raiſed at that hight run out with ſomewhat more than double the velocity.

The biſhop of SALISBURY moved, that this experiment might be tried in a triplicate proportion, to ſee, whether water raiſed nine times as high would run out with thrice the velocity. It was ordered to be tried accordingly at the next meeting.

Mr. BOYLE exhibited an experiment to ſhew, how water moved in an exhauſted glaſs cane; whereby it appeared, that ſuch water being ſhaken upwards fell down, and knocked againſt the end of the cane with a ſound like that of a dead weight. He added, that he had tried it with ſeveral other liquors, with the like effect, except oil and mercury.

He was deſired to give his directions for varying this experiment againſt the next meeting, which he promiſed to do, and Mr. HOOKE was ordered to receive them.

Mr. HOOKE affirmed, that the vibrations of a pendulum of eight feet long, with a weight of eight pounds (which was of a conical figure) laſted about eight hours.

Dr. CROUNE brought in his hypotheſis of motion, which was read, and ordered to be regiſtered [s], and to be compared by thoſe members, who were formerly nominated for that purpoſe, with the other theories already given in.

Mr. OLDENBURG delivered a copy of Monſr. HUYGENS's theory of motion to the preſident for his lordſhip's examination thereof.

He produced ſeveral curioſities delivered to him for the ſociety by Mr. GRIFFITH, merchant in London, who had brought them from Paleſtine, viz. 1. A ſmall bottle with oil of Jericho, called upon the place *Jacoun*, expreſſed out of a kind of olives, and eſteemed to be very ſanative to aches and green wounds. 2. Another ſmall bottle filled with water of the dead ſea, which was found to be exceedingly ſalt, and of which Mr. MELLISH, another merchant of London, affirmed to Mr. OLDENEURG, that human bodies could not be ſunk in it, by the trial, which he himſelf made in that ſea; with this farther addition, that when he, after ſwimming therein, came out, putting his garment about him, the lower part thereof dipping in that ſea-water became not quite dry again in ſeveral days, though expoſed to the ſun of that hot climate. 3. A piece of a burnt ſtone, reſembling ſlate,

[s] Regiſter, vol. iv. p. 44.

which being held in the flame of a candle gave a very odd and very offenſive ſmell.

Mr. BOYLE was deſired to examine ſome of the oil and water, and to give an account to the ſociety of what he ſhould find them; which he promiſed to do: and a little of both liquors and the ſtone were ordered to be put into the repoſitory.

Dr. TIMOTHY CLARKE communicated a letter to him from Mr. MICHAEL BEHM, conſul at Dantzick, dated there November 2, 1668, containing divers conſiderable particulars relating to the injection of liquors into veins, degeneration of blood, reſpiration of fiſhes, paſſages of the urine, the uſe of the gall, the exploding of the ſpirits in animals advanced by Dr. WILLIS, the epilepſy, &c. It was read, and ordered to be entered into the Letter-Book [h], Dr. CLARKE having given permiſſion for it, who was deſired to continue his correſpondence with that intelligent perſon, as well as with Dr. FABRICIUS, whoſe letter had been read at the preceding meeting.

Notice being taken, that in foreign parts the experiments of injection and transfuſion were much practiſed and improved, whereas they were neglected in England, where they were firſt invented; it was thought proper, that the caſes, mentioned in Dr. FABRICIUS's letter, wherein they had ſucceeded, ſhould be publiſhed in the *Philoſophical Tranſactions*, and the phyſicians of the ſociety deſired, that if they were ſatisfied therein, they would declare their approbation of the fitneſs of the trying ſuch experiments in the like caſes here: which being done, that it ſhould be repreſented and recommended to the governors of the hoſpitals in London for obtaining their leave of making uſe thereof in ſuch caſes.

Jan. 28. Mr. HORNECK was elected.

GEORGE CASTLE, M. D. was propoſed by Dr. CHRISTOPHER WREN.

The copies of Monſr. HUYGENS's theory of motion were delivered, one to Dr. WREN, and another to Mr. COLWALL.

The preſident took notice, that the experiment, ſhewed by Mr. BOYLE to the ſociety at the laſt meeting, of the falling down of water like a dead weight in an exhauſted glaſs-cane did not, when it was made the day following at Whitehall, ſucceed at firſt; but that at laſt it ſucceeded very well in his Majeſty's preſence, after the cane had been ſeveral times turned to and fro, by the doing of which his lordſhip conceived, that ſome particles of air, yet latitant in the water, had got between it and the glaſs, and facilitated the ſeparation of the water from the ſame, after it had ſtood ſtill therein for a good while, and gained a kind of adheſion to the ſides thereof.

[h] Supplement, vol. ii. p. 92.

This

This experiment was ordered to be repeated at the next meeting with a larger cane.

Several experiments were tried tending to verify the theories of motion communicated by Dr. WREN and Monſr. HUYGENS; but the apparatus not being perfect, it was ordered, that it ſhould be made fit againſt the next meeting for the better proſecution of theſe experiments.

Dr. WREN was alſo deſired to calculate ſome caſes from his theory, to be verified by experiments at the next meeting.

Mr. HOOKE made an experiment, tending to ſhew, that a body, once put in motion, would move perpetually, if it met not with reſiſtance. This he did by hanging a wheel, having a pointed piece of iron in it, on a capped load-ſtone, and putting it into motion by a pair of bellows; whereby the wheel continued its motion for a conſiderable time, as having but little reſiſtance, which was no other than that of the air, in which it moved round.

It was ſuggeſted, that it were worth obſerving, how the velocities of this motion decreaſed in equal times.

Mr. OLDENBURG communicated and read a Latin letter to him from Dr. MARTIN FOGELIUS of Hamburgh, dated there January 1, $166\frac{8}{9}$ [g], containing an account of ſome manuſcripts left by the famous philoſopher JOACHIM JUNGIUS [h], concerning motion, and APOLLONIUS PERGÆUS *de locis planis* in two books; of the former of which ſubjects were tranſmitted the chief heads, as of the latter the method obſerved therein. The writer of this letter having expreſſed his inclination to publiſh thoſe writings, if encouragement were given thereto, it was ordered,

[g] Letter-Book, vol. iii. p. 5.

[h] He was rector of the Gymnaſium at Hamburgh. In the original draught of a letter of Mr. (afterwards Dr.) JOHN PELL, to Sir CHARLES CAVENDYSHE, dated at Amſterdam $\frac{1}{2}\frac{1}{3}$, 1644, extant in the collection of Dr. PELL's manuſcripts, procured by me for the Royal Society in July 1755, that eminent mathematician recommends Dr. JUNGIUS and JOHN ADOLPHUS TASSIUS, corrector of the ſame Gymnaſium, to the acquaintance of Sir CHARLES, who was then at Hamburgh, as both mathematicians, of whoſe abilities and worth he had a great opinion. He remarked, that JUNGIUS had many things in print, as *Apodictica*, and *Apodidactica*: That TASSIUS had two years before reprinted JUNGIUS's *Geometria Empirica* in five ſheets of paper, but without diagrams: That TASSIUS was *a very courteous, affable, open man*; JUNGIUS a *little more reſerved*. He added; "The moſt barbarous nations had "ſomething to worſhip; and there are few men, "that have not ſome idol, ſome man or woman, "whom they eſteem and admire above all the reſt "of mankind; and JUNGIUS is mine. For I eſteem "of men more or leſs as I find them more or leſs ra"tional; and therefore having ſeen ſomething of "JUNGIUS's writing, wherein he ſeemed to me to "make a truer and better uſe of his reaſon, and to "manage that divine inſtrument of inſtruments "with more dexterity and ſkill than any other ſon "of ADAM, all other writers muſt pardon me, if "I profeſs to expect more ſolidity in JUNGIUS's "writings than in any other man now living. "If you find but the one half of what I imagine "to be in JUNGIUS, you will never be able to "reliſh any other modern philoſopher." Sir CHARLES CAVENDYSHE in a letter to Mr. PELL without a date, but received by the latter at Amſterdam Sept. $\frac{1}{2}\frac{2}{9}$, 1644, mentions his having ſeen JUNGIUS, whom he found very free, and who, he obſerved, preferred the analytics of the antients before Vieta's by letters, as being *more ſubject to errors and miſtakes, though more facile and quick of diſpatch.*

that

that he ſhould be deſired to inform the ſociety, in what manner the ſubject of motion was treated by JUNGIUS; and, if it could be conveniently done, to ſend over a ſmall ſpecimen of the way of his handling any one of the heads ſpecified in the letter.

February 1. At a meeting of the COUNCIL were preſent

The Preſident

The lord HENRY HOWARD	Sir GEORGE ENT
The lord BERKLEY	Dr. GODDARD
The lord biſhop of CHESTER	Dr. CLARKE
The lord BRERETON	Mr. COLWALL
Sir ROBERT MORAY	Dr. CROUNE
Sir PAUL NEILE	Mr. OLDENBURG.

The lord BERKLEY was ſworn of the council.

The draught of the contract of the ſociety with Mr. COLE concerning Chelſea-college was ordered to be ingroſſed by the care of Mr. HOSKYNS againſt the next meeting of the council, to be then ſealed.

The treaſurer was deſired to be then preſent, in order to pay Mr. COLE the hundred pounds out of the ſociety's cheſt.

It was ordered, that Dr. BALLE be deſired by Mr. HOSKYNS to be on the Wedneſday following in the morning, at Arundel-Houſe, there to meet Mr. WALKER in the ſociety's library, and together with him to perfect the catalogue of the books, eſpecially the manuſcripts; and that Mr. HOOKE be deſired by the amanuenſis to deliver the key of the library to Dr. BALLE, if he cannot be there himſelf:

That the catalogue of the ſaid manuſcripts being made, it ſhould be delivered to Mr. COLLINS, that he might inform himſelf, what value to put upon them: And

That the treaſurer do pay to Mr. HOOKE the arrears due to him, according to the allowance appointed him by the order of council of Novemb. 23, 1664, of thirty pounds a year.

Mr. JAMES GREGORY's reply to Monſr. CHRISTIAN HUYGENS in defence of his *Vera Circuli & Hyperbolæ Quadratura*, was declared fit to be printed in the *Philoſophical Tranſactions*[1]; but withal, that care ſhould be had of omitting all, that might be offenſive.

Mr. HOSKYNS brought the papers concerning the ſociety, that were left with

[1] It was accordingly printed there vol. iii. n° 44, p. 882, for February 1665.

Sir

Sir ANTHONY MORGAN, to the council, to the number of thirty eight, great and ſmall; which were delivered to the care and cuſtody of Mr. OLDENBURG.

The biſhop of CHESTER propoſed a perſon proper for tranſlating the *Hiſtory of the Royal Society* into Latin, if he might have ſome encouragement for doing it; and being aſked, what recompence that perſon would expect, his lordſhip ſaid, he doubted not but thirty pounds would content him.

It was ordered thereupon, that he ſhould be encouraged to undertake it; and that ſuch a reward ſhould be made good to him one way or other; ſo that where the printers of the ſociety ſhould prove deficient in paying him ſuch a ſum, the council would make it up.

It was moved by Mr. OLDENBURG, that the council would think upon an effectual way of carrying on the buſineſs of experiments at the meetings of the ſociety; and that in order thereunto they would conſider, whether it were not fit to conſtitute one or two committees, made up both of members of the ſociety and the council, proper for directing of experiments; which committees might meet for that purpoſe at leaſt once a month, one in the city, and the other at Weſtminſter end of the town. The propoſal being approved of, the preſident ſaid, that he would conſider of the perſons proper for ſuch a work.

Feb. 4. At a meeting of the SOCIETY,

Dr. CASTLE was elected and admitted.

Two experiments were made with balls to verify Dr. WREN's laws of motion.

1. Two equal balls, whereof one was let fall from the degree of 12, the other from that of 6, after the impulſe moved with contrary velocities, viz. that of 12 with 6, and that of 6 with 12 *ferè*.

2. Two unequal bells, which were in weight to one another as eight to one, after the impulſe moved with a proportionate velocity. Falling both from the ſame hight 12 and 12, the bigger returned to $2\frac{1}{2}$, and the ſmaller $11\frac{1}{2}$.

Falling both from $4\frac{1}{2}$, the bigger returned to $3\frac{1}{2}$, the ſmaller to $12\frac{1}{2}$.

Two copies of Monſr. HUYGENS's theory of motion were delivered, one to the lord BRERETON for Dr. PELL, the other to Mr. NEILE.

A letter from Monſr. HUYGENS to Mr. OLDENBURG, dated at Paris 6 Feb. 1669, N. S. [k] was read, acknowledging Dr. WREN's laws of motion to be altogether conformable to his, and deſiring to know, what kind of demonſtration Dr. WREN made uſe of to prove them by; propoſing alſo a way of ſecuring his diſ-

[k] Letter-Book, vol. iii. p. 22.

coveries

coveries or inventions for the future by way of cypher or anagram, to be lodged in the Regiſter-book of the ſociety, till he ſhould think it convenient to explain them in a common language; making withal a beginning of this way of communicating new diſcoveries by ſending the following cypher; which was ordered to be entered into the Regiſter-book [l].

a	b	c	d	e	h	i	l	m	n	o	p	r	s	t	v	y
5	2	2	1	4	1	2	3	3	1	3	2	2	3	2	4	1.

In the mean time ſome of the members intimated, that this way was capable of containing more ſecrets than one; and that another might find out an invention, and compriſe it in the very ſame cypher, which then might be claimed by him, who had firſt propoſed the cypher.

Dr. WREN ex tempore preſented the ſociety with a cypher of a late invention of his, which he deſired might be ſent by Mr. OLDENBURG to Monſr. HUYGENS by way of exchange, and entered alſo into the ſociety's Regiſter-book [m], as follows:

a	b	c	d	e	f	g	h	i	l	m	n	o	p	r	s	t	v	x	y
7	4	4	4	12	1	5	6	10	7	1	7	9	2	6	2	7	4	1	1.

The experiments appointed for the next meeting were thoſe of motion, of which Dr. WREN and Dr. CROUNE were deſired to calculate ſeveral caſes, according to their reſpective hypotheſes.

February 8. At a meeting of the COUNCIL were preſent

The Preſident

The lord BERKLEY
Mr. AERSKINE
Sir ROBERT MORAY
Sir GILBERT TALBOT
Sir PAUL NEILE
Dr. GODDARD
Dr. CLARKE
Mr. COLWALL
Mr. OLDENBURG.

It was ordered, that the lord HENRY HOWARD of Norfolk, Mr. AERSKINE, Dr. GODDARD, Dr. BALLE, Mr. HOSKYNS, Mr. HOOKE, and Mr. COLLINS, or any three or more of them, be a committee, to conſider, which of the manuſcripts of the library beſtowed by the ſaid lord HENRY HOWARD upon the ſociety are proper to be kept, and which to be parted with to the univerſity of Oxford, together with the reaſons for both.

Mr. HOSKYNS was deſired to attend the lord HENRY HOWARD with this order, and to learn of his lordſhip what time would be convenient to him for the meeting of this committee.

[l] Vol. iv. p. 49. [m] Ibid.

The catalogues of the books were committed to Mr. Hoskyns, for the uſe of the ſaid committee.

An aſſignment of Mr. Cole's leaſe of Chelſea-college was read and ſealed, and delivered with an aſſignment indorſed and executed; and theſe put into the caſh-cheſt of the ſociety at the houſe of the preſident; out of which cheſt Mr. Cole received the one hundred pounds for the ſaid aſſignment.

It was reſolved, that at the next meeting of the council ſhould be conſidered what might be the beſt way of employing Chelſea-college.

February 11. At a meeting of the Society,

Mr. Hooke being abſent, the experiments of motion were not proſecuted.

The preſident propoſed to the ſociety the appointing of two committees for conſidering of and directing experiments to be made from time to time at their weekly meetings; which being approved of, there were named for that purpoſe the following perſons, viz. for Weſtminſter, the biſhops of Salisbury and Chester, Mr. Boyle, Sir Robert Moray, Sir George Ent, Dr. Clarke, Dr. Wren, Mr. William Neile, Mr. Henshaw, Mr. Locke, and Mr. Hoskyns; and for the other committee to meet in the city were named Dr. Goddard, Mr. Colwall, Dr. Croune, Dr. Allen, and Mr. Hooke: Three or more of each of them to be a quorum, and they to meet conſtantly once a fortnight at leaſt, and to begin to do ſo, the former at Sir George Ent's houſe, and the latter at Mr. Hooke's lodgings in Greſham-college, the firſt time on the Tueſday following in the afternoon February 16, and to adviſe and agree together about the beſt ways of carrying on this work to the ſatisfaction of the ſociety. The chairman of each committee to take care of giving notice of the meeting of them from time to time, and to make uſe of the operator for trying of experiments: Every member of the ſociety to have the liberty of being preſent at either of the committees, and to aſſiſt in promoting the work.

The operator was ordered to ſpeak to Mr. Hooke, that the new great microſcope of Mr. Christopher Cock's making be brought to the ſociety at the next meeting.

Mr. Hoskyns produced a new kind of ſealing-wax, ſoft and tough, not ſticking, and when burnt at a candle, and dropt on paper, growing hard, like Spaniſh wax, and taking the impreſſion as well as that wax. Some of the members conjectured, that it was made up of lacca mingled and wrought with ſome gum or other, perhaps gum tragacanth, or the like.

The amanuenſis produced ſome of the water, brought out of Suſſex near Rye, ſaid to be very medicinal, which formerly had been mentioned in the ſociety. The water being in a wooden veſſel, it was deſired, that ſome of it might be ſent for in glaſs-

glaſs-bottles, well ſtopt; and that in the mean time the Journal be ſearched, to find out upon what account it was formerly commended in the ſociety.

This occaſioned ſome diſcourſe about the beſt way of examining mineral and other waters; upon which Mr. HENSHAW ſaid, that he had found it the beſt way to let them firſt putrefy, and the liquor being opened thereby, then to diſtil them; whereupon it would beſt appear, what ſalt was contained in them.

Dr. GODDARD obſerved, that mineral and other waters being diſtilled without any previous putrefaction, it would be better diſcovered what came from the waters themſelves, ſince it was not known, whether by putrefaction there might not be introduced ſomething adventitious.

Mr. HENSHAW was of opinion, that after putrefaction much more would be obſerved of the ſelf-ſame matter with that, which would be produced by diſtilling ſuch waters without putrefaction.

Dr. ALLEN mentioned, that he had obtained ſome cryſtals of the waters of Barnet and Epſom. He was deſired to produce them, which he promiſed to do.

Dr. CROUNE affirmed, that by dropping but one drop of oil of tartar into a glaſs of Barnet water, it became of a milky colour; and that it had this effect more upon that water than upon Epſom water.

Sir THEODORE DE VAUX produced two papers written and ſent to him by Dr. JOHNSON; one of which contained inquiries for Africa; the other, ſome illuſtrations of his concerning Ariconium, ſuppoſed to have antiently been one of the Roman baths. Both papers were committed to Mr. OLDENBURG, who was deſired to collect out of the former ſuch queries, as were proper to be added to thoſe, which he had already in his hands, to be recommended to the lord HENRY HOWARD for Africa; and to peruſe the other paper, and give the ſociety an account of the contents thereof:

Upon the riſing of the ſociety, Mr. BOYLE coming in late mentioned to the preſident an experiment of a certain kind of thick glaſs, which would break, having been held a while in a warm hand, and then gently ſtruck within by a bodkin. The preſident took it with him to a private company, whither he retired with ſeveral members of the ſociety, and where he ſaid he would try it, and make a report of it at the next meeting. The glaſs was unnealed [n], and of a conical ſhape, open at one end, and pretty narrow.

February 18. The experiments of motion were proſecuted with ſpringy bodies, by which it appeared to ſome of the members, that the laws of motion, eſtabliſhed by Dr. WREN, were beſt verified by the motion of the moſt ſpringy bodies. Theſe experiments were ordered to be continued at the next meeting.

[n] See Philoſ. Tranſact. vol. xliii, n° 477, p. 505.

Mr. OLDENBURG brought in ſeverel papers:

One was a packet ſent to him for the ſociety by Signor MALPIGHI, containing a manuſcript hiſtory of the ſilk-worm, its whole life, and the anatomy of all the parts thereof, delivered to the ſociety, conſiſting of twelve folio-ſheets, and of as many microſcopical draughts in folio. It was ordered, that the hearty thanks of the ſociety be returned to the author by a letter to be drawn up by Mr. OLDENBURG; and that he and Mr. HOOKE be deſired to peruſe thoſe papers, and to make a report thereof to the ſociety at their next meeting; and that the conſideration of publiſhing them be referred to the council.

Mr. OLDENBURG then communicated a letter concerning ſnails and ſpiders, ſent to him in one of Feb. 16, 166$\frac{8}{9}$, by Mr. SKIPPON, who had received it from Mr. WRAY, to whom it had been communicated by a friend of his at Cambridge. It was read, and thought very curious; and it was ordered, that this paper ſhould be inſerted in the Letter-Book [o], and the author be deſired to continue his obſervations about thoſe inſects, and eſpecially the thread flying in autumn, ſuppoſed by him to be made by ſpiders.

Mr. OLDENBURG communicated likewiſe a letter written to him in High-Dutch, January 30, 166$\frac{4}{5}$, by a Colonel at Hamburg, named BERTRAND DE LA COSTE, pretending to have found out, after twenty three years ſearch, an engine, called by him *Machina Archimedis*, able to move any weight whatſoever; which he was willing to ſhew to the ſociety, and to ſubmit it to the examen and cenſure of the ſevereſt mathematicians and mechaniſts. It was ordered, that the propoſer ſhould be aſked, whether his engine would move any weight in any time given? or what proportion of time he would demand to his force? and what experiments he had made of the performances of his engine?

Mr. HENSHAW, upon occaſion, mentioned the way of hatching chickens by *Balneum*, formerly uſed in the Minories by Dr. KEFFLER's [p] brother; the particulars of which he was deſired to bring in writing, which he promiſed to do.

The ways of purifying oil being ſpoken of, it was ſuppoſed by Mr. HENSHAW, that diſtilling it from quick lime would much free it from the tophus. Others moved, that it ſhould be inquired, how the oil uſed in churches was purified.

Sir ROBERT MORAY affirmed, that one pint of ſpirit of wine with a ſingle thread would burn three days.

Mr. CHRISTOPHER COCK produced a microſcope, which he ſaid he had made for the ſociety, if they liked it, with five glaſſes, of which the four eye-glaſſes were plano-convex, two and two ſo put together, as to touch one another in a point of

[o] It does not appear there, but it is printed in the Philoſ. Tranſact. vol. iv. n° 50, p. 1011, for Auguſt 1669.

[p] Dr. KEFFLER was ſon-in-law to the famous CORNELIUS DREBEL. MONCONYS, Voyages en Angleterre & aux Pays Bas, p. 74, edit. Paris 1695.

the

the convex ſurface. Some obſervations being made therewith, it appeared to do very well; but there being a guinea put in it, and looked upon, ſome of the members ſaw the image depreſſed, others emboſſed. The workman referred himſelf to the ſociety for the price of this microſcope, and the ſociety referred it to the council.

Mr. AUBREY mentioned, that he had lately again obſerved, together with Mr. HOSKYNS, the nubecula ſeen by him firſt April 27, 1668, between Cancer and the head of Hydra, employing a ſeven foot teleſcope. His account of it was ordered to be regiſtered [1].

Feb. 22. At a meeting of the COUNCIL were preſent

The Preſident

The earl of SANDWICH	Sir GEORGE ENT
Sir GILBERT TALBOT	Sir THEODORE DE VAUX
Sir ROBERT MORAY	Dr. CROUNE
Sir PAUL NEILE	Mr. OLDENBURG.

It was ordered, that the treaſurer pay to Mr. CHRISTOPHER COCK eight pounds for a large microſcope made by him for the ſociety: and

To the operator the arrears of his yearly ſalary of ten pounds: and

That the hiſtory of the ſilk-worm, written in Latin by Signor MARCELLO MALPIGHI, and dedicated to the ſociety, be printed forthwith by their printers, and that notice be given to the author of this order; the form of which order to be as follows:

"Tractatus, cui titulus, MARCELLI MALPIGHII *diſſertatio epiſtolica de bombyce* "*Soc. Regiæ dicata*, imprimatur à JOHANNE MARTYN et JACOBO ALLESTRY, "dictæ ſocietatis typographis.

"BROUNCKER, P. R. S."

Sir ROBERT MORAY made a propoſition, which he ſaid he had received from a noble member of the ſociety, concerning Chelſea-college, to this effect, that this perſon was willing to undertake the management of the houſe and land of the ſaid college, ſo as to employ it according to the deſign of the ſociety, in planting the ground with all ſorts of choice vegetables, exotic and domeſtic, and in repairing the houſe, all at his own charges, the ſociety remaining always proprietors and maſters thereof, with a full power of ordering and directing what particulars they would have obſerved and done in the management of this affair, the propoſer only expecting to be perpetual ſteward of that place.

[1] Regiſter, vol. iv. p. 48.

This

This was received as a noble propoſition; only Sir ROBERT MORAY was deſired to employ his intereſt with the propoſer to have it put in writing for preventing of miſtakes.

The amanuenſis was ordered to go to Dr. CLARKE from the council, and to deſire him to deliver to him the paper of proviſo's to be inſerted in the additional patent, and to carry the ſame to the ſolicitor of the ſociety, to get it inſerted accordingly.

Feb. 25. At a meeting of the SOCIETY,

Some experiments were made, to find what would be the reſiſtance of air to bodies moved through it with ſeveral velocities; and it ſeemed, that the larger the arch was, in which the pendulous body moved, the more impediment it ſuffered from the air: and the ſlower it moved through the air, as when it moved in a ſmaller arch of a circle, the leſs ſtop it received from the impediment of the air, and the impediment to motion decreaſed in a greater proportion than the decreaſe of the velocity: but what the exact proportion of decreaſe was, was to be found out by farther trials.

It was ordered, that this kind of experiments ſhould be proſecuted at the next meeting by employing boards or plates of ſeveral expanſions, but all of the ſame weight; and with balls or boards of ſeveral weights, but of the ſame expanſion.

Mr. HOOKE propoſed an experiment to find out, how the magnetical power decreaſes at ſeveral diſtances, and promiſed to bring in at the next meeting a watch, the balance of which ſhould move by the force of a magnetic ſteel.

Dr. HOLDER preſented his written diſcourſe concerning *the Elements of Speech*; *an Eſſay of Inquiry into the natural production of letters, together with an Appendix to inſtruct perſons deaf and dumb.*

The biſhop of CHESTER intimating, that he had read it, and found it a well-conſidered diſcourſe fit to be publiſhed, it was ordered, that it ſhould be tranſcribed for the preſs accordingly, and the original kept for the Regiſter-Book of the ſociety.

Mr. HOOKE reported, that he had peruſed Signor MALPIGHI's diſcourſe of ſilk-worms, and found it very curious and elaborate, well worth printing. This was ſeconded by Mr. OLDENBURG, who thereupon read the letter, which he had drawn up for Signor MALPIGHI, thanking him for his great reſpect in dedicating the ſaid diſcourſe to the ſociety: which letter was approved of, and ordered to be entered in the Letter-Book [r].

Mr. OLDENBURG read a paper containing ſome anſwers to queries about Japan, which was ordered to be filed up.

[r] It is not entered there.

March 1. At a meeting of the COUNCIL were preſent

The Preſident

The lord HENRY HOWARD	Mr. EVELYN
Mr. AERSKINE	Dr. CLARKE
Sir ROBERT MORAY	Dr. GODDARD
Sir GILBERT TALBOT	Dr. CROUNE
Sir PAUL NEILE	Mr. OBDENBURG.
Sir GEORGE ENT	

It was ordered, that notice be given to thoſe of the committee for conſidering the manuſcripts in the ſociety's library, to deſire their attendance on the council on the Thurſday following at two in the afternoon at Arundel-houſe:

That Mr. HOSKYNS and Mr. OLDENBURG inquire of Mr. WILLIAMSON, whether it be the practice to add any particulars, by way of indorſement or otherwiſe, to patents already ſigned by the King; and if ſo, then to go, together with Col. TITUS, to the attorney-general, to acquaint him, that it is the pleaſure of the lord privy-ſeal, to inſert thoſe two clauſes concerning the oath of allegiance and ſupremacy, to be given to the preſident and his vice-preſidents; and that of non-alienation: and

That Signor MALPIGHI, upon the motion of Mr. OLDENBURG of chooſing him an honorary member of the ſociety, be propoſed as ſuch at the next meeting of the ſame.

March 4. At a meeting of the COUNCIL were preſent

The Preſident

Sir GILBERT TALBOT	Dr. GODDARD
Mr. AERSKINE.	Dr. CLARKE
Sir PAUL NEILE.	Mr. COLWALL
Mr. EVELYN.	Mr. OLDENBURG.
Mr. HENSHAW.	

The committee for conſidering the manuſcripts in the library beſtowed by the lord HENRY HOWARD of Norfolk on the Royal Society made their report: whereupon the council having debated it, and coming to no reſolution therein, thought fit to order, that the ſecretary ſhould acquaint Mr. WALKER, that they were not yet come to a reſolution in this buſineſs; but, when they were, would take care, that the vice-chancellor of Oxford ſhould have notice of it.

The report of the ſaid council was as follows:

"In purſuance of an order of council of the Royal Society dated 8 Feb. laſt, "we have conſidered the manuſcript books in the library beſtowed by the honourable "HENRY lord HOWARD of Norfolk on the Royal Society, and do find them chiefly

"valuable

" valuable for their rarity and the reputation they carry along with them upon that " account, being unlikely to be otherwiſe of any very great advantage, either to " the univerſity of Oxford or to the Royal Society. Neither can we pitch upon " any certain rule of putting a price upon them, they being ſingle each in its " kind, and not poſſibly to be ſupplied, if once parted with; which beſides can " hardly be done, without ſeeming to ſlight the munificence of the giver, who " has appeared willing to reſerve and continue to himſelf and honourable family " the ownerſhip in name of that library, the uſe of which he was pleaſed to be- " ſtow on the Royal Society. All which we humbly certify as our opinion this " firſt of March, anno Domini, $166\frac{5}{6}$.

" WILLIAM AERSKINE,
" JOHN HOSKYNS,
" PETER BALLE."

It was ordered Dr. HOLDER's *Elements of Speech*, &c. be printed by the ſociety's bookſellers.

At the meeting of the SOCIETY on the ſame day,

Mr. HORNECK was admitted.

Signor MALPIGHI was propoſed by Mr. OLDENBURG for an honorary member, and elected as ſuch *nemine contradicente*, he having by his letters and the dedication of his diſſertation on the ſilk-worm expreſſed a ſingular reſpect for the ſociety.

Upon the election Mr. OLDENBURG was ordered to draw up a diploma[s], as a teſtimony of the ſame, to be ſent to Signor MALPIGHI at Bologna.

Some more experiments were made, to find what is the reſiſtance of the air to bodies moved through it with ſeveral velocities; which was at this time done with ſeveral weights faſtened to the ſame area of a thin lattin plate.

The double[t] weight being faſtened to the plate, the vibrations of the whole were after this manner:

[s] It is entered in the Letter-Book, vol. iii. p. 37. as follows. " PRÆSES, CONCILIUM, et SODALES REGALIS SOCIETATIS *Londini ad ſcientiam naturalem promovendam inſtitutæ* omnibus " et ſingulis, ad quos præſentes pervenerint ſalutem.

" Cum virtute et medicâ atque anatomicâ peritiâ clariſſimus dominus MARCELLUS MALPIGHIUS, profeſſor et medicus Bononienſis, inque Meſſanenſi academiâ med. profeſſor primarius, ſingularem ſuum in prædictæ ſocietatis inſtitutum et ſtudia affectum humaniſſimis doctiſſimiſque ſuis literis ad ipſam datis uberrimè fuerit teſtatus, ſuiſque meritis egregiis ſolidam imprimis philoſophiam promovere et augere pro virili ſatagat, dicta ſocietas laudatum dominum MALPIGHIUM die 4 Martii in ſolenni conſenſu, conſpirantibus omnium ſuffragiis, in ſodalium ſorum album deoptavit, inque hujus rei teſtimonium monumentum hoc publicum extare, et ſigilli ſui munire voluit. Dat. Londini anno æræ Chriſtianæ 1669, regni CAROLI II. auguſtiſſimi Magnæ Britanniæ, Franciæ, et Hiberniæ, regis, dictæ ſocietatis fundatoris et patroni, viceſimo primo."

[t] Mr. OLDENBURG in a marginal note on this minute remarks, that the reſult of the ſingle weight was not obſerved by him.

15 ½. 12. 9 ½. 8.
18. 13 ½. 10 ½. 8 ½. 7 *circiter.*

The treble weight being faſtened to the ſame plate, the vibrations were as follow:

16 ½. 13 ¾. 12. 10. 9. 7 ½ *circiter.*
18. 15. 13. 11. 9 ½. 8

The quadruple weight being faſtened ſtill to the ſame plate, the vibrations were thus:

17. 15. 13. 11 ½. 10 ½. 9 ½. 8 ½. 7 ¾.
18. 16 ½. 14. 12 ½. 11. 10. 9. 8 ⅛. 7 ½.
7 ½. 6 ½ *circiter.*
7.

Theſe experiments were ordered to be varied at the next meeting, by applying the ſame weight to ſeveral areas, as now they were tried by applying ſeveral weights to the ſame area.

There was viewed in the great microſcope, lately bought by the ſociety of CHRISTOPHER COCK, a leaf of a palm-tree, which appeared to be nothing but a congeries, of an excellent contrivance, of veſſels orderly laid together without any pulp.

It was ordered, that the cells in the microſcope ſhould be ſo contrived, as to place the glaſs therein in any fit poſition, againſt the next meeting.

Three books were preſented to the ſociety, one intitled, *A ſhort Relation of the river Nile, &c. and of other curioſities*, tranſlated out of a Portugueſe manuſcript by Sir PETER WYCHE; the ſecond, *Tractatus de Corde: item de motu & calore ſanguinis, et chyli in eum tranſitu*, by RICHARD LOWER, M. D. [u]; the third, the ſecond edition of Monſr. LE FEBURE's *Treatiſe of Chemiſtry*.

Mr. OLDENBURG read a letter to himſelf from Dr. EDWARD BROWN, dated at Vienna, Feb. $\frac{4}{14}$, $166\frac{8}{9}$, concerning ſome natural curioſities, which he was collecting in his tracts for the ſociety's uſe. It was ordered, that he ſhould be thanked and encouraged in his deſign by the ſecretary, and his letter entered into the Letter-Book [x].

[u] Printed at London 1669 in 8vo. Mr. OLDENBURG in his account of this book in the *Philoſ. Tranſact.* vol. iv. n° 45. p. 911. takes notice of a miſtake in it, chap. iv. where Dr. LOWER calls thoſe *Tranſactions* the *Tranſactions of the Society*; "which certainly he would not "have done, ſays Mr. OLDENBURG, if he had "either but taken notice of what is ſaid in n° "11. of the ſame, or elſe conſidered, that ſo il-"luſtrious and learned a body would certainly, if "they thought fit to publiſh any thing, entertain "the knowing world both with ſublimer matter "and with a ſuitable eloquence."

[x] Vol. iii. p. 20.

Mr. Boyle moved, that he might be desired to inquire, whether there was any *cinnaberis nativa transparens* in those parts.

Mr. Oldenburg read likewise a letter to him from Mr. Childrey, dated at Upway near Weymouth in Derbyshire, Feb. 9, 166$\frac{8}{9}$, concerning a mineral well in a village called Nottington, in the parish of Broadway in that county, and an account, 1. Of a child, born at Upway in April 1668, with five fingers on a row, and a thumb on each hand, and six toes in the same manner on each foot: 2. Of one William Townson of the same parish, who at about thirty years of age, shed all his teeth (as he had done before at seven) and had new ones in their room: and 3. Of an extraordinary tide at Weymouth on Tuesday July 17, 1666, about ten in the morning, when it being almost low water, the sea came in with so strong and violent a flood, as if it had been at a mill-tail, the tide rising above four foot in a quarter of an hour, and then ebbing, but quickly flowing again, sometimes in, and sometimes out, five or six, or, others said, seven or even nine times. This letter was ordered to be entered in the Letter-Book [r].

It being suggested, that the æquinox being near, some care should be taken of observing the precise time of the sun's entrance into aries, Mr. Hooke said, that he intended to make a proper apparatus for it against the next autumnal æquinox.

The experiments appointed for the next meeting, besides those above-mentioned, were Mr. Hooke's magnetical watch, and that of falling mercury in a glass cane.

March 11. The experiments of motion made at the last meeting being again spoken of, the president intimated, that the result of them seemed to be, that the heavier body fastened to the round plate maketh the greater excursion, and therefore continueth the longer; but that still it remained to be inquired after, what was the precise resistance of the air to bodies moved through it.

The prosecuting and varying these experiments, by applying the same weight to several bodies, which should have been done at this meeting, was referred to the next, and Mr. Hooke was ordered to take care, that then it might be done.

It was also moved, that he should bring in his new contrivance of a watch, said to move by a balance touched with a magnet.

There were dissected some oisters; and because the functions of many parts of them were not yet known, Dr. King was desired to produce at his first conveniency a live oister, and lay open all the parts thereof, to the end, that those, that are well known, might give light to those, that are not so; and particularly, that the vent, whence the spawn issues, may be inquired into. Dr. King promised to do this.

Mr. Hooke remarked, that he had examined some frogs, and found in them a seminal and excremental vent: and that he had looked upon the black round

[r] Vol. iii. p. 24.

spawn

ſpawn of frogs by a microſcope, and thought, that he ſaw a whitiſh tegument round about the black ſubſtance, and was of opinion, that that was like the white of an egg, as he gueſſed the black matter within to be inſtead of the yolk. He undertook to obſerve the progreſs of frogs ſpawn from time to time.

Occaſion being given to ſpeak of tarantula's, ſome of the members ſaid, that perſons bitten by them, though cured, yet muſt dance once a year: others, that different patients required different airs to make them dance, according to the different ſorts of tarantula's, which had bitten them.

Mr. BOYLE obſerved, that EPIPHANIUS FERDINANDUS ſeemed to him to have given the trueſt account of the biting of the tarantula's in a ſmall treatiſe on that ſubject.

The preſident moved, that ſince there was ſo great a neceſſity of having more curators than one, the ſociety would recommend it to the council to conſider of it, as a thing of ſo great importance to the advancement of their inſtitution; and it was accordingly referred to the council.

March 18. At a meeting of the COUNCIL there were preſent

The Preſident

The lord BERKLEY	Sir PAUL NEILE
The lord biſhop of CHESTER	Dr. GODDARD
Sir GILBERT TALBOT	Mr. COLWALL
Mr. AERSKINE	Dr. CROUNE
Sir ROBERT MORAY	Mr. OLDENBURG.

It was again conſidered, whether the ſociety ſhould part with any of the books of the library given to them by the lord HENRY HOWARD; and it being put to the vote was carried in the negative.

The council declared, that it was neceſſary to have another curator; and that therefore they deſired to be informed of a perſon proper for that office, to whom they would allow fifty pounds a year.

The biſhop of CHESTER named Dr. WALTER NEEDHAM and Dr. LOWER.

Dr. CROUNE named Mr. WRAY.

Theſe were both deſired to ſpeak or write to the perſons propoſed by them, in order to learn their inclinations to ſuch an employment.

At a meeting of the SOCIETY the ſame day,

Mr. HOOKE tried ſomething in order to make a watch go by the force of a load-ſtone. It was ordered, that he ſhould provide againſt the next meeting an

houſe-clock, going half-ſeconds, and put a flight upon it, to try what the power of the magnet would be.

It was remarked, that if this contrivance ſhould be made practicable, the magnet would then furniſh the navigator with the longitude, as well as it had hitherto ſerved him with the latitude.

Mention was made by Dr. GODDARD concerning an experiment for making out the manner of the motion of the muſcles; but a fuller account of it was referred to another meeting.

Dr. CROUNE propoſed an experiment, to try, whether an animal would be fed by blood alone transfuſed into it, viz by incloſing two dogs in a box, and making the blood circulate from the one to the other by way of transfuſion, feeding the one and not the other.

He was deſired to make the experiment, and Dr. ALLEN and Mr. HOOKE to aſſiſt him in it.

Dr. KING was put in mind of diſſecting a lobſter and an oiſter.

Mr. COLLINS communicated a paper, written by one Mr. CLERK, about making and uſing wind-mill ſails, that ſhall go horizontally, and perform more than perpendicular ſails, with leſs charge. It was ſaid to be effected by valves ſhutting with the wind, and opening, when they came againſt the wind.

The preſident remarked, that he had ſeen ſuch a contrivance, but thought it ineffectual as to uſe.

March 25, 1669. The SOCIETY did not meet.

April 1. There was tried an experiment, propoſed by Dr. GODDARD, to find, whether muſcles in their contraction grew bigger upon the whole, or not? The experiment was by inſerting a man's arm into an artificial arm made of tin, having a glaſs-pipe fitted and erected in the hand of it, ſo as being filled with water, and the hand of the fleſhy arm clutched, the water in the pipe ſubſided; but being relaxed and opened, the water roſe: which ſeemed to ſhew, that in contraction the muſcles, upon the whole, were brought into leſs dimenſions than in their dilatation.

Dr. GODDARD was deſired to bring in a full account of this experiment in writing; which he promiſed to do, having firſt repeated it [z].

This experiment gave occaſion to diſcourſe of the cauſe and manner of pulſation: and it was debated, whether the pulſe be cauſed by the muſcular motion of the

[z] See below the minutes of Decemb. 16, 1669.

heart, or by the ebullition of the blood in the heart, thence diſcharged into the great artery. Some of the members were of opinion, that when there is a ſyſtole or conſtriction in the heart, there is the like in the artery, and that the arteries have a kind of muſcular ſtructure; while others thought, that upon the conſtriction of the heart follows a dilatation in the artery, or that the ſyſtole of the one is the diaſtole of the other.

For the determining of this queſtion it was ordered, that experiments ſhould be made with a dog, an eel, and a pair of bellows with guts.

Dr. MERRET communicated a letter written by Dr. EDWARD BROWN to his father, Dr. THOMAS BROWN, dated at Vienna March 3, $166\frac{8}{9}$, containing an account of two parhelia lately ſeen in Hungary, and of four other parhelia ſeen in the ſame country in 1668 at Eaſter. This letter was ordered to be entered in the Letter-Book [a].

Mr. OLDENBURG read a letter to him from Mr. CHILDREY, dated March 22, $166\frac{8}{9}$ [b], promiſing to communicate to the ſociety, not only his collection of philoſophical obſervables to be found in ſuch geographical writings and itineraries, as he had peruſed, but alſo the hiſtory of weather drawn up by him out of ſeveral manuſcripts on that ſubject, which had come to his hands. This letter was accompanied with ſome powder made of the ſediment of the ſulphureous well at Nottington, mentioned in his former letter of Feb. 9. read March 4. which powder being caſt upon burning embers in a fire-pan, flamed and burnt blue like powder of brimſtone, and ſmelt perfectly like it. Some of this powder was ordered to be given to Mr. BOYLE to try it, and the reſt delivered to Mr. HOOKE for the repoſitory.

April 8. At a meeting of the COUNCIL were preſent

The Preſident.

The lord HENRY HOWARD	Sir THEODORE DE VAUX
The lord BRERETON	Dr. GODDARD
Mr. AERSKINE	Mr. COLWALL
Sir ROBERT MORAY	Mr. OLDENBURG.

It was ordered, that the treaſurer pay Mr. GILBERT, ſolicitor to the ſociety, or to his order, the ſum of thirty pounds twelve ſhillings and ten pence, according to his bill of April 3, 1669; and likewiſe ſuch monies, as by warrant from the preſident ſhall be judged neceſſary for having the additional patent paſs the great ſeal of England:

That Dr. AGLIONBY be for a year more exempted from the weekly contributions, he having deſired that indulgence by Sir THEODORE DE VAUX: and

[a] Vol. iii. p. 34. and Supplement, vol. ii. p. 105. It is printed in the Philoſ. Tranſact. vol. iv. n° 47. p. 953. for May 1669.

[b] Letter-Book, vol. iii. p. 59.

That

That Dr. MERRET be conferred with againſt the next meeting of the council concerning THOMAS WILLISEL, the botanic traveller, to teſtify what he knows of his abilities in collecting plants and other natural curioſities; and that WILLISEL be ſummoned accordingly to attend the council at their next meeting to receive their reſolution and orders.

At a meeting of the SOCIETY on the ſame day,

There was made one of the experiments appointed at the laſt meeting, viz. that with guts blown up, and tied on both ends, to ſhew, that for making a pulſe in the arteries there needs no more than a compreſſion in the heart, ſince the gut being compreſſed on one end, the motion of it was ſenſible at the other.

Dr. GODDARD objected, that this was not ſufficient to make out what was intended, ſince there was no outlet in theſe guts; whereas there is an iſſue of the blood in the body of animals out of the arteries into the veins.

Mr. HOOKE anſwered, that there is ſo, yet there being a return of the blood to the heart again, it could not be otherwiſe, but that, the veſſels being full, there would upon the circulation of the blood into the heart again and its ſyſtole, be cauſed a pulſation in the arteries.

He propoſed an addition of a pipe to this experiment, the better to ſhew the truth of his aſſertion.

He produced ſome plano-convex ſpherical glaſſes, as ſmall as pins-heads, to ſerve for object-glaſſes in microſcopes. He was deſired to put ſome of them into the ſociety's great microſcope for a trial.

He propoſed likewiſe an obſervation to be made of the texture of muſcles by a microſcope, which he promiſed to make for the next meeting, and then ſhew it to the ſociety.

Mr. OLDENBURG produced a printed paper, part of the *Journal des Scavans* for March 18, 1669, N. S. wherein the four rules of motion formerly ſent to the ſociety by Monſr. HUYGENS were printed, together with three more belonging to the ſame ſubject. Mr. OLDENBURG intimating, that the Pariſian philoſophers were very diligent in making experiments in order to the verifying or diſproving of thoſe rules, and moving, that what had been lately begun here of that nature might be vigorouſly proſecuted, it was ordered, that Dr. CROUNE ſhould be deſired to undertake that taſk, and to make ſuch experiments in private, where it might be more conveniently and more leiſurely done than in public; and having ſo done, to give an account of their ſucceſs to the ſociety: Dr. CROUNE being ſpoken to accordingly, promiſed, that he would do it, but deſired, that it might be done in Greſham-college, that ſo he might have the aſſiſtance of Mr. HOOKE, the hands of the operator, and the apparatus neceſſary thereto; which was approved of.

Count UBALDINI produced a little roundiſh oblong grey ſtone, taken out, as he affirmed, by a lady from under her tongue, after ſhe had endured for two days very great pains in her throat, which had been thought to be a quinſey; on which account ſhe had been let blood under the tongue; which not curing the pain, ſhe at laſt felt ſomething hard under her tongue, and putting her fingers to it, cried out, that there was a tooth coming out from under her tongue, and ſo plucked out this ſtone, which the count ſhewed the ſociety, but took it away with him.

April 15. Mr. HOOKE exhibited again the experiment of the watch moved by a magnet, which, according to its ſeveral diſtances from the flight fitted to the watch, made it go faſter or ſlower.

Sir ROBERT MORAY ſuggeſted ſeveral doubts to be conſidered in this experiment, 1. Whether the load-ſtone hath the ſame attraction in all poſitions? 2. Whether ſome kind of earth or rock may not alter the power of attraction? He alledging, that in Scotland there was a whole ridge of rocky mountains of a magnetic virtue, &c. 3. Whether there would not be found a difference in the attraction, according to a nearer or farther diſtance of the load-ſtone from the land?

The preſident moved, that it might be tried, whether a watch thus moved by a magnet would go equally with a ſtronger or weaker ſpring; for which purpoſe, his lordſhip propoſed, that the watch and load-ſtone being fixt, the ſpring of the watch ſhould be wound more or leſs high, to ſee, whether the motion cauſed by the magnet would be always equal.

It was ordered, that a piece of clock-work with a ſpring going ſeconds ſhould be provided for the next meeting, to be tried with a load-ſtone.

Mr. OLDENBURG communicated two letters written to him, one in French by Monſr. LANTIN, a counſellor of the parliament of Burgundy, dated November 30, 1668 [c], accompanying a preſent of a book intitled, *Claudii Salmaſci Præfatio in Librum de Homonymis Hyles Iatricæ; ejuſdem de Plinio Judicium* [d]: The other in Latin by Mr. HEVELIUS dated March 21, 1669, N. S. containing expreſſions of his readineſs to print the papers of Mr. HORROX, as they had been digeſted by Dr. WALLIS.

It was ordered, that Monſr. LANTIN and Mr. HEVELIUS ſhould be thanked by the ſecretary [e] for their reſpect to the ſociety, and that Mr. COLLINS ſhould be deſired to take care of having a copy made of thoſe papers of Mr. HORROX in the hands of the preſident; and that this copy ſhould be tranſmitted to Mr. HEVELIUS by the ſecretary.

[c] Letter-Book, vol. ii. p. 339. It is printed in the Philoſ. Tranſact. vol. iv. n° 46, p. 936, for April 1669.

[d] Printed at Dijon 1668, in 4°.

[e] His letter to Monſr. LANTIN was dated April 14, 1669, Letter-Book, vol. iii. p. 63.

Mr.

Mr. OLDENBURG read likewiſe an extract of a letter written by Dr. DOWNS from Rome Feb. 9, 1669, N. S. to Mr. SKIPPON, who had ſent it out of the country to him, to communicate the contents thereof to the ſociety; which were chiefly concerning a dog bitten by a viper, and recovered by a ſtone, taken out of the head of a ſerpent called *Cobra de Capeles*; and alſo concerning a man ſtung by a ſcorpion in the hand, and cured by ſuch a ſtone; together with a propoſal made by a perſon at Rome, for obſerving daily the different degrees of heat and cold between London and Rome for a whole year's time.

It was ordered, that Dr. DOWNS be deſired to get the experiments with the ſerpent-ſtone repeated upon two dogs to be bitten in the ſame part, to ſee whether one of them would not recover without the application of ſuch a ſtone.

Mr. OLDENBURG produced ſome Bononian-ſtones uncalcined of that kind, which imbibe and retain light. It being mentioned, that the perſon, who had the art of fitting thoſe ſtones for performing that odd effect, being dead, and the way of ſo preparing them thought to be loſt with him, theſe ſtones were ordered to be delivered to Mr. BOYLE, to try whether he could not light upon ſome way of ſo preparing them, that they might ſhine in the dark.

Sir ROBERT MORAY produced the ſkin of a Moor tanned, which he ſaid was offered to be ſold for five pounds; and being thought proper for the repoſitory, it was ordered that the treaſurer ſhould pay that ſum for the purchaſe of it.

April 22. The ſociety did not meet.

April 29. Mr. HOOKE produced his magnetical watch improved by having ſo contrived the magnetical balance, which was inſtead of a pendulum, as to make it vibrate as little arches, as ſhould be deſired, thereby to make the vibrations always equal, and the magnet to have ſtronger influence upon the ſaid balance.

It was again ordered, that a hand ſhewing minutes and ſeconds ſhould be added to it, thereby to compare it with a pendulum, for an aſſurance of its going equal.

Mr. HOOKE mentioned, that he had ſtill another way of meaſuring time exactly, wherein a ſudden turning motion ſhould not cauſe a ſtop or diſorder, as it did in this way.

Two microſcopical obſervations were made, one of the texture of fat, which appeared to be like froth full of cells; the other of a kind of mould upon bookbinders paſte, which was found to have a fine moſs growing on it, that had on the tops of its ſtems a head like ſeed.

Mr. BOYLE acquainted the ſociety, that on the ſea-ſide in ſome part of Devonſhire there grew in the ſea a bean-bearing tree, having its lower part under water, whoſe wood was hard, and the upper part like a bean-ſtalk.

He

He ſhewed a pretty large piece of black amber found on the ſea-ſhore in Suſſex; as alſo a great number of ſtringed and all rhomboid-like pieces of talc; of which kind of ſubſtance, another member ſaid, a whole mine was to be found in England.

Mr. WILLIAM NEILE was deſired to produce his theory of motion; which being done, it was read, and ordered to be regiſtered [f]. After ſome diſcourſe upon this theory, the author was deſired to complete it, and to conſider how to verify his principles by experiments, and to accommodate them to the rules of Dr. WREN and Monſr. HUYGENS; which he promiſed he would endeavour to do.

Mr. OLDENBURG produced a new book, lately printed at Paris [g], containing ſome curious anatomical obſervations made by the Royal Academy of Sciences there, upon five animals, viz. the cameleon, caſtor, dromedary, bear, and an African deer called by the French *gazelle*.

It was moved, that when any of the beaſts or birds of the King died, Mr. MAY might be ſpoken to by Sir ROBERT MORAY to ſend them to the ſociety to be diſſected.

Mr. BOYLE mentioning, that there was then in London ſuch a deer as the *gazelle* brought from Bantam, was deſired, that, if it ſhould die, he would procure it for the ſociety; which he promiſed to do, if he could.

Mr. AUBREY produced a letter written to him by Mr. FRANCIS POTTER in 1652, ſignifying, that at that time the writer of it had made ſome trials of the transfuſion of blood.

May 6. Mr. HOOKE produced a new kind of pendulum of his own invention, having a great weight appendant to it, and moved with a very ſmall force; viz. by ſuch a contrivance, that a pendulum of about fourteen feet long, ſo as a ſingle vibration of it is made in two ſeconds, with an excuſſion of half an inch or leſs, having a weight of three pounds hanging on it, and moved by the ſole force of a pocket-watch, with four wheels, ſhall go fourteen months, and cauſe very equal vibrations.

He ſhewed two ſeveral contrivances for it; one was with a pin upon the balance of a pocket-watch, making a bifurcated needle to vibrate on one end, and on the other end the pendulum: Another was with a thread faſtened on one end to the balance of the watch, and on the other end to the pendulum, and ſo moving it to and fro.

Dr. WREN ſuggeſted a third way, viz. by taking a cylindrical ſtaff of twenty eight feet long, and making it move in its middle on a pin, and hanging an equal weight on each end of it, to be moved with a pocket-watch.

[f] Regiſter, vol. iv. p. 49. [g] In 4°. See Philoſ. Tranſact. vol. iv. n° 49, p 991, for July 1669.

Mr. HOOKE was ordered to cauſe one to be made for the ſociety, cloſing the pendulum in a glaſs-tube with a bolt-head beneath.

He produced his inſtrument of obſerving ſecond minutes by the ſun, by a ſmall teleſcope faſtened on a board, and caſting the picture of the ſun, without a penumbra through it, upon an arch of wood covered with white paper, faſtened to the oppoſite ſide of the board; an inſtrument of excellent uſe to obſerve eclipſes. He was ordered to cauſe the arch to be divided againſt the next meeting.

Mr. NEILE being called upon about the completing of his Theory concerning the principles of motion, and applying them to the rules given by Dr. WREN and Monſr. HUYGENS for experiments, intimated, that he had begun to accommodate thoſe his principles to the ſaid rules, but not finiſhed it yet. He was deſired to bring it in as ſoon as he had finiſhed it.

Dr. CROUNE intimated, that he hoped he ſhould in a ſhort time give the ſociety an account concerning the ſucceſs of the experiments of motion, which he had been deſired to make, to ſee, whether they anſwered the rules given by Dr. WREN, and Monſr. HUYGENS concerning them.

The operator was again ordered to furniſh him with the apparatus neceſſary; and Mr. HOOKE was deſired to aſſiſt Dr. CROUNE, who ſaid, that at the next meeting a day might be pitched upon for making theſe experiments in Greſham-college, that ſo other members of the ſociety, who had leiſure, might be preſent.

Mr. BOYLE preſented the ſociety, for the repoſitory, with the ſkin of a calf with two heads, which, he ſaid, had been lately brought forth alive in England, having two wind-pipes, two lungs, and but one heart, ſucking with both mouths.

Dr. CROUNE being put in mind of the experiment of making a circular tranſfuſion of blood in two dogs, ſaid, that ſomething was already done in order to it, and that he would go about it as ſoon as he could.

He mentioned, that from this experiment it would appear, whether blood nouriſhes, or not; and added, that this experiment might be carried on, to find, whether one animal might be kept alive without breathing, by the breathing of the other only.

Mr. BOYLE obſerved upon this, that it would be worth trying, whether air generated of other bodies would not ſerve for reſpiration.

Mr. DANIEL COXE mentioned, that CORNELIUS DREBBEL pretended to have a certain liquor, to ſupply the want of freſh air in the boat, which he had made to go under water with; and which boat was ſo framed, that it had no bottom, according to the relation given of it in the notes made upon HERNANDES.

Sir ROBERT MORAY mentioned, that Mr. GREATRIX had improved his engine for going under water with; and that by means thereof he could ſink himſelf ten fathoms under water, and ſtay there with eaſe enough as long as he pleaſed, going up and down, ſtooping and working; but at a much greater depth he found an intolerable preſſure.

May 13. The new patent from his Majeſty, dated April 8, 1669, granting Chelſea college to the ſociety, together with ſome additional privileges and powers, was read. It was as follows:

" CAROLUS SECUNDUS Dei gratia Angliæ Scotiæ Franciæ et Hi-
" berniæ Rex, fidei Defenſor, &c. omnibus, ad quos hæ Literæ noſtræ patentes
" pervenerint, ſalutem. SCIATIS, quod nos de gratia noſtra ſpeciali ac ex certa
" ſcientia et mero motu noſtris dedimus et conceſſimus, ac per præſentes pro nobis
" heredibus et ſucceſſoribus noſtris damus et concedimus, dilectis et fidelibus
" noſtris *Præſidi Concilio et Sodalibus Regalis Societatis Londini pro ſcientia naturali*
" *promovenda*, et ſucceſſoribus ſuis in perpetuum, totam illam peciam terræ ara-
" bilis vocatam Teamſhott, continentem per æſtimationem viginti acras, jacentem
" inter viam noſtram ducentem a Weſtmonaſterio verſus Chelſey ex parte boreali
" et occidentali; et peciam prati continentem per æſtimationem quatuor acras,
" parcellam octodecim acrarum prati nuper in tenura Comitis Nottinghamienſis,
" vel aſſignatorum ſuorum, ex parte auſtrali; ac clauſum prati vocatum Stone-
" bridge Cloſe ex parte orientali; et peciam terræ arabilis nuper in occupatione
" THOMÆ EVANS, vel aſſignatorum ſuorum, ex parte occidentali; per particula-
" ria inde mentionata eſſe annualis redditus, ſive valoris, viginti trium ſolidorum
" et quatuor denariorum: Nec non totum illum prædictum clauſum prati voca-
" tum Stony Bridge Cloſe, continentem per æſtimationem quatuor acras, nuper
" in occupatione JOHANNIS DEAKES, vel aſſignatorum ſuorum, jacentem inter ri-
" vum vocatum Le Common Sewer ex parte orientali; et prædictam peciam terræ
" vocatam Teamſhott ex parte occidentali; et pontem vocatum Stony Bridge ex
" parte boreali; per particularia inde mentionata eſſe annualis redditus, ſive valo-
" ris, viginti ſolidorum: Nec non totam illam unam peciam terræ arabilis in
" communi campo vocato Eaſt Field, continentem per æſtimationem tres acras,
" nuper in occupatione THOMÆ FRANCES, vel aſſignatorum ſuorum, jacen-
" tem inter prædictam peciam terræ vocatam Teamſhott ex parte orientali;
" peciam terræ arabilis nuper in tenura Comitis Lincolnienſis, vel aſſignatorum ſuo-
" rum, ex parte occidentali; parcellam prati de Earles Court Land ex parte auſtrali;
" et viam noſtram ducentem a Weſtmonaſterio verſus Chelſey prædictam ex parte
" boreali et occidentali; per particularia inde mentionata eſſe annualis redditus,
" ſive valoris, quatuor ſolidorum (quæ quidem præmiſſa ſunt aut olim fuerunt par-
" cella terræ noſtræ in Chelſey, exiſtentis parcellæ terræ Dominicalis Manerii de Chel-
" ſey prædicta, ac nuper fuerunt parcella poſſeſſionum JOHANNIS nuper Ducis Nor-
" thumbriæ; et quæ nuper per præchariſſimum avum noſtrum beatæ memoriæ
" JACOBUM Regem per Literas ſuas patentes, gerentes datum apud Weſtmonaſte-
" rium octavo die Maii, anno regni ſui Angliæ octavo et Scotiæ quadrageſimo
" tertio, conceſſa fuerunt, aut mentionata eſſe conceſſa; Præpoſito et Sociis Collegii
" Regis JACOBI in Chelſey prope London ex fundatione ejuſdem JACOBI Regis
" Angliæ, et ſucceſſoribus ſuis in perpetuum; tenendum de præfato JACOBO

" Rege, ut de manerio ſuo de Eaſt Greenwich in comitatu Cantiæ, per fidelitatem
" tantum, in libero et communi ſoccagio, et non in capite, nec per ſervitium mi-
" litare) Ac etiam omnia et ſingula domus ædificia ſtructuras boſcos ſubboſcos ar-
" bores, ac totam terram fundum et ſolum eorundem boſcorum ſubboſcorum et
" arborum, ac omnia alia jura juriſdictiones francheſias privilegia libertates profi-
" cua commoditates advantagia emolumenta et hereditamenta noſtra quæcunque,
" cum eorum pertinentiis univerſis, cujuſcunque ſint generis naturæ ſeu ſpeciei,
" ſeu quibuſcunque nominibus ſciantur cenſeantur nuncupentur ſeu cognoſcantur,
" ſcituata jacentia et exiſtentia provenientia creſcentia renovantia ſive emergentia
" infra comitatum villas campos loca ſive hamlettas prædicta, vel alibi ubicun-
" que, prædictis terris et cæteris præmiſſis vel alicui inde parcellæ quoquo modo
" ſpectantia[h]: Necnon reverſionem et reverſiones omnium et ſingulorum præ-
" miſſorum ſuperius per præſentes præconceſſorum, et cujuſlibet inde parcellæ,
" dependentes vel expectantes de in vel ſuper aliquam dimiſſionem vel conceſſio-
" nem pro termino vel terminis vitæ vel vitarum vel annorum, aut aliter de præ-
" miſſis ſuperius per præſentes præconceſſis ſeu de aliqua inde parcella quoquo
" modo factam, exiſtentem de recordo vel non de recordo: Necnon omnia et
" ſingula redditus et annualia proficua quæcunque reſervata ſuper quibuſcunque
" dimiſſionibus vel conceſſionibus de et ſuper præmiſſa per præſentes præconceſſa,
" vel de et ſuper aliquam inde parcellam. DEDIMUS etiam et conceſſimus, ac
" per præſentes pro nobis heredibus et ſucceſſoribus noſtris damus et concedimus,
" præfatis Præſidi Concilio et Sodalibus Regalis Societatis Londini pro ſcientia
" naturali promovenda, et ſucceſſoribus ſuis in perpetuum, quod ipſi et eorum
" ſucceſſores de cætero in perpetuum habeant teneant et gaudeant, ac habere tenere
" et gaudere valeant et poſſint, infra præmiſſa ſuperius per præſentes præconceſſa,
" ac infra quamlibet inde parcellam, tot tanta talia eadem hujuſmodi et conſimi-
" lia jura juriſdictiones libertates francheſias conſuetudines privilegia proficua com-
" moditates advantagia emolumenta et hereditamenta quæcunque, quot quanta
" qualia et quæ, ac adeo plene libere et integre, ac in tam amplis modo et forma,
" prout prædictus JOHANNES nuper Dux Northumbriæ, aut prædictus Præpoſitus
" et Socii Collegii Regis JACOBI in Chelſey prope London ex fundatione ejuſdem
" JACOBI Regis Angliæ, aut aliquis alius ſive aliqui alii, prædicta terras tene-
" menta et cætera præmiſſa cum ſuis pertinentiis, aut aliquam inde parcellam,
" unquam antehac habentes poſſidentes aut ſeiſiti inde exiſtentes, habens poſſi-
" dens aut ſeiſitus inde exſtens, unquam habuerunt tenuerunt uſi vel gaviſi fue-
" runt, habuit tenuit uſus vel gaviſus fuit, ſeu habere tenere uti vel gaudere de-
" buerunt aut debuit, in præmiſſis ſuperius per præſentes præconceſſis, aut ali-
" qua inde parcella, ratione vel prætextu alicujus chartæ doni conceſſionis vel
" confirmationis per nos ſeu aliquem progenitorum vel anteceſſorum noſtro-
" rum nuper Regum vel Reginarum Angliæ antehac habitorum factorum vel
" conceſſorum ſeu confirmatorum, aut ratione vel prætextu alicujus actus Parlia-
" menti vel aliquorum actuum Parliamentorum, aut ratione vel prætextu alicujus
" legitimæ præſcriptionis uſus ſeu conſuetudinis antehac habitorum ſeu uſitatorum,
" aut aliter quocunque legali modo jure ſeu titulo, ac adeo plene libere et integre,
" ac in tam amplis modo et forma, prout nos aut aliquis progenitorum vel ante-
" ceſſorum noſtrorum nuper Regum vel Reginarum Angliæ prædicta terras tene-

[h] *Sic in* Authent.

" menta

" menta et cætera præmiſſa, aut aliquam inde parcellam, habuimus et gaviſi fui-
" mus aut habuerunt et gaviſi fuerunt, ſeu habere et gaudere debuimus aut ha-
" bere et gaudere debuerunt aut debuit. DAMUS ulterius, ac per præſentes pro
" nobis heredibus et ſucceſſoribus noſtris concedimus, præfatis Præſidi Concilio
" et Sodalibus Regalis Societatis Londini pro ſcientia naturali promovenda, et eo-
" rum ſucceſſoribus, omnia et ſingula præmiſſa ſuperius per præſentes præconceſſa,
" cum eorum pertinentiis univerſis, adeo plene libere et integre, ac in tam amplis
" modo et forma, prout ea omnia et ſingula præmiſſa, aut aliqua inde parcella,
" ad manus noſtras, ſeu ad manus aliquorum progenitorum vel anteceſſorum
" noſtrorum nuper Regum vel Reginarum Angliæ, ratione vel prætextu diſſolu-
" tionis vel ſurſum redditionis alicujus nuper monaſterii prioratus ſive hoſpitalis,
" aut ratione vel prætextu alicujus actus Parliamenti vel aliquorum actuum Par-
" liamentorum, aut ratione alicujus attincturæ ſive foriſfacturæ, aut ratione alicu-
" jus excambii vel perquiſiti, aut alicujus doni vel conceſſionis, aut ratione eſ-
" chaetæ, aut quocunque alio legali modo jure ſeu titulo devenerunt ſeu devenire
" debuerunt, ac in manibus noſtris jam exiſtunt ſeu exiſtere debent vel debuerunt:
" habendum tenendum et gaudendum prædicta terras tenementa et hereditamenta,
" ac cætera omnia et ſingula præmiſſa ſuperius per præſentes præconceſſa, cum
" eorum pertinentiis univerſis, præfato Præſidi Concilio et Sodalibus Regalis So-
" cietatis Londini pro ſcientia naturali promovenda, et ſucceſſoribus ſuis in perpe-
" tuum; tenendum de nobis heredibus et ſucceſſoribus noſtris, ut de manerio
" noſtro de Eaſt Greenwich in comitatu noſtro Cantiæ, per fidelitatem tantum, in
" libero et communi ſoccagio, et non in capite, nec per ſervitium militare; ac
" reddendum annuatim nobis heredibus et ſucceſſoribus noſtris de et pro prædicta
" terra arabili vocata Teamſhott viginti tres ſolidos et quatuor denarios, ac de et
" pro prædicto clauſo prati vocato Stony Bridge Cloſe viginti ſolidos, ac de et
" pro prædicta pecia terræ arabilis in communi campo vocato Eaſt Field quatuor
" ſolidos legalis monetæ Angliæ, ad feſta Sancti MICHAELIS Archangeli et An-
" nunciationis beatæ MARIÆ Virginis, ad receptam Scaccarii noſtri Weſtmonaſterii
" heredum et ſucceſſorum noſtrorum, ſeu ad manus Ballivorum, ſeu Receptorum
" præmiſſorum pro tempore exiſtente [1], per æquales portiones annuatim ſolvendas
" in perpetuum. ET ULTERIUS de uberiori gratia noſtra ſpeciali ac ex certa
" ſcientia et mero motu noſtris volumus, ac per præſentes pro nobis heredibus et
" ſucceſſoribus noſtris concedimus præfato Præſidi Concilio et Sodalibus Regalis
" Societatis prædictæ et ſucceſſoribus ſuis, quod nos heredes et ſucceſſores noſtri
" de cætero in perpetuum annuatim, et de tempore in tempus, exonerabimus ac-
" quietabimus et indempnes conſervabimus, tam præfatos Præſidem Concilium et
" Sodales Regalis Societatis prædictæ et ſucceſſores ſuos, quam prædicta terras
" tenementa et cætera omnia et ſingula præmiſſa ſuperius expreſſa et ſpecificata ac
" per præſentes præconceſſa, et quamlibet inde parcellam, cum eorum pertinen-
" tiis univerſis, de et ab omnibus et omnimodis corrodiis redditibus feodis ſervitiis
" annuitatibus penſionibus portionibus ac denariorum ſummis ac oneribus quibuſ-
" cunque de præmiſſis, ſeu aliqua inde parcella, nobis heredibus vel ſucceſſoribus
" noſtris exeuntibus vel ſolvendis, vel ſuperinde verſus nos heredes vel ſucceſſores
" noſtros oneratis vel onerandis; præterquam de redditibus ſervitiis et tenuris ſu-
" perius in his præſentibus nobis heredibus et ſucceſſoribus noſtris reſervatis, ac

[1] *Sic in* Authent. *et paſſim infra.*

præter-

" præterquam de dimiſſionibus et conceſſionibus de præmiſſis ſeu de aliqua inde
" parcella antehac factis, ac conventionibus et conditionibus in iiſdem exiſtenti-
" bus, ac conventionibus et oneribus, quæ aliquis firmarius ſeu aliqui firmarii
" præmiſſorum ratione indenturarum et dimiſſionum ſuarum facere et exonerare
" tenetur ſeu tenentur. VOLUMUS etiam, ac per præſentes pro nobis heredibus et
" ſucceſſoribus noſtris firmiter injungendo præcipimus, tam Commiſſionariis pro
" theſauro noſtro, Theſaurario, Camerario, Subtheſaurario, et Baronibus Scaccarii
" noſtri heredum et ſucceſſorum noſtrorum pro tempore exiſtente, quam omnibus
" et ſingulis Auditoribus, et aliis officiariis, et miniſtris noſtris heredum et
" ſucceſſorum noſtrorum quibuſcunque pro tempore exiſtente; quod ipſi et
" eorum quilibet ſuper ſolam demonſtrationem harum Literarum noſtrarum
" patentium, vel irrotulamenti earundem, abſque aliquo alio brevi ſeu war-
" ranto a nobis heredibus vel ſucceſſoribus noſtris quoquo modo impetran-
" do ſeu proſequendo, plenam integram debitamque allocationem et exone-
" rationem manifeſtam de et ab omnibus et omnimodis hujuſmodi corrodiis red-
" ditibus feodis penſionibus portionibus et denariorum ſummis ac oneribus quibuſ-
" cunque (præterquam de ſervitiis redditibus terris ac arreragiis redditus ac cæ-
" teris præmiſſis in his præſentibus, ut præfertur, reſervatis, et per præfatos
" Præſidem Concilium et Sodales Regalis Societatis prædictæ et ſucceſſores ſuos
" ſolubilibus fiendis [k] ſeu performandis) de præmiſſis per præſentes præconceſſis,
" ſeu de aliqua inde parte vel parcella, nobis heredibus vel ſucceſſoribus noſtris
" exeuntibus ſeu ſolvendis, vel ſuperinde verſus nos heredes vel ſucceſſores noſtros
" oneratis ſeu onerandis, præfatis Præſidi Concilio et Sodalibus Regalis Societatis
" prædictæ et ſucceſſoribus ſuis facient, et de tempore in tempus fieri caufabunt:
" Et hæ Literæ noſtræ patentes, vel irrotulamentum earundem, erunt de tempore
" in tempus, tam dictis Commiſſionariis pro Theſauro noſtro, Theſaurario, Can-
" cellario, et Baronibus Scaccarii noſtri heredum et ſucceſſorum noſtrorum pro
" tempore exiſtente, quam omnibus et ſingulis Auditoribus, et aliis officiariis, et
" miniſtris noſtris heredum et ſucceſſorum noſtrorum quibuſcunque pro tempore
" exiſtente, ſufficiens warrantum et exoneratio in hac parte. ET CUM NOS per
" Literas noſtras patentes, gerentes datum apud Weſtmonaſterium, viceſimo ſe-
" cundo die Aprilis, anno regni noſtri decimo quinto, Præſidi Concilio et Sodalibus
" Regalis Societatis prædictæ factas, inter alia conceſſimus præfatis Præſidi Concilio et
" Sodalibus prædictæ Regalis Societatis, et ſucceſſoribus ſuis in perpetuum, quod ſi
" contigerit Præſidem ejuſdem Regalis Societatis pro tempore exiſtente ægritudine
" vel infirmitate detineri, vel in ſervitio noſtro heredum vel ſucceſſorum noſtro-
" rum verſari, vel aliter eſſe occupatum, ita quod neceſſariis negotiis ejuſdem
" Regalis Societatis officium Præſidis tangentibus attendere non poterit; quod
" tunc et toties bene liceat et licebit eidem Præſidi ſic detento verſato vel occupato
" unum de Concilio prædictæ Regalis Societatis pro tempore exiſtente, foro et
" eſſe Deputatum ejuſdem Præſidis, nominare et appunctuare: qui quidem De-
" putatus, in officio Deputati Præſidis prædicti ſic faciendus et conſtituendus, ſit
" et eſſet Deputatus ejuſdem Præſidis de tempore in tempus, toties quoties præ-
" dictus Præſes ſic abeſſe contigerit, durante toto tempore, quo prædictus Præſes
" in officio præſidis continuaverit; niſi interim prædictus Præſes Regalis Societatis
" prædictæ pro tempore exiſtente unum alium de prædicto Concilio ejus Deputa-

[k] *Sic in* Authent.

tum

" tum fecerit et conſtituerit: Et quod quilibet hujuſmodi Deputatus prædicti Præ-
" ſidis ſic, ut præfertur, faciendus et conſtituendus omnia et ſingula, quæ ad officium
" Præſidis prædictæ Regalis Societatis pertinent ſeu pertinere debent, vel per prædi-
" ctum Præſidem virtute iſtarum Literarum noſtrarum patentium limitata et appun-
" ctuata fore [1] facienda et exequenda de tempore in tempus, toties quoties prædictus
" Præſes ſic abeſſe contigerit, durante tali tempore, quo Deputatus prædicti Præſidis
" continuaverit, facere et exequi valeat et poſſit, vigore iſtarum Literarum noſtrarum
" patentium, adeo plene libere et integre, ac in tam amplis modo et forma, prout
" Præſes prædictus, ſi præſens eſſet, illa facere et exequi valeat et poſſit; ſacramento
" corporali ſuper ſancta Dei Evangelia, in forma et effectu in eiſdem Literis noſtris
" patentibus ſpecificatis, per hujuſmodi Deputatum ad omnia et ſingula, quæ ad
" officium Præſidis pertinent, bene et fideliter exequendum, coram præfato Con-
" cilio prædictæ Regalis Societatis, vel aliquibus ſeptem vel pluribus eorum, prius
" præſtando; et ſic toties quoties caſus ſic acciderit: cui quidem Concilio, vel
" aliquibus ſeptem vel pluribus eorum pro tempore exiſtente, ſacramentum præ-
" dictum adminiſtrare poteſtatem et authoritatem, quoties caſus ſic acciderit, de-
" dimus et conceſſimus per eaſdem Literas noſtras patentes, abſque brevi commiſ-
" ſione ſive ulteriori warranto in ea parte a nobis heredibus et ſucceſſoribus noſtris
" procurandis ſeu obtinendis: Ac quod ipſi et ſucceſſores eorum, ſeu aliqui novem
" vel plures eorum (quorum Præſidem pro tempore exiſtente, vel ejus deputatum,
" ſemper unum eſſe volumus) conventus ſeu congregationes de ſeipſis pro experi-
" mentorum et rerum naturalium cognitione et indagine atque negotiis ad Soci-
" etatem prædictam ſpectantibus, quoties et quando opus fuerit, licite facere et
" habere poſſint in collegio ſive aula ſive alio loco commodo intra civitatem noſ-
" tram London, vel in aliquo alio loco commodo intra decem milliaria ab eadem
" civitate noſtra: Et cum diverſæ et variæ res poteſtates libertates et privilegia in
" iiſdem Literis noſtris patentibus præfato Præſidi Concilio ac Sodalibus Regalis
" Societatis prædictæ conceſſa, virtute iſtarum Literarum noſtrarum patentium,
" non ſunt exercenda facienda performanda ſeu exequenda, niſi per prædictum
" Præſidem et Concilium, aut aliquos ſeptem vel plures eorum: Et cum ulterius
" per prædictas Literas noſtras patentes pro nobis heredibus et ſucceſſoribus noſtris
" dedimus et conceſſimus præfatis Præſidi Concilio et Sodalibus prædictæ Regalis
" Societatis, et ſucceſſoribus ſuis in perpetuum, ſive aliquibus viginti et uni vel
" pluribus eorum (quorum Præſidem pro tempore exiſtente, vel ejus Deputatum,
" ſemper unum eſſe volumus) ſeu majori parti prædictorum viginti et unius vel
" plurium, plenam poteſtatem et authoritatem de tempore in tempus eligendi nō-
" minandi et conſtituendi unum vel plures Typographos ſive Impreſſores, et
" Chalcographos ſeu Sculptores, et ipſi vel ipſis per ſcriptum communi Sigillo
" prædictæ Regalis Societatis ſigillatum, et manu Præſidis pro tempore exiſtente
" ſignatum, facultatem concedendi, ut imprimant tales res materias et negotia
" prædictam Regalem Societatem tangentia vel concernentia, quales prædictis
" Typographo vel Impreſſori, Chalcographo vel Sculptori, vel Typographis vel
" Impreſſoribus, Chalcographis vel Sculptoribus, de tempore in tempus per Præ-
" ſidem et Concilium prædictæ Regalis Societatis, vel aliquos ſeptem vel plures
" eorum (quorum Præſidem pro tempore exiſtente, vel ejus Deputatum, unum
" eſſe volumus) vel per majorem partem prædictorum ſeptem vel plurium com-

[1] *Sic in* Authent.

" miſſa:

" missa [m] fuerint; sacramentis suis corporalibus, antequam ad officia sua exercen-
" da admittantur, coram Præside et Concilio pro tempore existente, vel aliquibus
" septem vel pluribus eorum, prius præstandis; cui quidem Præsidi et Concilio,
" vel aliquibus septem vel pluribus eorum pro tempore existente, sacramenta
" prædicta administrare plenam potestatem et authoritatem dedimus et concessimus
" per prædictas Literas nostras patentes; prout in eisdem Literis nostris paten-
" tibus, relatione inde habita, plenius liquet et apparet: Nos, de abundantiori
" gratia nostra speciali ac ex certa scientia et mero motu nostris, DEDIMUS et con-
" cessimus, ac per præsentes pro nobis heredibus et successoribus nostris damus et
" concedimus, præfatis Præsidi Concilio et Sodalibus prædictæ Regalis Socie-
" tatis, et successoribus suis in perpetuum, quod de cætero in perpetuum, si con-
" tigerit Præsidem ejusdem Regalis Societatis pro tempore existente ægritudine
" vel infirmitate detineri, vel in servitio nostro heredum vel successorum nostro-
" rum versari, vel aliter esse occupatum, ita quod necessariis negotiis ejusdem
" Regalis Societatis officium Præsidis tangentibus attendere non poterit; quod
" tunc et toties bene liceat et licebit eidem Præsidi sic detento versato vel occu-
" pato unum de Concilio prædictæ Regalis Societatis pro tempore existente, fore
" et esse Deputatum ejusdem Præsidis, nominare et appunctuare; qui quidem
" Deputatus, in officio Deputati Præsidis prædicti sic faciendus et constituendus,
" sit et erit Deputatus ejusdem Præsidis de tempore in tempus, toties quoties præ-
" dictus Præses sic abesse contigerit, durante toto tempore, quo prædictus Præses
" in officio Præsidis continuaverit, etiamsi interim Præses Regalis Societatis præ-
" dictæ pro tempore existente unum alium vel plures alios de prædicto Concilio ejus
" Deputatum et Deputatos fecerit et constituerit; cui quidem Præsidi pro tem-
" pore existente duos vel plures de prædicto Consilio ejus Deputatos ipso et eo-
" dem tempore facere et constituere potestatem et authoritatem, quoties ei pla-
" cuerit, damus et concedimus per præsentes pro nobis heredibus et successoribus
" nostris: Et quod quilibet hujusmodi Deputatus et Deputati prædicti Præsidis
" sic, ut præfertur, faciendi et constituendi omnia et singula, quæ ad officium
" Præsidis prædictæ Regalis Societatis pertinent seu pertinere debent, vel per præ-
" dictum Præsidem virtute prædictarum Literarum nostrarum patentium, vel præ-
" sentium, limitata et appunctuata fore [n] facienda et exequenda de tempore in tempus,
" toties quoties prædictus Præses sic abesse contigerit, durante tali tempore, quo
" Deputatus et Deputati prædicti Præsidis continuaverit et continuaverint, facere et
" exequi valeat et possit valeant et possint, vigore harum Literarum nostrarum
" patentium, adeo plene libere et integre, ac in tam amplis modo et forma, prout
" Præses prædictus, si præsens esset, illa facere et exequi valeret et posset; sacra-
" mento corporali super sancta Dei Evangelia, in forma et effectu in eisdem
" Literis nostris patentibus specificatis, per hujusmodi Deputatum et Deputatos
" ad omnia et singula, quæ ad officium Præsidis pertinent, bene et fideliter exe-
" quendum, coram præfato Concilio prædictæ Regalis Societatis, vel aliquibus
" quinque vel pluribus eorum, prius præstando; et sic toties quoties casus sic
" acciderit: cui quidem Concilio, vel aliquibus quinque vel pluribus eorum pro
" tempore existente, sacramentum prædictum administrare potestatem et autho-

[m] *Sic in* Authent. [n] Ibid.

" ritatem

" ritatem, quoties caſus ſic acciderit, damus et concedimus per præſentes, abſque " brevi commiſſione ſive ulteriori warranto in ea parte a nobis heredibus et ſuc- " ceſſoribus noſtris procurandis ſeu obtinendis: Ac ulterius, quod de cætero in " perpetuum ipſi et ſucceſſores eorum, ſeu aliqui novem vel plures eorum (quo- " rum Præſidem pro tempore exiſtente, vel ejus Deputatum, ſemper unum eſſe " volumus) conventus ſeu congregationes de ſeipſis pro experimentorum et rerum " naturalium cognitione et indagine aliiſque negotiis ad Societatem prædictam " ſpectantibus, quoties et quando opus fuerit, licite facere et habere poſſint in " collegio ſive aula ſive alio loco commodo infra regnum noſtrum Angliæ: Ac " ulterius, quod omnia et ſingula res poteſtates libertates et privilegia in prædictis " Literis noſtris patentibus præfatis Præſidi Concilio et Sodalibus Regalis Socie- " tatis prædictæ conceſſa, virtute iſtarum Literarum noſtrarum patentium, quæ " non ſunt exercenda facienda performanda ſeu exequenda, niſi per prædictum " Præſidem et Conſilium, aut aliquos ſeptem vel plures eorum; de cætero in per- " petuum exerceri fieri performari ſeu exequi poſſint et valeant per prædictum " Præſidem et Concilium, aut aliquos quinque vel plures eorum. Ac ULTERIUS " de uberiori gratia noſtra dedimus et conceſſimus, ac per præſentes pro nobis " heredibus et ſucceſſoribus noſtris damus et concedimus, præfatis Præſidi Con- " cilio et Sodalibus prædictæ Regalis Societatis, et ſucceſſoribus ſuis in perpetuum, " quod de cætero in perpetuum bene liceat et licebit Præſidi Regalis Societatis " prædictæ pro tempore exiſtente, de tempore in tempus eligere nominare et con- " ſtituere aliquem vel aliquos Typographum ſive Impreſſorem, Typographos ſive " Impreſſores, et Chalcographum ſeu Sculptorem, Chalcographos ſeu Sculptores, " et ipſi vel ipſis facultatem concedere, ut imprimant tales res materias et ne- " gotia prædictam Regalem Societatem tangentia vel concernentia, quales præ- " dictis Typographo vel Impreſſori, Chalcographo ſeu Sculptori, vel Typographis " vel Impreſſoribus, Chalcographis vel Sculptoribus, de tempore in tempus per " Præſidem et Concilium prædictæ Regalis Societatis, vel aliquos quinque vel " plures eorum (quorum Præſidem pro tempore exiſtente, vel ejus Deputatum, " unum eſſe volumns) vel per majorem partem prædictorum quinque vel plurium " commiſſæ fuerint; ſacramentis ſuis corporalibus, antequam ad officia ſua exer- " cenda admittantur, coram Præſide et Concilio pro tempore exiſtente, vel ali- " quibus quinque vel pluribus eorum, prius præſtandis; et ſic toties quoties caſus " ſic acciderit: cui quidem Præſidi et Concilio pro tempore exiſtente, vel aliqui- " bus quinque vel pluribus eorum, ſacramenta prædicta adminiſtrare plenam po- " teſtatem et authoritatem damus et concedimus per præſentes. ET ULTERIUS " volumus, ac per præſentes pro nobis heredibus et ſucceſſoribus noſtris concedimus " præfatis Præſidi Concilio et Sodalibus Regalis Societatis prædictæ et ſucceſſori- " bus ſuis, quod hæ Literæ noſtræ patentes, vel irrotulamentum earundem, ſta- " bunt et erunt in omnibus et per omnia bonæ firmæ validæ ſufficientes et effe- " ctuales in lege ad omnes reſpectus propoſita conſtructiones et intentiones erga et " contra nos heredes et ſucceſſores noſtros, tam in omnibus curiis noſtris, quam " alibi infra regnum noſtrum Angliæ, abſque aliquibus confirmationibus licentiis vel " tolerationibus de nobis heredibus vel ſucceſſoribus noſtris quoquo modo in poſte- " rum procurandis aut obtinendis. NON OBSTANTE male nominando vel male reci- " tando aut non recitando prædicta terras tenementa et cætera præmiſſa, vel aliquam " inde parcellam. Et non obſtante non inveniendo officium aut inquiſitionem præmiſ-

" ſorum, aut alicujus inde parcellæ, per quæ titulus noſter inveniri debuit, ante
" confectionem harum Literarum noſtrarum patentium. Et non obſtante male
" recitando vel non recitando aliquam dimiſſionem vel conceſſionem de præmiſſis
" vel de aliqua inde parcella factam, exiſtentem de recordo vel non de recordo. Et
" non obſtante male nominando vel non nominando aliquam villam hamletam
" parochiam locum vel comitatum, in quibus præmiſſa vel aliqua inde parcella
" exiſtunt vel exiſtit. Et non obſtante, quod de nobis tenentium firmariorum ſive
" occupatorum præmiſſorum, vel alicujus inde parcellæ, plena vera et certa non
" fit mentio. Et non obſtante aliquibus defectibus [o] de certitudine vel computa-
" tione aut declaratione veri annui valoris præmiſſorum, aut alicujus inde par-
" cellæ; aut annualis redditus reſervati de et ſuper præmiſſis, vel de et ſuper
" aliqua inde parcella, in his Literis noſtris patentibus expreſſis et contentis. Et
" non obſtante ſtatuto in Parliamento Domini HENRICI nuper Regis Angliæ ſexti
" progenitoris noſtri, anno regni ſui decimo octavo, facto et edito. Et non obſtante
" aliquibus aliis defectis [p], in non certe nominando naturam genus ſpeciei [q] quan-
" titatem aut qualitatem præmiſſorum, aut alicujus inde parcellæ. ET non ob-
" ſtante ſtatuto de terris et tenementis ad manum mortuam non ponendis; aut
" aliquo alio ſtatuto actu ordinatione proclamatione proviſione ſive reſtrictione in
" contrarium inde antehac habitis factis editis ordinatis ſeu proviſis, in aliquo non
" obſtante. SALVO tamen ANDREÆ COLE Armigero et omnibus aliis perſonis
" quibuſcunque, præterquam nos heredes et ſucceſſores noſtros, talia jus clameum
" intereſſe et demanda quæcunque; qualia ipſe vel ipſi ſeu eorum aliquis habet
" ſeu habeant, aut de jure habere debent [r], de et in præmiſſis, ſeu aliqua parte
" vel parcella inde. Et ULTERIUS volumus, et per præſentes pro nobis here-
" dibus et ſucceſſoribus noſtris ordinamus et firmiter injungendo præcipimus,
" quod Præſes Societatis prædictæ pro tempore exiſtente, et Deputati ejus, ante-
" quam ipſi aut eorum aliqui ad executionem officii illius admittantur, tam ſa-
" cramentum corporale communiter vocatum *The oath of obedience*, quam ſacramen-
" tum corporale communiter vocatum *The oath of ſupremacy*, ſuper ſacroſanctis
" Dei Evangeliis præſtabunt, et eorum quilibet præſtabit, coram Concilio ejuſdem
" Societatis, aut aliquibus ſeptem vel pluribus eorum; cui quidem Concilio, aut
" aliquibus ſeptem vel pluribus eorum, ſacramenta prædicta adminiſtrare pro
" nobis heredibus et ſucceſſoribus noſtris plenam poteſtatem et authoritatem de
" tempore in tempus, quotieſcunque opus fuerit, damus et concedimus per præ-
" ſentes. PROVISO ſemper, et voluntas et intentio noſtra regia eſt, quod terræ et
" præmiſſa prædicta per præſentes, ut præfertur, conceſſa, ſeu eorum aliqua, non
" alienabuntur vel vendentur alicui perſonæ ſive aliquibus perſonis quibuſcunque,
" aliquo in præſentibus contento in contrarium inde non obſtante. Eo, quod
" expreſſa mentio de vero valore annuo vel de certitudine præmiſſorum ſive
" eorum alicujus, aut de aliis donis ſive conceſſionibus per nos ſeu per aliquem
" progenitorum ſive prædeceſſorum noſtrorum præfatis Præſidi Concilio et Soda-
" libus Regalis Societatis de London, et ſucceſſoribus, ante hæc tempora factis,
" in præſentibus minime facta exiſtit; aut aliquo ſtatuto actu ordinatione provi-
" ſione proclamatione ſive reſtrictione in contrarium inde antehac habitis factis
" editis ordinatis ſive proviſis, aut aliqua alia re cauſa vel materia quacunque, in

[o] *Sic in* Authent. [p] *Sic* ibid. [q] *Sic* ibid. [r] *Sic* ibid.

" aliquo

" aliquo non obſtante. In cujus rei teſtimonium has Literas noſtras fieri " fecimus patentes. Teste Me ipſo apud Weſtmonaſterium, octavo die Aprilis, " anno regni noſtri viceſimo primo.

" Per breve de privato Sigillo.

" PIGOTT."

May 20. At a meeting of the Council were preſent

The Preſident

The lord Henry Howard	Dr. Goddard
Mr. Aerskine	Dr. Clarke
Sir Robert Moray	Mr. Henshaw
Sir Gilbert Talbot	Mr. Evelyn
Sir George Ent	Mr. Colwall
Sir Theodore de Vaux	Mr. Oldenburg.

The preſident took the oaths of allegiance and ſupremacy according to the import of the additional charter.

He then nominated and conſtituted Sir Robert Moray and Dr. Goddard as two vice-preſidents, by virtue of the ſame charter, giving power to the preſident to appoint as many vice-preſidents out of the council, as he ſhall think proper. Theſe two likewiſe took the ſaid oaths of allegiance and ſupremacy.

It was ordered, that the ten pounds, advanced by the treaſurer to Thomas Willisel, as part of the thirty pounds appointed him by the council for one year, be allowed him upon his account; the payment to begin the 25th of March preceding.

The form of a certificate from the council for the ſaid Willisel was read, and ordered to be reviewed by Mr. Hoskyns, and upon the preſident's approbation ſent away to the ſaid Willisel.

It was ordered, that the lord Brereton, Mr. Charles Howard, Mr. Aerskine, Sir Robert Moray, Mr. Evelyn, Mr. Henshaw, and Mr. Hoskyns, or any three or more of them, be a committee to conſider of the improvements to be made of his Majeſty's grant of Chelſea-college, by diſcovering what may belong to it, by conferring with Mr. Cheney about thoſe acres, which he had yet in leaſe of the land of that college, and by commuting parcels of land with the ſame, in caſe he ſhould ſurrender his intereſt upon equitable terms to the Royal Society: and that the ſaid committee do meet at the lord Brereton's lodgings in Channel-Row, beginning to do ſo on the Saturday following at five in the evening; and that they make a report to the council.

Sir Theodore de Vaux renewing the motion formerly made concerning the exchange of the manuſcripts in the Arundelian-library, beſtowed by the lord

HOWARD upon the ſociety, the council adhered to their former vote, and the ſaid lord HOWARD declared, that as he had formerly left to the council the full diſpoſal of that library, ſo he did ſtill, deſiring only, that it might not be imputed to him, as if he were a hinderer of that exchange, he being indifferent, either to the keeping them for the ſociety, or the exchanging them with the univerſity of Oxford.

N°. 47 of the *Philoſophical Tranſactions* was licenſed.

At a meeting of the SOCIETY on the ſame day,

Mr. HOOKE produced again his magnetical watch ſo improved, as he ſaid, that it ſhould move in all poſitions, with any kind of motion, without ſtopping, or being diſturbed. He communicated the way of this improvement to the preſident, being not yet free to declare it in public, till he had brought it to perfection.

It was again ordered, that a minute-hand ſhould be fitted to it, to ſee the equality of the vibrations.

Dr. HOLDER's book, intitled, *The Elements of Speech*[1], was preſented to the ſociety by the author.

Sir THEODORE DE VAUX produced out of Sir THEODORE MAYERNE's collection a paper dated June 17, 1647, containing an account of an accident, which happened to one Mr. JOHN STEVENSON, who ſwallowed a bodkin, and after keeping it ſix weeks in his ſtomach voided it by the anus. It was read, and ordered to be kept on the file.

Dr. BALLE preſented a ſmall tract in Italian, written by Dr. DONATO ROSETTI of Leghorn, containing demonſtrations, as the author pretended, of ſome paradoxical propoſitions formerly publiſhed, viz. about the cauſe of æquilibriums; about floating bodies; a vacuum; the abſolute weight of the whole air, or any part thereof; the hight of the atmoſphere, and the way of experimenting, whether light is moved in any ſenſible time at the diſtance of forty or more miles. The preſident took the book with him to peruſe; after which it was ordered to be put into the ſociety's library.

Dr. BALLE likewiſe preſented two other ſmall tracts publiſhed in Italian, the one by the ſame ROSETTI, by way of letter to Signor FRACASSATI, concerning æquilibriums; the other by DEIGO ZERILLI, in confirmation of an opinion of JOHN ALFONSO BORELLI againſt STEPHANO DE GL'ANGELI, concerning ſome propoſition advanced by BORELLI in his book *de vi percuſſionis*, c. 14.

Mr. OLDENBURG produced divers particulars ſent him out of Portugal for the ſociety by Sir ROBERT SOUTHWELL and HIERONYMO LOBO a Jeſuit, and GABRIEL

[1] Printed at London 1669, in 8vo.

GRISLEY,

GRISLEY, a German phyſician, at Liſbon, accompanied with three letters, one from Sir ROBERT SOUTHWELL, dated March $\frac{6}{16}$, 1669[t]; the ſecond in Latin from father LOBO dated October 1, 1668[u]; and the third in Dutch from the German phyſician, dated March 15, 1669.

The particulars ſent with theſe letters were,

1. A printed book in the Portugueſe language, intitled, *Hiſtoria Geral de Æthiopia a alta, compoſta na meſma Æthiopia pelo padre* MANSEL D' ALMEYDA; *abbreviada con nova releycam e methodo pelo* BALTHEZAR TELLES, &c. printed at Coimbra in 1666, in folio.

2. Divers curioſities of ſeeds, nuts, reputed vipers-tongues, &c. according to the following liſts:

1. Some Taroco nuts	Theſe from Angola.
2. Two Angola onions	
3. Some vipers-tongues	
4. A tooth of the beaſt emgala	
5. Some black ſeeds, like beans of the tree ſapucaya	Theſe from Braſil.
6. Maracoya-ſeeds	
7. Seeds of the ſenſitive plant	
8. Quinteſſence of tobacco	
9. Two coco-nuts	
10. Some Braſil cheſnuts	
11. A root and ſtalk, which being maſticated draws rheum	
12. Arbor corall	Theſe, &c.
13. Ciſtus mas 1 Cluſii	
14. Ciſtus mas 2 Cluſii	
15. Ciſtus ledon 1 Cluſii	
16. Ciſtus ledon 4 Cluſii	
17. Ciſtus ledon 5 Cluſii	
18. Stramonium ſive Datura folio albo	
19. Thymelea	
20. Lentiſcus	
21. Laurus Americana	
22. Jaſminum Polemonium Monſpelienſe dictum	
23. Zizyphus alba	
24. Jaſminum Indicum flore buteo odoratiſſimo	
25. Ciſtus fœmina	
26. Alcea Japonenſis flore pleno mutabili	

[t] Letter-Book, vol. iii. p. 38.

[u] Ibid. p. 40.

27. Juni.

27. Juaiporus major Cluſii
28. Melopepo melionis notæ
29. Acaju Britannicum
30. Maracaju Braſilianum
31. Admirabilis Peruana flore vario
32. Fœniculum dulce Azoricum
33. Hyacinthus tuberoſus Indicus duas cebollas habens

} Theſe were ſent by Dr. GABRIEL GRISLEY, who alſo ſent with them a written catalogue of ſuch plants, as he had always in his reach; as alſo a printed catalogue of the plants of Portugal.

Of theſe ſeeds and bulbs Mr. OLDENBURG was deſired to diſtribute ſome to Mr. CHARLES HOWARD of Norfolk and to Mr. EVELYN, that they might try, whether they would grow in this climate.

Mr. OLDENBURG was deſired to return the ſociety's thanks to Sir ROBERT SOUTHWELL, father LOBO, and Dr. GRISLEY [x].

May 27. Mr. HOOKE produced again his magnetical watch with a minute-hand upon it; which being tried was found not to go very juſt; the cauſe of which defect was conceived to be in the pinion, that carried the hand: which defect was ordered to be amended.

Some inquiries were read, which had been drawn by Mr. OLDENBURG out of ſeveral authors; and a paper formerly brought in by Sir THEODORE DE VAUX, concerning Barbary, to be recommended to the lord HENRY HOWARD of Norfolk, who was going ambaſſador to the emperor TAFILETTA. Theſe were approved of [y], and the following additions made to them.

1. Whether *granum Nubiæ* will kill in a leſs quantity than any other known poiſon?

2. Whether they have any poiſon, that will kill by ſmell; and, if ſo, what that is?

3. What beaſts of prey they have, and the manner of catching them?

4. What kind of dogs they have? and what games they are inclined to?

5. To take the longitude and latitude of the places, as they travel.

Mr. OLDENBURG acquainted the ſociety, that the phyſician of the Prince of Tuſcany, Signor JOHN BAPTISTA GORNIA, preſent at this meeting, had delivered to him ſome philoſophical and medical queries concerning the qualities of mercury and its uſe in the iliac-paſſion, ſent him from Florence by one of the chief phyſicians of that place, Signor ALESSANDRO SIGNI: which queries it was humbly deſired might be recommended by the ſociety to the conſideration of ſome of the philoſophers and phyſicians of their own body for an anſwer thereto; which the

[x] His letters to them are entered in the Letter-Book, vol. iii. p. 95, 96, 97. [y] Regiſter, vol. iv. p. 50.

ſaid

ſaid Signor SIGNI would receive as a great favour, he being engaged in a conteſt about this matter with another phyſician at Florence.

Thoſe queries were ordered to be read, and they were as follow, with the caſe occaſioning them:

" Dum in iliacâ paſſione propinatur argentum vivum naturale ad pondus libræ " unius, præmiſſis præmittendis tum pro fœcum duritie et ſiccitate, tum pro " ſubſecutâ inteſtinorum inflammatione, quæritur,

" 1. Utrum ejuſmodi Mercurius nativus ſit ſuapte naturâ venenum?

" 2. Utrum, ſi moram ille traxerit in corpore animali per duos tresve dies, " exinde poſſit venenatam adeò ſive corroſivam induere qualitatem, ut lethalis " evadat?

" 3. Utrum idem Mercurius doſi ſupra dictâ in iliacâ paſſione exhibitus, præmiſſis " ſemper præmittendis, et ægro jam pro deplorato habito, ſit accommodatum " remedium?"

This gave occaſion of much diſcourſe, ſome members affirming, that it was frequently given both to children and grown perſons without any hurt: Others intimating, that it deſerved to be conſidered, that it cauſeth ſo odd an effect as fluxing or ſalivating; as alſo that it is uſed for the killing of all ſorts of worms in human bodies; on which accounts it ſeems to have ſome poiſonous quality in it.

Sir ROBERT MORAY related, that in the King's laboratory ſome mercury being put into a bolt-head with a flat bottom, and the air being exhauſted, the mercury had riſen much more eaſily than otherwiſe; which ſhewed, that things may be digeſted by that way without the danger of breaking glaſſes, which frequently happens by the expanſion of air, though perhaps it is imputed to other cauſes.

Mr. BOYLE remarked, that two very able phyſicians of his acquaintance gave to a woman deſperately ſick of the iliac paſſion above a pound of crude quickſilver, which remained ſeveral days in her body without producing any fatal ſymptom; and afterwards diſſecting the dead corps, they found, that part of her gut, where the excrement was ſtopped, gangrened; but the quinkſilver lay all on a heap above it, and had not ſo much as diſcoloured the parts of the gut contiguous to it.

After theſe and the like diſcourſes it was ordered, that the phyſicians of the ſociety, and particularly Sir GEORGE ENT, Dr. GODDARD, Dr. CLARKE, Dr. ALLEN, (the three laſt of whom were preſent) ſhould be deſired to conſider of the abovementioned queries, meeting at Sir GEORGE ENT's houſe, and to make a report of the reſult of their diſquiſition to the ſociety, in order to the returning of an anſwer to the Florentine phyſician, who had deſired it. Whereupon copies of thoſe queries were ordered to be made for thoſe four phyſicians, which the amanuenſis ſhould ſee delivered to them.

Mr. OLDENBURG read a letter to him from Monſr. HUYGENS dated at Paris May 29, 1669, N. S. [z], containing his opinion of Mr. HOOKE's new method of moving great pendulums with the force of a ſmall pocket-watch; as alſo his offer of communicating to the ſociety a new way of his own contrivance to print things written and geometrical figures with little coſt and great expedition; a ſpecimen of which accompanied this letter.

Mr. OLDENBURG was deſired to return the ſociety's thanks to Monſr. HUYGENS, and to acquaint him [a], that there were ſeveral members, who had upon this occaſion affirmed, that they had inventions of the like nature, of which trials ſhould be made, and a ſpecimen ſent to him; and that he ſhould thereupon be requeſted to communicate his method.

June 3. At a meeting of the COUNCIL were preſent

The Preſident

The lord HENRY HOWARD	Mr. EVELYN
Sir PAUL NEILE	Sir GEORGE ENT
Sir THEODORE DE VAUX	Dr. GODDARD
Dr. CLARKE	Mr. OLDENBURG.
Mr. COLWALL	

The Latin preface compoſed by Mr. OLDENBURG, and to be prefixed to Signor MALPIGHI's diſſertation on the ſilk-worm, was read, and approved.

It was ordered, that a ſalary of forty pounds a year be allowed to Mr. OLDENBURG, one of the ſecretaries of the ſociety, from the time, that the laſt preſent was ordered to him [b].

At a meeting of the SOCIETY, on the ſame day,

Sir GILBERT TALBOT preſented the ſociety with two models of winding ſtairs, one of which was ſingle, the other double, from ſome ingenious perſons at Hamburgh, who were not named.

Dr. GODDARD's paper, in anſwer to the Florentine queries brought in at the laſt meeting, concerning the fitneſs of mercury for the cure of the iliac paſſion, was read and recommended to the other phyſicians named at that meeting, to conſider of it, and to make ſuch additions or alterations in it, as they ſhould think proper; which being done, it was ordered to be ſent to Florence, as an anſwer of thoſe phyſicians, who were preſent at the ſociety, when thoſe queries were propoſed by Signor GORNIA.

Mr. OLDENBURG read three letters, written to him, one by Dr. THOMAS

[z] Letter-Book, vol. iii. p. 80.
[a] Mr. OLDENBURG's letter, dated May 31, 1669, is in the Letter-Book, vol. iii. p. 90.
[b] April 27, 1668.

BROWNE from Norwich, May 29, 1669 [c]; the second by Dr. EDWARD BROWN from Vienna, April 20, 1669 [d], inclosed in the preceding, and containing an account of some observations made in Hungary; and the third by Monsr. SLUSIUS from Leige May 26, 1669 [e], communicating his judgment on Mr. MERCATOR's Logarithmo-technia, sent him by Mr. OLDENBURG, and his general method for demonstrating the nature of the cycloid and infinite cycloidical figures. This last letter was recommended to the perusal and consideration of the president, who was desired to inform the society of the import of it.

The queries concerning Barbary were delivered to the lord HOWARD, with a desire, that he would endeavour to procure an answer to them; and they were ordered to be registered [f].

There was produced the model of an engine, contrived by Dr. WREN for the grinding hyperbolical glasses. But there being made some objections to it, viz. 1. That it would scarce work any such glasses without rings. 2. That the glasses would not come off well polished; the farther discourse of it, and of making trials with it, was deferred, till the inventor himself should be present to demonstrate and explain it, and to clear it from objections.

Mr. HOOKE mentioned, that he had a method of grinding elliptical glasses, which he would shortly communicate.

Dr. CROUNE being called upon concerning the experiments of transfusion and those of motion, said, that he had wanted hitherto the hands of the operator, who was therefore ordered anew to defer no longer the furnishing of all the necessaries for those experiments, nor his attendance at such times, as should be convenient for Dr. CROUNE.

June 10. At a meeting of the COUNCIL were present

The President

The lord BRERETON	Dr. GODDARD
Mr. AERSKINE	Mr. EVELYN
Sir ROBERT MORAY	Mr. COLWALL
Sir PAUL NEILE	Dr. CLARKE
Sir GEORGE ENT	Mr. HENSHAW
Sir THEODORE DE VAUX	Mr. OLDENBURG.

Mr. HOSKYNS made a report of what was done by the committee appointed May 20, 1669, for improving Chelsea-college, as follows:

" At a committee of the Royal Society for improving Chelsea-college, &c. at

[c] Supplement to the Letter-Book, vol. ii. p. 114.
[d] Letter-Book, vol. iii. p. 68.
[e] The copy of this letter in the Letter-Book, vol. iii. p. 83, has the date May 31.
[f] Register, vol. iv. p. 50. The answers to them were read to the society March 28, 1672.

" the lord BRERETON's lodgings May 22, 1669, in purſuance of an order of the " council of the 20th paſt, reſolved to

" Query the charter, and what is by this laſt granted to the ſociety of the " rights and poſſeſſions of the late college; and how far grantable?

" Item, Query, the map of the ſcite of the ſaid college, and its lands; which " map is in the hands of Sir ANTHONY MORGAN's executors, or Mr. COLE, or " Mr. CHENEY.

" Item, Query, the book of the ſaid college printed, and lately in Sir ANTHONY " MORGAN's cuſtody?

" Item, Query, the paper of bringing Uxbridge river to London of Mr. " PACKER; and whether the liberty and power of bringing that river were grant- " ed to the ſaid college, and the act of parliament to that purpoſe?

" Item, Query, the patent for making collection for voluntary contributions " throughout the nation, for advancing the ſaid college; and what was collected, " and in whoſe hands the ſame is?

" Item, the lord BRERETON is deſired to learn from Dr. WILKINSON by " means of Mr. CHENEY, what donations have been made to the ſaid college; " and what is become of the library?

" Item, Query, the patents, that Sir ANTHONY MORGAN mentions, but could " not find, made to the ſaid college?"[a]

The lord BRERETON reported[s], that Mr. CHENEY would be ready to treat with the ſociety about a year hence, when it would be in his power, the land to be treated about being now leaſed out.

It was ordered, that the council of the Royal Society, or three or more of them, be a committee, to conſider of the moſt convenient and effectual way to carry on the buſineſs of the ſociety; and that they meet the firſt time at the houſe of the lord viſcount BROUNCKER on the Monday following at five in the afternoon.

The certificate for THOMAS WILLIZEL, drawn up by Mr. HOSKYNS, was read and approved, as follows:

" Theſe are to certify all, whom it may concern, that the bearer hereof, THO- " MAS WILLISEL, is at preſent employed by the preſident, council and fellows " of the Royal Society of London for improving natural knowledge, to go into " ſeveral parts of his Majeſty's dominions for purpoſes ſuitable to their inſtitution, " according to authority unto them on this behalf given by his ſacred Majeſty,

[s] See the Minutes of the Council of May 20, 1669.

" that

" that now is: And they earneſtly recommend him to all generous and ingenuous " ſpirits, deſiring, that as occaſion ſhall require, they will aſſiſt him in promoting " a work ſo generally beneficial to all mankind. In witneſs whereof the ſaid pre- " ſident, council, and fellows of the Royal Society have hereunto cauſed their " common ſeal to be affixed this day of

At a meeting of the SOCIETY, on the ſame day,

Dr. CHRISTOPHER WREN explained the model of his engine for grinding hyperbolical glaſſes, viz. upon what geometrical principle it depends, and how that is to be applied to practice. The preſident affirmed, that he had conſidered the principle, it being formerly imparted to him, and had found it mathematically true; and as to its application to uſe, the ſucceſs of that depended upon experiment. The contrivance was, that in this engine there was a complication of three different motions, whereby three bodies ſo work upon one another, as to produce an hyperbolical figure; any irregularity, made by the encountring of one another, being immediately rectified. Dr. WREN intimated, that great care muſt be had in ſetting the engine, that being ſomewhat nice, ſince the three axes muſt all interſect in a point, and one at right angles with the other two.

It was ordered, that the paper containing the demonſtration of this ſhould be regiſtered [h], and an engine be made by the care of Mr. HOOKE, to try the principle in matter.

Mr. HOOKE produced the model of another engine contrived by himſelf, ſo as to work a glaſs into any elliptical or hyperbolical figure aſſigned, by two motions, one upon the centers, the other upon a flat.

Some objections were made againſt it; but an engine was ordered to be made for trial.

Dr. GODDARD produced again his paper, anſwering the three Florentine queries concerning mercury, as it had been reviewed by the other phyſicians; and it being read and approved of, it was ordered, that Mr. OLDENBURG ſhould be deſired to ſee it tranſmitted to Florence, and to ſignify to the perſon concerned, that the ſaid queries having been propoſed at the ſociety by Signor GORNIA, phyſician to the prince of Tuſcany, the ſociety had committed them to the conſideration of the phyſicians preſent at that time, who had given this anſwer thereto; which was ordered to be regiſtered [i], as follows:

" Dum in iliacâ paſſione propinatur Mercurius nativus ad pondus libræ unius, " præmiſſis præſidiis requiſitis, cum pro fæcum duritie et ſiccitate, tum pro ſub- " ſecutâ inteſtinorum inflammatione, inquiritur,

[h] Regiſter, vol. iv. p. 51. It is publiſhed in June 1669.
the Philoſ. Tranſact. vol. iv. n° 48, p. 961, for

[i] Regiſter, vol. iv. p. 65.

" 1. Utrum idem Mercurius naturalis ſit ſuapte naturâ venenum?

" 2. Utrum, ſi moram traxerit in corpore vivo per duos treſve dies, exinde " poſſit adeo venenatam ſive corroſivam qualitatem induere, ut inde lethalis " evadat?

" 3. Utrum idem Mercurius eadem doſi in iliaca paſſione propinatus, ſemper " præmiſſis præmittendis, et ægro jam pro deplorato habito, ſit remedium con- " veniens?

" Ad Primam Quæſtionem Reſponſio.

" 1. Mercurius nativus ſive crudus, in exhalationes vi caloris elevatus, paralyſin " vel ſtuporem induere poteſt; ut in iis, qui vaſa argentea, et alia, ex metallo " viliori fabrefacta, deaurare ſolent, aliquando conſpicitur; uti etiam de operariis, " qui in argenti vivi fodinis occupati ſunt, perhibetur. Eundem, unguentis per- " miſtum et corpori inunctum, vel aliter exterius applicatum, ptyaliſmum ſeu ſali- " vationem (præter alvi fluxum quandoque) excitare compertum eſt: neutrum " tamen horum eundem, licèt ad libræ quantitatem propinatum, ut in iliacâ paſ- " ſione ſæpius factum, efficere obſervatum eſt; nec, licèt poſt Mercurium crudum, " in hoc morbo exhibitum, ſæpius ægrum interiiſſe contigerit, id à Mercurio po- " tius quàm vi morbi accidiſſe, ulla ratione unquam conſtitit; uti neque quem- " quam à Mercurio vivo devorato extinctum fuiſſe. Quum autem ſtupor vel pa- " ralyſis à Mercurio, minutiſſimis corpuſculis corpus ingreſſo (ut quando exhalatio " ejus, vi caloris elevata, inſpiratione trahitur) et poſtea in majores particulas (quæ " reverâ globuli minuti admodum ſunt) unito, et nervoſi generis fibrillas pre- " mente, fieri poſſit; haud majori jure idem Mercurius ſuapte naturâ venenum, " quàm corpus quodvis durum, membrum corporis aliquod exteriùs premens, " eique ſtuporem inducens, pro veneno habendum videtur. Quumque dicta ſa- " livatio, tempeſtivè excitata, morbis curandis et ſanitati reſtituendæ apta ſit; " hujus effectûs nomine multo minùs Mercurius venenis accenſendus videtur; niſi " purgantia vel maximè benigna, ut rhabarbarum, ſena, &c. quòd diarrhœas con- " citent, pari jure pro venenis reputanda ſint. Videtur ergo, ex ejus effectibus, " hactenus notis, Mercurium nativum ſuapte naturâ venenum eſſe, non liquere.

" Ad ſecundam. Supponere videtur quæſtio ſecunda, Mercurium extra corpus " qualitate adeo venenatâ ſeu corroſivâ præditum non eſſe, ut inde lethalis evadat, " ſed per duorum vel trium dierum in corpore moram, talem induere poſſe. " Qualitatem venenatam quod ſpectat, nondum inter philoſophos vel Medicos " convenit, in quo ejus eſſentia conſiſtat, vel quod diſcrimen ſtatuendum, ſive " quis terminus ponendus ſit, inter id, quod corpori merè noxium quoviſmodo, " et id, quod venenatum habendum ſit. Certè, quod quantitate ſpectabili, ſine " vitæ diſcrimine, corpori ingeri poteſt, venenum minimè reputandum videtur; " ut de Mercurio crudo ſatis exploratum eſt. Corroſivam qualitatem quod ſpectat, " tantùm abeſt ut eam obtineat Mercurius nativus, ut ſpiritus chymicos maximè " corroſivos, v. g. vitrioli, nitri, ſalis, &c. efficaciter obtundat; adeò ut Mer- " curio commiſti, intra corpus aſſumi tuto poſſint; id quod conſtat ex Mercurio, " dulci dicto, (ejuſdem præparatione maximè notâ et uſitatâ) cui permiſcetur ſpi-

" rituum,

" rituum, corroſivorum dictorum, dimidium ejus quantitatis, quam Mercurius " ſublimatus continet; et qui in mediocri doſi, tantum ejuſmodi ſpirituum in ſe " habet, quantum, niſi tali modo retunderetur vel aliter dilueretur, in corpus aſ- " ſumi tutò non poſſet. Si igitur humori, vel materiæ alicui in corpore corro- " ſivæ ſeu acri, jungatur Mercurius crudus, ejus acrimoniam retundere potius, " quam acrimoniam exinde ſibi acquirere aptus eſt. Et quâ aliâ ratione venena- " tam ſeu corroſivam qualitatem biduanâ vel triduanâ in corpore morâ induere " poſſit, intellectu haud facile eſt.

" Ad tertiam. Scitè admodum Celſus; nihil intereſt, quàm ſit tutum præſidi- " um, quod eſt unicum: ideoque in iliaca paſſione, præmiſſis præmittendis, aliiſ- " que omnibus cum ratione, fruſtrà licèt, tentatis, ut æger jam pro deplorato " habeatur; mercurius crudus propinatus videtur conveniens remedium; utpote " à quo, licet non ſemper, aliquando tamen levamen ſenſiſſe ægros compertum " ſit: et quantitatem quod ſpectat, quum omnis ejus noxa (ſiqua talis contigerit) " corpori illata, ab eodem in corpuſcula minutiſſima ſoluto pendeat, cui vel " unica drachma hac ratione ſufficere poteſt; quumque mole vel pondere exiguo, " in iliaca paſſione, ad inteſtinorum implicationes diducendas et explicandas, vel " materiam iis contentam ante ſe agendam et promovendam, non ſufficiat; " ſumma ratione ad majorem ejus quantitatem, adeóque ad libram, confugiendum " videtur."

Mr. OLDENBURG produced and read two papers, one of which in Latin was ſent to him by a member of the ſociety, who would not be named, containing ſome animadverſions upon the rules of motion communicated to the ſociety, and made public, by Dr. CHRISTOPHER WREN and Monſr. HUYGENS [k], viz. that from thoſe rules it followed, there would be an increaſe and diminution of the ſum of motion in the world: which the animadverter eſteemed to be ſuch a paradox, as was not to be admitted, unleſs it were ſupported by irrefragable experiments. Dr. WREN being preſent declared, that he had foreſeen and conſidered that conſe- quence, and eſteemed it as a corollary, that naturally followed from his theory, and was true, having been verified by experiments made by himſelf and others, and there appearing none to the contrary. This being entertained by the ſociety as very rational, it was ordered, that Mr. OLDENBURG ſhould be deſired to ac- quaint the author of the animadverſions with this anſwer of Dr. WREN, and to return him the ſociety's thanks for imparting thoſe ingenious reflexions of his; adding, that in caſe he had made, or ſhould make, any experiments diſproving the ſaid conſequence, the ſociety would be very glad to be informed thereof for farther

[k] They were ſent to Mr OLDENBURG in a letter from Mr. FRANCIS WILLUGHBY, dated May 29, 1669. entered in the Letter-Book, vol. iii. p. 89. in which letter he acquainted Mr. OLDENBURG, that he might publiſh theſe papers in the *Philoſophical Tranſactions*, if he thought them worth it. " But the author of the ani- " madverſions, *added he*, deſires to have his name " concealed, his only deſign being to extort ſome " experiments from the ingenious authors of that " theory, which he thinks but reaſonable; and " that no man ought to think his fame ſtrong " enough to impoſe an improbable thing upon " this inquiſitive world, without either reaſons or " experiments."

diſquiſition.

disquisition. This paper was ordered to be registered [l], together with another of the president, wherein it is proved, that the cases of motion are but three [m], as follow.

" Let $s = Rq$
" $r = Sq$
" $x = qe = qo$

" Then $S \overset{\circ}{+} x = Re$ $\quad r \overset{\circ}{+} x = Se$
" $S \overset{\circ}{-} x = Re$ $\quad r \overset{\circ}{-} x = So.$

" And $rs \overset{\circ}{+} rx = Re \times R$ $\quad re \overset{\circ}{+} sx = Se + S$
" $rs \overset{\circ}{-} rx = Ro \times R$ $\quad rs \overset{\circ}{+} sx = So + S.$

" And their sums whose difference is

" When $x \leq S$ are $\left\{ \begin{matrix} 2rs \pm rx \mp sx \\ 2rs \mp rx \pm sx \end{matrix} \right\} r - s$ in $2x$.

" When $r > x > s$ are $\left\{ \begin{matrix} rx \pm \frac{2}{0} rs \mp sx \\ rx \mp \frac{0}{2} rs \pm sx \end{matrix} \right\} r - x$ in $2S$.

" When $x \gtrless r$ are $\left\{ \begin{matrix} rx + Sx \\ rx + Sx \end{matrix} \right\} o.$

The other paper in English produced by Mr. OLDENBURG contained some experiments concerning the motion of sap in trees, made in the spring of that year by Mr. FRANCIS WILLUGHBY and Mr. WRAY, both members of the society. It was read, and ordered to be registered [n]; and Mr. OLDENBURG was desired to request them, that as they had opportunity, they would try some experiments, to find, whether there be any circulation of the juice in vegetables as there is of blood in animals.

Mr. OLDENBURG communicated a Latin letter to him from Signor CASSINI, dated at Paris June 10, 1669, N. S. [o] giving notice, that he had prosecuted the ephemerides of the satellites of Jupiter, for two years more, and intended to publish them, and to send a copy of them to the society, when printed.

June 17. Dr. WALLIS, by the hands of Mr. OLDENBURG, delivered a dozen of his books, intitled, THOMÆ HOBBES *Quadratura Circuli, Cubatio, Sphæræ, Duplicatio Cubi, confutata* [p]. One of which books was for the society, another for the president, a third to the treasurer, two more to the secretaries; and the other seven were distributed to Mr. BOYLE, Sir ROBERT MORAY, Sir JOHN LOWTHER, Dr. WREN, Mr. HOSKYNS, Mr. COLLINS, and Mr. HOOKE.

[l] Register, vol. iv. p. 73.
[m] Ibid. p. 76.
[n] Ibid. p. 77. It is printed in the Philos. Transact. vol. iv. n° 48. p. 963.
[o] Letter-Book, vol. iii. p. 105.
[p] Printed at Oxford 1669, in 4to.

Mr. HOOKE excused himself for having prepared no experiments for this meeting. He was ordered to take care, that against the next either his own new instrument for working elliptical glasses, or that of Dr. WREN for grinding hyperbolical ones, might be ready; as also that a couple of long pendulums, to be moved by the force of a pocket-watch, be prepared, to see how long they would go even together.

Mr. OLDENBURG read an account in Latin sent him in a letter from Mr. COLEPRESSE dated at Leyden April $\frac{3}{13}$, 1669, which account was written by JAMES GEORGE SECMON, M. D. The letter and account were ordered to be entered in the Letter-Book [q]. The account was as follows:

" Quid mihi de fodinis Norwegiæ constiterit paucis dabo.

1. " Esse illic duorum metallorum fodinas, præcipuè ferrarias et argentarias, pro " comperto habeo, longo intervallo regionum à se distantes (argentarias autem se " diligenter lustrasse, et de his respondere posse;) casuque primùm inventas. Ar- " gento puro ignibus subterraneis fuso, et ad latera montis scilicet petræ (quæ " longitudine præterpropter milliare est, ad cujus radices operæ, artifices, et præ- " fecti, quasi urbecula quadam habitant) adhærere deprehenso. Alia signa inve- " niendarum fodinarum nulla tum fuisse, aut etiamnum esse, nisi communia illa, " à RODOLPHO AGRICOLA, et aliis oblensa, inexpectatam scilicet arborum et " plantarum aliarum, locis hujusmodi petrosis, et sterilibus, lætitiam, &c.

" 2. Esse autem in summo jugo hujus petræ, utrinque plano, facta orificia fo- " dinarum plura, primo aditu sat patula, multis antris, interdum denis, in pro- " fundum, et longum continuatis, in quæ totidem scalis adhibito lumine descen- " ditur: venas autem plerumque ab occidente versus orientem tendere; sæpe " etiam interrumpi; unde antrorum illa multitudo.

" Adhiberi etiam virgam divinam ad inveniendas venas, sed nullo sæpe suc- " cessu, fortè (ille inquit) quod corylus debito modo et tempore cæsa non sit.

" 3. Metallicidas opus in 12 horas in opem continuare, manè et vesperi, aliis " egredientibus, aliis in fodinas succedentibus, quorum numerus in universum ad " 300 fere accedit. Instrumenta sunt malleus, et cœlum, scilicet scalprum ferreum " capite plano, pede lato et acuto, quo decisum de petrâ metallum petrosum fu- " niculis et furculis sub dium educitur, ubi ab examinandi artificibus deprehenso, " * * * *, nullâ certâ proportione, contineri in materia metallica, metalli tota " massa urgentibus malleis, scilicet funibus per molas aquatiles motis, contun- " ditur, et furnis majoribus, prout sensim sensimque purgatur, argentum exco- " quitur.

" Ingeniosiores fusores argentum vivum adhibent, ut id alterum argentum " quasi absorbeat; post separandum.

[q] Vol. iii. p. 54, 55.

" 4. In

" 4. In fodinis ferreis teſtabatur, plus eſſe admixtum heterogenii, in utriſque " unici tantum generis metallum inveniri.

" Etiamſi enim fieri poſſit, ut diverſi metalli, ut æris, auri, aliquantum ad- " mixtum inveniatur, tamen id tantillum eſt, ut ſeparatione indignum eſſe judi- " cant.

" In fodinis autem argenteis etiam metallum purum inventum eſſe, quod ul- " terioris elaborationis non indigeret. Aliquando inventum eſſe fruſtum (maxi- " mam partem) purum, longitudine trium cubitorum, latitudine, et craſſitie ſeſqui- " cubitali, ſed id rarùm admodum eſſe.

" Magnetes et ex ferreis, et ſuis mineris erui.

" 5. Venenatas exſpirationes aliquando etiam operarios interfeciſſe, nec ſe ſcire " (ait) an remedio aliquo, ut cordiali aliquo pharmaco, ſe præmunire ipſi ſciant.

" Aquas, quæ nonnunquam copiosè affluunt, laborem impedire, ſed per in- " ſtrumenta, in eum uſum elaborata, extrabilis.

" Homunculos, ſcilicet ſpectra ſubterranea (more ipſorum metallicorum) nigris " linteis veſtita, ſibi morem gerentes non lædere, ſed adjuvare, in ſe peccantes " ſæpe perimere &c."

Mr. OLDENBURG produced a printed relation with a cut repreſenting a double matrix, ſaid to have been in a woman lately opened at Paris; in the falſe one of which two matrixes there had been conceived a fœtus, which at laſt was broken looſe, and fallen into the abdomen, and ſo killed the mother [r]. Some members were of opinion, that it might not be a double matrix, but what is called by anatomiſts *tuba Fallopii*.

Sir ROBERT MORAY gave occaſion to diſcourſe of the preſent eruption of Mount Ætna, and how the combuſtible matter under ground, as ſulphur and nitre &c. might come to be ſet on fire. Some members thought, that by the breaking of ſome ſtones, and their falling upon collected inflammable matter, fire might be ſtruck, which kindling it, might be the cauſe of ſuch conflagrations.

Mr. HOSKYNS mentioned an inſtance of allum-ſtones in the north of England, which being broken ſmall, catched fire, and burnt all away.

It was thought deſirable to write to ſome curious and intelligent perſon reſiding in Sicily, and to deſire him to give the ſociety an account of all the remarkable circumſtances of the eruption of Ætna.

[r] Philoſ. Tranſact. n°. 48. p. 969.

Mr.

Mr. OLDENBURG ſaid, that he had already written to Signor ALFONSO BORELLI, profeſſor of natural philoſophy at Meſſina, to that purpoſe [1], and hoped to receive a good account from him on that ſubject.

The operator was ordered to attend the preſident at the Navy-office, and to receive his lordſhip's orders how to fit ſome of the inſtruments to be ſent to ſea with the lord HOWARD.

It was moved alſo, that that inſtrument might be fitted for the lord HOWARD, which had been formerly contrived by Mr. HOOKE for fetching up from the bottom of the ſea what might be there, as ſtones, ſhells, plants, &c. which is done by a couple of ſprings ſhutting and catching as ſoon as the inſtrument touches the ground.

Mr. HOOKE mentioned, that he hoped to be now able to rectify the engine formerly contrived by him for the well grinding of great ſpherical glaſſes ſo as to free it from thoſe defects, which were hitherto diſcovered therein: which he was encouraged by the ſociety to put in execution.

The preſident put Mr. HOOKE in mind of making a true meridian for obſerving the preſent variation of the needle; and alſo to make at laſt the obſervation, formerly recommended to him, concerning the magnitude of the earth.

June 24. At a meeting of the COUNCIL were preſent

The Preſident

The lord BRERETON	Mr. HENSHAW
Sir ROBERT MORAY	Mr. COLWALL
Dr. GODDARRD	Mr. OLDENBURG.

The preſident having propoſed from the commiſſioners of the navy, that the ſociety would undertake the weighing up of the wrecks in the Thames at Woolwich; upon debate, it was reſolved, that his lordſhip ſhould be deſired to return this anſwer, that the ſociety being deſtitute of the neceſſaries for undertaking ſuch a work, were ready to give their aſſiſtance to his Majeſty's officers therein, and to depute certain perſons of their body to take care of the performance, referring themſelves to his Majeſty's gratification upon the effecting thereof.

The preſident reported, that the committee appointed June 10. to conſider of the way to carry on the ſociety's buſineſs, had agreed upon a letter, once more to be ſent about for ſoliciting the arrears; and that ſuch a letter was drawn up, and ready to be preſented to the council: which being read, it was, after ſome amendments, ordered, that ſeveral copies ſhould be made of it, directed firſt of all to ſuch fellows, as were in and about London, and their delivery to be recommended to thoſe, who had propoſed ſuch, as were in arrear to the ſociety. The ſaid letter was in the following terms:

[1] His letter in Latin was dated May 18, 1669, and entered in the Letter-Book, vol. iii. p. 79.

" Sir,

" By order of the council of the Royal Society I am to give you notice, that " you are in arrears of the contribution, which by your ſubſcription you engaged " yourſelf to pay, the ſum of ——— : and to offer to your conſideration, that the " ſociety being not yet endowed with any revenue, is not in a capacity to bear the " charges of the proper work thereof, and maintain the neceſſary officers, without " the contribution of the fellows; ſo that if the ſociety fail therein, the diſhonour " of it muſt ſight upon all ſuch, as do not pay their contribution. It is therefore " hoped upon ſuch conſiderations (which perhaps might not occur to you before) " that you will forthwith take order for your payment of all your arrears, and " duly pay the ſaid contribution for the future, as long as you ſhall think fit to " continue a fellow of the ſociety."

The ſociety did not ſit this day, on account of the want of a ſufficient number [t].

July

[t] Between this and the next meeting Mr. OLDENBURG read the following letter from NATHANIEL FAIRFAX, M. D. which, though not read to the ſociety, yet deſerves a place here on account of the remarkable fact contained in it.

Woodbridge [in Suffolk,] June 28, 1669.

Sir,

* * * The entertainment of the preſent addreſs is to be a relation of ſelf-ſtarving, which having had the luck to take air beyond and wide of you, I thought in time ſome ſtory or other thereabouts might haply arrive at you. Wherefore more to gratify your curioſity, than that I judge it very inſtructive philoſophically, I have taken occaſion to pen it, and that brokenly too, as I found it in my looſe diary, being as follows:

Mrs. Jane Naunton, a maiden lady, about twenty-three, deſcended from anceſtors of condition near this place, and ſojourning under the ſame roof with myſelf, very fat of body, but handſome, having appetite and digeſtion both of ſolids and liquids beyond what is uſual with thoſe of her qualifications, being no farther concerned with religion than as imagined heroicalneſs was the meaſure of it, a devoted affecter of romances, with the life and ſoul whereof ſhe was practically ſpirited, as a good Chriſtian is with that of the bible; of a ſpirit ſuperlatively high and precipitating, averſe to ſecond thoughts, and pertinacious; otherwiſe well accompliſhed and deſerving; in the latter end of March laſt took a penſe, upon a neglect, as ſhe thought, of ſome concerned in the improvement of that, whence ſhe, being an orphan, ſhould derive the accommodations of life. When perceiving her accounts growing beyond what ſhe could anſwer from her proper income or other genteel method, ſhe reſolved upon ſtinting her expences by a new found invention of faſting, till death ſhould ſet her beyond the reach of ſecular wants. Her principle was this, that it was more commendable for her to die than to do any thing unworthy of her as a gentlewoman; but to be beholden to kindred for aſſiſtance of livelihood, or otherwiſe betake herſelf to the artifices of the yeomanry, was ſuch. Now as for laying violent hands on herſelf, ſhe was againſt that, becauſe the fruit of an haſty paſſion or moodineſs, which were rudeneſſes ill becoming ſuch a daughter of reaſon and courtſhip, as ſhe muſt bear herſelf. But becauſe convenience for a generous way of dieting could not be procured without gratuities from friends, ſhe conceived herſelf no ways bound to uphold her body by theſe ignoble ſupports. Nor muſt this be ſelf-murther any more than a ſoldier's expoſing his body in the field, when a cowardly flight might ſave him. As for the thwartings of holy writ, ſhe was not very careful to ſalve them; for concluding this to be virtuous, ſhe knew, whatever was ſo, muſt needs be religious. Upon this foot ſhe ſtood againſt all the world, and April 1ſt, began to take up in diet, only eating a jumball or two at a treat, and drinking ſhort of her wont. Second day ſhe betook herſelf only to ſmall beer, of which ſhe took ſometimes three, ſometimes two [glaſſes] ſometimes leſs; at which rate ſhe held on for about a fortnight, eating nothing; forſaking alſo tobacco (of which ſhe had been a taker) from the firſt day. During this time ſhe lived under extreme hunger and cravings, and had ſcurvy remembrances by gripes and ſtitches, which not being able to continue to keep to herſelf, when with us, ſhe was fain to retire.

Yet

July 1. Mr. OLDENBURG read a written letter to him by M. HUYGENS from Paris

Yet the ſecond week, ſhe ſaid, was better than the firſt.

About the middle of April ſhe fell again to tobacco, which in two or three days gave her two or three ſtools, a way of evacuation, which till then had been wanting from the firſt day: nor did that effect from tobacco laſt any longer than thoſe three days.

At a fornight's end, her arms and hands grew deadiſh, and winterly (which before were fair enough) and ſo continued; her face wan, except when paſſion had ſtirred her.

About three weeks end ſhe had her catamenia in courſe, when in five or ſix days time ſhe ſucked the juice of ſix China oranges. Nearer the month's end, to cure the furrings of her tongue, ſhe ſucked ſparingly certain Seville oranges; her mouth growing ſcorbutical, and her gums bleeding, for which ſhe uſed by way of gargle ſalt and water.

April 30. ſhe ſucked part of a limon, and then ſhe abated of her beer-drinking, only the third part of her glaſs-tumbler, holding in all but ℥vi, and many days none at all; only from thence to the 11th or 12th day ſhe had taken down the juice of ſixteen limons. Moſt nights ſhe ſlept not till four in the morning, between which and ten ſhe had uſually three or four broken ſleeps. Then her fleſh waſted ſenſibly, the ſkin ſhrunk, and ſcurf peeled off. She was always cold to the touch, and her feet, ſhe told me, colder than her hands, to her own ſenſe; her pulſe very low, her urine lixivial, of a deeper aduſt citrine than that of the ſcurvy.

The 11th day walking in her bed-chamber, her ſpirits failed her, and ſhe fell down and hurt her arm; whereupon ſhe gave over walking afterwards. Whereas her bed uſed to warm her, after ſhe had laid a little while in it, now ſhe remained cold night and day: her head ached, her legs pained her at the bone. In the heat of the day ſhe was beſt. The ſun declining, at four or five ſhe was forced through cold to bed, yet could ſhe not bear a fire in her chamber; it made her faint, ſhe ſaid. For air-ſake ſhe always kept her caſement open by the bed-ſide. She gave over her fine needle-work, (at which ſhe was ingenious beyond moſt gentlewomen) a fortnight e'er this; as alſo reading, becauſe her eyes pained her upon any wiſhed looking.

17th, She roſe between twelve and one, and then and thenceforward could only ſit up till her bed was made. 18th. ſhe could gain no heat in bed; and was ſo as never before, wild in her head, ſo as ſhe could not lie down, her head fared ſo confuſedly. She complained of a coldneſs in her ſtomach and pain in her ſide, diſreliſhed beer, and had her courſes out of courſe.

19th. Sitting up as before, ſhe complained her head was giddy, and legs trembled; and ſhe told me ſhe believed her palate was more critical than when well.

From 22d to 25th took a little vinegar, and ſcarce any juice of limon: but 26th returned to juice again. 27th and 28th full of fainting fits. 29th and 30th ſlept often, and was faint at waking, all day long. 30th and 31ſt drank nothing.

June 1ſt, 2d, drank nothing, nor 3d till night, having ſpent the day in frequent faintings, for which ſhe only uſed refreſhing ſcents. From the 4th to 6th ſhe ſweat often, and that night burnt extremely: ſo held on 7th, 8th, and 9th, abating in her beer, and had ſeveral agonies and throws night and day: thoſe broke on her again almoſt in courſe. 10th Her throws increaſed, which ſhe had hitherto borne like a Roman: now they extorted outcries. So ſhe continued much in the condition of a woman in travel at times to 16th. She devoured more oranges, to ſtrengthen, I ſuppoſe, but ſhe ſaid becauſe they grew drier. Then either through fear of death, or ſenſe of pain, or both, ſhe was fain to give in, and riſing betimes dreſſed for a walk, which ſhe was confident ſhe could go through, her ſpirit was ſo bent upon it. Accordingly, by the help of myſelf on one ſide, and her nurſe on the other, after ſeven or eight reſts we hauled her a mile out of town, where ſhe took horſe, and rode at night to Ipſwich. That day ſhe began to feed on buttered peas, which, ſhe told me, made her ſick; after that a pint of ſtrawberries (and that day nature befriended her by ſtool) afterwards fiſh and bread. Fleſh-meat ſhe cannot yet bear. Butter is ſtill offenſive. Laſt Wedneſdsy ſhe told me, ſhe thought ſhe ſhould have died, being afflicted all day with head-ach and fainting. Her countenance is paliſh and wan as much as ever: and ſhe is now taking diet with as much warineſs, as ſhe had forſaken it with raſhneſs, being at preſent as great an inſtance of a trifling reſolver, as ſhe was before of an adventurous faſter.

This account I could eaſily gather, ſhe coming daily to my lodging, whilſt able, and I waiting upon her almoſt every day in her chamber, when weakneſs had confined her. Aſking her towards the end of her faſting, how her ſtomach ſtood to victuals, ſhe anſwered me, that ſhe neither craved food, nor loathed it. As for corner-bits, I believe ſhe had none. The inſtance to me is confirming as to that common remark, *Natura paucis contenta.*

June 26, 1669, N. S. [s], containing his acknowledgments for the approbation expreſſed by the preſident at a meeting of the ſociety, concerning his rules of motion; as alſo a deſcription of a burning concave of thirty four inches diameter, melting all ſorts of metals, and vitrifying brick in leſs than a minute; together with another proof of his new way of printing, which proof was made by a geometrical figure, and an intimation of a very curious book of Signor REDI, a Florentine philoſopher, touching the generation of inſects; and a remark on Mr. HOOKE's pendulum applied to a pocket-watch. It was ordered, that he ſhould be deſired to acquaint the ſociety, how thick the iron was, that was melted by the burning concave.

Mr. HOOKE taking notice of the remark made on his long pendulum moved by a pocket-watch, viz. that the ſmallneſs of the vibrations renders the pendulum more ſenſible of the impreſſion, which the watch makes upon it, ſaid, that the weight appendant to the ſtring was ſo great, that that impreſſion could have no power upon it.

After this came in the Venetian ambaſſador, Signor MOCENIGO, to be preſent at the experiments appointed for this meeting, which were theſe,

1. The magnetical watch of Mr. HOOKE, going ſlower or faſter according to the greater or leſs diſtance of the load-ſtone, and ſo moving regularly in any poſture.

2. Mr. BOYLE's way of weighing water in water; of which he was deſired to give in the deſcription to be regiſtered.

3. His new method of exhauſting the air out of water in a glaſs cane, whereupon the water being ſhaken, it fell againſt the end of the cane with a noiſe like that of a ſtone or metal.

4. Burning coals in a box diſſolved by air, as a menſtruum, in the opinion of Mr. HOOKE.

5. A microſcopical obſervation of moſs-ſeeds.

6. A repreſentation of the manner, how the planets may move from a natural cauſe in an ellipſis by Mr. HOOKE, who was ordered to proſecute the experiment.

He was ordered likewiſe, to prepare againſt the next meeting the long pendulum with great weights formerly appointed, to try how long they would go even together; as alſo one of the two new engines for grinding elliptical and hyperbolical glaſſes.

July 8. Mr. BLOME preſented a petition to the ſociety about encouraging and

[s] Letter Book, vol. iii. p. 103.

licenſing

licenſing his Engliſh work of geography; which petition being read, it was ordered, that Dr. GODDARD, Mr. COLWALL, and Mr. HOOKE ſhould be deſired to conſider of that petition and of the book itſelf, and to report to the ſociety their opinion upon the whole what they thought proper to be done in that affair.

The experiment of repreſenting the manner of the elliptic motion of the planets was again made, and ordered to be farther proſecuted at the next meeting.

Dr. TIMOTHY CLARKE communicated a letter to him in Latin of June 29, 1669, from Dr. JOHNSTON concerning the young faſting woman in Derbyſhire, named MARTHA TAYLOR, together with his apprehenſion of ſome impoſture in the affair; which made him deſire, that by the authority of his Majeſty ſhe might be ſearched by ſome intelligent phyſician, aſſiſted by a juſtice of the peace. The letter being read, Dr. CLARKE was thanked for his communication, and deſired to permit a copy of the letter to be taken for the ſociety's Letter-book; which he readily allowed. It was as follows [x]:

" Ornatiſſime Domine, Junii 29, 69.

" Ne igitur diu humanitatem veſtram detineam, quæ de longa inedia puellæ " Derbienſis obſervavi, quâ poſſum brevitate, perſtringam, ejuſque hiſtoriam " duplici tabula delineabo: *Hac*, ut ex proprio accepi ore, quam ideo exaro, ut " ſi aliis variam narravit fabulam, facilius ejus fraus appareat: *Illâ*, ex propriis " obſervationibus. Prioris ut contraham velum, MARTHA TAYLOR, 19 annorum, " filia cunicularii, metallis damnati, dum 11 ætatis agebat annum, ex ictu circa " regionem renum, per 14 dies febricitabat, cum paralyſi inferiorum [illegible]orum. " Tum inopinanter è lecto ſurgit, eâque per 10 dies ſcholæ abecedariæ relegatâ, " iterum increbuit febris et paralyſis per 14 alios dies, et per decem convaluit. " Tum melancholiâ obfuſcata religiosâ (recurrente paralyſi) tandem deliravit, " maniâ per ſex menſes leviori correptâ. Interim ſingultus tam immanis, ut per " 400 vel 500 paſſus audiretur. Quoties à cruciatu ſingultûs liberata, ſcripturæ " ſacræ, aut librorum religioſorum lectione noctu et interdiu ſe exercebat. " Circa feſtum omnium ſanctorum 1665, menſtrualis erupit fluxus, cum urina " nonnunquam cruenta; et circa feſtum ſancti MICHAELIS Archangeli 1667, ob- " ſerato iſto profluvio, tum præter ſingultum (qui adhuc permanet) violento vo- " mitu omnia conquaſſata interanea, et circa feſtum ſancti ANDREÆ, ſanguinem " egerebat è ventriculo, hæmorrhagiâ etiam per nares, oculi ſiniſtri canthum, et " aurem lævam moleſtata, ut ex hoc ſanguinis diſpendio adeò debilis fuerit, ut " vix audiri potuerit ab adſtantibus. Die ſancti THOMÆ Apoſtoli 1667, tres " taleolas pomi artocreâ cocti deglutivit, et abhinc nullam ſolidam eſcam hauſit. " Atque ad ſecundum Februarii ſequentis vix labia irrigabat, et ad paſcha ſequens " ſyrupo ex aqua fontana et ſaccharo cum pauxillo mellis roſacei fauces permaduit, " aphthis tum exulceratas; et per ſex ſeptimanas in æſtate ne guttulam ſumpſit " liquoris, ſed odore florum refocillata vitam degit angelicam. Circa feſtum om- " nium ſanctorum 1668, iterum ſyrupo è ſaccharo, et aqua fontana, fauces, vel

[x] Letter-Book, vol. iii. p. 113.

" linguam

" linguam potius, imbuit. Circa natalitium Domini 1668, ſuccum unius pruni " Damaſceni (pulpa et cute ejectâ) aut paſſulæ majoris ſuxit; et initio Februarii " mucagine ſacchari Thomæi ex apice cultelli, ſemel in die deglutiebat, nihil " enim antehac à primo jejunio in gulam intraſſe ſentiebat. Et ſecundo iduum " Aprilis vinum claretum ſaccharo conditum ad uncias duas in tota ſeptimana " ſumpſit; ſed totum ejus madorem faucibus abſumptum ſentit, quia una vice " vix ſex guttas primoribus labiis guſtat. Per totum hoc tempus nec urinam aut " alvi ſracedines excrevit, nec (ut illa dicit) ſudavit. Ungues nec manibus aut " pedibus hoc temporis curriculo creverunt: Sed capilli capitis paulò ſunt exten- " ſiores. Hæc omnia mihi retulit, antequam quæſtionibus filum orationis præci- " di. Interim obſervavi, quòd facies erat vegeta, oculi vividi, labia ſucculenta, " ut etiam genæ: plorabat ſemel, ſtrophiolo bis vel ter, inter confabulandum, " nares et os obturebat. Sæpius lingua ad palatum alliſa ſonum edebat infantis " deglutientis baſia uberis.

" Loquelam bis vel ter ſingultus inopinus, inſoliti ſoni, et, ut mihi videbatur, " ſimulati, interturbavit, et difficilis reſpiratio nonnunquam diſterminavit, nec " tamen, ut aiebat, ſpiritus fatiſcebant. Erecta lecto diſcumbit, et cucullo faciem " obumbrat; per duas horas (niſi bis vel ter interpolante ſingultu, aut dyſpnœâ) " mihi et adſtantibus liberè, et vivaciter confabulavit, contrectabam imprimis ma- " num, quæ parum in vola ſudavit, internodiis digitorum, et aliis locis ſcabie " deſœdata, alias mollis et firma. Pulſus erat omnibus numeris ſanorum ſimilli- " mus. Abdomen à cartilagine enſe-formi ad pubem depreſſum; ſed non, ut " Citeſius refert de puella Conſolentanea, cui abdomen adeò emarcuit et tabuit, ut " ab imis coſtis ad pubem uſque nihil priſtini ſuperfuerit aqualiculi, ſed ſola à " ſterno pendula mucronata cartilago, non aliter quàm ſuggundia, quæ extra " perpendiculum ſtillicidia ejiciunt.

" Retulit mihi, quòd inteſtina delapſa erant, et veſica de loco deturbata. Tum " dixi, illam à ſpectatoribus falli, quia veſica abſque uteri ulcere egredi nequit. " Rogavi igitur, quænam eſſet moles tumoris circa anum; reſpondit ad magnitu- " dinem nucis juglandis: Tum, inquam, nec inteſtina delapſa erant per anum; " at illa inquit, altero loco i. e. per rimam pudendi prodeunt: peto igitur, ut ocu- " laris eſſem teſtis, et manu explorarem quinam eſſet ille tumor. Poſtquam igitur " ſub fragulis eam obſervaſſem diu locum præparare; inguen manibus ſtipavit, " et me inſpicere invitavit; ſed tam obſcura lux et apertura tam auguſta, ut nec " colorem nec figuram agnoſcerem, nec contrectare poſſem, quia etſi minime tan- " gebam, de dolore acerrimo conquerebatur; et vulvæ labia, ſursùm elevata, " quantum judicare potui, ſolummodò palpabam.

" Aveo igitur, ut remota lodice, liberum intuitum permitteret; illa contrà, " ſatis perſpicue vides. Iterum igitur leviſſima vi manus ejus amovere conabar; " illa vero magis intensè de dolore querebatur; ſuper abdomen igitur (interjectâ " lodice) manum appoſui, et ſudantem inveni, etſi prius negavit ullum madorem " de aliqua parte corporis manare: unde illam dolere, aut in metu eſſe ſentiebam. " Tum petii, quomodo tumorem mundum, et à putrefactione præſervabat? Re- " ſpondet, per fomentationem cum aqua, lacte, aut ejus cremore, aut ſero, aut ce-

" reviſia,

" revisia, et inde refocillationem sentire, et, ut mater mihi postea retulit, illam " inde nutriri.

" Hoc modo frustrà contra puellæ placitum aut astutiam colluctans, expeto, ut " in os inspicerem: tum mater (quæ hactenus in hortulo fuit, relictâ filiâ natu " minori in cubiculo) obganniens reclamat, dicens, filiam ejus minimè esse hypo- " critam, dum toti regioni, immo Angliæ, abunde satisfeciset, et afflictam ejus " puellam, in honorem Dei miracula ejus denunciantem, multiloquio vires absu- " mere sæpius sentiebat. Nolui igitur illam ulterius molestare; filia tamen libenter " annuit ut inspicerem, et nil præterquam quod in sanis assolet observavi, nisi " quod lingua fuit parum aridior. Intra conchas aurium nullum apparuit cereu- " ma, sed collum modice torosum, scabie interspersum vidi, et jubam satis den- " sam. Tum è tuguriolo matrem seduxi, et datâ pecuniâ efflagito ut suaderet " filiæ, procidentiam illam vaginæ uteri mihi ostendere. Oh (inquit callida mu- " lier) nondum scio qualis sit ille tumor; filia enim mea probe scit, quàm miserè " affligar ex ipsius calamitate; ideò nec illa ostendit, nec ego cupio illum videre; " et D. Dr. Willughby Derbiensis adeò illius commiserabatur, ut videns illum " insolitum tumorem penè in lypothymiam incideret. Unde mihi videtur, quòd " vir ille doctissimus, cui opportunitas erat explorandi, perfunctoriè inspexit. " Tum nec hac methodo instructior, contuli me iterum ad puellam, et dixi, me " nolle eam amplius inquietare; omnibus tamen perpensis sperare, opem illi con- " ferre, saltem à putrefactione excretum illud, quodcunque fuerit, præservare, et " per clysmata nutrimen subministrare, donec ventriculi obstructio esset reserata. " Hæc enim dixi, ut tentarem, utrum curationem exoptaret, et ut alio tempore " votis meis annueret. Postquam ab illa egrediebar, audivi, quòd fœmina quæ- " dam, mille tum passibus remota, sæpius fomentaverat locum; ad hanc igitur " equitavi, et illa dixit, se sæpius trimesti spatio foviisse aquâ, lacte, &c. et cum " primo illum inspexit, fuisse instar carnis excoriatæ, sed jam cuticulam habere, " tumorémque nonnunquam anseris ovum æquare, nonnunquam esse ampliorem, et " è cavitate uteri prodire.

" Habes, vir clarissime, prolixam satis historiam; et facile suspicaris, quòd an- " sam præbeo dubitandi, utrum sine omni cibo et potu tam diu vixerit; an verò " minori ferculorum varietate contenta, et liquida etiam, remotis arbitris, sorbil- " lans, et fortasse in vesicam aliquam appensam alvum exonerans, aut saltem uri- " nam, spectatores etiam ingeniosos hactenus deluserit. Ne igitur, ut de dente " Silesii aureo, ficta et fallax esset hypothesis, necessarium judico, ut virtuosi ex- " quisito scrutinio dirimant controversiam, dum inter mortales degit puella; post " mortem enim ejus (nisi anatomicum subit cultellum) aucta erit controversia, et " nulla indagine determinanda. Aucta esse privilegia societatis literatorum Au- " gustæ nuper exaudivi. Æquum est, ut vobis conferret Regia Majestas facultа- " tem designandi idoneos viros authoritate firma munitos, qui αὐτοψίᾳ et experi- " mentis, in rebus dubiæ fidei et anomalis, veritatem investigarent. Et in hoc " casu, ubi non solùm plebs, sed etiam viri sagaces fluctuant, et alii, qui sacris sese " dedère, ob miraculi speciem obfirmati sunt in suis opinionibus, necessarium " videtur, ut rei certitudo cognoscatur. Ut omnis igitur dubitandi ansa præri- " piatur, supplex exoro, mecúmque plurimi alii, ut à sereniissima Regia Majes-

" tate juſſum obtineat dominatio veſtra, ut aliquis medicus (accitis juſticiariis vi-
" cinis, vel fide dignis teſtibus) oculari inſpectione partes affectas exploraret: Sed
" hæc acerrimo veſtro judicio, ut totum hoc inconcinnum ſcriptum, ſubjicio."

Mr. BOYLE preſented for the repoſitory a certain African gum, the name of which he knew not, reported to be very ſticking and binding, and ſold at a conſiderable rate.

Mr. OLDENBURG read a letter to him from Mr. WILLUGHBY, dated June 21, 1669, at Middleton in Warwickſhire [y], concerning the circulation of ſap in trees, and his thoughts of the experiments making out the rules of motion given by Dr. WREN and Monſr. HUYGENS. With regard to the circulation of ſap he obſerved, that he had always been of opinion, that the ſap circulates; though it would be very difficult certainly to evince it by experiments; but that perhaps the anatomy of ſome of thoſe animals, which lie torpid all the winter, and yet feed and grow no more than vegetables, may give ſome light into that ſubject. With regard to the laws of motion he wrote thus: " My lord BROUNCKER hath " very briefly and accurately demonſtrated the ſame conſequences from Dr. WREN's " theory. I think it cannot be expected, that any one ſhould produce contrary " experiments, till thoſe are made public, by which the learned authors ſupport " their hypotheſis; though I think it were not hard to confirm or weaken it by " trying the different effects of the ſame force communicated immediately and " mediately by greater and leſſer bodies. What HUYGENS hints, that the ſum " of the Q of the velocities multiplied into their bodies is the ſame before and " after the concourſe, ſeems to fall out very luckily; for it being plain, that " $Q\overline{s-x}^{R} + Q\overline{R+x}\,Q\overline{R+x}^{S} = Q.\overline{s+x}^{R} + Q\overline{R-x}^{I}$. From " thence may deduced, that motion cannot be decreaſed or increaſed infinitely, " but that bounds may be ſet both for the increaſe and decreaſe of all the motion " in the world."

It was ordered, that Mr. OLDENBURG ſhould ſend to Mr. WILLUGHBY a copy of the paper containing a ſeries of experiments formerly made by Mr. LAURENCE ROOKE and Dr. WREN; and preſs him to make obſervations for finding out, whether the ſap in trees circulates, or not.

Mr. HOOKE acquainted the ſociety, that looking over ſome of the things in their repoſitory, he had met with ſuch a hand as Monſr. LE FEBURE once produced before the ſociety, mentioning, that it was given him for the hand of a mermaid; but that this hand was a part of a ſea-leopard, and altogether like that of Monſr. LE FEBURE.

Dr. ALLEN related a ſtory of a man lately bitten by a dog, and thence fallen into an hydrophobia, of which he died. The doctor was deſired to give the relation in writing, which he promiſed to do.

[y] Letter-Book, vol. iii. p. 108.

It

It was mentioned, that ſome years before, there being two live rattle-ſnakes brought into England, and kept in the college of phyſicians, they lived a conſiderable time without any food, yet at length decayed by little and little, and then died: It was added, that at firſt their bitings ſuddenly killed puppies, cats, &c. but at laſt loſt that power.

Mr. OLDENBURG produced and read a paper containing ſome obſervations on the Bath-ſprings, ſent him by Mr. Glanville: Which was ordered to be regiſtered *.

Mr. HOOKE propoſed an experiment about the ſtrength of twiſted cords, compared with untwiſted ones, to be tried at the next meeting, together with thoſe others, that ſhould have been made at this meeting.

July 15. There was preſent at this meeting Count HERCULES DE ZANIS of Bologna, one of the philoſophical academicians of that city, who upon occaſion declared, that the way of preparing the Bononian ſtone for ſhining was not loſt, but that himſelf knew it, and was ready to ſend for ſome of it calcined in his manner from Paris, for the ſociety. He added, that the ſtone was very common about Bologna, and a good quantity of it found in his eſtate near that city. He conceived, that as talc, found likewiſe plentifully there in the fiſſures of mountainous and mineral places, was generated by the rain-waters dropping through the earth down into thoſe fiſſures, and in their ſliding away congealed by the extraordinary cold of thoſe parts in ſuch a manner, that the droppings ſucceſſively following and ſpreading themſelves there made thin plates on the top of one another; ſo this Bononian-ſtone was formed by the ſame rain-waters, impregnated with certain mineral juices, and ſucceſſively congealed by the cold.

Mr. HOOKE made an experiment of comparing together the ſtrength of twiſted and untwiſted ſilk, and it appeared by the ſeveral trials made of it, that a certain number of threads untwiſted proved ſtronger than ſo many twiſted. Whence Mr. HOOKE concluded, that cables made faggot-wiſe would be ſtronger than when twiſted.

To this it was objected, that cables would not then be ſo managable; and that certainly people had not been wanting to make trials of this nature, but had doubtleſs found, that, all things compared, the inconvenience would prove greater in the uſe of untwiſted than twiſted threads.

Mr. HOOKE remarked upon this, that the belief of the ſuperior ſtrength of twiſted threads to that of untwiſted had doubtleſs proceeded from trials made upon flax, which having but ſhort pieces held not therefore ſo well untwiſted as twiſted.

Sir ROBERT MORAY moved, that an equal number of hempen threads, firſt

* It does not appear in the Regiſter, but is printed in the Philoſ. Tranſact. vol. iv. n° 49, p. 977, for July 1669.

ſpun, ſhould be taken, and only whipt about, and as many of them twiſted together in the ordinary way, to ſee, which of them would be the ſtronger.

There was produced the inſtrument of taking an angle between two objects, ſo as to ſee one of them immediately by the eye, the other by reflection: As was likewiſe

Mr. TOWNLEY's inſtrument for dividing a degree into many thouſand parts.

Mr. OLDENBURG exhibited a ſcheme of the marſh-plots of Xaintonge in France, where the French ſalt is made, together with a deſcription of the proceſs of making it, ſent to him from Dr. ELIAS RICHARD, a French phyſician living near the place, who having been not long before in England, and permitted to be preſent at a meeting of the ſociety, communicated this ſcheme and diſcourſe as an acknowledgment of the favour, which he had then received. The reading of this diſcourſe was deferred to the next meeting [a].

Mr. HOOKE promiſed to have ready at that meeting one of his new kind of watches, that ſhould go fourteen months, which he firſt produced and deſcribed May 6, 1669.

The members appointed at the laſt meeting to conſider of Mr. BLOME's petition made this report, that the ſociety would not give an approbation of any book, but what ſhould appear to them to be very accurate; and that it was not likely, that any member of their body had the leiſure to read over ſo large a work as Mr. BLOME's; and farther, that if a bare licenſe were only deſired, that could not be granted by them without ſome peruſal of the whole, to ſee, that no groſs faults were contained in it.

This report was judged ſatisfactory, and the ſecretary was directed to acquaint Mr. BLOME with it.

Mr. HOOKE intimated, that he was obſerving in Greſham-college the parallax of the earth's orb, and hoped to give a good account of it.

July 22. Dr. TIMOTHY CLARE communicated a letter written to the preſident by WILLIAM DURSTON, M. D. from Plymouth July 18, 1669, containing an account of a maid's breaſts exceſſively ſwelled in one night [b]. It was ordered, that the writer of this letter ſhould be deſired by Dr. CLARKE and the ſecretary to communicate what farther obſervations he ſhould make about the ſtate of this woman's health, and the continuance of that tumour, together with the applications uſed for the abatement of it.

Mr. OLDENBURG read two letters, the one written to him by Mr. GLANVILL

[a] There is no notice in the Journal of its being then read, but it is printed in the Philoſ. Tranſ. vol. iv. n° 51, p. 1025, for September 1669.

[b] Letter-Book, vol. iii. p. 149: And Philoſ. Tranſact. vol. iv. n° 52, p. 1047, for Oct. 1669.

from

from Bath July 19, 1669 [c], the other to Mr. GLANVILL by Mr. ANDREW PASCHALL from Chedſey in Somerſetſhire June 18, 1669 [d], both giving an account of a deſign of eſtabliſhing a philoſophical correſpondence in that country under the directions and encouragement of the Roval Society; who declared by their preſident, that they could not but with all kindneſs accept this reſpect, and ſhould endeavour to countenance the undertaking upon all occaſions.

The ſociety being made acquainted by Mr. OLDENBURG, that Mr. EDWARD DIGGS intended to go ſhortly to Virginia, and offered his ſervice for philoſophical purpoſes; it was ordered, that the inquiries formerly drawn up for that country ſhould be recommended to him.

It was reſolved, that in regard many of the members of the ſociety were in the country at this ſeaſon of the year, the meetings thereof ſhould be intermitted till the preſident ſhould find, that there was a competent number of them in town again, who ſhould then be ſummoned by his lordſhip's order to return to the meetings.

It was ordered, that Mr. HOOKE ſhould, during this interval, make ſuch experiments in private, as were in the former meetings committed to his care and left hitherto unperformed. As alſo, that ſuch others of the ſociety, who had conveniency to make any obſervations and experiments of a philoſophical nature, ſhould be deſired to be mindful of doing what they could during this receſs of the ſociety againſt the reſuming of their meetings.

October 11. At a meeting of the COUNCIL of the SOCIEEY were preſent

The Preſident

Sir GILBERT TALBOT	Dr. CLARKE
Sir ROBERT MORAY	Dr. GODDARD
Sir PAUL NEILE	Mr. COLWALL
Sir THEODORE DE VAUX	Mr. OLDENBURG.

It was ordered,

That the treaſurer pay THOMAS WILLISEL ten pounds more, as a part of the thirty pounds appointed him by the council for one year upon account:

That Mr. CHARLES HOWARD, Dr. GODDARD, Dr. MERRET, and Mr. HOOKE, or any two or more of them, meet and direct the ſaid THOMAS WILLISEL in his employment of farther collecting ſuch plants, birds, fiſhes, and minerals, and in ſuch parts of his Majeſty's kingdoms, as they ſhall think beſt for the uſe of the ſociety; and that the ſaid THOMAS WILLISEL, at his return, firſt of all attend the preſident, and receive orders from him about the collection, which he ſhall then have made:

[c] Letter-Book, vol. iii. p. 152. [d] Ibid.

That the preſident, Sir ROBERT MORAY, Sir THEODORE DE VAUX, Dr. CLARKE, and Mr. OLDENBURG, or any three or more of them, be a committee of the council for auditing the accounts of the treaſurer of the ſociety; and that they agree among themſelves about the time and place of their meeting for that purpoſe. And

That Dr. MERRET be deſired to ſend the collection made by THOMAS WILLISEL in his firſt voyage, to the ſociety at their next meeting in Arundel-houſe Octob. 21, 1669.

The preſident declared, that he thought proper, that the meetings of the ſociety ſhould now be reſumed, and that therefore he intended to ſummon the members to meet on the 21ſt inſtant; for which he gave this form:

"Theſe are to give notice, that the Royal Society is to meet again on Thurſday "the 21ſt of this preſent month of October, in Arundel-houſe, at the uſual hour, "and thenceforth to continue as formerly."

October 21. This day the SOCIETY met again after ſome intermiſſion.

Mr. HOOKE produced a piece of ſtuff ſtained by a way of his own contrivance, which he ſaid he hoped to perfect, and to make it ſerve for ſtaining whole ſuits of hangings. He was deſired to purſue this experiment.

EDWARD JEFFREYS, M.A. was propoſed candidate by the lord biſhop of CHESTER.

Mr. OLDENBURG produced ſeveral letters and other papers with ſome curioſities, come to his hands ſince the laſt meeting of the ſociety.

1. A Latin letter of Signor MALPIGHI to the ſociety dated at Bologna July 15, 1669[e], acknowledging their favour in electing him into their body, and in cauſing his diſcourſe on the ſilk-worm to be printed.

2. Another from him to Mr. OLDENBURG of the ſame date[f], ſignifying his care of increaſing the philoſophical correſpondence in Italy, and adding ſome farther obſervations made by himſelf on the ſilkworm.

3. A letter in Latin from JOHN ALFONSO BORELLI to Mr. OLDENBURG, dated at Meſſina July 24, 1669[g], promiſing an account of the burning of Ætna.

4. Two letters to Mr. OLDENBURG from M. HUYGENS, dated Aug 10[h], and Sept. 4[i], 1669, N. S. at Paris; the former of which commended Dr. WREN's demonſtration of the hyperbolical cycloid, and acknowledged the doctor's way of compendious printing to be the ſame with his own; adding ſome notable experiments of

[e] Letter-Book, vol. iii. p. 135. [f] Ibid. p. 134. [g] Ibid. p. 157. [h] Ibid. p. 164. [i] Ibid. p. 173.

a large burning concave made in France; together with his opinion of Mr. WILLIAM NEILE's hypotheſis of motion, whoſe reaſoning he thought very metaphyſical and ſubtile, but whoſe principles he could not for the moſt part aſſent to. The other letter depoſited with the ſociety a paper containing the anagrams of fourteen propoſitions of Monſr. HUYGENS, to be explained in due time[i], with ſome account of the ſucceſs of his ſea-watches.

5. A letter in Latin to Mr. OLDENBURG from Monſr. SLUSIUS, dated at Leige, Auguſt 16, 1669, N. S. [k] commending Dr. WREN's invention and demonſtration of the hyperbolical cycloid, and inlarging upon it: and taking notice of the paralogiſm of Mr. HOBBES in his quadrature of the circle, which piece had been ſhewn to Monſr. SLUSIUS four or five years before by Monſr. DE SORBIERE, and confuted by Monſr. SLUSIUS.

6. A Manuſcript in Portugueſe delivered to Mr. OLDENBURG by Sir ROBERT SOUTHWELL, intitled, *Varias Receitas et Segredos da Medicina*; which was recommended to Mr. OLDENBURG to procure a tranſlation of it into Latin or Engliſh.

7. Two pretty large glaſs-bottles, ſent with the manuſcript by Sir ROBERT SOUTHWELL; which bottles were filled with capaiva-balſam from Braſil, deſcribed by PISO as excellent for the curing of wounds and ulcers; part of which was ordered to be diſtribued to ſuch of the members, as ſhould deſire to make trial with it.

8. A box containing ſeveral particulars gathered in the late eruption of mount Ætna, ſent by Mr. PARKER and Mr. MORGAN, Engliſh merchants at Meſſina, to Mr. EDWARD HOPEGOOD, merchant of London, for the Royal Society; viz. ſmall bags of aſhes, taken up in divers places, ſome on the top of, and others at ſeveral diſtances from that mountain.

A bag with ſome ſal armoniac.

A bag with ſandever.

Several ſorts of ſtones called *ſciarri*, ſome like cinders and black, others reddiſh, others cloſe and denſe.

A map repreſenting the fire and its extent.

9. A little glaſs ſent to Mr. OLDENBURG from Dr. DE GRAAFF, containing a *teſticulus gliris* [l] unravelled and ſwimming in ſpirit of wine, deſigned to prove, that that organ is made up of nothing but ſmall veſſels.

Dr. KING remarked, that he had formerly done the ſame, not only in the *teſtes*

[i] Regiſter, vol. iv. p. 81.
[k] Ibid. p. 167.
[l] Dr. DE GRAAFF ſent with it a letter to Mr. OLDENBURG dated July 25, 1669, a paſſage of which is printed in the Philoſ. Tranſact. vol. iv. n° 52. p. 1046. for Octob. 1669.

of

of male rabbets, but alſo in thoſe of a man, ſpreading thoſe veſſels upon a broad glaſs, and ſo preſenting them before the ſociety. He was deſired to diſſolve a teſtis after this manner of Dr. DE GRAAFF, and to exhibit it in ſpirit of wine, this way of making the thing more clear; which he promiſed to do, when he ſhould have leiſure.

10. An anſwer of Dr. WILLIAM JACKSON, a phyſician of Nantwich in Cheſhire, to certain queries concerning the ſalt-ſprings and ſalt-works of that place: which was ordered to be regiſtered [m].

THOMAS WILLISEL the botanic traveller, employed by the ſociety, brought in his collection of plants gathered in ſeveral parts of England and Scotland, together with ſome rare Scottiſh birds and fiſhes.

It was ordered, that Dr. MERRET be thanked for digeſting theſe plants, and that Mr. HOOKE take the whole collection into his cuſtody for the repoſitory, making firſt of all an inventory of them, and producing them before the ſociety.

The lord biſhop of CHESTER acquainted the ſociety, that his Majeſty had expreſſed a deſire of having the meaſure of a degree upon the earth determined, and expected the aſſiſtance of the ſociety in it:

Upon which it was ordered, that the biſhops of SALISBURY and CHESTER, Sir ROBERT MORAY, Sir PAUL NEILE, Dr. WALLIS, Dr. CHRISTOPHER WREN, Dr. GODDARD, and Mr. HOOKE, or any three or more of them, be a committee to conſider of a way of determining the meaſure of a degree upon the earth; and that they meet for that purpoſe at the preſident's houſe in Covent-Garden on the Monday following about five in the evening, and make a report to the ſociety, when they ſhall have concluded any thing in this matter.

Mr. HOOKE was likewiſe deſired to peruſe what RICCIOLI had written and performed on this ſubject, and to give an account thereof to the ſaid committee at their firſt meeting.

Oct. 28. Mr. JEFFREYS was elected.

Mr. HOOKE produced a new kind of pendulum-clock, deſigned to keep time more exactly than others, for aſtronomical obſervations, and ſo contrived, that the ſwing being in this clock fourteen feet long, and having a weight of three pounds hanging to it, was moved by a very ſmall force, as that of a pocket-watch, the ſwing making its whole vibration not above a degree, and going ſeventy weeks.

It being objected, that any concuſſion was likely to diſorder or ſtop it, Mr.

[m] Regiſter, vol. iv. p. 83. It is printed in the Philoſ. Tranſact. n° 52. p. 1060. for Novemb. 1669.

Hooke declared his opinion, that it would not. He was ordered to try it in aſtronomical obſervations, and give the ſociety an account of its ſucceſs.

He ſhewed again a piece of ſtained flannel, as being thought the moſt difficult ſtuff to be ſtained; and he again expreſſed his hopes of ſtaining whole pieces of hangings after this manner, even in vivid colours.

Mr. Oldenburg read a letter to him from Dr. Thomas Brown, dated at Norwich, Octob. 25, 1669 [n], incloſing a relation of his ſon Dr. Edward Brown, then travelling in Germany, concerning the quickſilver mines in Friuli [o]; which was found to agree with that brought in formerly by Dr. Pope [p].

Mr. Oldenburg informed the ſociety, that he had received a letter himſelf from Monſr. Juſtel, dated at Paris October 25, 1669, N. S. ſignifying, that in Italy an obſcure belt had been ſeen about the middle of the body of Saturn; as alſo that P. Gottignies had made a microſcope magnifying above three hundred and fifty times in diameter, and taking in a field of four palms, which is about three feet; and that the microſcopes of the workmanſhip of Eustachio Divini came not near in goodneſs to this of Gottignies.

Mr. Hooke affirmed, that ſuch a belt had been obſerved in England by Mr. Balle about three years ago; and that he had a letter of that gentleman mentioning it.

It being obſerved, that it had been ordered above three months before, that Dr. Wren's engine for grinding hyperbolical glaſſes, and that of Mr. Hooke for elliptical ones, ſhould be prepared for making trials of them; and it being found, that neither of them were prepared; the order was renewed to Mr. Hooke for doing it with all convenient ſpeed.

Mr. Oldenburg mentioned, that Dr. Wren deſired to borrow the model of that engine of his, in order to make a ſcheme and deſcription thereof for the ſatisfaction of Monſr. Huygens, who, though he had much applauded that invention, and the demonſtration of it, yet had made ſome objection againſt its practicableneſs; which objection ſeemed only grounded on the objector's miſapprehending the contrivance of the engine; to remove which Dr. Wren was willing to ſend him a ſcheme of the model.

It being mentioned, that Dr. Goddard had been formerly deſired to give in writing his experiment about the manner of the motion of the muſcles, whether they in their contraction grow bigger upon the whole or not; and this not being yet done, the doctor was again deſired to do it, that it might be entered in the Regiſter-Book.

[n] Letter-Book, vol. iii. p. 189.

[o] Ibid. p. 190. It is printed in the Philoſ. Tranſact. vol. iv. n° 54. p. 1080. for Dec. 1669.

[p] Printed in the Philoſ. Tranſact. n°. 2. p. 21.

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The order of the laſt meeting, appointing a committee for conſidering of a way to determine the quantity of a degree upon the earth, being renewed, and thoſe members, who might ſince have had thoughts of it, being deſired to ſpeak of it, Mr. HOOKE declared his opinion, that one of the exacteſt ways of performing it might be by making accurate obſervations of the heavens to a ſecond by a perpendicular tube, and then to take exact diſtances of angles to a ſecond alſo [q].

Nov. 4. Mr. JEFFREYS was admitted.

Mr. HOOKE propoſed a way of dividing a degree in very many minute parts, which he conceived to be much more eaſy than that by a ſcrew or a ſliding ruler, or any other known to him. It conſiſted in proportioning a ſhort line, which is to be divided into many ſmall parts, to a long line.

This being examined, and the application of it to practice for taking meaſures both in the heavens and upon the earth debated, it was thought proper to be uſed in the experiment of meaſuring a degree upon the earth, recommended by his Majeſty to the conſideration of the ſociety: and Mr. HOOKE was ordered to make the apparatus neceſſary for that work ready with all poſſible ſpeed.

Mr. OLDENBURG read part of a letter written to him by Monſr. HUYGENS from Paris, October 30, 1669, N. S. [r] giving notice, that he had received an account of his ſea-watches ſent to Candia for a trial to find the longitude, and would hereafter declare the particulars, which he judged worthy to be known; and communicating ſome remarks about motion: and as he complained, that the metal, of which he had made two teleſcopical object-glaſſes for the length of forty-five feet each, was faulty; the ſociety ordered, that a plate of good glaſs, made at Lambeth, ſhould be provided and preſented to him.

Mr. OLDENBURG produced a paper in Latin, ſent to Mr. HILL from Riga by NICHOLAS WITTE, an ingenious doctor of phyſic, concerning a way of ordering wines ſo as to preſerve them from the injuries of froſt.

November 11. THOMAS BARRINGTON, eſq; was propoſed candidate by Mr. OLDENBURG.

Don GASPAR MERE DE SOUZA, profeſſor of mathematics in the univerſity of Coimbra, was likewiſe propoſed by Mr. OLDENBURG upon the deſire of the former expreſſed in two letters of his dated at Liſbon June 2, and July 1, 1669.

Dr. URBANUS HIERNE, a Swede, was propoſed candidate by Monſr. LEYONBERGH, the Swediſh reſident.

[q] This appears to have been the method obſerved by the French not long after. See Monſr. PICART's treatiſe on that ſubject, and Monſr. DU HAMEL's *Regiæ Scientiarum Academiæ Hiſtor.* l. 1. c. 2. p 98.

[r] Letter-Book, vol. iii. p. 194.

There

There was preſented from Mr. BOYLE the ſecond edition of his *Phyſiological eſſays* inlarged, and with the addition of *A diſcourſe of abſolute reſt in bodies.*

There was alſo preſented for the repoſitory from Mr. POVEY a ſceleton.

The preſident nominated Dr. WALLIS, Mr. LOCKE, Mr. NEILE, Dr. SMITH, and Mr. CREED, to be a committee to examine the accounts of the ſociety for this year; who being put to the ballot, according to ſtatute, were all elected; and thereupon deſired to meet the next day about three in the afternoon at Dr. WALLIS's lodgings in little Drury-Lane, to examine the ſaid accounts, which they promiſed to do.

Mr. HOOKE produced a piece of callico ſtained after the way contrived by himſelf, which he was deſired to proſecute in other colours beſides thoſe, that appeared in this piece.

He produced likewiſe ſeveral capillary plants, ſuppoſed to have no ſeed, on which however he found little caſes or boxes, which being opened and put into a good microſcope were found to have ſeed.

Dr. CROUNE mentioned, that Mr. MOHUN, a friend of his, was ready to go into the Eaſt-Indies to the Engliſh factory at Muſelapatan, and offered his ſervice to the ſociety for giving them what account he ſhould be able, in anſwer to ſuch inquiries, as they ſhould think fit to recommend to him. The ſecretary was accordingly deſired to provide for Mr. MOHUN a copy of ſuch queries, as were uſually ſent into thoſe parts.

Mr. OLDENBURG produced a letter written from Erfurd, May 10, 1669, to Mr. BOYLE by Dr. LEICHNER, a German phyſician, and accompanied with a book of his, printed in High Dutch, and intitled *D. Eccardi* LEICHNERI *apodicti-ſcher Prufe-Spiegel*, i. e. *Speculum apodictico-probatorium*, tending to introduce in ſchools and univerſities a way of teaching all diſciplines and ſciences apodictically or demonſtratively, even logic, metaphyſics, natural philoſophy, ethics, &c. for the promoting of which method he recommended this book to the conſideration of the Royal Society; who committed it to the peruſal of Mr. OLDENBURG.

Nov. 18. Mr. BARRINGTON, Don GASPAR DE MERE DE SOUZA, and Dr. URBANUS HIERNE were elected; the ſecond of whom being in Portugal, Mr. OLDENBURG was deſired to acquaint him of his election by a letter [r].

Monſr. GEORGE STIERNHELM, a Swediſh gentleman, and one of the council of war to the king of Sweden, was propoſed candidate upon his deſire expreſſed in a letter from Stockholm to the preſident dated September 21, 1669 [s], and delivered at this meeting by Mr. CHAMBERLAYNE, who preſented at the ſame time

[r] This letter written in Latin, and dated Decemb. 8, 1669, is inſerted in the Letter-Book, vol. iii. p. 209. [s] Ibid. p. 184.

from Monſr. STIERNHELM ſeveral curioſities, as 1. An inſtrument called by the preſenter *linea Carolina*, together with a written paper explaining the deſign and uſe of that line, viz. that, ſuppoſing common water to be alike all over the world, and taking a Batavian grain for the leaſt common meaſure, it would teach to know all other meaſures both of liquids and dry things, and from thence to know alſo the capacities of all veſſels, and the change of their ſhapes in any other ſhapes whatſoever aſſigned. 2. A printed table of the meaſures of liquids and dry things, and for ſurveying. 3. A printed ſcheme, called *monile* MINERVÆ, the deſign of which did not appear to the members preſent. 4. A printed half ſheet, intitled GEORGII STIERNHELMII *Babel deſtructa, ſeu Runa Suethica*, being a breviate of two volumes deſigned by the author for the preſs, undertaking firſt to ſhew the true origin of languages, which he makes to be the Scythian tongue; and then to diſcover the roots, that are univerſal and common to almoſt all languages, out of which he attempts to derive the firſt tongues, and thence the others, which proceed from them. 5. Four little boxes, each containing two little balls, one ſilvered, the other gilded over, deviſed for eſtimating the weight of liquors. 6. Tables of quadrate and cubic numbers, printed at Stockholm in 1667.

The preſident was deſired to conſider the full import of the *linea Carolina*, together with the written paper, and the printed table, both relating to it, and to make report of it to the ſociety at their next meeting.

Mr. HOOKE produced an inſtrument of his own contrivance to meaſure the quantity of refractions; and the experiments made therein were ordered to be repeated at the next meeting.

Mr. OLDENBURG read two letters written to him, the one from Dr. DURSTON, dated at Plymouth, November 2, 1669 [t], concerning the death of the big-breaſted woman, and what was obſerved of her ſwelled breaſts after death: the other by Dr. ELIAS RICHARD from St. Martin in France, dated Aug. 17, 1669, containing a relation of the French way of making vinegar.

With regard to the former of theſe letters, it was thought deſirable to know of Dr. DURSTON what he had obſerved in the inward parts of the woman, he doubtleſs having opened her after her death [u]. And concerning the other letter of Dr. RICHARD, ſeveral inquiries were ſuggeſted, as proper to be ſent to him for farther explanation, as 1. Whether the *rape* (as the matter, of which vinegar is made in France, is called) is not permitted to lie till it begin to grow ſour, and then put in? 2. How long one and the ſame parcel of rape will ſerve, whether longer than one year? 3. How they free the rape from that greaſe or unctuoſity, which it is ſaid to contract? 4. Whether it had not been examined what kind of greaſe that is, which is ſaid to ſtick partly to the ſides of the veſſels, and partly to the rape?

[t] Letter-Book, p. 201. It is printed in the Philoſ. Tranſact. n° vol. iv. 53. p. 1068. for Nov. 1669.

[u] He was not ſuffered to open her, as appears from his letter of Nov. 28, 1669. Letter-Book, vol. iii. p. 205. and Philoſ. Tranſact. n° 54. p. 1077.

Dr.

Dr. CASTLE produced a piece of wood, which, he ſaid, was petrified by being put, not into a petrifying water, but earth in Bedfordſhire, in which it had lain three years. Being tried upon glaſs, it made ſcratches in it, though it had the perfect appearance of wood.

The doctor was deſired to procure a perfect hiſtory of it from the perſon, who had kept it buried in the ground.

Mr. HOOKE promiſed for the next meeting ſome experiments of weighing bodies, to ſhew the poroſity of them, and a way of making them more compact than they were before by hammering them.

Nov. 25. Mr. BARRINGTON was admitted, and for his admiſſion paid five pounds, the ſum required being but forty ſhillings.

Mr. NICHOLAS MERCATOR was alſo admitted.

Mr. HOOKE brought in the inſtrument for taking angles upon the earth in order to meaſure a degree exactly, contrived ſo, that in the uſe of it no notice is taken of any inequality of the ground; the wire employed therein being always equally extended by an equal weight.

Sir ROBERT MORAY produced a paper ſent out of Poland to the lord ARLINGTON, concerning a method of reſtoring with a certain water ſuch eyes, out of which the humors have been ſqueezed; which had been ſucceſsfully tried in Cracow.

Several of the members were of opinion, that if nothing be ſqueezed out but the humors, the coats remaining ſafe, there was no great wonder in ſuch a cure. In the mean time it was moved by the biſhop of CHESTER to cut the cornea of a dog, to ſee whether it would heal again.

Mr. OLDENBURG gave an account of the ſubſtance of a French book lately printed at Paris in 8vo, and intitled *Nouvelles Experiences ſur la Vipere par Monſr.* CHARAS; viz. 1. That the author undertakes to prove, that the biting of the vipers of France is really venomous, and proves mortal without antidotes. 2. That he endeavours to confute Signor REDI, who had aſſerted in his book *delle Vipere*, publiſhed a few years before, that the poiſon of vipers reſides in the yellow liquor contained in the bag about the teeth, Monſr. CHARAS maintaining it to be in the veins and enraged ſpirits of the animal. 3. That he very much recommends the volatile ſalt of vipers, as the beſt antidote againſt their bitings, and teaches the way of preparing it right.

The biſhop of CHESTER took notice hereupon, that the ſociety had formerly made ſeveral trials of this kind, to find, whether the bitings of vipers would kill; but found, that they did not, and only made the part, that was bitten, to ſwell without any other hurt; and that he thought vipers killed no more than bees,

when they ſtung; and that ſometimes their bitings might prove mortal, when they meet with an ill habit of body.

Mr. OLDENBURG produced again the balls for knowing the difference of the weights of liquors, preſented at the laſt meeting by Mr. CHAMBERLAYNE from Monſr. STIERNHELM; and two of them being opened, the ſilvered one proved to be ordinary bees wax; the other gilt to be ſoft red wax, with ſome mixture, the former ſwimming, the latter ſinking in common water.

Nov. 29. At a meeting of the COUNCIL were preſent

The Preſident

The lord biſhop of SALISBURY	Mr. COLWALL
The lord biſhop of CHESTER	Mr. HENSHAW
Sir PAUL NEILE	Dr. CROUNE
Sir THEODORE DE VAUX	Mr. OLDENBURG.
Dr. GODDARD	

The committee of the council for auditing the accounts made a report, which was approved of by the council, and is as follows:

" At a committee of the council of the Royal Society for auditing the treaſurer's accounts, November 10, 1668.

" Upon examination of Mr. DANIEL COLWALL's accounts we find him debtor

	l.	*s.*	*d.*
" To arrears due to the Royal Society for their quarterly payments, this 10th Nov. 1669.	1283	4	6
" To money he hath received for admiſſions	18	0	0
" To money he received out of the caſh-cheſt	100	0	0
" To the balance of his laſt account	98	5	6
	1499	10	0

" That he is creditor

" By money he hath paid for the uſe of the ſociety	400	2	4
" By money in arrear reſting unpaid by the fellows	1028	15	0
" By balance reſting in caſh now in his hands	70	12	8
	1499	10	0

" BROUNCKER, P. R. S.
" THEODORE DE VAUX. TIM. CLARKE.
" HENRY OLDENBURG.

November

November 30. At a meeting of the SOCIETY, being the day of their anniverſary election,

Mr. WILLIAM NEILE made a report from the committee for auditing the accounts of the ſociety, by which it appeared,

	l.	*s.*	*d.*
That the treaſurer had received on the quarterly payments	254	9	6
That he had received out of the caſh-cheſt ——	100	0	0
That he had received more for admiſſions ——	18	0	0
That he was debtor to the balance of his laſt account made up Nov. 9, 1668. —— —— ——	98	5	6
	470	15	0
That he hath paid for the uſe of the ſociety by bills and orders of the council —— ——	400	2	4
That he hath in money reſting now in caſh in his hands ſeventy pounds twelve ſhillings and eight pence ——	70	12	8
	470	15	0

It appearing, by this report, that there were great arrears due to the ſociety by the fellows, Sir PAUL NEILE declared his opinion, that to prevent the ſwelling of thoſe arrears, a good method would be to enter into a legal tie for the future payments; adding, that this had been ſeveral times under the conſideration of the council, but that they had referred it to this day, on purpoſe firſt to acquaint the ſociety, and to underſtand their ſenſe upon it, before they would conclude any thing in it.

This being debated, it was at laſt agreed upon, that the buſineſs ſhould be put to the queſtion, viz. 1. Whether a legal tie ſhould be entered into for the diſcharge of the weekly payments. And, 2. if ſo, whether the council ſhould be deſired to draw up a form for ſuch a legal tie, and preſent it to the ſociety?

The preſident accordingly put theſe two queſtions, which were both carried in the affirmative. And it was farther agreed upon, that this offer ſhould be made by the council on the firſt Thurſday of the next term.

This being done, the ſociety proceeded to the chief work of this day, and, according to their charter and ſtatutes, elected a new council and officers.

Thoſe continued of the COUNCIL were

The

The lord viſcount BROUNCKER	Sir ROBERT MORAY
The lord HENRY HOWARD of Norfolk	Sir PAUL NEILE
	Dr. GODDARD
The lord biſhop of SALISBURY	Mr. COLWALL
The lord biſhop of CHESTER	Mr. HENSHAW
The lord BRERETON	Mr. OLDENBURG.

The new members of the COUNCIL were

The earl of AYLESBURY	Dr. SMITH
Mr. CHARLES HOWARD	Mr. HOSKYNS
Sir ROBERT SOUTHWELL	Dr. BALLE
Dr. CHRISTOPHER WREN	Mr. CREED
Mr. LOCKE	Dr. KING.

The officers choſen were

The lord viſcount BROUNCKER, preſident.

Mr. COLWALL, treaſurer.

Mr. HENSHAW, Mr. OLDENBURG, } ſecretaries.

Of the new members of the COUNCIL were ſworn Mr. HOWARD, Sir ROBERT SOUTHWELL, Dr. SMITH, Mr. HOSKYNS, and Dr. BALLE; the reſt being abſent.

Between this and the preceding election died two eminent men, who were members of the ſociety, Sir JOHN DENHAM, knt. of the bath, and GEORGE BATE, M. D.

Sir JOHN DENHAM was only ſon of Sir JOHN DENHAM, knt. lord chief baron of the exchequer in Ireland, and one of the lords-juſtices of that kingdom, by ELEANOR his wife, one of the daughters of Sir GEORGE MORE, bart. baron of Mellifont in Ireland. He was born in the city of Dublin about the year 1613, but brought from thence very young, upon his father's promotion to the poſt of one of the barons of the exchequer in England in 1617, and after he had been qualified at ſchool in grammar learning, was ſent to Trinity-college in Cambridge, where he was admitted a fellow-commoner in Michaelmaſs-term, 1631. During his reſidence there he diſcovered none of thoſe talents of genius and wit, which afterwards diſtinguiſhed him, his love of cards and dice diverting him from any application to his ſtudies. After he had continued about three years in Trinity-college, and been examined in the public ſchools for the degree of bachelor of arts, he removed to Lincoln's-Inn, where though he ſeemed very aſſiduous in the ſtudy of the law, he ſtill indulged himſelf to exceſs in his favourite amuſement of gaming, till his father being informed of it, threatned to diſinherit him, unleſs he corrected that vice [x]. This made ſuch an impreſſion upon him, that he compoſed a little *Eſſay*

[x] WOOD, Athen. Oxon. vol. ii. col. 422.

againſt

againſt Gaming, expoſing the ill conſequences of it; which he preſented to his father as a proof of his reformation: but after the death of his father [y], which happened January 6, 1638, he relapſed into his former courſe, in which he ſoon loſt a conſiderable part of the fortune, which had been left him. His tragedy, intitled *The Sopky*, acted at the private houſe in Black-Friars by his Majeſty's ſervants, and publiſhed in the latter end of 1641, raiſed him at once a conſiderable character as a writer; and occaſioned Mr. WALLER to ſay of him, that he broke out like the Iriſh rebellion, threeſcore thouſand ſtrong, when no body was aware, or in the leaſt expected it. Not long after this he was appointed high-ſheriff of the county of Surrey, and made governor of Farnham-caſtle for the King: but not being well ſkilled in military affairs, he kept that poſt but a ſhort time, retiring to his Majeſty at Oxford [z], where in 1643 he printed in 4to his poem called *Cooper's Hill*, reprinted with additions at London in 1650 and 1657 in the ſame form. He ſuffered impriſonment for ſome time on account of his zeal for his royal maſter [a]; and after his releaſe from it went to Paris. Upon the King's being ſeized by cornet JOYCE, and brought to the army, in the beginning of June 1647, Mr. DENHAM undertook to the Queen, that he would find ſome means to get acceſs to his Majeſty; which accordingly he obtained by the intereſt of HUGH PETERS [b], a preacher and a powerful perſon in the army; and coming well inſtructed from the Queen, the King, who had been long kept in the dark, diſcourſed very freely with him of the whole ſtate of his affairs; and at his departure from Hampton-Court in Novemb. 1647, commanded him to ſtay privately at London, in order to ſend to him and receive from him all his letters from and to all his correſpondents at home and abroad, being furniſhed with nine ſeveral cyphers for that purpoſe. This truſt he diſcharged with great ſafety to the perſons, with whom the King and himſelf correſponded, till about nine months after being diſcovered by Mr. COWLEY's hand, which was known, he eſcaped happily both for himſelf and his correſpondents [c], and went abroad [d], attending upon the prince of WALES in Holland and France, from whom, after the death of CHARLES I. and before the young King's departure from St. Germains to Jerſey, he had a grant of the reverſion of the office of ſurveyor-general of his Majeſty's buildings, after the deceaſe of INIGO JONES, who died July 21, 1651. He was ſent by his Majeſty together with Mr. WILLIAM (afterwards lord) CROFTS, envoy to the King of Poland [e], where they collected among the Scots 10000 l. for the uſe of CHARLES II. [f] About the year 1652 he returned to England, and being reduced to low circumſtances by his former exceſſes in play and the ſale of his eſtate by order of parliament in July of the preceding year, he was entertained by PHILIP earl of Pembroke at Wilton, and in London

[y] He was buried at Egham in Surry.

[z] WOOD, col. 423.

[a] Memoirs of Sir JOHN BERKLEY, p. 4. edit. London 1702.

[b] Ibid. and Sir JOHN DENHAM's dedication of his poems to King CHARLES II. 2d edit. 1671.

[c] Dedication to King CHARLES II.

[d] Mr. WOOD, col. 423. affirms, that Mr. DENHAM, in 1648, conveyed away the duke of YORK from the palace of St. James in Weſtminſter, then under the tuition of ALGERNON earl of Northumberland, and carried him into France: but this muſt be a miſtake, ſince the duke himſelf in his own *Memoirs* cited by Mr. CARTE in his *General Hiſtory of England*, vol. iv. p. 578, 579, makes no mention of Mr. DENHAM as being concerned in his eſcape, which appears to have been intirely managed by col. JOSEPH BAMPFIELD.

[e] WOOD, ubi ſupra.

[f] DENHAM's Poems, p. 67.

for above a year. At the Reſtoration he entered upon his office of ſurveyor general, and on occaſion of the coronation of the King in April 1661, was created knight of the Bath. He laboured for ſome time under a diſorder of his underſtanding, imputed to the diſcontent ariſing from his ſecond marriage; but recovering from it wrote the year before his own death an excellent poem on that of his friend Mr. COWLEY. He died at his office near Whitehall, in March $166\frac{1}{9}$, and was interred on the 23d of that month in the ſouth croſs iſle of Weſtminſter near the graves of CHAUCER and COWLEY.

GEORGE BATE, M. D. was ſon of Mr. JOHN BATE of Bourton in Buckinghamſhire, and was born at Maids-Morton near Buckingham about the year 1608 [c]. After his firſt education in grammar learning at ſchool, he was ſent to the univerſity of Oxford, and became one of the clerks of New-college in the beginning of 1622, at the age of fourteen. From that college he was removed to Queen's, and thence to Edmund-hall [f], as a member of which he took the degree of Bachelor of Arts, 28 April 1626 [g], that of Maſter 22 January $162\frac{8}{9}$ [h], and that of Batchelor of Phyſic March $16\frac{2}{3}\frac{9}{0}$ [i]. Being then licenſed to practiſe phyſic, he exerciſed his profeſſion in and near Oxford for ſome years, chiefly among the Puritan party, whoſe principles he was thought to eſpouſe [k]. Upon taking the degree of Doctor of Phyſic, 7 July 1637 [l], he grew more eminent in his profeſſion; and when King CHARLES I. kept his court at Oxford, after the breaking out of the war between him and the parliament, Dr. BATE was appointed chief phyſician to his Majeſty. But upon the decline of the Royal Cauſe he retired to London, where he became phyſician to the Charter-houſe, and fellow of the College of Phyſicians [m]. Though, upon his ſettling in London, he is affirmed by Mr. WOOD [n], to have *complied with the times for intereſt ſake*; yet he publiſhed, but without his name, in 1648 in 4to, a piece in favour of King CHARLES I. under the title of *The Royal Apology*; *or the Declaration of the Commons in Parliament* 11 *Feb.* 1647 *canvaſſed* [o]; and ſoon after his Majeſty death, a book intitled *Elenchus motuum nuperorum in Angliâ, ſimul ac Juris Regii ac Parliamentarii brevis Narratio*, printed at Paris in 1649, and at Francfort in 1650, in 4to. He joined Dr. FRANCIS GLISON and Dr. AHASUERUS REGEMORTER, fellows of the College of Phyſicians, in compiling that celebrated treatiſe *de Rachitide, ſive morbo puerili, qui vulgo* the Rickets *dicitur*, printed at London in 1650 in 8° [p]. His favour with OLIVER CROMWELL, to whom, when both general and protector, he was chief phyſician, did not prevent him from being admitted into the ſame poſt by King CHARLES II. at the Reſtoration, to whom he dedicated a new edition of his *Elenchus*, as he did the ſecond part of it, printed at London in 1661 in 8°, to the earl of Clarendon, lord chancellor. But ſome paſſages in this work giving offence to the Roman Catholics and cavaliers,

[c] WOOD Athen. Oxon. vol ii. col. 424. ſays, that he was 14 years of age in 1622.
[f] Id. ibid.
[g] Id. Faſti Oxon. vol. i. col. 233.
[h] Ibid. col 241.
[i] Ibid. col. 247.
[k] Id. Athen. Oxon. *ubi ſupra*.
[l] Id. Faſti Oxon. vol. i. col. 273.
[m] Id. Athen. Oxon. vol. ii. col. 424.
[n] Ibid.
[o] He mentions this in his dedication to King CHARLES II. of his *Elenchus*.
[p] WOOD, col. 426, and Dr. CHARLES GOODALL's College of Phyſicians vindicated, and the true ſtate of phyſic in this nation faithfully repreſented, in anſwer to a ſcandalous pamphlet, intitled *The Corner Stone*, &c. p. 145, edit. Lond. 1676, in 8°.

ROBERT

ROBERT PUGH, a papiſt,[q] who had been officer in the Royal army during the wars, publiſhed remarks upon it, in a piece intitled *Elenchus Elenchi*, printed at Paris 1664 in 8°. Dr. BATE intended a third part of his *Elenchus*[m], if he had not been prevented by death, having been ſeveral years before ſeized with an apoplexy, which left him for ſome time in a paralytical condition[r]. He was one of the earlieſt members of the Royal Society, being elected into it 12 December 1660. He died at his houſe in Hatton-Garden in Holborn 19 April 1669, and was interred in the church of Kingſton upon Thames, where a monument was erected to him. Several years after his death was publiſhed *Pharmacopœia Bateana: in qua octingenta circiter pharmaca, pleraque omnia è Praxi* GEORGII BATE *Regi* CAROLO II. *protomedici excerpta*, printed at London 1688 in 8°, by the care of JOHN SHIPTON, an apothecary of London.

December 2. Dr. URBANUS HIERNE was elected.

Mr. HOOKE produced a picture printed after the expeditious manner of Dr. WREN, who having covered a very thin braſs-plate with etching varniſh, cauſed it to be etched upon by a hand careful not to cloſe any letter, in which work the aqua fortis muſt be ſo ſtrong, as to corrode the plate quite through: Which done, the plate is to be turned and laid upon another thick plate covered all over with printer's ink, to be paſſed, after the uſual manner, through the rolling-preſs.

Mr. HOOKE was deſired to proſecute and perfect this invention of Dr. WREN.

He brought in the inſtrument, formerly promiſed by him, for dividing a degree into as many ſmall parts, as may be deſired, not by a ſcrew or a ſliding ruler, but by proportioning a ſhort line to a long one, in order to meaſure the diſtances of the ſtars, and the diameters of the planets. This inſtrument was to be applied to a twelve foot teleſcope, and repreſent a degree in two inches, and magnify thirty times, obſerving even to ſeconds; and to be employed in the experiment of meaſuring the quantity of a degree upon the earth, by meaſuring therewith, how far a ſtar paſſeth from the Zenith; which is to done by making two obſervations, the one northward, the other ſouthward, and taking notice, by the advantage of this contrivance, of the diſtance, and thence concluding the quantity of a degree, or part of a degree.

Sir ROBERT MORAY produced a Latin paper ſent from Paris by one ROBERT DESGABETZ, containing ſeveral inventions, as, 1. Of finding the parallax by a better way than the author thought to have been invented hitherto, in order to find the phyſical truth of the Copernican ſyſtem. 2. Of a perpetual motion by means of the Carteſian *materia ſtriata*, by which magnetic needles are converted to the poles, &c. 3. Framing ſhips after a new manner, to go under water without danger of ſhip-wreck. 4. Of an horizontal wind mill. 5. Of a new faſhioned muſical inſtrument, excelling a theorbo, harp, baſs-viol, &c. 6. Of a pocket pendulum-watch; which appeared to be the ſame with that of Mr. HOOKE.

[q] See his preface to the ſecond part. [r] Ibid.

Sir ROBERT MORAY having peruſed this paper declared his opinion, that the ſeveral contrivances, contained in it, were either already better done here, or were not likely to perform what they pretended to.

Mr. OLDENBURG produced a printed paper, containing ſome propoſitions for the carrying on a philoſophical correſpondence begun in the county of Somerſet, and expreſſing great reſpect to the Royal Society, and a readineſs to ſerve them with what intelligence the perſons concerned in that correſpondence ſhould procure in the country towards promoting the ſociety's deſign.

Mr. OLDENBURG remarked, that this was the effect of what had been laid before the ſociety at their meeting of July 22, 1669, in two letters, one from Mr. GLANVILL, the other from Mr. PASCHALL.

Mr. COLLINS took hence occaſion to deſire, that ſince theſe gentlemen offered their ſervice to the ſociety by way of communicating what ſhould occur in their country, of a philoſophical nature, they might be written to, and deſired to inquire at Col. OVERTON's, living at Badaft near Aller in Somerſetſhire, after the papers of Mr. SAMUEL FOSTER, who had been Profeſſor of Aſtronomy in Greſham-college [s], which he underſtood to be in the hands of the ſaid Colonel; and particularly after the paper, which contained Mr. FOSTER's way of dialing by two threads placed at a diſtance from each, the interſection of their ſhadows being to ſhew the time of the day; and that if they could obtain it, they would make a tranſcript thereof, and ſend it to the ſociety. Mr. OLDENBURG promiſed to acquaint Mr. GLANVILL, the ſecretary of the ſaid philoſophical correſpondence, with this requeſt.

Mr. COLLINS mentioned, that he had been informed, that many papers of the famous mathematician Mr. THOMAS HARRIOT were in the hands of the ſon of the earl of Cherbury [t]. Upon which Mr. OLDENBURG ſaid, that he would endeavour to procure a ſight and tranſcript of them, if they were in thoſe hands.

Mr. HENSHAW, at the riſing of the ſociety deſired the favour of the loan of a manuſcript of IRENÆUS in the Arundelian library, for a friend of his to compare it with another manuſcript of the ſame author out of the Oxonian library; adding, that he would be caution for the returning it after a little while to the ſociety. This requeſt was granted, and Mr. HOOKE was ordered to take the caution from Mr. HENSHAW at the delivery of the manuſcripts.

The experiments appointed for the next meeting were, 1. The improvement of the new way of printing pictures. 2. The improvement of the new way of ſtaining ſtuffs. 3. The repetition of the experiments of refraction, formerly began to be made in a new inſtrument for that purpoſe.

[s] He had been elected a ſecond time to that profeſſorſhip May 26, 1641, and died in July 1652. Dr. WARD's Lives of the Profeſſors of Greſham-college, p. 85.

[t] A miſtake probably for RICHARD lord VAUGHAN and earl of CARBERY; or for the lord HERBERT of CHERBURY.

December

December 9. Monſ. GEORGE STIERNHELME was elected, and his election ordered to be ſignified to him in a letter from the ſecretary [u].

Mr. OLDENBURG read an account ſent him by Mr. GLANVILL from Mr. PASCHALL, of a labouring man in Somerſetſhire, who diſcharged all his excrements, that are otherwiſe voided by the anus, through a hole in the left ſide of the belly, cauſed there by the twiſting of the guts, which not being cured by the ſwallowing of two bullets and other remedies, and the excrements making their way to the ſaid part of the belly, cauſed there a putrefaction; upon which followed a hole, letting them out, at which alſo one of the bullets, after it had been about two years in the belly, was taken out by the patient himſelf, incruſted for the greateſt part with a ſtony matter ſhot into cryſtals; the other part remaining ſmooth, this being ſuppoſed to have been cauſed by the patient's frequent touching it by a quill, which he often uſed, to remove it from the hole, in order to open a paſſage for the excrements preſſing there. The bullet being ſent with the narrative was alſo produced and ſhewn to the ſociety, who deſired, that the ſecretary would endeavour to procure it for their repoſitory.

Mr. HOOKE produced another ſpecimen of ſtaining with yellow, red, green, blue and purple colours; which he ſaid would endure waſhing with warm water and ſoap.

Dr. TIMOTHY CLARKE mentioned, that a perſon at Deptford had ſhewed him a ſpecimen of ſtaining upon Indian ſattin done here, which would endure ſcouring. He was deſired to procure a ſight of it for the ſociety, which he promiſed to endeavour to do.

Mr. HOOKE being called upon for the experiments appointed for this meeting, excuſed himſelf for not bringing them in, he having had ſome avocations of a public nature, which had hindered him from preparing thoſe experiments; which he was ordered to do againſt the next meeting.

Decemb. 16. Mr. HOOKE exhibited another ſpecimen of Dr. WREN's new and compendious way of printing; in which pictures likewiſe might be done.

There was preſented from Mr. EVELYN the ſecond edition of his *Sylva* and *Pomona*, with conſiderable enlargements.

Dr. GODDARD's account was read of an experiment formerly made by him before the ſociety, to ſhew, whether the muſcles of an animal, in their motion, are bigger or leſs in their total ſum of dimenſions? This account was ordered to be regiſtered [x], as follows:

[u] Mr. OLDENBURG's letter in Latin for that purpoſe, dated December 9, 1669, is entered in the Letter-Book, vol. iii. p. 211.

[x] Regiſter, vol. iv. p. 95.

" A caſe was made of lattin capacious and convenient to receive immerſed in " water the arm of a man, ſo as the large orifice or entrance into it might be " ſtopped cloſe by the part of the arm next the ſhoulder, with a ſmall glaſs pipe " cemented to it towards the other end, opening into the cavity, (according to " the figure.) Upon putting in of water firſt a little warmed, and afterwards of " the arm, ſo as it cloſed the wide orifice of it, and the water did riſe into the " ſmall glaſs canal; firſt it was viſible, that the water roſe upon every pulſation " of the artery, and ſubſided upon every intermiſſion; and then the perſon being " ordered to make a contraction or clutching of his fiſt of both arms, that within " the caſe and that without at the ſame time; upon every ſuch contraction, the " water in the glaſs canal did deſcend much more, than upon the intermiſſions of " the pulſe beforementioned."

Upon reading this paper, it was ſuggeſted by Mr. HOOKE, that it would be worth conſidering what it is, that by its influx makes the muſcles act by contraction; and then how the muſcles are again relaxed by nature's diſcharging that liquor or ſpirit, which contracted them. To illuſtrate this, he mentioned, that ſpirit of wine (for example) poured upon gut-ſtrings contracts and ſhortens them, and being thence evaporated relaxes and lengthens them again. So that, he ſaid, there muſt be a very ſubtile volatile ſpirit, that enters into the muſcles; and the ſame muſt very quickly be diſcharged again to cauſe the contraction and expanſion of the muſcles.

He intimated likewiſe, that if he could communicate the force of gun-powder to a ſpring, he might then command as much ſtrength as he would.

Occaſion being here given to ſpeak of well-rectified ſpirit of wine, Mr. HOOKE ſaid, that it might be yet more refined after that all would burn away, it being poſſible, that though it will burn away, yet there might ſtill be ſome phlegm in it, which may be carried up with the volatile ſpirit. He added, that the beſt proof of its perfect rectification was, if it would fire gun-powder.

Mr. WYLDE mentioned a method of painting ſarcenets with water-colours, and varniſhing them; but added, that the varniſh would rot them.

Sir ROBERT MORAY acquainted the ſociety, that before they ſat down, one Mr. SMITH of Reading had diſcourſed to him of a new way, which he had of cloth-making as to all the parts belonging thereto; viz. that he had a peculiar and very eaſy way of taking out the natural curl of the wool, making it lie as plain as flax: That he could make the hair thrice as fine and long as before, and yet ſtronger withal: That he could ſpin three yards for two: That in the weaving he could do that with the third ſtroke, which otherwiſe is not done but with nine ſtrokes: That he could ſo contrive the fulling-mills, as not to make any holes in the cloth: And that he had a method of preſſing, ſo that the cloth ſhould become both longer and finer than ordinary, and yet loſe nothing of its ſtrength, nor receive the impreſſion of the wrong ſide upon the right.

Mr.

Mr. HOOKE was ordered to diſcourſe farther with this Mr. SMITH of all the particulars, and ſet down in writing the method uſed by him in executing what he affirmed: As alſo to get a ſpecimen of what he ſaid had been already performed in his new way; and to offer him his aſſiſtance in the contrivance of divers tools, which he ſhould want.

Particular notice being taken of what Mr. SMITH had affirmed, that he could make a hair as fine as ſilk, Mr. HOOKE remarked, that if this could be done, he could tell how to give them all the gloſſy colours, that ſhould be deſired.

The ſociety reſolved to adjourn till the 13th of January following, by reaſon of the approaching feſtival of Chriſtmas.

In the mean time Mr. HOOKE was deſired to make the experiment of meaſuring a degree upon the earth; and to get his new clock, deſigned to go fourteen months, finiſhed; and to proſecute his method of ſtaining, and the new manner of printing.

December 20. At a meeting of the COUNCIL were preſent

The Preſident

The earl of AYLESBURY	Dr. BALLE
The lord biſhop of CHESTER	Dr. SMITH
Mr. CHARLES HOWARD	Dr. KING
Sir ROBERT MORAY	Mr. CREED
Sir PAUL NEILE	Mr. OLDENBURG.

The earl of AYLESBURY, Dr. KING, and Mr. CREED were ſworn of the council.

The buſineſs of the legal tie for the diſcharge of the weekly payments being debated, the putting it to the queſtion was deferred till the next council, the biſhop of CHESTER and Sir ROBERT MORAY deſiring firſt to conſider and to confer farther of it in private.

The matter of Chelſea-college being again ſpoken of, Mr. CHARLES HOWARD was deſired to think of a fit tenant for that place, and to propoſe ſuch an one to the council at their next meeting.

Dr. BALLE and Mr. HOOKE were deſired to finiſh the catalogue of the ſociety's library within the approaching holy-days.

Mr. OLDENBURG deſired the council from Mr. HENSHAW, to lend him for a few weeks out of the ſociety's library a manuſcript of IRENÆUS for a friend of his, upon ſecurity.

It was ordered hereupon in general,

That

That all thoſe, who ſhall have granted to them by the council the loan of any of the books belonging to the Arundelian library, beſtowed on the Royal Society by HENRY lord HOWARD of Norfolk, ſhall oblige themſelves by a bond of one hundred pounds ſtirling, to be given to the preſident, council, and fellows of the ſociety, to reſtore the ſame within the time to be reſpectively prefixed, intire, undefaced, and unblotted.

Upon theſe terms it was ordered, that the manuſcript of IRENÆUS ſhould be delivered to Mr. HENSHAW.

1682/3, *January* 13. At a meeting of the SOCIETY,

Mr. HOOKE brought in two ſpecimens of ſtaining better than thoſe produced by him before.

He intimated, that an acquaintance of his lately gone to Malabar had promiſed him to endeavour to get the art of ſtaining uſed by that people, which that perſon had ſaid to be performed by them chiefly with a root.

He added, that the preparing of the cloth or ſtuff to be ſtained was a main thing in this work, to hinder the colours from ſpreading too far, and from running all along the thread.

Sir ROBERT MORAY mentioned divers materials of colouring uſed in Scotland for red, blue, and yellow. He was deſired to inform himſelf by letter of the particulars, and to communicate them to the ſociety; which he promiſed to do.

It was remarked, that there was not found one ſimple, which by itſelf alone would colour green.

Dr. CROUNE produced a piece of rotton wood, broken out of the midſt of a rotten willow tree, cut down; which piece had ſeveral cavities in it, running out at length, in which lay ſeveral ſubſtances, ſhaped like a cartridge, wound about with greeniſh leaves, and exactly cloſed at both ends, wherein lodged worms.

Mr. OLDENBURG was deſired to write an account of this to Mr. WILLUGHBY, and to inquire of him, whether he had obſerved the like; and if ſo, into what flies ſuch worms changed [y].

Mr. HOOKE mentioned, that he had been informed of two ſprings in Northamptonſhire, neither of which ſingle would petrify, but meeting together they did ſo. He was deſired to learn more particulars of it.

Mr. COLLINS produced the ſolution of the problem promiſed by him, of meaſuring diſtant objects at one ſtation.

[y] Mr. OLDENBURG's letter to Mr. WILLUGHBY on this ſubject dated January 20, 1682/3, is inſerted in the Letter-Book, vo. iii. p. 226.

The

The amanuenſis was ordered to draw the ſchemes of it larger, that all the members might ſee them at the next meeting, when the papers ſhould be read.

Dr. POPE remarked, that Mr. TOWNLEY had a like way of meaſuring diſtances; and that not long before he had meaſured the hight of an hill in Lancaſhire, where he reſided.

Mr. OLDENBURG produced a manuſcript ſent and addreſſed to the preſident by Mr. JOHN FLAMSTEAD of Derby, giving an account of ſome of the more notable celeſtial phænomena of the year 1670, to be conſpicuous in the Engliſh horizon; among which was an eclipſe of the ſun viſible in England April 9, but omitted by all other aſtronomers; as alſo ſeveral occultations of ſome fixed ſtars by the moon.

Some particulars of it being read, the ſociety declared, that this was a very uſeful labour for the improvements of aſtronomy; and that therefore the author ſhould receive their thanks by the ſecretary [a], and be made acquainted not only with their acceptance of his reſpect to them, but alſo with the value, which they had for his deſign and labours, and that he ſhould be deſired to continue this his induſtry: that the main things in theſe papers ſhould be publiſhed in the next *Philoſophical Tranſactions* [a], whereby to communicate them timely to ſuch as might obſerve: as alſo that the original be kept among the ſociety's papers.

Mr. HENSHAW returned the manuſcript formerly lent him out of the ſociety's library, viz. *Pſalterium interlineatum antiquo Normannico.*

There were preſented from Dr. WALLIS two books publiſhed by him, one intitled, *Mechanica, ſive de motu tractatus geometricus; pars prima:* London 1670 in 4to; the other intitled, THOMÆ HOBBES *Quadratura Circuli ſecundò edita denuò refutata:* printed at Oxford in 1669.

Jan. 20. Mr. HOOKE produced for examination two ways of making an univerſal meaſure [b], one by purged quickſilver, dropt on a plain exactly horizontal, and having a dry ſurface, until the horizontal diameter of it be double to the perpendicular of the ſame; which being obtained by exactly comparing the ſaid two lines together, the longer of them ſhall ſerve for the meaſure, e. g for an inch.

The other way was by dropping diſtilled water from the point of a very fine needle, and counting ſo many drops for a meaſure of ſuch a denomination.

Many exceptions were made by divers of the members againſt both theſe ways: to the former, that even diſtilled mercury would be different; and that the air of ſeveral places would alter the dimenſions; and that it was very difficult to meaſure

[a] Mr. OLDENBURG's letter to Mr. FLAMSTEAD dated Jan. 14, 166⅚, is in the Letter-Book, vol. iii. p. 225.

[a] They were accordingly publiſhed, vol. iv. n° 55. p. 1099. for Jan. 1670.

[b] See his Poſthumous works, p. 472.

exactly

exactly the horizontal and perpendicular diameters. To the latter, that it is very difficult to have every where needles equally pointed, as the ſame ſize of drops.

For theſe and the like difficulties both theſe ways were laid aſide.

Mr. COLLINS's ſolution of the problem for meaſuring the diſtances of three objects from one ſtation was read, approved of, as to its truth (though its practicableneſs at ſea was doubted) and ordered to be regiſtered [c].

Mr. OLDENBURG produced and read a letter written to him by Monſr. HUYGENS from Paris January 22, 1670, N. S. [d] containing an account of the ſucceſs of his pendulum-watch ſent by ſea to Candia, and of his thoughts concerning Dr. WREN's engine for grinding hyperbolical glaſſes, Mr. BARROW's lectures on optics, and Mr. BOYLE's diſcourſe on the *abſolute reſt of bodies*; as alſo about the judgment given by the Royal Academy of Sciences at Paris concerning the invention of a man, who pretended to diſcover the longitude from the moon's motion, but appeared to know leſs of the ſubject, than others, who had made the ſame pretences before him.

Mr. OLDENBURG produced another letter written to him by Monſr. SLUSIUS from Liege, Jan. 2, 1670, N. S. [e] concerning Dr. WREN's hyperbolical cylindroid, and an hydroſtatical experiment; the reading of which letter was deferred till the next meeting; as alſo of a paper, containing CASSINI's new way (by him ſo eſteemed) geometrical and direct, to find the apogees, excentricities, and anomalies of the motion of the planets.

Mr. HOOKE having declared his opinion, that Dr. WREN's engine for grinding hyperbolical glaſſes would not be practicable, as he did not ſee how rings could be avoided in that way; but that he conceived, that his own engine, formerly produced before the ſociety for working glaſſes, both of an elliptical and hyperbolical figure, might be reduced to uſeful practice, he was exhorted by the ſociety to cauſe ſuch an engine to be made with all poſſible ſpeed; to which he anſwered, that one was making.

Jan. 27. Mr. SMETHWICK produced a ſtony ſubſtance altogether like an egg in ſhape and colour, pretended to have been found in a ſandy field near Newark. Upon a ſtrict view ſeveral of the members judged it to be artificial, and nothing elſe but a piece of white marble turned oval. It being propoſed, that it might be cut aſunder, to ſee it within, Mr. SMETHWICK alledged, that he had no permiſſion for it, but would try, whether he could obtain it.

Sir ROBERT MORAY remarked, that the King had heard of a piece of ground in Northamptonſhire, wherein wood and other things buried would be petrified.

[c] Regiſter, vol. iv. p. 95. It is printed in the Philoſ. Tranſact. vol. vi. n° 69. p. 2093.

[d] Letter-Book, vol. iii. p. 228.

[e] Ibid. p. 213.

Mr. OLDENBURG read the paper concerning CASSINI's pretended new method, geometrical and direct, of finding the apogees and excentricities of the motion of the planets: after which he moved, that it might be inquired into, whether the like method had not been already found out in England. Whereupon Mr. MERCATOR, having considered this matter in private, produced a paper of his, which shewed, that this very thing was founded upon what Dr. SETH WARD, now lord bishop of SALISBURY, had demonstrated in his *Astronomia geometrica* published in 1656. This paper was read, and being found to be the demonstration of this alledged invention of CASSINI, printed as such in the French *Journal des Sçavans* of September 2, 1669, it was thought proper, that the narrative of the truth of this matter should be published in the Philosophical Transactions [f], together with the ground, which Mr. MERCATOR affirmed to have been given long before by HERIGON [g] in his *Theoria Planetarum*; not omitting to make mention of the occasion, that was given to the bishop of SALISBURY for finding out that demonstration, viz. by Monsr. BULLIALDUS, who had acknowledged, that this was wanting in astronomy.

Mr. OLDENBURG produced a printed map of the royal channel in Languedoc, at that time making for the conjunction of the ocean and the mediterranean, in length about thirty leagues, each consisting of four thousand fathoms; in breadth sixty feet, and in depth nine feet; entering at one end into the Garonne a little above Tholouse, and so into the ocean, and at the other end into the lake of Frontignan, and so into the mediterranean; and furnished with a supply of waters from divers springs, and many small rivers, and especially by five rivers issuing out of the *Montagne noire* not very far off; which, as they naturally run from North to South, are made by a new channel to change their course, and to run East and West, to serve for the purpose of this great work [h].

Feb. 3. Mr. HOOKE produced a contrivance of his to try, whether a mechanical muscle could be made by art, performing without labour the same office, which a natural muscle doth in animals. It was so contrived, as that by the application of heat to a body filled with air for dilatation, and by the application of cold to the same body for contraction, there might follow a muscular motion. It was objected, that it did not appear, how this agent, that was to produce heat and cold, could be applied for use, so as to cause this motion immediately, and with that speed, as it is done in animals. However Mr. HOOKE was ordered to consider more fully of it, and to acquaint the society with the result of his farther considerations.

He suggested, that if it could be done leisurely this way, the motion might be rendered quick by springs.

Mr. OLDENBURG produced and read several letters written to him from divers parts: one from St. Martin near Rochelle, Jan. 14, 1670, N. S. by Monsr. RI-

[f] It is printed there, vol. v. n° 57. p. 1168. for March 1670.

[g] PETER HERIGON, professor of the mathematics at Paris.

[h] See Philos. Transact. vol. iv. n° 56. p. 1123. for Feb. 16$\frac{7}{8}$.

CHARD, a doctor of phyſic, anſwering the doubts ſtarted at the meeting of the ſociety Nov. 18, 1669, concerning the way of making vinegar in France, communicated by him. The ſecond from Dr. EDWARD BROWN, dated January 26, $16\frac{6}{7}\frac{9}{0}$, with a Latin one incloſed from PETER LAMBECIUS, the Emperor's hiſtoriographer and library-keeper, to Mr. OLDENBURG dated at Vienna October 30, 1669[i], preſenting his ſervice to the ſociety, and ſending a catalogue of divers chemical manuſcripts in the Imperial library, and offering them the liberty of tranſcribing any of them, and even his readineſs to ſend the books themſelves upon caution given. The third from NATHANAEL HIGHMORE, M. D. to Dr. BEAL, dated at Sherbourn in Dorſetſhire, Dec. 17, 1669[k], concerning the ſalt-ſpring at Eaſt-Chinock in Somerſetſhire; as alſo the medical ſpring, called Farrington-Well in Dorſetſhire, with a ſmall parcel of ſalt obtained from the ſalt-ſpring.

Dr. BALLE related, that he was credibly informed, that four miles from Exeter, at a village called Honeton's Cliſt, at an alehouſe, there was a kind of metal reſembling braſs, brought from the Eaſt-Indies, which, when ſtruck with the finger, or with much ſofter bodies, would yield a very loud noiſe; but when knockt with an iron hammer, a low and deadiſh noiſe.

This being looked upon as not credible, Dr. BALLE affirmed, that the perſon, from whom he heard it, aſſured him, that himſelf had made the experiment of it; but that the ſociety might do well to direct, that Dr. COTTON, who reſided near the place, ſhould be written to to inquire into the truth of that ſtory; and Mr. OLDENBURG was deſired accordingly to write about it.

Feb. 10. Mr. HOOKE being abſent, the ſociety, inſtead of experiments, was entertained with the reading of ſome letters, and the view of ſome curioſities of nature, ſent partly out of New-England by Mr. WINTHROP, governor of Connecticut, partly out of Hungary and Tranſylvania by Dr. EDWARD BROWN, and partly out of Warwickſhire by Mr. WILLUGHBY, all directed to Mr. OLDENBURG for the ſociety.

Mr. WINTHROP's letter was dated at Boſton in New-England, Oct. 4, 1669[l]; and the curioſities accompanying it were,

1. Three dwarf oaks, with cups of acorns in them, the acorns being fallen off, of which yet there were ſome found in the box, whereof two were given to Mr. CHARLES HOWARD, and one to Mr. OLDENBURG for Mr. EVELYN, to plant them here, and two reſerved for the repoſitory.

2. Two broad and one narrower girdle of the Indian money.

[i] Letter-Book, vol. iii. p. 199. Mr. OLDENBURG's anſwer to LAMBECIUS is dated Feb. 10, $16\frac{6}{7}\frac{9}{0}$. Ibid. p. 242.

[k] Supplement to the Letter-Books, vol. iv. p. 138. It is printed in the Philoſ. Tranſact. vol. iv. n° 56. p. 1128.

[l] An extract of it is printed in the Philoſ. Tranſact. vol. v. n° 57. p. 1151. for March 1670.

3. One white and one blue ſtring of Indian money, and one pair of bracelets for the aged, and one child's bracelet.

4. A ſmall pail made of the bark of a birch-tree.

5. Four ſorts of ſand, one found on the ſea-ſhore near New-Haven in New-England, the other in St. Chriſtopher's-Iſland, both metalline; the third very fine of Saco in New-England, taken out of a pond there; the fourth of Virginia.

6. Some winter and ſummer-wheat, produced in thoſe parts.

7. A ſort of ſnake-weed.

8. Hertford-earth, like terra ſigillata, which the cattle eat.

9. A curious ſort of moſs growing on the trees beyond Virginia towards Florida.

10. Black and ſpeckled beans.

11. Red beans and white in two papers.

12. A lime-ſtone lately found in New-England.

13. Three ſtones found in clay deep in the ground at Hertford in New-England.

14. Earth, which being put into common water ſwims, as wood or cork, for a time, found about Patomack river in Virginia.

15. The horns of a kind of beetle.

16. Flies like moths, which ingender the worms, that ſpoil apple-trees.

17. The ſhape of thoſe worms or caterpillars, which ſpoil the apple-trees, into which form they turn, after they have crept into the earth from the tree; and in this form they lie in the earth, and only in the ſpring a fly is bred of them like a moth, and they come out of the earth; and from them again are the caterpillars produced.

18. Exceedingly ſmall piſmires.

19. Some walnuts, of which one was given to Mr. CHARLES HOWARD, and another to Mr. EVELYN, and the reſt reſerved for the repoſitory.

20. Three Indian purſes or bags, in one whereof were New-England cheſnuts. Two of theſe purſes were made of porcupine's quills ſplit.

21. A ſmall diſh or porrenger of the bark of a tree.

22. A tray made of the root of a tree.

23. Ten pieces of candle-wood, which being lighted burnt with a good flame, and were uſed by many planters inſtead of candles. They were ſplit out of the knots of pitch-pine; and tar is made out of ſuch knots.

24. A bag of hazle-nuts grown in New-England.

25. A bag of granat-nuts, with a little paper of very ſmall granats.

26. Two unuſual ſhells.

27. A black ſtone of Panirhall.

28. Two flying ſquirrels.

29. Some few granat-ſtones by themſelves, ſaid to have been ſent by one THOMAS EDWARDS.

30. Two pretty large ſhells.

31. Some ears of Indian corn.

32. A comb of the Indian ladies.

33. Shreds of ſtuff made by the Engliſh planters of cotton and wool, put up to ſhew the colour, which was only dyed with the bark of a kind of walnut-tree, called by the planters the butter-nut-tree, the kernel of that ſort of walnut being very oily, whence they are called butter-nuts. They dyed it only with the decoction of that bark, without allum or copperas, as they ſaid.

34. A branch of the ſaid butter-walnut-tree.

35. Some minerals of New-England.

36. A mineral ſtuff found in a vein of the like kind of ſandy ſtones in digging a trench at Hertford in New-England.

37. A branch of a tree, called the cotton-tree, bearing a kind of down; which yet is not fit to ſpin. The trees grow high and great. At the bottom of ſome of the leaves next to the ſtalk of the leaf, is a knob, which is hollow, and a certain fly, ſomewhat like a piſmire-fly, is bred in thoſe knobs: in ſome years more leaves have thoſe knobs than in other years.

38. The little-herb, or hedera trifolia Canadenſis.

39. *Lapides.*

39. *Lapides albi minerales.*

40. Speckled, gray, and black beans.

41. The matrices, in which thoſe ſhells are bred, of which the Indians make their white wampam-peage, which is their money. They grow on the bottom of ſea-bays, and the ſhells are like periwinckles, but larger. Whilſt they are very ſmall, and firſt growing, many are within one of the concave receptacles of theſe matrices. If any of the little caſes be opened, there will be found the *primordia* of thoſe great ſhells, of which the Indians make their wampam; and many ſmall ſhells will be found in one caſe. They may be better diſcerned as to their full ſhape by a microſcope. Theſe caſes are thin and ſeparate from one another; but all faſtened one cloſe by another to a membrane-like ſkin.

In the ſecond box marked B.

1. A fiſh full of prickles, called the ſea-hedge-hog.

2. A flying fiſh.

3. Three pods of ſilk-graſs.

4. Pieces of the bark of a tree growing in Nova Scotia and the more eaſterly parts of New-England; upon which bark there are little knobs, which being opened yield a liquid matter like turpentine, ſaid to be of a very ſanative and balſamic nature.

5. Five ears of Indian corn of a ſpecial kind, ſaid to ripen a month at leaſt before other kinds.

In the third box marked C.

1. Some pine-apples, in number five.

2. Stones full of little holes, in every one of which there was a little living creature like a worm. They are taken under water.

In the fourth box marked D.

An extraordinary kind of fiſh, ſomewhat reſembling a ſtar-fiſh, but different from it in divers particulars, and very curiouſly wrought.

Beſides theſe things, there were likewiſe ſent the head of a deer, not of a common kind, brought from a very remote part of the country by ſome Indians; two bibles and three books, intitled *The Practice of Piety*, tranſlated into the Indian language; two aſtronomical deſcriptions of the comet of 1664; a tranſlation of Mr. RICHARD BAXTER's *Call to the Unconverted* into the Indian tongue, and an Indian grammar.

Mr.

Mr. OLDENBURG then produced Dr. EDWARD BROWN's letter to him, dated at Norwich, Feb. 5, $16\frac{69}{70}$ [m], accompanied with two boxes, in one of which marked A were two ſorts of Tranſylvanian ſtone-ſalt, together with another ſalt in a ſmall box marked B incloſed in the former, ſuch as in thoſe parts is uſed at table. In the other box marked C there were three ſorts of ſtone-ſalt from the mine of Eperies in Upper Hungary, 1. A yellow ſalt. 2. A cryſtal ſalt. 3. A blue and white ſalt.

He next produced a letter written to him by Mr. WILLUGHBY, dated at Middleton, Jan. 29, 1669 [n], in anſwer to what had been deſired of him concerning worms found wrapt up in leaves in a rotten willow ſhewed to the ſociety by Dr. CROUNE; concerning which Mr. WILLUGHBY ſaid, that he was able to give no good account of them, having never met with them but once about ten years before in oak-leaves, ſtrangely twiſted up, and in the midſt of each of them a ſingle egg. But at that time he had obſerved no farther of them, or without ſucceſs. He remarks, that all the inſects, that are quite impriſoned, and have no holes open for them to fly out at, after they are changed (which thoſe in apples, nuts, and the heads of teaſels have) make their way either with their teeth, or a diſſolvent liquor, which they ſpew out. But that it is much harder to conceive, how the old inſect ſhould ſo wrap herſelf.

He ſent with this letter a box containing ſome inſects, and obſerved, that nature made the theca's, in which thoſe inſects were contained, chiefly to preſerve them while they lie torpid in winter; and that it is obſervable, that the torpor ſeizes upon them in all conditions, 1. Either after they are changed, and come to perfection. 2. Before they are changed; or 3. when they are newly hatched. And that it is with them in that condition, as if the time ſtood ſtill, they living as long after warm weather hath awaked them, as they would have done from the time the cold firſt ſeized them, if they had eſcaped it. Flies, butterflies, waſps, hornets, &c. are inſtances of the firſt ſort: of the ſecond the ſolitary eruca in the teaſel-head, which being come to his full growth lies there all winter, and about April changes into an aurelia. Of the laſt he took thoſe of Dr. CROUNE to be.

With regard to the hiſtory of ſpiders flying, he left that to Mr. MARTIN LISTER, *the firſt and moſt ingenious obſerver*. "Being ſtirred up, *adds he*, by his "diſcoveries, I have taken ſome pains about them, and in September laſt in a "mooriſh ground ſaw a great many of ſeveral ſpecies gotten up to the tops of "ruſhes and graſs, and hanging by their legs. They turned their tails with the "wind, and ſpitted out a web, which was carried in the air to ſome other buſh or "plant; and as ſoon as ever they felt it catch upon any thing, they would immediately turn themſelves, and run along the web to the place, where it was hung, "and from thence begin their work again. So much I have ſeen and have witneſſes for.

"The noble theory of motion I have not lately meddled with, thinking to

[m] Letter-Book, vol. iii. p. 239. [n] Ibid. p. 231.

"have

" have my lord of CHESTER's company and aſſiſtance in experiments about it " before this."

This letter of Mr. WILLUGHBY giving occaſion to diſcourſe of the generation and changes of thoſe inſects mentioned by him, Mr. HOSKYNS related, that one Mr. MORGAN told him, that he had a curioſity to ſee what it was, that made many holes in ſome ſorts of willows and ſally's, which he had planted, and which he found dead, as he gueſſed by reaſon of thoſe holes. Cleaving ſome of the trees, he found a long grub or worm, almoſt of the length of his finger, white, conſiſting as it were of ſeveral joints, and the head yellow, with a ſtrong proboſcis and hard teeth, or rather chaps, at the end of it (as waſps have) with which it reduced the wood to little bits like ſaw-duſt. The worm had ſeveral legs, and as it eat farther, it grew bigger, as likewiſe did the hole. At the end of the year it ſhrinks to a ſmaller bulk, and ſleeps during the winter, and the next ſummer is a fly. But of that he promiſed a farther account.

There was preſented Dr. MALACHIAH THRUSTON's book, intitled, *De reſpirationis uſu primario diatriba. Cui accedant animadverſiones à cl. viro in eandem ſcriptæ, unà cum reſponſionibus authoris.*

Feb. 17. There was produced and read a long letter of Dr. EDWARD BROWN to Mr. OLDENBURG, dated at Norwich Feb. 12, 1669, giving an account of ſeveral baths in Germany, Hungary, and ſome parts of Turky [*], and accompanied with a box containing theſe following particulars:

1. A ſmall box with a ſtone of the talcum-rock from Spittal in Upper Carinthia.

2. Another ſmall box with a ſubſtance taken from the ſtones at the entrance of the cave, which leads to the ſpring, that ſerves the duke's bath at Baden.

3. A box with ſulphur taken out of the pipes, which paſs the Thermæ at Baden.

4. Another box with a ſubſtance taken from the top of the cave, through which the hot ſprings paſs at Baden.

5. A box with a ſubſtance incruſting the ſides of the ſweating-bath at Glaſhutten.

6. Another box with a ſubſtance growing upon the wood in the baths of Glaſhutten.

7. Another box with a ſubſtance ſticking to the coppers in the boiling of the hot-bath at Manners-dorf.

[*] Letter-Book, vol. iii. p. 254. It is printed in the Philoſ. Tranſact. vol. v. n° 59 p. 1044. for May 1670.

8. Muſcovy

8. Muſcovy glaſs from Mount Hæmus.

9. Several mineral ſtones, ſeven in number, two of which were incruſtations about wood.

Mr. Hooke produced a piece of ſtaining improved.

He promiſed for the next meeting an anatomical experiment concerning the lungs.

February 24. Mr. Hooke reported, that the anatomical experiment concerning the uſe of the lungs, which he had promiſed to make in private, had not ſucceeded, but that he intended to try it again betwixt that and the next meeting.

He ſhewed an experiment to illuſtrate, how the figures of trees, that are naturally made upon divers ſtones, may be formed by art; which he did by rubbing two poliſhed marbles together, between which there was put ſome water, ſo that after they had been a little while rubbed together, and were thereupon ſo drawn, as that ſome air might intermix and dilate the water, there appeared plain figures of the form of trees. Whence it was conjectured, that the like figures, formed by nature upon ſundry ſtones, might be made by ſome water oozing through ſtones, and working upon them, air being intermixed and dilating the liquor.

Mr. Oldenburg produced and read three letters to himſelf, one by Monſr. Huet [p], dated at Paris February 22, 1670, N. S. [q], containing an account of a method found out there for making ſea-water freſh, by precipitation, with oil of tartar: The ſecond by Mr. Francis Vernon, ſecretary to Mr. Montagu, the Engliſh ambaſſador to the court of France, dated at Paris Feb. 25, 16$\frac{6}{7}\frac{9}{0}$ [r], mentioning a printed paper ſent by Monſr. Huygens to Mr. Oldenburg *de Parheliis & Halónibus*; as alſo the depoſiting of ſome written papers of Monſr. Huygens in the hands of Monſr. Vernon, together with his deſire, that they might be ſent to the Royal Society in caſe of his death, he being then ſick; on which occaſion he expreſſed a very great eſteem of the ſociety, and much confidence of the ſtability of their inſtitution beyond any other philoſophical ſociety. The third by Mr. Flamstead, dated at Derby, Feb. 7, 16$\frac{6}{7}\frac{9}{0}$ [s], expreſſing his acknowledgments to the ſociety for the favourable reception of his aſtronomical diſcourſe lately communicated to them.

Monſr. Huet's concerning the way of making ſea-water freſh occaſioned ſome diſcourſe upon the ſalubrity of ſuch water, when made freſh; ſome alledging, that in the diſſolution there came over with the ſweet water a corroſive volatile ſalt, which had a noxious quality for human bodies; and others adding, that poſſibly that noxiouſneſs might proceed from the want of air in the water ſo diſtilled, ſup-

[p] Peter Daniel Huet, afterwards biſhop of Avranches in France, well known by his writings.

[q] Letter-Book, vol. iii. p. 253. It is printed in the Philoſ. Tranſact. vol. v. n° 67, p. 2048, for January 167$\frac{1}{2}$.

[r] Letter-Book, vol. iii. p. 267.

[s] Ibid. p. 237.

poſing the neceſſity there is of a competent quantity of air in all things, that are to feed the bodies of men.

Whereupon it was remarked by Dr. GODDARD, that diſtilled waters had as much air in them as undiſtilled, they being of the ſame weight. He was therefore deſired to repeat ſome trials of the weight of diſtilled waters compared with that of the undiſtilled ones.

The relation of the way of making ſea-water freſh intimating, that one of the things, whereby it was performed, was a precipitation made by oil of tartar, it was alledged, that by this oil of tartar the ſaline parts of the ſea-water ſeemed to be as it were chained, and kept back, ſo that they could not come over the helm, &c.

March 3. Mr. JEFFREYS gave ſome account of the two ſtellar eclipſes lately obſerved by him and Mr. HOOKE; which he was deſired to bring in writing at the next meeting.

Mr. OLDENBURG produced a letter to the preſident from Mr. EVELYN, accompanied both with an engine for the more equal ſowing of corn and with the deſcription of it[t]; by which engine a great quantity of ſeed-corn is ſaid to be ſaved, and a greater crop gained. The deſcription was tranſlated by the earl of SANDWICH from the Spaniſh into Engliſh; the engine being uſed in Spain, and in ſuch a manner, that being faſtened to a plow, it plows, ſows, and harrows at once.

Some of the members remarked, that there was ſuch a kind of engine, at leaſt for equal ſowing, in England, and that it had ſeveral times been uſed with good ſucceſs and advantage, but that people are ſo attached to their old way, as to neglect the uſe, though more beneficial, of a new one.

The biſhop of CHESTER added, that one of theſe engines had been made by the ſociety's operator, and put in practice by himſelf; and that it was lent to one Mr. BUCKLEY in Surrey near Banſtead-Downs.

Mr. EVELYN having moved in his letter, that the deſcription of the Spaniſh engine might be printed in the *Philoſophical Tranſactions*, it was ordered, that Mr. HOOKE ſhould be deſired to conſider this Spaniſh engine, and put it into order, and likewiſe make a ſcheme and deſcription of the Engliſh, to be publiſhed together.

THOMAS WILLISEL being returned from his journey, produced before the ſociety ſeveral minerals, fiſhes, and birds, which he had collected. Among the birds, which he had met with in Ireland, there were ſome with three beaks, having two paſſages, one of which was thought by Dr. GLISSON to ſerve for breathing, the other for ſwallowing.

[t] This letter and the deſcription of the engine are printed in the Philoſ. Tranſact. vol. v. n° 60, p. 1055, for June 1670.

It was ordered, that Dr. POPE, Mr. JEFFREYS, and Mr. HOOKE do inform the ſaid THOMAS WILLISEL of ſuch natural things, as may be had in England, and were yet wanting in the ſociety's repoſitory, and that the ſaid WILLISEL take order and directions from them what to inquire after and bring home for the future.

Mr. OLDENBURG ſignified, that Dr. JAMES DU MOULIN deſired, that the ſociety would do him the favour to certify, that upon their deſire he had tranſlated the *Hiſtory of the Royal Society* into French, and that he had now ſatisfied their deſire. It was ordered hereupon, that ſuch a certificate be granted him, and ſigned by the preſident, in the following form:

" Noverint univerſi, ornatiſſimum Dominum JACOBUM DU MOULIN, M. D. " rogatu Societatis Regiæ Londini ad Scientiam naturalem promovendam inſtitutæ, " traduxiſſe in ſermonem Gallicum Hiſtoriam prædictæ Societatis à THOMA " SPRAT, S. T. Doctore linguâ Anglicâ adornatam. Londini die 3 Martii " $16\frac{69}{70}$."

Mr. CHARLES HOWARD intimated to the ſociety, that he had now recovered the loſt art of making red glaſs; as alſo that he had extracted without any addition out of the ſpar of the Derbyſhire lead mines a liquor of an acid taſte and a ſtrong ſmell. He was deſired to produce a piece of plate of that glaſs, if he could conveniently do it, and alſo ſome of the liquor.

Sir ROBERT MORAY was deſired to take with him for a trial ſome of the metal, which THOMAS WILLISEL ſaid was called a new metal, found in Yorkſhire upon Ingelberry-hill; which Sir ROBERT did accordingly.

March 10. There was produced ſome fagots of red-ſtreak graſs ſent by Mr. READ out of Herefordſhire for the uſe of the ſociety; which were diſtributed to ſeveral of the members, as the lord ASHLEY, Sir PAUL NEILE, Sir CYRIL WYCHE, Dr. SMITH, Dr. BALLE, and Mr. HOOKE.

An experiment was made in the artificial tin-arm of Dr. GODDARD's contrivance, to find, whether pulſation was made by an intumeſcence of the artery, or not? And it was found by ſeveral trials, that as the pulſe beat, ſo the water roſe in the glaſs-cane adapted to the ſaid tin-arm: And this was found to hold in many pulſations, even to forty ſtrokes; but the water was obſerved to aſcend unequally in the glaſs.

This phænomenon being put to the debate, ſome of the phyſicians, and particularly Sir GEORGE ENT, Dr. CLARKE, and Dr. GODDARD thought it not cogent, to conclude from the riſe of the water an intumeſcence of the artery; but were of opinion, that that aſcent might proceed from the mere vibration of the artery without ſwelling of the ſame, eſpecially conſidering, that the coat of the artery was not eaſily capable of diſtenſion, and that the ſmalneſs of the quantity of blood paſſing at every pulſation out of the heart into the artery, and being added to ſo great a quantity of blood in the body, could hardly make a ſenſible dilatation.

Dr.

Dr. CROUNE mentioned an obſervation of his, by which, he thought, it appeared, that at the ſame time, when there was a ſyſtole in the heart, there was alſo a ſyſtole in all the arteries; ſo that the blood paſſed at one and the ſame time out of the heart into the arteries, and out of the arteries into the veins.

It was moved, that experiments might be thought of, to find, whether indeed the arteries were apt to be diſtended, and it was ſuggeſted, that it ought to be conſidered, that there was not ſo great a quantity of blood in the arteries, in regard there was ſo much of it in the veins and in almoſt all the parts of the body.

Mr. BOYLE moved, that a wire might be put in the inſtrument, and faſtened to it; which being fillipped in the water, might ſhew, whether the water might then riſe, as well as it did at the time of the pulſations of the artery.

Dr. GODDARD moved, that a dog might be opened, in order to obſerve carefully the pulſations of the heart and the artery.

It being intimated by him, that the bore of all the ends of the capillary arteries, taken together in bulk, was probably of the ſame capacity with the ſingle great bore of the artery receiving the blood of the heart; and that therefore the blood might paſs out of the arteries as eaſily as it came in, and therefore needed not to diſtend them; Mr. LOCKE deſired, that it might be conſidered, that though that were ſo, yet there was more ſuperficies in the whole bulk of all the ends of the arteries together than in the ſingle great artery.

March 17. An experiment was made with long pendulums, having two leaden balls of equal weight faſtened to them, and moving the one in water, the other in air, to ſee the difference of the reſiſtance of the two mediums to them. It was found, that the pendulum moving in the air made thirteen vibrations, whilſt that in water made but twelve.

It was ſuggeſted, that it would be proper to try this experiment in a large exhauſted receiver with a long cane to it, to ſee how long the pendulum would move, before it ſtops, and afterwards to try it alſo in compreſſed air; which experiment was ordered to be made at the next meeting.

Mr. OLDENBURG produced a letter from Dr. EDWARD BROWN, dated at Norwich, March 8, $16\frac{69}{70}$ [u], giving notice of ſome minerals ſent by major BENDISH, which were delivered at this meeting by the ſaid major, and came accompanied with an anſwer to ſeveral queries formerly recommended to the Doctor [x], who alſo ſent a draught and deſcription of a burning, melting and driving furnace.

The particulars delivered were theſe:

[u] Letter-Book, vol. iii. p. 280.
[x] Ibid. They are printed in the Philoſ. Tranſact. vol. v. n° 58, p. 1189, for April 1670.

In a box marked A.

1. A little box of pure cinnabar out of the ſilver-mines at Schemnitz in Hungary.

2. Silver-ore with cinnabar growing upon it from Schemnitz.

3. Cinnabar out of Tyrol.

4. A rich piece of cinnabar ſent out of Carinthia.

5. Brown cinnabar out of the foreſt of Cre not far from St. Veit in Carinthia.

6. A large piece of cinnabar from Carinthia mixed with other ſubſtances.

7. A ſtone like a bone digged from under the root of a tree in the foreſt of Cre, having cinnabar with it.

In a long box.

B B. Two boxes of amethyſts, amethyſtin-tinctures and cryſtals, as they ſhoot or grow in the mines at Schemnitz.

C. Silver-ore from Schemnitz; the longeſt piece from the Trinity-mines.

D D. Two little boxes of natural vitriol.

E. Bolus found nigh Schemnitz.

F. Kyſs, a ſort of pyrites.

G. Glaſs-ſlacker, a vitrified ſubſtance to make lute of, for covering the glaſs-bodies in the ſeparating furnaces at Schemnitz.

The exhibiting of theſe gave occaſion to diſcourſe of the way of reducing ore into metal; upon which Sir ROBERT MORAY ſuggeſted, among others, the following queries to be farther propoſed to Dr. BROWN:

1. What is the leaſt quantity of ſilver in ore, which makes the perſon employed in that buſineſs think it worth the pains of working it?

2. What are the particular expences from the firſt working to the refining? What the lead ſtands them in, and what are the charges of refining?

3. How lead is wrought here in England, and to compare it with their working in Germany and Hungary?

4. Whether the ore be not ſometimes melted at the firſt burning? Why not then, as well as at the ſecond burning?

5. Which

5. Which way they reduce litharge into lead again?

6. Whether there be ſilver in any other baſe metal but lead?

7. Whether it be all wood, no coal, which they uſe in this work?

8. How they make their aſſays?

9. What kind of balance they uſe, and the deſcription thereof?

10. Whether they put all their lead, that is to be refined, into the cupula?

11. To deſire a more exact and more particular deſcription of the furnaces.

Mr. CHARLES HOWARD preſented from his brother the lord HENRY HOWARD the following curioſities,

1. Two pieces of amber, one like an heart, with flies in it; the other like a bead, with an ant in it.

2. A little piece of the rock, to which ſome amber was yet faſtened; the two pieces of amber abovementioned having been digged out of a rock about Tangier, when the rocks were broken there for the mole.

3. Two Roman coins, one larger than the other; the larger found about Tangier, the leſs at Fez.

Mr. OLDENBURG produced a French paper brought to him by Mr. VERNON, ſecretary to the King's ambaſſador at Paris, containing a diſcourſe of Monſr. MARIOTTE concerning the organ of viſion, viz. Whether it be the retina or choroides; a diſpute lately raiſed between him and Monſr. PECQUET: Which diſcourſe Mr. VERNON had been deſired to recommend from the author to the favour of the Royal Society for their peruſal and conſideration before the publication of it.

It was ordered, that Mr. HENSHAW ſhould be deſired to tranſlate it into Engliſh againſt the next meeting; and that it ſhould then be conſidered by ſuch of the members, as the ſociety ſhould appoint for that purpoſe.

March 24. Mr. HOOKE being called upon for the experiment of moving a pendulum in an exhauſted receiver ſaid, that Mr. BOYLE, ſince the laſt meeting, had told him, that there was no ſenſible difference between the celerity of a pendulum's motion in the air and that *in vacuo*. However it was ordered, that this experiment ſhould be made before the ſociety at their next meeting.

Mr. HOOKE made a report of the obſervations made by himſelf and Mr. JEFFREYS of two late ſtellar eclipſes predicted by Mr. FLAMSTEAD, which happened

ed February 25 and March 3, 1676; concerning which he ſaid, that in the former they could not ſee the ſub-ingreſs, but ſaw the egreſs, the time of which agreed very near with that aſſigned by Mr. FLAMSTEAD: And that in the latter they obſerved the time of the ſub-ingreſs 17 h. 2 m. which differed conſiderably from the time calculated by Mr. FLAMSTEAD: And they added, that they expected the egreſs till 18 h. 45 m.; but that the day then clearing up, and the ſmoke and vapours aſcending, they loſt the ſight, which they had, of the moon. Theſe obſervations were made with a ſix foot teleſcope.

On this occaſion it was remarked, that Mr. FLAMSTEAD had affirmed, that though the almanack-makers had omitted the eclipſe of the ſun on 9 April following, as inviſible here, yet he had by his calculation from the curve-line tables found, that a part of the ſaid eclipſe, if the air were ſerene, would be conſpicuous in theſe parts; which calculation was publiſhed, with the whole calculus, in the *Philoſophical Tranſactions*, n° 55.

Mr. OLDENBURG produced another preſent of minerals from Dr. EDWARD BROWN, together with a catalogue and deſcription of them in a letter written by him to Mr. OLDENBURG at Norwich March 21, 1676 [7].

The particulars were theſe:

Gold ore from Chremnitz.

Antimony of gold.

Ore from Chremnitz containing ſilver and gold.

Vitriol earth; the vitriol made out of that earth from Chremnitz.

Copper ore out of the mine of Herrn-ground near Newſel in Hungary.

Black copper ore, containing alſo ſilver.

Berg-grune.

Four ſorts of vitriol, white, green, blue and reddiſh.

A ſtone lately diſcovered in the copper-mines at Herrnn ground; which was ordered to be poliſhed on one ſide.

A ſtone ſaid to be the mother of the Turquoiſe.

Iron turned into copper; one piece melted; a chain and heart of iron, now copper. This heart being filed proved ſtill iron within, but the outſide was copper.

[7] Supplement to the Letter-Books, vol. ii. p. 116.

Antimony ore from Tranſylvania.

Natural vitriol cryſtallized in the mines of Chremnitz.

THOMAS WILLISEL brought in a ſmall collection of ſea-plants lately gathered by him on the ſea-ſhore in Kent.

Mr. HOWARD was deſired to try, whether any of them would grow in a garden.

Mr. OLDENBURG read a letter to him from Dr. WALLIS, dated at Oxford March 19, $16\frac{69}{70}$[a], containing his anſwer to ſome animadverſions of Mr. CHILDREY on his hypotheſis of tides[a]. And it was ordered, that a copy of the Doctor's letter ſhould be ſent to Mr. CHILDREY as moſt concerned in the anſwer.

Mr. HENSHAW produced his tranſlation of Monſr. MARIOTTE's paper concerning the principal organ of viſion; which was ordered to be read at the next meeting.

March 31. The number of members preſent being but ſmall, and the preſident and all his vice-preſidents abſent, nothing was done at this meeting.

April 7. Dr. CROUNE undertook to write to the earl of AYLESBURY, to make ſeveral trials to diſcover what minerals or ſalts were contained in the medicinal waters of Bourbon in France; and to ſend the products of them to the ſociety, together with the meaſure or weight of the water, from which they were taken.

It was ordered, that Mr. FLAMSTEAD be requeſted by Mr. OLDENBURG to proceed in making his calculations; and to inform him, that Mr. HOOKE would undertake to make the obſervations.

Mr. HOOKE was deſired to find out a place to make his obſervations of the ſun and ſtars by a new way, which he then propoſed.

It was deſired, that Monſr. MARIOTTE's paper concerning the principal organ of viſion ſhould be printed in the *Philoſophical Tranſactions*[b], and as much of Monſr. PECQUET's, as gave occaſion to that diſcourſe.

April 14. Monſr. GUSTAVUS HELMFELD, a Swediſh gentleman, was propoſed candidate by Monſr. LEYONBERGH, the Swediſh reſident.

The experiment of moving two pendulums of equal length and bigneſs with two leaden balls of equal weight, the one in the open air, the other in an exhauſted receiver, was made; and it was found, that that in the receiver moved a

[a] Letter-Book, vol. iii. p. 355. It is printed in the Philoſ. Tranſact. vol. v. n° 64, p. 2059, for Octob. 1670.

[a] Letter-Book, vol. iii. p. 316, and Philoſ. Tranſact. p. 2061.

[b] It is printed vol. v. n° 59, p. 1023, for May 1670.

conſiderable

conſiderable time longer than that in the open air, which latter was ſet at ſomewhat a bigger arch, to give it the advantage over the other.

This experiment was ordered to be made at the next meeting in ſuch a manner, that a gage be put in the receiver, to ſee what air it holds; as alſo to put both the pendulums in receivers, one exhauſted, the other not; thereby to keep the latter as well as the former from the agitation of the air: and farther, to try it with balls of light materials, as cork, ſealed bubbles, &c. to make the diſproportion appear the more.

An experiment was made to repreſent the thickening and clearing of the air by a glaſs filled with a clear ſolution of copper, which having another liquor poured into it became thick, by having ſome of its particles precipitated, and then another liquor being infuſed into it, cleared up from the bottom, and repreſented clouds hanging in the midſt of the liquor, and by little and little exhaling into the air.

Mr. OLDENBURG read a paper ſent him from Rome concerning an obſervation about the preſent declination of the magnetic needle, made there by Monſr. AUZOUT [c], and ſhewing, that at preſent it declined there about two degrees Weſtward, whereas of late years it had declined ſeveral degrees Eaſtward.

This being agreeable to what was aſſerted by Mr. HENRY BOND, whoſe hypotheſis of the motion of the magnet led him to affirm, that this year the variation at London would be 2° 18′, it was ordered, that Mr. HOOKE ſhould direct an eaſy and ſure way to deſcribe an exact meridian; and that then obſervations ſhould be made, to ſee how far they verified Mr. BOND's hypotheſis.

Mr. HOOKE ſuggeſted a method for ſtriking exact meridians by the North ſtar, and by obſerving the time of the night.

There were produced ſome papers ſent by Dr. WALLIS to Mr. OLDENBURG, containing Mr. HENRY HYRNE's objections [d] againſt the doctor's hypotheſis about the tides, together with a general anſwer to them [e]; as alſo concerning Mr. HYRNE's new hypotheſis of tides [f], together with a ſcheme. Theſe papers were ordered to be read at the next meeting, the ſcheme being directed to be drawn in great by the amanuenſis.

April 21. Monſr. HELMFELD was elected and admitted.

An experiment was made with two pendulums, having two leaden balls of equal weight appended to them, the one hanging in the open air, the other in a tun of water, in which it was immerſed about a foot deep: and it was found, that the

[c] It is printed in the Philoſ. Tranſact. vol. v. n° 58. p. 1184. for April 1670.

[d] In a letter to Dr. WALLIS dated at Parſons Green Feb. 28, 16$\frac{7}{8}$. Letter-Book, vol. iii. p. 326.

[e] Dr. WALLIS's anſwer is dated at Oxford March 9, 16$\frac{7}{8}$. Ibid. p. 428.

[f] In a letter to Dr. WALLIS dated April 2. 1670. Ibid. p. 230. Dr. WALLIS's reply is dated April 4. Ibid. p. 350.

pendulum in the air made twelve vibrations, whilſt that in the water made but eleven.

It was ordered, that an account ſhould be brought in of the experiments made of this kind to be entered in the Regiſter-Book.

Mr. Hooke brought in his inſtrument to obſerve the motion of the ſun to ſeconds; which was ordered to be produced again at the next meeting, and to be tried upon the leads of Arundel-houſe, if the ſun ſhould ſhine.

Mr. Oldenburg read Mr. Hyrne's hypotheſis of the flux and reflux of the ſea oppoſed to that of Dr. Wallis, the author aſſerting himſelf to be as fully ſatisfied concerning the cauſe of this phœnomenon, as of any thing in nature. This hypotheſis ſuppoſeth a motion of the earth from North to South every ſix hours and a few minutes, and back again in as long a time: and that, on the ſame ſide of the æquator, the tides are at the ſame time all the world over, without any reference to the moon's being at or near the meridian; and that the ſpring-tides at change and full are no otherwiſe depending on the moon's motion than barely by a ſynchroniſm. The like motion he affirmed to be in all the planets, viz. directly from North to South and from South to North again. From this hypotheſis of the motion of the terraqueous globe, Mr. Hyrne ſaid, that if it proved true, ſeamen might infallibly conclude in what longitude they were, being in the open ſea; and that this would be a great furtherance to the diſcovery of the North-Eaſt or North-Weſt paſſage.

The whole was recommended to the farther conſideration of Dr. Wallis, who was preſent.

Mr. Hooke intimated, that he had another hypotheſis concerning the tides different both from that of Dr. Wallis and that of Mr. Hyrne, which, when he had perfected it, he would communicate to the ſociety.

He was deſired to give in writing a deſcription of the experiment made by him at the laſt meeting, repreſenting the ſerenity and cloudineſs of the air by the ſucceſſive infuſion of two different liquors into a ſolution of copper; which he promiſed to do.

Thomas Willisel brought in ſome plants gathered by him in Norfolk and Suffolk, which were recommended to the care of Mr. Charles Howard.

Mr. Hooke was put in mind of obſerving the declination of the needle, of proſecuting the experiments of the motion of pendulums in the air and the exhauſted receiver, and of the motion of the blood in animals out of the veins into the arteries without the concurrence of the lungs.

Mr. Henshaw produced the manuſcript of Irenæus borrowed by him of the ſociety Feb. 25, $16\frac{69}{70}$.

April 27. At a meeting of the COUNCIL were preſent

The lord biſhop of CHESTER vice-preſident

Sir ROBERT MORAY	Mr. COLWALL
Sir ROBERT SOUTHWELL	Mr. CREED
Dr. BALLE	Mr. OLDENBURG.
Mr. CHARLES HOWARD	

It was ordered, that the treaſurer continue to pay to Mr. HOOKE his ſalary of thirty pounds a year from the time of his laſt payment, which was appointed to be made to him by an order of the council of Feb. 1, $166\frac{8}{9}$:

That the lord BRERETON, Mr. CHARLES HOWARD, and Sir ROBERT MORAY, or any two of them, be deſired to ſpeak with Mr. CHENEY concerning thoſe acres, which he had yet in leaſe of Chelſea-college, and the exchanging ſome parcels of land with the ſame, and to be mindful to do ſo in the month of June next, that being the time, when, according to the report of the lord BRERETON to the council June 10, 1669, it would be in Mr. CHENEY's power to treat with the ſociety concerning that land: and

That N° 58 of the *Philoſophical Tranſactions* be licenſed.

April 28. At a meeting of the SOCIETY,

It was ordered, that the operator ſhould immediately beſpeak a glaſs-tube as large as could be made, and eight feet long at leaſt, for making experiments of the deſcent of bodies in water: and

That the inſtrument contrived by Mr. HOOKE for obſerving the motion of the ſun be produced again at the next meeting.

He exhibited his contrivance of the glaſs-tube poſited perpendicularly, for obſerving the ſtars in the zenith, to try to find the parallax of the earth's orb, in order to determine the queſtion of the earth's motion. He was ſolicited to carry on theſe obſervations with care and diligence.

Mr. OLDENBURG produced ſeveral ſpecimens of the parts extracted out of the Scarborough Spa by ROBERT WITTIE, M. D. together with his diſcourſe concerning it [g], in which he affirms, that he had found a body of minerals, which he took to be the product of thoſe five, eſteemed by him to be contained in that Spa, viz. iron, vitriol, alum, nitre, and ſalt, and to have a compound taſte of ſharp, ſalt, acid, and ſomewhat ſtiptic, and a *tertium* different from them all: adding, that he had extracted an ounce of five quarts, and that in dry years the ſame quantity will yield ten drachms.

[g] It is printed in the Philoſ. Tranſact. vol. v. n° 60. p. 1074.

May 5. Mr. HOOKE brought in his inſtrument for obſerving the motion of the ſun to ſeconds; and the experiment being made but imperfectly, it was ordered, that the ſaid inſtrument ſhould be fitted againſt the next meeting with a ball and ſocket to keep it ſteady.

Dr. CHRISTOPHER WREN produced a new contrivance of his for a more convenient winding up of weights by ropes, and ſerving for wells, mines and cranes, and thought applicable to clocks. He had conſidered, that the ways till then uſed in all engines for winding up weights by ropes were but two, viz. the fixing one end of a rope upon a cylinder or barrel, and ſo winding up the whole coil of rope; the other by having a chain or a looſe rope, catching on teeth, as is uſual in clocks. But finding, that both theſe ways were inconvenient, the firſt becauſe of the riding of much rope in winding one turn upon another; the ſecond, becauſe of the wearing out of the chain or rope upon the teeth, he, to prevent both theſe inconveniences, deviſed another to make the weight and its counterpoiſe bind on the cylinder, which it will do, if it be wound three times about. But becauſe it will then in turning, ſcrew on like a worm, and will need a cylinder of a very great length, therefore if there be two cylinders, each turned with three notches, and the notches be placed alternately, the convex edges to the concave, the rope being wound three times about both cylinders, will bind firmly without ſliding, and work up its weight with a proportionable counterpoiſe at the other end of the rope.

This being thought applicable to clocks, Mr. HOOKE was ordered to make a trial of it.

The preſident produced a letter to himſelf from the lord HENRY HOWARD, his Majeſty's ambaſſador extraordinary to the emperor of Morocco, dated at Cadiz, Feb. 21, $16\frac{69}{70}$, declaring his excellency's readineſs to ſerve the ſociety abroad, and intimating what collection of curioſities he had made for them, and reſerved by him to preſent at his return; ſending in the mean time a very curious piece of a ſilver-ſtone, interlaced with a quantity of perfect ſilver; which was delivered to Mr. HOOKE for the repoſitory.

It was ordered, that ſolemn thanks ſhould be returned to his excellency as from the ſociety, and the letter be forthwith drawn up by the ſecretary and ſigned by the preſident [h].

Dr. KING produced ſome willow-wood, containing ſeveral worms wrapt up in leaves, and lodged in ſeveral channels made by themſelves, which he had received from Sir JOHN BARNARD out of Northamptonſhire. There being three pieces of it, one of them was delivered to Mr. HOOKE for the repoſitory, the other to Mr. OLDENBURG for Mr. WILLUGHBY, and the third was kept by Dr. KING to obſerve what inſect it would produce.

[h] It was dated May 10, 1670, and entered in the Letter-Book, vol. iv. p. 18.

May 12. The ſociety did not ſit, as the number preſent was but ſmall.

May 19. Mr. HOOKE produced an engine, that may ſerve for a wind-gun, and be more eaſily charged than an ordinary one, and yet ſhoot as certainly as that. But the valve being yet wanting, it was ordered, that it ſhould be made ready againſt the next meeting.

It was alſo ordered, that the variation of the needle ſhould be obſerved by Sir ROBERT MORAY and Mr. HOOKE at Whitehall on the 1ſt of June following.

Mr. HOOKE was put in mind to get a ball and ſocket made againſt the next meeting for the inſtrument of repreſenting the ſun's motion to a ſecond.

The operator was ordered to procure at Woolwich a glaſs body as long and wide as can be made, for making experiments of the deſcent of bodies in water.

Mr. OLDENBURG mentioned, that he had been informed by a letter from Paris, that Monſr. MARIOTTE, intending to obſerve the winds there from time to time for ſeveral years together, and endeavouring to get the ſame thing done in other parts of France and of the world, deſired, that the like might be obſerved in England, he conceiving, that thereby might be diſcovered uſeful things in navigation, eſpecially in predicting what winds would blow.

It was ordered, that a weather-cock ſhould be beſpoken by Mr. HOOKE, ſuch a one, as Dr. WREN had formerly contrived, for obſerving not only the winds and their quarters and degrees of ſtrength, but alſo the quantities of rain, and other particulars relating to the temperature of the air.

Mr. OLDENBURG informed the ſociety, that in a late converſation of his with capt. GUILLAUME, who was the year before in Eaſt Hudſon's Bay, where the center of the beaver trade is, that he had received ſome information concerning that voyage and country upon divers queſtions, which he had propoſed to the captain. The paper was read, and ordered to be kept on the file [m].

May 26. Mr. HOOKE produced an optical experiment, whereby the repreſentation of objects in a dark room furniſhed with a lens is made applicable to painting, ſo as to exhibit and draw in colours the face of a man or any other object as big as the life.

It was ordered, that againſt the next meeting ſomething ſhould be deſigned, and, if it could be, painted, by the means of this inſtrument.

It was ſuggeſted, that whereas the pictures repreſented in the darkened box are inverted, they might be reverted by the reflexion of a flat piece of metal; though others were of opinion, that this would alter the colours of the objects repreſented.

[m] See the minutes April 18, 1672.

Sir

Sir ROBERT MORAY was reminded to make an obſervation of the variation of the needle together with Mr. HOOKE.

Dr. CROUNE produced a printed paper in Latin publiſhed at Leipſic in Germany, in imitation of the *Journal des Sçavans* and the *Philoſophical Tranſactions*, under the title of *Miſcellanea curioſa*; as alſo a written paper ſent him by Dr. JOACHIMUS ELSNERUS from Breſlaw, containing an account of a cure performed on a diſeaſed eye by means of the aqueous humour of an *uro-gallus* or *cock of the wood*, thought poſſible to be performed by the ſame humour of other birds.

Mr. OLDENBURG produced a book in Latin, ſent him from Venice by the author, Signor FRANCESCO TRAVAGINO, printed in 4to in 1669 under the title of FRANCISCI TRAVAGINI *ſuper obſervationibus à ſe factis tempore ultimorum terræ-motuum, ac potiſſimum Raguſiani phyſica diſquiſitio, ſeu gyri terræ diurni indicium.*

The preſident was deſired to peruſe this book, and to give his thoughts of it to the ſociety.

Dr. EDWARD BROWN preſented ſome more minerals, which he had met with in his late travels, viz.

1. Silver ore from Kottenberg in Bohemia.
2. Silver ore from Freyberg in Miſnia.
3. Sulphur ore from Freyberg.
4. Litharge.
5. Silver ore ſlacken from Freyberg.

Theſe were accompanied with a diſcourſe upon them in a letter to Mr. OLDENBURG, dated May 20, 1670 [n], which was as follows:

" Sir,

" AT Kottenberg, eight Bohemian miles from Prague are about thirty ſilver-
" mines: the hills about the town are not very high, ſome of the deepeſt
" mines are ſixty and ſome ſeventy fathom deep. They have worked here ſeven
" hundred years. I went into that mine, which was firſt digged, but was after-
" wards left for a long time, but now they dig there again; it is called the Cotna.
" A monk walking over the hill, in which this mine is, found a ſilver-tree ſticking
" to his garment, which gave the occaſion, as they ſtill report, of ſearching after
" ſilver in theſe parts, and of digging this firſt mine. The largeſt mines are at
" ſome diſtance from the town northward, where they have alſo their melting
" furnaces; the river Elbe being nigh to help them in their work. That mine,
" into which I deſcended by ladders, nigh to the town, is nineteen fathom deep;
" the chief vein of ore runs South, about a foot in breadth; the ore containeth

[n] Letter-Book, vol. iv. p. 23.

" ſilver

" ſilver and copper, ſo as out of 100 lb. of ore they ordinarily get an ounce, or " an ounce and half of ſilver, and nine or ten ounces of copper. A blue earth, " which they meet with in digging, is the moſt certain ſign they have that they are " nigh ſome vein of ore. Not long ſince two men died in this mine having made " a fire in it a little before. Some of the ore of this mine is here at your ſervice.

" Nigh to Freyberg in Miſnia are divers remarkable ſilver-mines; ſome are at " an Engliſh mile diſtance, others at two; and ſome are nearer to the town.

" The mine upon the high hill is conſiderable for its depth; it being deep above " ſeventy fathom of that country, as I was informed, each of which fathoms " containeth twelve of their ells, and three of their ells make almoſt two of our " yards; a depth exceeding any mine I have obſerved elſewhere.

" In another mine, called the Himmelfurſt or Prince of Heaven, was found " ore not long ſince ſo rich, as in 100 lb. weight to contain 130 marks of ſilver, " or 65 lb. in an hundred; but there was not much of it, and where the veins are " richeſt they are obſerved to be thinneſt, of a finger or two fingers breadth; but " the ordinary ore holdeth but an ounce or an ounce and half in 100 lb. weight " or not ſo much; for, if it holdeth but half an ounce, they work it, having " many helps to open the body of the ore, whereby it may be melted, as a ſort " of ſilver-ore containing lead in it, and the brimſtone-ore, which is found here, " and lead; alſo the droſs of the metal taken out of the pan and burned two or " three times in an open furnace.

" The virgula divina is uſed here.

" The greateſt inconvenience to them is the duſt in the mines, which doth ſpoil " their lungs, and fret their ſkins.

" They have divers ſorts of ore, which contain either ſilver and copper, ſilver " and lead, or all three; but they work the ore only for ſilver.

" Brimſtone-ore is alſo digged out of ſome of theſe mines: it is hard and ſtony, " that which hath red ſpots is the beſt. They uſe a particular furnace to melt the " brimſtone from its ore, the richeſt of which yieldeth 3 lb. of brimſtone out of " 100 lb. of ore, which, as it melteth, runneth out of the furnace into water, and " is once again melted and purified. Some of the brimſtone-ore containeth ſilver " in it, and ſome copper, and ſome in a ſmall proportion both.

" After that the brimſtone is melted from its ore, the remainder ſerveth either to " the melting of ſilver-ore, or to the making of vitriol.

" To the former thus; a portion of it is caſt into the melting-furnace with the " ſilver-ore, to this end (to uſe the miners expreſſion) to make the ſilver ore, which " is too hard, fluid.

" To

" To the latter, viz. to the making of vitriol, thus; they take the ore, out of " which the brimſtone hath been already melted, and burn it once again, or let it " continue burning ſome time in the open air: then putting it into a large fat or " veſſel, they pour water upon it, and after ſome time let it out and boil it to a " convenient heighth; then pour it into long troughs, in which are ſet up many " croſs ſticks, and the pureſt cryſtalliſed vitriol adhereth to the ſticks; that in " powder to the ſides and bottom of the trough. I am,

" Sir,

May 20, 1670. " your humble ſervant,

" EDWARD BROWN."

Dr. CROUNE acquainted the ſociety, that Sir NICHOLAS MILLET had mentioned to him, and Mr. HOOKE, that he had a manuſcript of his own writing, which contained the obſervations of the variation of the needle made for ſeventeen or eighteen years in the ſame place. And they were deſired to procure a ſight and peruſal of that manuſcript for the ſociety.

Mr. COLWALL mentioned, that there was lately returned from Suratta one capt. CHAMLET, who had made his voyage in four months and a half. It was intimated, that he might be deſired to ſhew his journal.

June 2. The experiment of applying the repreſentation of the outward objects in a dark room to painting was repeated; and it being doubted, whether if any falſe line were drawn this way, the painter could correct it, it was ordered, that ſome picture ſhould be drawn againſt the next meeting.

Dr. KING produced a *calculus humanus* of about thirty-two ounces weight, which ſome years ago had been taken out of the bladder of one Mr. NICHOLAS BYFIELD[n]. He was deſired, ſince the owner of the ſtone would not part with it, to get it caſt in its full bigneſs and exact ſhape, for the ſociety's repoſitory.

Sir THEODORE DE VAUX produced a letter written to him by Mr. WALSH, May 18, 1670, containing ſome remarkable obſervations, one eſpecially concerning a great number of millepedes voided by ſtool, all living, by a child of ſix years of age.

The preſident gave an account of Signor TRAVAGINO's book concerning the obſervations made by him at the time of ſome late earthquakes, and eſpecially that at Raguſa, tending to prove the diurnal motion of the earth by a certain lateral vibrating from Weſt to Eaſt, which he had obſerved at Venice in two earthquakes, beſide the perpendicular ſubſulting motion in the ſame.

[n] Probably that eminent divine, who was vicar of Iſleworth in Middleſex, where he died in 1662. See WOOD's Athen. Oxon. vol. i. col. 473.

The

The author was commended for having publiſhed this obſervation and his conjecture thereupon, that others might take the more particular notice of ſuch a motion upon occaſion.

June 9. The dark box for painting all ſorts of objects was produced again with ſome improvements, which were chiefly two, viz. the changing it into a convenient poſture for drawing, and the repreſenting the figures direct: but the latter being done only by a looking-glaſs, which takes off much of the brightneſs of the picture, Mr. HOOKE thought, that a metalline plate well poliſhed would do much better; and he was ordered to try to make a picture that way at the next meeting.

It was ordered alſo, that Sir ROBERT MORAY and Mr. HOOKE ſhould meet at Whitehall the night following, in order to obſerve the preſent variation of the needle; and that the latter prepare things neceſſary for that obſervation.

Mr. HOOKE was ordered likewiſe to make ready for meaſuring a degree upon the earth in the next vacation. The place to do it in was appointed to be Bedford-river about twenty miles in length, formerly ſurveyed with exactneſs by Mr. MOOR.

Dr. WREN, his Majeſty's ſurveyor *, mentioned, that in the ſurvey, which was made of the old and new river of Ware, there had an eſtimate been made by him of the quantity of the water, which they hold, by the velocity and ſolidity of the rivers.

Sir ROBERT MORAY made inquiry, what trials had been made by any members of the ſociety concerning the grafting of cyons of fruit-trees upon foreſt-trees.

Mr. EVELYN ſaid, that he had tried apples upon elms without ſucceſs.

Mr. HOSKYNS affirmed, that at Farrington in Berkſhire quinces had been grafted with very good ſucceſs upon willows.

Another member mentioned, that it was common and ſucceſsful to graft pears upon white thorns.

Dr. GODDARD ſuggeſted, that it would perhaps not be amiſs to obſerve affinity in this kind of grafting, as to graft cyons of cheſnuts on oaks.

Others ſuggeſted, that apples might be tried on oaks, and walnuts on aſh-trees, &c.

Sir ROBERT MORAY mentioned an invention to increaſe the force of ſounds for hearing at a great diſtance. The figure of the inſtrument was ſaid to be like that

* He had been appointed to that office in the room of Sir JOHN DENHAM, who died in March 166⅞.

of a cornet, very large at the mouth, to move in at with liberty all the organs of ſpeech, and ſo both to magnify the ſound, and to articulate it.

The inventor, Sir SAMUEL MORLAND, bart. was ſaid to entertain hopes to improve it ſo, as to make a man's voice to be heard at the diſtance of five, and perhaps more miles.

June 16. The SOCIETY did not ſit.

June 23. Sir ROBERT MORAY and Mr. HOOKE made a report, that on the 13th inſtant they had made an obſervation to find, whether there was now a difference of the preſent meridian from that, which was formerly made on the dial in Whitehall garden[n]. They made their obſervation by the North ſtar in this manner. At 10 *h.* wanting 4 minutes they began to obſerve; the ſaid ſtar being to be juſt Eaſt at 1 *h.* $\frac{1}{4}$: they hung on poles perpendicular threads, which covered one another and the ſtar, and the South-eaſt ſide of the ſaid dial. The breadth of the dial's upper edge to the oppoſite was 4 feet 4 $\frac{1}{2}$ inches, and the plane between the two perpendicular threads was diſtant from the North-eaſt edge of the dial 3 inches wanting $\frac{1}{20}$ part, which gives the angle of the pole's diſtance Eaſtward from the meridian of the dial. Here the breadth of the dial gives the radius, and the diſtance of the plane between the two perpendiculars gives the tangent. Then the difference between the diſtance of the ſtar from the pole, and the diſtance of the plane between the perpendiculars from the ſide of the dial, gives the diſtance of the dial from the meridian, if any there be.

June 28. At a meeting of the COUNCIL were preſent

The Preſident

Sir PAUL NEILE	Dr. SMITH
Sir ROBERT SOUTHWELL	Dr. BALLE
Dr. CHRISTOPHER WREN	Dr. KING
Dr. GODDARD	Mr. CREED
Mr. HENSHAW	Mr. OLDENBURG.
Mr. COLWALL	

It was ordered, that Mr. HOOKE do find out a man fit to be employed by him in the ſervice of the ſociety, and that ſuch an one have allowed him five pounds for a quarter of a year, to begin from the time, that Mr. HOOKE ſhall declare to the preſident, that he had taken ſuch an one into his ſervice.

It was agreed, that a curator, if a fit one could be met with, be entertained by the ſociety for a quarter of a year, to begin from the Michaelmas following.

[n] Mr. GUNTER drew the lines on the dial in Whitehall garden, and wrote the deſcription and uſe of them by the direction of Prince CHARLES, in a ſmall tract, which he afterwards publiſhed by order of King JAMES I. in 1624. Dr. WARD's Lives of the Profeſſors of Greſham-college, p. 79.

Dr. WREN propoſed, that ſome rich citizen might be found out to take a leaſe of Chelſea-college upon the terms of building the houſe, and paying ſome rent beſides. Whereupon he was deſired to inquire after ſuch an one.

July 7. At a meeting of the SOCIETY,

Mr. HOOKE produced again his darkened box improved, ſo that it was now proper for the hand to draw a picture conveniently by a metalline ſpeculum and a moveable bottom, whereby the picture appeared both erect and direct.

Mr. SMETHWICK preſented an account of ſome experiments of the weight of ſome metals made by Mr. REYNOLDS in the Tower of London: Which was as follows*:

" The weight of a ſquare inch in decimals of the pound averdupoiſe.

" Gold - - - - - -	0.68057843
" Quickſilver - - -	0.47579412
" Lead - - - - - -	0.42288235
" Silver - - - - -	0.37751960
" Copper - - - - -	0.33030392
" Tin-glaſs - - - -	0.28775016
" Forged iron - - -	0.28610754
" Tin - - - - - -	0.27567644
" Caſt iron - - - -	0.27215365
" Marble - - - - -	0.10952500
" Paving-ſtone - -	0.098
" Freeſtone - - - -	0.0935
" Rain-water - - -	0.03618979
" Lamp-oil - - - -	0.03331
" Sallad-oil - - - -	0.032735
" Fine gunpowder	0 02525
" Oak - - - - - -	0.0029
" Elm - - - - - -	0.00278

" To reduce Averdupoiſe into Troy weight, note, that fourteen pounds Aver-
" dupoiſe makes ſeventeen pounds Troy weight preciſely.

" The difference of ſome liquors upon the tun compared to rain-water.

" Sallad-oil - - - -	21——6	Lighter than Rain-water.
" Claret-wine - - -	1——6	
" Rheniſh-wine - -	1——4	
" White-wine - -	1——2	

* Regiſter, vol. iv. p. 100, 101.

" Canary - - - - -	3——3	Heavier than
" Sherry - - - - -	5——3	Rain-water.
" Muſkadin - - -	11——2	

" Small beer - - -	1——3	Heavier than
" Ale - - - - - -	5——2	Rain-water.
" Milk - - - - -	8——4	

Some experiments were made to find out the comparative weights of ſome metalline bodies to water.

1. A piece of lead caſt, which weighed in air 3 ounces minus 2 grains or 1438 grains, in water 2 oz. 5 dr. 50 gr. or 1310 gr.

Air 1438.

Water $\frac{1310}{128}$ difference. So that the proportion of lead to water is as $10\frac{15}{64}$ to 1.

2. A piece of lead caſt, weighing in air 1 oz. 0 $\frac{3}{4}$ gr. in water 7 dr. 34 gr. or 454 gr.

Air 480 $\frac{3}{4}$.

Water $\frac{454}{26\frac{3}{4}}$ differ. whereby the proportion of lead to water is as $17\frac{6}{11}$ to 1 *ferè*.

3. A piece of iron forged weighing in the air 3 oz. minus 2 gr. or 1438 gr. in water 2 oz. 5 dr. 1 gr. or 1261.

Air 1438.

Water $\frac{1261}{177}$ differ. whereby the proportion of iron to water is as $7\frac{22}{177}$ to 1.

4. A piece of iron forged weighing in the air 1 oz. in water 6 dr. 59 gr. or 419 gr.

Air 480.

Water $\frac{429}{61}$ differ. whereby the proportion of iron to water is as $6\frac{51}{61}$ to 1.

Dr. GODDARD mentioned, that he had found pure conduit water of London, as light as the ſame water diſtilled.

It was ordered, that at the next meeting ſhould be tried ſilver, lead and tin, both caſt and hammered; and that the pieces to be caſt ſhould be ſo in an open ingot and in a cloſe mould.

July 14. The ſociety did not ſit, according to the entry in the *Journal*[p]; but in the Regiſter[q] the following papers are inſerted, as having been on that day produced to the ſociety:

[p] Vol. iv. p. 150.

[q] Vol. iv. p. 102, *&c. ſeq.*

1. Obſervations on inſects lodging themſelves in old willows by Dr. EDMUND KING[r]:

2. An account of the experiments for explicating the thickening of the air by clouds and fogs, and the clearing of it in fair weather; by Mr. HOOKE[s], which account was as follows:

" There was made a ſolution of verdigriſe in clear water, which was afterwards " filtred through cap paper, ſo as to ſeparate all ſuch dregs and parts of the " verdigriſe, as were not perfectly diſſolved. Of this ſolution about a pint was " put into a clear glaſs-cone, which being looked through, repreſented the co- " lour of a clear blue ſky, and was yet further hightened in that colour by a drop " or two of ſpirit of ſal armoniac or of urine. To make then a repreſentation of " the thickening of the air, ſome few drops of oil of tartar per deliquium were " dropt into it, and ſhaked together; whereupon, all the ſaid liquor did become " thick and turbid like a foggy or miſty air. If it were dropt in very leiſurely, " and a little of it, it would appear like many little white clouds, diſperſed up " and down the air: if, after the liquor was thick and turbid, a little oil of vi- " triol or aquafortis were poured gently into it and ſuffered to fall to the bottom " of the veſſel, the liquor would begin to clear at the bottom, and the thicker and " whiter parts to hang towards the top like white clouds in ſummer, which being " ſuffered to ſtand for a while, or if the liquors ſo mingled were ſhaken together, " the whole liquor would become clear and tranſparent almoſt as water; and " might again be reduced to exhibit all the former phænomena, if a greater " quantity of the aforeſaid liquors were again poured into it."

3. Obſervations on ſeveral particulars in Muſcovy; communicated by Sir PETER WYCHE[t], which were as follow:

" 1. Concerning the way uſed in Muſcovy to keep their grain,

" If they have time, ſervants and horſes ready, as ſoon as the corn is reapt, they " bring their corn unto a fine threſhing floor, large and ſmooth, without any cover- " ing, near which is always a warm ſtove, in which they always keep fire night " and day in ſome places, an open fire, ſo that both heat and ſmoke aſcend to the " place where the corn is orderly laid, the ears of corn being placed lowermoſt, " from above towards the fire; the diſtance between the fire and corn is about " two Engliſh yards and a half. The corn receives a very great heat; no man, I " think, can endure to lie in the corn's place a quarter of an hour. After two or " three days (for they have ſervants lie aſide the fire, or ſometimes the oven un- " ſtopt) when they think it is dried, they bring it to the threſhing floor, where " one Ruſſe ſhall thraſh out more corn in a day, than five Engliſh men, every " blow eaſing the ſheaf of its load of corn. This corn they put into a dry houſe " to keep it from wet weather. When they are afraid of an enemy, they will dig

[r] Regiſter, vol. iv. p. 105. This paper is printed in the Philoſ. Tranſact. vol. v. n° 65. p. 2098, for November 1670.

[s] Regiſter, *ubi ſupra*, p. 102.

[t] Ibid. p. 103.

" a hole in the earth, according to the proportion of corn they have to hide, " putting chaff underneath, and on the top; and then without any more ado they " cover it with earth, and after this ſort they have kept it, as they ſay, from da- " mage very many months: in a dry room they will keep it thus ordered ſeven " years.

" 2. Concerning birds and beaſts changing colour.

" That hares do ſo is very certain, and one of our common obſervations. I " have been informed, that the bird called the heath-cock doth ſo alſo. I have " procured a couple of hares, which Sir PETER WYCHE will take care to " convey into England. Theſe two tame hares are now beginning to change, " the tips of their feet are white already: the day we write this is the 24th of " Sept. 1669.

" 3. The froſt pierceth two arſhines into the ground, as I have been informed " by the grave-makers, who uſually thaw the outſide of the ground, and dig and " beat out the reſt with ſpades and mattocks: it is a moſt terrible labour, and they " are well paid for it. An arſhine is about one third leſs than an Engliſh yard. " Ice in the river I have ſeen an arſhine and an half thick: both ice and earth are " covered all the winter with a deep ſnow.

" 4. Sheep and divers calves I have ſeen cleſt into pieces with a cleaver or pole- " ax: they are within, as well as without, hard as oak in a manner. I have cauſed " the heart to be cut out, and afterwards hewed in pieces; it is a great deal harder " to cut than to cleave a piece of birch. It is all ice, and ſtiff: after it hath lain " in a ſtove half an hour, the blood will diſtil drop by drop.

" 5. Oil never comes to be hard ice, though its fluidity is ſtopt: it requires " warmth to make it run out of the bottle, and melts by degrees, but it is al- " ways ſoft.

" 6. The blood of man, all ſeroſity ſevered, will freeze: any beaſts blood alſo, " and will be perfect ice.

" 7. Canary wines freeze alſo, beginning from the circumference toward the cen- " ter, where the moſt ſpirituous ſubſtance of the wine retreats and lurks in an oval " form of ice. The like in ſtrong beer, which the great boyares lay up in bottles, " to inebriate and intoxicate ſome perſons, they have a deſign upon.

" 8. Thick pieces of iron and ſteel will become brittle; pieces of ſteel are very " brittle in an extreme cold, like glaſs; as I am informed by ſmiths, &c. One " Mr. LAYTON, that lived in coming out of the cold into a warm ſtove, " ſtruck upon ſome occaſion, a gentle blow upon a table, and immediately his " ſword brake. We have one in our company, an ingenious fellow, that ſaw " this.

" 9. Wet

" 9. Wet your finger, and clap it on a piece of iron without doors, in an ordi-
" nary cold, it ſhall immediately ſtick ſo faſt to your finger like ſolder, that, if
" you put it away, the iron will pull off your ſkin.

" 10. All ſilver veſſels, though never ſo old, as bowls, beakers, ſilver-heads
" of ſticks, being expoſed one hour to an intenſe cold, change colour."

July 21. There was preſented Dr. WALLIS's ſecond part of his treatiſe, intitled *Mechanica ſive de motu tractatus geometricus: Pars ſecunda, in quâ de Centro Gravitatis ejuſque Calculo*, printed at London, in 1670, in 4^to^.

Mr. OLDENBURG preſented an Italian tract of Signor MENGOLI, intitled *Degli Refrattioni et Parallaſſe Solari.*

He communicated a letter to him from Mr. HEVELIUS, dated at Dantzick, July 5, 1670, N. S. [u], relating to his obſervations of the preſent declination of the magnetic needle in that city made by himſelf June 22, 1670, N. S. whereby the needle was found there to decline from the north 7 degrees 20 minutes weſtward; whereas in 1642, it had declined there but 3 degrees 5 minutes weſtward.

Mr. HOOKE was put in mind to proſecute the obſervation of the meridian at Whitehall, together with Sir ROBERT MORAY.

Mr. OLDENBURG read a letter to him from Dr. WITTIE, dated at York July 4, 1670 [x], concerning ſome experiments of his about the Scarborough Spa, which was accompanied with ſome curioſities ſent by the Doctor, as a black ſediment falling to the bottom upon the change of the water with galls, and the ſame powder calcined; a piece of earth taken by him from an iron ſtone; as alſo a little nitre of that Spa water.

The experiments of weighing copper and ſilver were referred to the next meeting; as alſo the examination of Mr. HOOKE's inſtrument for taking angles.

July 26. At a meeting of the COUNCIL were preſent

The Preſident

Mr. CHARLES HOWARD	Mr. LOCKE
Sir ROBERT MORAY	Mr. COLWALL
Dr. WREN	Mr. OLDENBURG.
Dr. BALLE	

Mr. LOCKE was ſworn of the council.

Mr. MOSES PITT, the printer of Dr. WALLIS's two volumes *de motu* having

[u] Letter-Book, vol. iv. p. 31. [x] Ibid. p. 27.

repreſented

repreſented to the council both the charges of printing thoſe books, and the length of time for ſelling off the edition, inſiſted upon the price of fifteen ſhillings and ſix pence for both the volumes. Wheupon the council declared, that ſince he did not think fit to abate any thing of that price, and to take fourteen ſhillings for both the volumes, he was at liberty to ſell them as he could; but that then the ſubſcribers, who had agreed to pay ſuch a rate, as ſhould be ſet by the council, were alſo left at liberty to buy or not buy at his rate.

Dr. WREN was put in mind of his promiſe to endeavour to procure a good tenant for Chelſea-college.

July 28. At a meeting of the SOCIETY,

There was examined an inſtrument invented by Mr. HOOKE for meaſuring the diſtances of celeſtial bodies by taking angles, conceived to be of great uſe at night. It was ſo contrived, that two objects meeting at the point of a pin were ſeen at once, one direct, upon one arm of the inſtrument furniſhed with a teleſcope, the other by reflection, on the other arm, ſliding upon a ruler, divided into equal parts.

It was ordered, that an inſtrument of this kind be made to be ſent to ſea.

Dr. CROUNE preſented from the earl of AYLESBURY ſome ſalt extracted from the waters of Bourbon, which ſalt was found to have nothing of a vitriolic taſte, but only a lixivial one.

He again acquainted the ſociety [y], that Sir NICHOLAS MILLET of Batterſea had a manuſcript containing obſervations of a magnetic needle for many years, which he thought Sir NICHOLAS would not be unwilling to let the ſociety have the peruſal of, if applied to; for which reaſon the Doctor was deſired to procure that favour from Sir NICHOLAS, and to peruſe the manuſcript together with Mr. HOOKE, and to make a report of it to the ſociety.

Sir ROBERT MORAY and Mr. HOOKE were deſired to obſerve the preſent variation of the needle in Whitehall-garden, during the diſcontinuance of the ſociety's meetings.

Mr. HOOKE reported to the ſociety, that he had already found ſo much, as to ſuſpect ſome parallax of the earth's orb, and conceived, that it would be more ſenſible half a year after. He ſaid, that by a perpendicular tube he obſerved the ſtars, which paſs our zenith, at different times of the year, and by noting, whether the ſame ſtar be at thoſe different times of obſervation at the ſame diſtance from the zenith or not; concerning which he affirmed, that a certain ſtar was then leſs diſtant from the zenith than it had been a month before.

[y] See above May 26, 1670.

He

He was desired to prosecute carefully this observation, so important to determine the controversy concerning the motion of the earth.

The society thinking proper to discontinue their public weekly meetings, there was recommended to Mr. HOOKE during this recess the care of these three things, 1. To continue to observe, whether there be a parallax in the earth's orb. 2. To observe the present variation of the needle. 3. To measure the precise quantity of a degree upon the earth.

October 27. The society opening this day their assemblies again,

There were presented to them, 1. from Mr. BOYLE a new book, intitled, *Tracts about the cosmical qualities of things; cosmical suspicions; the temperature of the subterraneal regions; the temperature of the submarine regions; and the bottom of the sea*, printed at Oxford in 1670, in 8°. 2. From Mr. WINTHROP of New England, three boxes filled with curiosities of that country, specified in a letter of his to Mr. OLDENBURG, dated at Boston Aug. 26, 1670 [z].

There was also read a Latin letter to the society from Signor GEMINIANI MONTANARI; dated at Bologna 30 April 1670, N. S. [a], expressing the singular esteem, which he had of their institution; containing some new observations lately made by him of the non-appearance of some stars of the second magnitude in the ship, though formerly observed by BAYER and others; and intimating, that he had sent them a manuscript of his own composing, containing various experiments on the breaking of the glass drops, together with his conjecture about the cause of that phænomenon, a task imposed on him by the grand duke of Tuscany, the performance of which was now presented to the society; adding likewise a present of some books, which Mr. OLDENBURG promised to produce at the next meeting.

It was ordered, that Signor MONTANARI should have the solemn thanks of the society from the secretary [b]; and that his letter be entered in the Letter-book, and his discourse about the glass-drops preserved likewise, after it had been perused, and an account given of the contents of it; for which purpose were named Sir SAMUEL TUKE and Mr. HOSKYNS, who divided those papers between them, and proposed to translate them into English.

Mr. OLDENBURG produced another Latin letter from ERASMUS BARTHOLINUS, M. D. dated at Copenhagen 27 February 1670 [c], but not received till 8 August, (having been detained long at Hamburgh) giving notice of a certain transparent stone, a kind of selenites, sent out of Iceland to Dr. BARTHOLINUS, and having in different positions a double, quadruple, and sextupline refraction; as also an electric virtue. A specimen of this stone was sent with this letter, as also a printed book composed by Dr. BARTHOLINUS; which with the said stone was re-

[z] Letter-Book, vol. iv. p. 53.
[a] Ibid. p. 13.
[b] His letter dated at London, 19 Nov. 1670, is entered in the Letter-Book, vol. iv. p. 118.
[c] Ibid. p. 9. It is printed in the Philos. Transact. vol. v. n° 67. p. 2039, for January 167$\frac{2}{3}$.

ferred

ferred to Mr. HOOKE, who was desired to give an account of them at the next meeting.

Mr. OLDENBURG communicated also a letter in French dated at Paris 29 Oct. 1670, N. S. [d], signifying, that at Montpelier there had been lately discovered and shewn by a German the vessels, that carry the milk to the breasts of nursing women, and that it issues out of the ductus of Monsr. PECQUET: And that an experiment had been lately made of tying close the ureters of a dog, so that no urine nor any thing else could pass; and yet that the urinary bladder had been found filled with water. Which was an argument, that confirmed the conjecture, that there is another passage of the urine to the bladder beside that by the ureters.

Two letters of Mr. WILLUGHBY to Mr. OLDENBURG were read, one dated at Astrop 19 August 1670 [e], the other at Middleton 2 Sept. 1670 [f], both confirming Dr. KING's observation about the maggots lodged in old willows, and changed into bees, and sending some of the very rose leaves, out of which the bee had bitten pieces of such a shape, as are found employed by that insect in making up those cartrages, wherein the bees close themselves up.

Mr. OLDENBURG read likewise two other letters, to himself, the one from Mr. HEVELIUS, dated 27 Aug. 1670, N. S. [g], containing two observations of his concerning a new star near the *rostrum cygni*, and the present appearance of Saturn: The other from Monsr. HUYGENS dated at the Hague, 31 Oct. 1670, N. S. [h], containing his observation of Saturn agreeing with those of Mr. HEVELIUS and Mr. HOOKE, the latter of whom produced his also made in September preceding. This letter contained likewise Monsr. HUYGENS's sentiments upon Dr. WALLIS's book *de Motu*, Dr. BARROW's Optics, and Mr. BOYLE's experiments concerning respiration.

Mr. HOOKE promised to produce at the next meeting a new watch-work, which should be equivalent to a pendulum.

He was put in mind to finish at last the mensuration of the quantity of a degree upon the earth; and he promised, that in the first frost and clear weather he would observe the latitudes of the places in reference to that business.

November 2. There were delivered to Mr. HOOKE, for the library of the society, nine books sent by Signor MONTANARI; and the rest were promised by the secretary to be produced at the next meeting: These nine books were,

1. *Exercitationes mechanicæ* MARCHETTI.

2, 3, 4, 5. *Quatre Considerationi del* ANGELI *contra* RICCIOLI, in 4 volumes.

[d] It is printed in the Philos. Transact. vol. v. n° 65. p. 2083, for November 1670.

[e] Letter-Book, vol. iv. p. 46.

[f] Ibid. p. 67. Extracts of these two letters are printed in the Philos. Transact. n° 65, p. 2100.

[g] Letter-Book, vol. iv. p 57. It is printed in the Philos. Transact. n° 65, p. 2087.

[h] Letter Book, p. 100. See Philos. Transact. n° 65, p. 2093.

6. *De Ottone Æreo Commentarii* JOHANNIS CAPPONI.

7. *Proſtaſi Phyſico-matematiche del* FINETTI.

8. *Argumento Phyſico-matem. del* P. RICCIOLI, *con la riſpoſta del* P. ANGELI.

9. *Apologia del Padre* RICCIOLI *contra ſyſtema Copernicanum.*

DANIEL GEORGE MORHOFF, Profeſſor in the Univerſity of Kiel in Holſtein, preſented the ſociety with an account of an experiment, which he affirmed to have ſeen performed at Amſterdam, of breaking a Rheniſh wine-glaſs with a ſonorous human voice, anſwering the tone of the glaſs, when knocked, and an octave being taken above it. This account was dated at London Novemb. 3, 1670, and addreſſed to Mr. OLDENBURG [i]. This experiment was ordered to be tried.

Mr. OLDENBURG read a Latin letter to him from Mr. GEORGE STIERNHIELM, dated at Stockholm 17 May 1670 [k], acknowledging the ſociety's favour in electing him a member of their body, and communicating a ſtrange ſtory of a gardiner of the Queen of Sweden, who in the year 1646 endeavouring to aſſiſt a perſon in danger of being drowned, broke the ice himſelf, and falling under it at ſix in the evening, continued in that ſituation till nine the next morning, when he was taken out without the leaſt ſign of life in him; but being carried into a warm ſtove, and put to bed, after an hour or two, having vomited ſome water, began to breath, and in a few days recovered intirely, except a deafneſs in one ear, which continued when this letter was written, he being then alive at ſixty four years of age, and the fact well known to the whole court.

November 10. At a meeting of the COUNCIL were preſent

The Preſident

The lord HENRY HOWARD	Dr. SMITH
The lord biſhop of CHESTER	Dr. KING
Sir PAUL NEILE	Mr. HOSKYNS
Mr. COLWALL	Mr. OLDENBURG.

Five of the council were named to be a committee for auditing the treaſurer's accounts, viz. the preſident, the lord HENRY HOWARD, the lord biſhop of CHESTER, Dr. SMITH, and one of the ſecretaries.

It was reſolved, that there be drawn up a legal form, by which every perſon, who deſired to continue a fellow of the Royal Society, and ſhould ſign the ſame, ſhould oblige himſelf to pay his arrears of fifty two ſhillings a year, and four pounds *per annum* for the future: Which obligation ſhould however bind none of the ſubſcribers, unleſs the number be ſuch, whoſe contributions the council ſhould judge ſufficient to defray the charges requiſite to carry on the buſineſs of the ſociety: And

[i] Letter-Book, vol. iv. p. 108. MORHOFF publiſhed at Kiel in 1672, in 4to, *Epiſtola de ſcypho vitreo per ſonum humanæ vocis rupto.*

[k] Letter-Book, vol. iv. p. 20.

That Mr. HOSKYNS be desired to draw up such a form against the next meeting of the council to be held on the 14th of that month at the president's house in Covent-Garden.

Mr. HOSKYNS was accordingly desired to draw up such a form, which he promised to do.

N° 65 of the *Philosophical Transactions* was licensed.

At a meeting of the SOCIETY, on the same day,

The rest of the books presented to the society by Signor MONTANARI were delivered to Mr. HOOKE for the repository, viz.

1. *Antignome Physico-matematiche del* D. DONATO ROSETTI.

2. *Insegnamenti fisico-matematiche dati al* GINETTI.

3. *Congietture fisico-astronomiche della Natura del universo, da* PIETRO CAVINA.

4. *Dimonstratione fisico-matematiche delle sette propositioni che promesse* DONATO ROSETTI.

5. *Lettere del Signor* MONTANARI, *et Risposte del Signor* ROSETTI.

Mr. HOOKE produced an essay of a new watch-work, which he said might be made into a pocket-watch, and would go equally in all positions and motions at sea: Which he was desired to perfect, if he could, against the next meeting.

Mr. OLDENBURG read a letter written by Dr. DURSTON of Plymouth to Dr. TIMOTHY CLARKE, dated 28 Octob. 1670, containing an account of a monstrous birth at Plymouth, with some anatomical observations thereupon [l].

He communicated likewise a letter to himself from Mr. ADAM MARTINDALE [m] dated at Rotherston in Cheshire 4 Novemb. 1670, giving an account of a rock of natural salt, lately discovered in that county, and yielding a vigorous sharp brine beyond any of the springs in the salt-works of Cheshire [n].

It was ordered, that Mr. MARTINDALE should be thanked in the name of the society [o], and desired to view the place himself, if he could conveniently; and then acquaint them with the most considerable particulars of this matter.

[l] Letter-Book, vol. iv. p. 95. It is printed in the Philos. Transact. vol. v, n° 65, p. 2096, for Novemb. 1670.

[m] He had been ejected from the living of Rotherston in Cheshire, for non-conformity in 1662. I have in my possession a manuscript in his hand-writing relating to his own life.

[n] This letter is entered in the Letter-Book, vol. iv. p. 114, and printed in the Philos. Trans. vol. v. n° 66. p. 2015, for Decemb. 1670.

[o] Mr. OLDENBURG's letter to him for that purpose was dated Nov. 15, 1670, and inserted in the Letter-Book, vol. iv. p. 115.

Mr. HOOKE mentioned a little book lately tranſlated into Engliſh out of French, and printed at London 1670 in 12°. under the title of *A Diſcourſe about local Motion*, undertaking to demonſtrate the rules of motion, and to prove, that of the ſeven rules given by DES CARTES on that ſubject, there is but one true. He intimated, that he intended to make ſome experiments in order to try the truth of the author's obſervations, and to ſhew them to the ſociety.

Nov. 14. At a meeting of the COUNCIL were preſent

The Preſident

The earl of AYLESBURY	Mr. CHARLES HOWARD
The lord HOWARD	Dr. GODDARD
The lord biſhop of CHESTER	Mr. COLWALL
Sir ROBERT MORAY	Dr. KING
Sir PAUL NEILE	Mr. OLDENBURG.

It was reſolved, that Mr. HOOKE be ſummoned to attend the next meeting of the council, to receive their rebuke for the neglect of his office.

Mr. HOSKYNS produced the legal form of ſubſcriptions, which had been recommended by him at the laſt meeting of the council; which form was read, and referred to the conſideration of another meeting. It was as follows:

"I —— do covenant, grant, and agree to and with the preſident, council and fellows of the Royal Society, &c. to pay unto them the ſum of —— upon the —— day of —— which ſhall be in the year of our Lord ——. And alſo the ſum of four pounds yearly and every year, ſo long as I ſhall continue fellow of the ſaid ſociety, by four even quarterly payments, the firſt to be on ——. To the performance of which I do hereby bind myſelf and my heirs. Witneſs my hand and ſeal this —— day of ——. In the preſence of ——."[22]

Or thus:

"We, whoſe names are under-written, do every one for himſelf and not for another covenant, promiſe, grant and agree to and with the preſident —— &c. to pay all and every ſuch ſum and ſums of money, as each of us reſpectively owe and are due unto the ſaid ſociety from us by virtue of any order or ſtatute of the ſaid ſociety: and alſo the yearly ſum of four pounds by four equal quarterly payments at the four uſual days of payment in the year, that is to ſay —— The ſaid payment to continue ſo long as each of us reſpectively do continue a member of the ſaid ſociety. To all which ſeveral payments we do ſeverally and reſpectively bind ourſelves, our ſeveral and reſpective heirs.

"Sealed and delivered by
"—— the —— day of ——
"in the preſence of ——."

Nov. 17. At a meeting of the SOCIETY,

Mr. Hooke produced another watch-work performing the effect of a pendulum; but he acknowledged it not so valuable as what he had shewed at the last meeting; which therefore he was desired to prosecute and perfect.

Mr. Oldenburg read a letter from Mr. Hevelius, dated at Dantzick Oct. 31, 1670[p], containing some of his late observations, 1. of the last eclipse of the moon on Sept. 29, 1670, N. S. 2. of the late conjunction of Venus and the moon on the 11th of October 1670, N. S. and 3. of the considerable decrease of the new star lately discovered about the beak of *cygnus*, and some remarks on the other new star in the neck of the whale.

Mr. Hooke being asked, whether he had tried the experiment of breaking a glass with an human voice, said, that he had tried it, but found no other success, than that the glass had sounded upon the sound of a man's voice.

He was desired to try it again, and to take care of finding the tone of an octave requisite for the effect; and that being found, to continue it for a while forcibly and without interruption.

Nov. 24. At a meeting of the Council were present

The President

The lord Howard	Dr. Goddard
Mr. Charles Howard	Mr. Colwall
Sir Robert Moray	Mr. Hoskyns
Mr. Henshaw	Mr. Oldenburg.

The committee of the council for auditing the accounts made their report, which the council approved of, viz.

" At a committee of the council of the Royal Society for auditing the trea-
" surer's accounts,

" Upon examination of Mr. Daniel Colwall's accounts we find him debtor

	l.	*s.*	*d.*
" To the arrears due to the said society for their quarterly payments, this 10th Nov. 1670.	1475	11	0
" To monies he hath received for admissions	10	10	0
" To the balance of his last account	70	12	8
	1556	13	8

" He is creditor

[p] Letter-Book, vol. iv. p. 102. It is printed in the Philos. Transact. vol. v. n° 66. p. 2023. for December 1670.

" By

	l.	s.	d.
" By money he hath paid for the uſe of the ſociety —	220	15	10
" By arrears yet unpaid by the fellows of the ſociety —	1267	2	0
" By balance reſting in his hand, ſixty eight pounds, fifteen " ſhillings, ten pence — —	68	15	10
	1556	13	8

At a meeting of the SOCIETY on the ſame day,

There was choſen a committee for auditing the accounts, viz.

Sir PETER WYCHE,
Sir SAMUEL TUKE,
Dr. TIMOTHY CLARKE,
Dr. EDWARD BROWN,
Mr. LE HUNT.

Which committee, or any three of them, were to meet on the following Wedneſday Nov. 30, in the morning between eight and nine of the clock.

There was read a letter from Dr. WALLIS to Mr. OLDENBURG, dated at Oxford Nov. 15, 1670 [q], concerning a controverſy between HONORATO FABRI and JOHN BAPTISTA BORELLI; whether a ſtone thrown horizontally will in the ſame time come to the horizontal plane, as if without the motion of projection it had fallen directly down in the perpendicular. This FABRI denied, alledging an experiment of MERSENNUS to that purpoſe, and affirming the motion of deſcent to be retarded by the additional horizontal motion, ſuppoſing the deſcent in the curve to be by the obliquity of the motion hindered, as in ſloping planes.

Dr. WALLIS deſired, that an experiment formerly ſuggeſted by him to the ſociety might be made for the clearing this matter; for though, he ſuppoſed, moſt of the members were rather of BORELLI's than FABRI's opinion, yet, as it was denied, he thought it well deſerved to be tried. The conſideration of this was referred to the next meeting.

There was read another letter written from Derby Nov. 16, 1670, by Mr. JOHN FLAMSTEAD to Mr. OLDENBURG [r], accompanied with a Latin manuſcript containing a deſcription made by him of the celeſtial appearances of the next year by him predicted and recommended to obſervation.

It was ordered, that he ſhould be thanked, and the ſum of his papers be printed in the *Philoſophical Tranſactions* of the following month [s].

Mr. HOOKE being abſent from this meeting, no experiments were provided.

[q] Letter-Book, vol. iv. p. 115. [r] Ibid. [s] It was accordingly printed, n° 66. p. 2029.

Nov.

Nov. 30. Mr. AUBREY preſented the ſociety with an old printed book in the antient Britiſh tongue.

The committee for auditing the accounts brought in their report concerning the ſame, viz.

" At a committee of the Royal Society for auditing the treaſurer's account,
" Nov. 30, 1670,

" We certify, that it appears,

	l.	*s.*	*d.*
" That the treaſurer had received on the quarterly payments	208	9	0
" That he hath received more for admiſſions	10	10	0
" That he is debtor to the balance of his laſt account ending " Nov. 12, 1669.	70	12	8
	289	11	8

" PETER WYCHE,
" EDWARD BROWN,
" WILLIAM LE HUNT."

" That it alſo appears,

" That he hath paid to the uſe of the ſociety, as by bills and " orders of the council	220	15	10
" That he hath reſting in caſh now in his hand ſixty eight " pounds, fifteen ſhillings, ten pence	68	15	10
	289	11	8

" PETER WYCHE,
" EDWARD BROWN,
" WILLIAM LE HUNT."

This being the anniverſary day for electing the council and officers of the ſociety for the year following, there were continued of the old council,

The lord viſcount BROUNCKER
The earl of AYLESBURY
The lord biſhop of SARUM
The lord biſhop of CHESTER
The lord HENRY HOWARD
Sir ROBERT MORAY
Sir PAUL NEILE
Dr. GODDARD
Mr. HENSHAW
Mr. COLWALL
Mr. OLDENBURG.

The ten new members of the COUNCIL elected were,

Sir

Sir JOHN LOWTHER
Sir PETER WYCHE
Sir JOHN BANKES
Sir SAMUEL TUKE
Sir JAMES HAYES
Mr. AERSKINE
Mr. EVELYN
Dr. TIMOTHY CLARKE
Dr. CROUNE
Dr. EDWARD BROWN.

Of theſe new ones were ſworn,

Mr. AERSKINE
Sir PETER WYCHE
Sir JOHN BANKES
Sir SAMUEL TUKE
Sir JAMES HAYES
Mr. EVELYN
Dr. CROUNE
Dr. BROWN.

The officers choſen were,

The lord viſcount BROUNCKER, preſident.

Mr. COLWALL, treaſurer.

Mr. HENSHAW, } ſecretaries.
Mr. OLDENBURG, }

The ſociety loſt by death between this and the former election three eminent members, Monſr. SORBIERE, EDWARD WATERHOUSE, LL. D. and WILLIAM NEILE, eſq;

SAMUEL SORBIERE was deſcended of a good family, and born at St. Ambroix in the dioceſe of Uſez in the province of Languedoc in France, on the 17th of September 1615, according to the account of his only ſon: but if the inſcription on the print of him ingraved after his death from that done by AUDRAN at Rome in 1667, is to be depended upon, he muſt have been born five years ſooner, in 1610[t]. His parents were both Proteſtants; his father STEPHEN SORBIERE being a citizen of St. Ambroix, and his mother LOUISE PETIT ſiſter of SAMUEL PETIT, miniſter of the Reformed Church at Niſmes, well known to the learned world by his writings. Monſr. SORBIERE's parents dying when he was very young, Monſr. PETIT, who was his god-father as well as uncle, took him into his own houſe, and had as much care of his education, as if he had been his own ſon. After Monſr. SORBIERE had been initiated in polite learning under ſo great a maſter of it, he went in 1639 to Paris, where, having conceived a diſlike to the ſtudy of divinity, to which he had been deſigned, he applied himſelf to that of phyſic, in which he made ſo conſiderable a progreſs, that in a ſhort time he drew up a ſyſtem of that art for his own uſe, which was printed in a large ſheet of paper, under the title of *Syſteme de la Médicine Galenique pour le ſoulagement de la Mémoire.*

[t] Memoires pour la vie de Monſr. SORBIERE par Monſr. GRAVEROL, *prefixed to* Sorberiana, edit. d' Amſterdam 1694.

After

After reſiding near four years at Paris, where he was admitted into the acquaintance and friendſhip of the men of the greateſt eminence for learning [w], particularly GROTIUS, father MERSENNUS, and GASSENDUS, he went to Holland, where in the beginning of the year 1642 he paid a viſit to Monſr. DES CARTES then reſiding at Eyndegeeſt near Leyden [x]; and the year following he publiſhed under the diſguiſed name of GUTHBERTUS HIGLANDUS a letter addreſſed to Dr. ANDREW RIVET in anſwer to the *Cruriſragium Prodromi Rivetiani* of Monſr. DE LA MILETIERE; which letter is ſubjoined to Dr. RIVET's Apologetic againſt GROTIUS. During his ſtay in Holland he aſſiſted in the tranſlation of CAMDEN's *Britannia*, deſigned for a part of the Great Atlas, which tranſlation had been begun by a prieſt named SALABERT, who could not continue it, being obliged to return to France. Monſr. SORBIERE tranſlated likewiſe into French Sir THOMAS MORE's *Utopia*, at the deſire of the count DE RHINGRAVE, governor of Sluys, which tranſlation was printed at Amſterdam in 1643 in 12°.

The neceſſity of his circumſtances rendering it proper for him to return to his own country, but being unable to ſupport the charges of the journey, he requeſted his learned friend GASPAR BARLÆUS, profeſſor of philoſophy at Amſterdam, in a letter of June 13, 1644 [y], to recommend him to attend the ſon of ſome rich man into France in the autumn or ſpring following: and he found ſome means of going thither in 1645, but went back to Holland the year following, and married ſoon after at the Hague JUDITH RENAUD, daughter of DANIEL RENAUD, who was a native of St. Ambroix, as well as himſelf. About this time having formed a deſign of ſettling in ſome place for the practice of phyſic, he fixed upon Leyden for that purpoſe, where in 1648 in 12° he publiſhed his *Diſcours ſceptique ſur le paſſage du chyle et ſur le mouvement de cœur*. The year following he publiſhed at Amſterdam in 8vo a French tranſlation of Mr. THOMAS HOBBES's *Elementa Philoſophica ſeu politica de cive*, of which he had in 1647 publiſhed an edition at Amſterdam, at the requeſt of GASSENDUS and father MERSENNUS. He accompanied his tranſlation with an apologetical diſcourſe prefixed to it. His *Lettre d'un merchand du Breſil à un de ſes amis d'Amſterdam* was written by him in favour of the Dutch Eaſt-India company, for the ſatisfaction of his father-in-law, who had ſome intereſt in that company.

His unſettled temper having induced him to return to France, he was made principal of the college in the city of Orange in 1650; where, to gratify count DE DHONA, the governor, he publiſhed a piece intitled, *Lettre d'un Gentilhomme François à un de ſes amis d'Amſterdam ſur les deſſeins de* CROMWELL. At the end of the year 1653 he went to Vaiſon, where he abjured the Reformed, and embraced the Roman Catholic religion, by the perſuaſion of JOSEPH MARIE SUARES, biſhop of that city, whoſe name he aſſumed at his confirmation. In the beginning of 1654 he made a journey to Paris, and publiſhed there a diſcourſe on the change of his religion dedicated to cardinal MAZARIN: and the clergy having granted

[w] Monſr. SORBIERE's letter to GASPAR BARLÆUS, dated at the Hague *Id. Jun.* 1644. printed in *Clarorum Virorum Epiſtolæ, centum inedite ex muſeo* JOH. BRANT. *edit. Amſtel.* 1702. in 8vo. p. 186.

[x] Lettres et Diſcours de M. DE SORBIERE, p. 679.

[y] Clarorum Virorum Epiſtolæ, *ubi ſupra*.

him a penſion of 400 livres, he took the clerical habit in view of a benefice, which the cardinal gave him hopes of, having in the mean time conferred on him a penſion of 300 livres [z]. From Paris he went to Rome [a], where he made himſelf known to Pope ALEXANDER VII. by a Latin letter, addreſſed to him, and written againſt the Proteſtants, who were angry with him for abandoning them. Upon his return to Paris he publiſhed under the name of *Sebaſtianus Aletophilus* a Latin letter againſt RIOLANUS upon the lacteal veins diſcovered by GASPAR ASELLIUS of Cremona, a celebrated anatomiſt at Padua. It was addreſſed to JOHN PECQUET, in whoſe *Experimenta Anatomica*, printed at Paris 1654 in 4to, it is inſerted. He publiſhed likewiſe under the ſame name in 1657 another Latin letter *ad Lignerium de vitandâ in ſcribendo acerbitate.* The year following his *Diſſertatio de vitâ et moribus* PETRI GASSENDI was prefixed to the edition of the works of that philoſopher printed at Lyons in ſix volumes in folio. In 1660 he publiſhed at Paris in 4to his *Lettres et Diſcours ſur diverſes matieres curieuſes*, which contain ſeveral diſcourſes read by him at the aſſembly at Monſr. DE MONTMOR's, which began their meetings on the 18th of December 1657, and in which Monſr. SORBIERE acted as ſecretary. He was honoured in 1660 with the title of hiſtoriographer to the French king, who gave him ſome months after a penſion of a thouſand livres on the abbey of Horublieres in the dioceſe of Noyon, and two years after another penſion of the ſame value: beſides which he had two other penſions of 150 and 136 livres given him in 1656 by Pope ALEXANDER VII. together with the priory of St. Nicholas de la Guierche in the dioceſe of Rennes, worth 500 livres a year, conferred on him by that Pope, and the chapel of Notre Dame la Giſante of the ſame value, and a penſion of 800 livres from the clergy [b].

In 1663 he made a tour into England, where on the 22d of June he was elected into the Royal Society; and the year following publiſhed at Paris in 12° an account of his journey under the title of *Relation d'un voyage en Angleterre, ou ſont touchées pluſieurs choſes, qui regardent l'eſtat des ſciences et de la religion, et autres matieres curieuſes.* This book gave ſuch offence, that the French king in his council held at Fontainebleau July 9, 1664, N. S. being informed, that the author had taken the liberty to aſſert ſeveral things, which were falſe and injurious to the Engliſh nation, and to the character of one of the chief miniſters of ſtate [c] of that kingdom, for whom that king had a high affection, eſteem, and regard; and that he had likewiſe caſt ſeveral groundleſs reflections on the conduct of the king of Denmark with reſpect to count ULEFELDT; his Majeſty being deſirous of ſhewing public marks of his diſpleaſure againſt this audacious and impudent ſatire, ordered it to be ſuppreſſed [d], having ſome time before puniſhed the author by baniſhing him to Nantes. Under this diſgrace M. DE SORBIERE wrote a Latin letter to the biſhop of Laon, requeſting him to uſe his intereſt with the lord AUBIGNY, that the latter would prevail upon King CHARLES II. to interpoſe with LEWIS XIV.

[z] GRAVEROL, *ubi ſupra.*

[a] He was there in March and May 1654, as appears from two of his letters printed in his *Lettres et Diſcours*, p. 321 and 325.

[b] GRAVEROL, *ubi ſupra.*

[c] The earl of CLARENDON.

[d] Extract of the regiſters of the council held at Fontainebleau July 9, 1664, among the papers of the Royal Society.

for

for the recalling Monſr. SORBIERE from his exile; who in this letter as highly extolled the earl of CLARENDON, as he had in his *Relation* depreſſed him [e]. That book, which ſoon met with a ſevere cenſure from Mr. THOMAS SPRAT in his *Obſervations* addreſſed to Dr. CHRISTOPHER WREN, and publiſhed in 1665, was probably the occaſion, that the council of the Royal Society on the 14th of Nov. 1666 propoſed it to the Society, to leave him out of the liſt of their members; but the queſtion was carried on the ballot in his favour by fourteen votes againſt eight.

Pope ALEXANDER VII. dying in 1667, Monſr. SORBIERE publiſhed a large collection of poems in various languages in honour of cardinal ROSPIGLIOSI, who was thought likely to ſucceed to the papal ſee, and with whom he had kept a correſpondence by letters ever ſince his journey to Rome in 1654; whither he returned in 1667, in order to be preſent at the advancement of that cardinal to the popedom, upon which event he wrote a letter to Monſr. DE MONTMOR, in which he gave the character of the new Pope under the title of CLEMENTIS IX. *Icon.* During his reſidence at Rome he publiſhed his diſcourſe on the tranſfuſion of the blood of an animal into the human body.

His expectations from CLEMENT IX. were extremely diſappointed; for though he was well received by him, he had from him only a preſent of an hundred piſtoles to bear the charges of his journey, and ſome benefices in Bretagne, which being attended with law-ſuits were of little profit to him. He returned therefore in ſome chagrin to Paris, where he printed in 1669 a collection of letters, under the title of *Epiſtolæ illuſtrium et eruditorum virorum*, inſerting among them all thoſe, which he had received from the Pope, when cardinal ROSPIGLIOSI, in order to inſinuate, that he had not undertaken his laſt journey to Rome upon chimerical hopes.

He died April 9, 1670, N. S. after three months ſickneſs of a dropſy; when finding his caſe deſperate he took four grains of laudanum, in order to ſoften the horrors, and leſſen the agonies of death [f].

His parts were not contemptible, but his knowledge in ancient and modern philoſophy was merely ſuperficial [g]. His chief ambition and employment was to be acquainted with the men eminent for learning throughout Europe, and to profit more by their converſation than by books, ſo that he had the reputation of being rather curious than learned [h]. He was a great maſter of RABELAIS, and particularly fond of MONTAGNE and CHARRON, and had ſo high an eſteem for CRELLIUS the Socinian, that ſome years before his death he began a tranſlation of that writer's treatiſe *de Cauſis Mortis* CHRISTI [i], which he ſtiled an ineſtimable piece, as he did CRELLIUS *a faithful ſervant of* GOD [k].

[e] Letter of Mr. OLDENBURG to Mr. BOYLE, dated at London Oct. 20, 1664, printed in Mr. BOYLE's works, vol. v. p. 313.

[f] GRAVEROL.

[g] CHAPELAIN, Memoire de quelques gens de lettres vivans in 1662, dreſſé par ordre de Monſr. COLBERT, *printed at the end of* Mêlanges de litterature tires des lettres manuſcrites de Monſr. CHAPELAIN, *Paris* 1726.

[h] BAILLET vie de DES CARTES, tom. ii. p. 167.

[i] GRAVEROL, *ubi ſupra.*

[k] SORBERIANA, p. 54.

EDWARD WATERHOUSE, LL. D. had a learned education, and reſided ſome time at Oxford for the ſake of the Bodleian library there, but does not appear to have been a member of that univerſity [m]. In 1653, he publiſhed at London in 8°, *An Apology for Learning and Learned Men*, and another diſcourſe in the ſame form *Of magnanimity under Croſſes, and of acquaintance with God*. His next piece printed at London in 12°, was intitled, *Of the Piety, Charity, and Policy of older Times, paralleled by members of the Church of England*. His *Diſcourſe and Defence of Arms and Armory, ſhewing the Nature and Riſe of Arms and Honour in England, from the Camp, the Court, and the City, under the two latter of which are contained the Univerſities and Inns of Courts*, was printed at London 1660, 8°. Soon after the paſſing of the ſecond charter of the Royal Society he was propoſed on the 22d of July 1663, candidate for election into it, and choſen on the 29th of that month, being admitted on the 5th of Auguſt. The ſame year he publiſhed a *Commentary on Sir* JOHN FORTESCU *de Laudibus Legum Angliæ*, printed at London in fol. The fire of London in September 1666 occaſioned him to give the public another piece, which ſeems to be his laſt performance, publiſhed there in 8° the year following under the title of *A Narrative of the burning of London*, anno 1666. He afterwards entered into holy orders by the perſuaſion of Dr. SHELDON archbiſhop of Canterbury [n]; which appears to have been about the year 1668; for in the printed liſt of the Royal Society for 1668, he is ſtiled EDWARD WATERHOUSE, eſq; whereas in that of 1669, he has the title of D. D. which in a copy, that once belonged to Dr. PELL, is corrected LL. D. He died on the 30th of May 1670 [o], at his houſe at Mile-end Green, leaving two young daughters behind him, and was interred June 2, at Greenford in Middleſex, where he had ſome eſtate [p].

WILLIAM NEILE, eſq; was eldeſt ſon of Sir PAUL NEILE, knt. one of the uſhers of the privy-chamber to King CHARLES I. and was grandſon of Dr. RICHARD NEILE, archbiſhop of York, in whoſe palace at Biſhops-Thorp in Yorkſhire he was born 7 Decemb. 1637. His education was in the univerſity of Oxford, where he became gentleman commoner of Wadham-college in 1652, for the ſake of Dr. WILKINS the warden, by whoſe inſtructions and thoſe of Dr. SETH WARD he greatly cultivated and improved his genius in mathematics [q]. His ſucceſs in that ſtudy appeared as early as the year 1657, when he found out and demonſtrated a ſtrait line equal to a paraboloeid, and communicated and publiſhed the ſame (though not in print) to the lord viſcount BROUNCKER and others, who uſed to meet at Greſham-college, and by whom it was received with good approbation [r]; and his demonſtration of this was publiſhed with thoſe of the lord BROUNCKER and Dr. WREN in Dr. WALLIS's book *de Cycloide* [s] printed at Oxford in 1659, in 4to.

[m] WOOD Faſti Oxon. vol. ii. col. 94, 95.
[n] Id. ibid.
[o] PECK's Deſiderata Curioſa, vol. ii. b. 14. p. 43. Mr. WOOD is miſtaken in ſaying, that Dr. WATERHOUSE died in 1671.
[p] PECK, *ubi ſupra*.
[q] WOOD Athen. Oxon. vol. ii. col. 467.
[r] Lord BROUNCKER's letter to Mr. OLDENBURG dated at London, Oct. 8, 1673, printed in the Philoſ. Tranſact. vol. viii. n° 98, p. 6147, and Dr. WALLIS's and Dr. WREN's letters ibid. p. 6146——6150.
[s] P. 93.

Mr.

Mr. NEILE was an early member of the Royal Society, for being propoſed a candidate on the 31ſt of December 1662, he was elected into it on the 7th of January following, and admitted on the 14th of that month; and at the election of officers of the ſociety April 11, 1666, was choſen of the council. His theory of motion was communicated to the ſociety 29 April 1669. But the farther expectations, which the public had conceived of the force of his genius in mathematical and philoſophical ſubjects, were diſappointed by his death, which happened at his father's houſe at White Waltham in Berkſhire on the 24th of Aug. 1670, in the church of which pariſh he was interred.

Decemb. 8. Monſr. ANDREAS MONCEAUX, a French gentleman and a great traveller, ſon to Monſr. MONCEAUX, counſellor to the moſt Chriſtian King, and great audiencïer of France, was propoſed candidate.

Mr. HOOKE brought in this problem of architecture; The baſis of the diſtance of two pillars and the altitude of an arch being given, to find out the right figure of that arch, for the firm ſuſtaining, upon the whole, or any part of it, any weight given; as alſo to find out the butments of that arch.

Mr. HOOKE being aſked, whether he had the demonſtration of this uſeful problem, he ſaid he had it, and would ſhew it to the preſident.

He was deſired to repreſent at the next meeting the mechanical way of making ſuch an arch by pieces of angles ſtanding in ſuch angles, as to make the figure of an arch required; which he promiſed to do.

Mr. OLDENBURG renewing the late motion of Dr. WALLIS for deciding by a juſt experiment the controverſy between Signor BORELLI and HONORATO FABRI, Mr. HOOKE was ordered to prepare for an experiment to be made at the next meeting in the aſſembly-room, by having two balls, and projecting the one horizontally from the window over the door, and letting the other fall down perpendicularly from the ſame hight.

Mr. OLDENBURG read a letter to him from Mr. MARTINDALE dated at Rotherſton, Novem. 26, 1670[t], ſignifying, that he had himſelf viewed the ſalt-rock lately diſcovered in that country, and found things very nearly anſwering his friend's relation communicated Novem. 10.

Decemb. 15. Monſr. MONCEAUX was elected.

Sir EDWARD RICH was propoſed candidate by Sir JAMES HAYES.

Mr. HOOKE repreſented the mechanical way of making an arch of ſuch a figure, as ſhall ſuſtain any weight given. Being aſked, whether he had ready the demonſtration of it, he anſwered, that he had given it to the preſident, who was abſent from this meeting.

[t] Letter-Book, vol. iv. p. 132. It is printed in the Philoſ. Tranſact. vol. v. n° 66, p. 2016.

The

The experiment of the horizontal projection and perpendicular fall of bodies was referred to the next meeting.

Mr. AUBREY presented to the society a piece of Roman antiquity, which was a pot found in Weekfield in the parish of Hedington in Wiltshire in 1656, then half full of Roman coin, silver and copper, about CONSTANTINE. In this field, he remarked, had been a Roman colony, there having been digged up many foundations of houses and much coin.

He presented likewise Dr. JOHN DAVIES's *Grammatica Linguæ Cambro-Britannicæ*; as also HERONIS CTESIBII Βελοποικὰ, i. e. *Telefactiva*, in Greek and Latin, with Scholia by BERNARD BALDUS, with HERO's life written by the said BALDUS, printed Augsburg in 1616, in 4°.

Sir JAMES HAYES produced an antique stone with an Italian writing cut upon it, found in Windsor-Tower, called the Devil's tower. Mr. HENSHAW undertook to examine the writing at his leisure, and to give the society an account of it.

167$\frac{0}{1}$, *January* 12. There was presented from Mr. BOYLE some printed philosophical tracts of his, viz. *Of a Discovery of the admirable Rarefaction of the Air; new observations about the duration of the Spring of the Air*, &c. printed at London, in 4to.

Mr. HOOKE brought in a curiosity, sent to the society for the repository by the archbishop of CANTERBURY [u], supposed to be several pieces of an hippotamus, digged up at Chatham, according to a printed paper accompanying the same.

Dr. FULLWOOD [x], being sent by the bishop of SALISBURY to the society, presented them with a stone grown *in pene viri*, which, he said, was delivered to him by Dr. EDWARD COTTON for the society's repository, according to a letter accompanying it, dated at Exeter January 7, 167$\frac{0}{1}$, from Dr. COTTON to the bishop of SALISBURY [y].

Dr. COTTON in this letter observed, that upon examination of the person, who voided the stone, and upon trial of the part, he found, that about eleven years before he voided it, the stone coming from the bladder into the urethra, was then too big to pass through, and therefore stuck within two inches of the top of it; and within a few days the urine forced a passage immediately behind it, and so continued during the whole time, that the stone stuck there. The man being not much troubled with it, continued his usual exercises, and once, at least, took a journey to London without any considerable inconvenience. This stone weighed three quarters of an ounce wanting five grains Averdupois. It was ordered, that Dr.

[u] Dr. GILBERT SHELDON.

[x] Probably FRANCIS FULLWOOD, D.D. Minister of West Alvington in Devonshire, archdeacon of Totnes, and canon of Exeter. WOOD, Athen. Oxon. vol. ii fol. 299.

[y] Letter-Book, vol. iv. p. 155.

COTTON ſhould be thanked for this communication, and deſired, according to his offer, to procure the teſtimony of the patient concerning the truth of the fact.

Sir ROBERT MORAY mentioned, that the King had laid a wager of fifty pounds to five for the compreſſion of air by water; and that it was acknowledged, that his Majeſty had won the wager. Sir ROBERT deſired, that the experiments formerly made for evincing this fact might be made before the ſociety, and afterwards before the King; which he ſaid might be done by a cane contrived after ſuch a manner, that it ſhould take in more and more water, according as it ſhould be ſink deeper and deeper into it.

He deſired likewiſe, that the experiment of ſupporting any heavy body at a certain depth under water, by keeping it from being depreſſed by any incumbent water, might be made.

It was ordered, that the apparatus for the firſt of theſe experiments ſhould be made ready by Mr. HOOKE for the next meeting; and that Mr. OLDENBURG ſhould deſire Mr. BOYLE in the name of the ſociety to lend them the apparatus for the other experiment.

Mr. HOOKE produced his engine formerly promiſed for grinding glaſſes of a true both elliptical and hyperbolical figure; whereby, he affirmed, all the motions made by this contrivance touch every point in an ellipſis.

It was ordered, that this engine ſhould be put in a frame, and a trial made of its performance. Some of the members doubted, that this engine would wear, and the ſand remain uneven, which would make the figure of the glaſs imperfect. But Mr. HOOKE was of opinion, that by this engine the ſand would be prepared equally fine, and ſo ſpread every where.

He propoſed a new way of making a veſſel for extracting the air, ſo large, that a man might ſit in it, and ſo contrived, as to rarefy the air to a certain degree, and to ſupply the perſon ſitting in it with freſh air. He was deſired to get ſuch a veſſel made.

Mr. OLDENBURG read a letter written to him from Monſr. HUET, dated at St. Germains, Octob. 30, 1670, N. S. [a], and containing an account of two experiments made for finding out another paſſage of the urine to the bladder beſides the known one; as alſo a confirmation of Monſr. HAUTON's invention for making ſea-water ſweet.

Dr. KING hereupon related, that he had alſo made an experiment, to find, whether there were another paſſage for the urine, which he had done by cutting away the ureters, and inſerting a ſilver pipe tied about into the next part to the kidney, thereby to hinder all paſſage to the urine that way; but that he had found no

[a] Letter-Book, vol. iv. p. 98. It is printed in the Philoſ. Tranſact. vol. v. n° 67. p. 2049, for January 167½.

liquor

liquor in the bladder, except two or three drops, having in the beginning firſt ſqueezed out all the urine, and given the dog, made uſe of by him, a good quantity of milk to drink, and meat to eat.

The demonſtration of Mr. HOOKE concerning the line of an arch for ſupporting any weight aſſigned, being called for, Mr. OLDENBURG mentioned, that Dr. WREN had alſo a demonſtration of it. It was deſired, that theſe demonſtrations might be both delivered and opened together by the preſident.

The experiments appointed for the next meeting were

1. That of the horizontal projection of a ball and the perpendicular deſcent of another, to ſee, whether theſe two balls will come to the ground in the ſame time.

2. The engine for elliptical glaſſes.

3. The air-veſſel.

4. The apparatus for compreſſing air by water.

5. The experiment for making an heavy body ſwim at a certain depth under water.

January 19. The experiments for keeping an heavy body ſuſpended at a certain depth under water was made and ſucceeded very well, according to the way delivered by Mr. BOYLE in his *Hydroſtatical paradoxes*, propoſ. 11. The ſecretary was deſired to return Mr. BOYLE the ſociety's thanks for furniſhing them with the apparatus for making this experiment.

This apparatus was recommended to the care of Sir ROBERT MORAY, in order to ſhew the ſame experiment to his Majeſty.

The other experiment about the ſynchroniſm of the fall of a projected and a perpendicularly deſcending body was referred to the next meeting, and the operator ordered to ſpeak for the key of the room over the door of the meeting-rooms to make the experiment in.

Mr. HOOKE was called upon to make ready the apparatus neceſſary to ſhew the King the compreſſion of air by water; which he promiſed to do.

It was deſired, that the ſame experiment might be made in a bottle, wherein the air ſhould be ſo compreſſed, as to drive out the water.

Both methods were directed to be firſt repreſented to the ſociety.

Mr. HOOKE promiſed likewiſe, that at the next meeting he would bring in the new air-veſſel; as alſo, if he poſſibly could, the new glaſs-grinding engine.

Dr. WREN delivered to the preſident his demonſtration of what line it is, which an arch, fit to ſuſtain any aſſigned weight, makes.

The preſident was deſired to examine it, and to give an account of it to the ſociety.

Mr. HOOKE being called upon for his demonſtration of the ſame ſubject anſwered, that he had already declared the ſubſtance of it to the preſident, who yet deſired him to give it alſo in writing, that ſo it might be with more leiſure and conveniency examined.

Mr. HOOKE produced from Mr. TOWNLEY a box full of a certain herb pretended to be a ſuccedaneum of tea, and ſaid to grow plentifully in Lancaſhire. Some of the members viewing it found it to be the *Myrtus Brabantica*, in Engliſh, ſweet willow.

Mr. OLDENBURG produced two letters written to him, the one by Mr. WRAY, from Middleton 13 January 167⅞[a], containing an uncommon account of piſmires yielding an acid ſpirit fit to turn a violet colour into red. The other was from Mr. MARTIN LISTER, dated at York January 10, 167⅞[b], containing a catalogue of thirty three ſeveral ſorts of ſpiders to be found in England, and by him reduced into ſeveral claſſes; together with a ſet of queries on that ſubject, in order to the compoſing a philoſophical hiſtory of it.

January 26. An experiment was made of compreſſing air by water, which was done in a large tube of ſix feet long, filled with water, and by letting into it a ſyringe open at one end, in which the air was at the depth of two feet and a half compreſſed about one inch, and at the depth of five feet near two inches.

There was alſo made the experiment to find, whether a ball horizontally projected, and another falling down perpendicularly, would come to the ground at the ſame time from the ſame hight. This was done by blowing a ſmall leaden bullet through a hollowed wooden cane, at the orifice of which there was a contrivance made for another leaden bullet of the ſame figure and ſize, to fall down ſtrait; which being tried ſeveral times, the balls were judged by the ear of ſome of the members to come to the ground at the ſame time, by others not. For which reaſon it was thought neceſſary to make more trials at the next meeting.

Sir ROBERT MORAY acquainted the ſociety with a new and eaſy way of bringing up freſh water from the bottom of the ſea, where any bottom hath been found by navigators. He was deſired to give it in writing, or to direct to the author, whence he had taken it.

[a] Letter-Book, vol. iv. p. 175. It is printed in the Philoſ. Tranſact. vol. v. n° 68, p. 2063, for February 167⅞.

[b] Letter-Book, p. 156. It is printed in the Philoſ. Tranſact. n° 72, p. 2170.

Mr. OLDENBURG produced ſome of the rock-ſalt lately digged up in Cheſhire, together with a letter to him from Mr. MARTINDALE, dated at Rotherſton 7 Jan. 167$\frac{0}{1}$[c], mentioning, that the workmen had bored three yards into it. That an hot fire makes the ſalt crack and fly like bags of kelp or ſcatang: That hot water diſſolves it ſpeedily, and cold ſlowly: That being pulverized it is a very ſharp ſalt, and the brown, that is free from mixture, full as ſharp as the white. Some of this ſalt was delivered to Dr. DANIEL COXE to examine it, and to make a report of it to the ſociety.

It was moved by one member, that Mr. MARTINDALE be aſked, how far that ſalt-rock was from any ſalt-ſpring?

Dr. DANIEL COXE mentioned on this occaſion, that he had taſted ſome of the ſalt made at Mayo, one of the iſles of Cape Verde, and thought this to be like that ſalt.

Mr. OLDENBURG read part of a letter to him from Dr. PHILIP JAMES SACHS, one of the academy *Naturæ Curioſorum* in Germany, dated at Breſlaw in Sileſia, 1 Octob. 1670, accompanied with a copy of their *Miſcellanea Curioſa Medico-phyſica*, printed at Leipſic in 1670, in 4°, and conſiſting of an hundred and ſixty obſervations medical, anatomical, botanical, pathological, chirurgical, and chemical, which they intended to proſecute by publiſhing ſuch a book once every year; for the aſſiſtance to which they deſired the communications of the curious in other nations, as well as their own.

Mr. OLDENBURG was deſired to draw up a letter ſignifying the ſociety's approbation of this attempt, and encouraging them to proſecute it[d]; as alſo to peruſe the book, and give the ſociety ſome account of the contents of it.

He produced likewiſe a printed book in Italian, compoſed by the jeſuit LANA, and intitled *Prodromo, overo Saggi di alcune inventioni nuove promeſſe al arte maeſtra*, ſent by Mr. JOHN DODDINGTON, ſecretary to the Engliſh ambaſſador to the ſtate of Venice.

It was recommended to Mr. OLDENBURG to peruſe it, and to give the ſociety ſome account of it.

February 2. Dr. DANIEL COXE produced ſome of the cryſtals and ſpirit, which a piece of the rock-ſalt lately diſcovered in Cheſhire had yielded. This ſalt was thought by ſeveral of the members to be of the nature of ſtrong ſea-ſalt without any ſal nitre or alum in it; good to ſeaſon ſuch things with, as need very ſtrong ſalt. The ſpirit was eſteemed very ſulphureous.

[c] Letter-Book, vol. iv. p. 153. dated 2 Feb. 167$\frac{2}{1}$, and entered in the Letter-Book,
[d] Mr. OLDENBURG's letter to Dr. SACHS was vol. iv. p. 197.

The

The experiment of the horizontal and perpendicular fall of two bullets was tried again ſeveral times, and found by moſt of the members to come to the ground both together. It was ordered to be ſtill farther proſecuted.

Mr. OLDENBURG read Dr. COTTON's letter of January 28, 167$\frac{2}{3}$, containing a farther account of the ſtone, which ſtuck and increaſed in the urethra, atteſted by the patient himſelf, THO. WESTCOTT: Which atteſtation was as follows:

"The time, that the ſtone was growing, was about 18 years, and was in the "yard about 14 years, and grew always bigger, and of the bigneſs it was now: "And I think myſelf to be about 88 years old. The firſt ſtopping of the urine "was when the ſtone came into the yard. I voided the ſtone about three years "ſince. The medicine was to boil a quart of white wine, and in that boil two or "three burdock leaves, and boil it very well; then put into that the bigneſs "of a hazel nut of black ſoap, and drink it morning, noon, and evening. Anoint "the ſeat of your body very well with black ſoap, and take the ſkin of a ſnake, "and ſtrike it with Venice turpentine, and put it round behind the member, and "come up over the yard cloſe to the body."

Dr. COTTON remarked in his letter, that the orifice opened by the violence of the urine, was then cloſed up, and that the urine paſſed the ordinary way.

Mr. OLDENBURG read the Latin letter drawn up by him for Dr. SACHS, which was approved of, and ordered to be ſent away.

He delivered to Mr. HENSHAW the Italian manuſcript of Signor MONTANARI, formerly recommended to Sir SAMUEL TUKE and Mr. HOSKYNS for a tranſlation of it into Engliſh; who having excuſed themſelves from that work, the one becauſe of his ſickneſs, the other by reaſon of his abſence from London, Mr. HENSHAW was deſired to tranſlate thoſe papers, who promiſed to do it as ſoon as conveniently he could.

February 9. The former experiment of the horizontal projection and perpendicular fall of two bullets was tried again another way; and it ſeemed, that in moſt trials they came both together to the ground. It was ordered, that ſome things be mended in the inſtrument employed in this experiment; and that at the next meeting more trials be made, and that from a higher place.

Mr. HOOKE being aſked, whether the air-veſſel for a man to ſit in was yet ready, anſwered, that it was, and that he now intended to make ſome experiments in it, and to report them at the next meeting. He added, that the chief deſign of this veſſel was to find what change the rarefaction of the air would produce in man, as to reſpiration, heat, &c. Being aſked, how it was contrived, he ſaid, that it conſiſted of two tuns, one included in the other; the one to hold a man, the other filled with water to cover the former, thereby to keep it ſtanch; with tops

[t] Letter Book, vol. iv. p. 193, 194.

to put on with cement; or to take off; one of them having a gage, to ſee to what degree the air is rarefied; as alſo a cock to be turned by the perſon, who ſits in the veſſel, according as occaſion ſhall require, &c.

It was reſolved, that after a report ſhall be made by Mr. HOOKE of the ſucceſs of the experiments to be made by him this week, a day be appointed for as many of the ſociety, as pleaſed, to meet in Greſham-college, to ſee the veſſel and ſome experiments to be made therein.

Mr. OLDENBURG read a letter written to him by Mr. MARTIN LISTER, from York 25 January, $167\frac{0}{1}^{f}$, giving an account of another inſect likely to yield an acid liquor as well as piſmires; which inſect he called *the long and round bodied lead-coloured Julus*; as alſo ſeveral particulars concerning the bleeding of ſycamores and walnuts immediately after froſts.

This gave occaſion of much diſcourſe concerning the motion of ſap in trees, and of the texture of them.

Mr. HOOKE ſaid, that he had obſerved, that there were ſeveral ſorts of pores in trees; ſome of them went from the middle to the bark, ſhaped like little deſks or boxes; others were like pipes going from the top to the bottom of the tree; others were exceedingly ſmall, not ſeen but by a microſcope, which he therefore called microſcopical pores.

Sir ROBERT MORAY ſuggeſted, that it might be worth the while to inquire, whether all the nouriſhment of a tree comes by the root; or whether ſome be furniſhed by the ambient air.

Others moved, that it might be further inquired into, whether there be a circulation of the ſap in trees? Dr. GODDARD ſaid, that a ſtrait ligature having been made about a vine-tree, there had been obſerved a turgeſcence as well above as beneath the ligature.

Mr. HOOKE propoſed a contrivance to find with ſome certainty, whether there be a circulation in trees; which contrivance he was ordered to get made againſt the next meeting; which he promiſed to do.

Mr. EVELYN related, that an aloe being watered in winter ſoon rots and dies at the root; but that being let alone, it thrives well.

He remarked likewiſe, that the *ſemper-vive* being expoſed to the air would in two or three hours fill itſelf, and be freſh; and that the *amomum Plinii* would fill itſelf in half an hour in the open air.

It being queried, whether any trees would live, after a part of them had been

[a] Letter-Book, vol. iv. p. 189. It is printed in the Philoſ. Tranſact. vol. v. n° 68, p. 2067.

diſbarked

diſbarked round, Dr. HOLDER mentioned, that the alder *(alnus)* would thrive, notwithſtanding its being thus unbarked.

Mr. HOOKE being put in mind of his engine for grinding glaſſes ſaid, that he would get the whole apparatus ready, as ſoon as he could.

It being obſerved, that very many things were begun at the ſociety, but very few of them proſecuted, Mr. OLDENBURG offered to bring in a liſt of ſuch particulars, which he was deſired to do with ſpeed.

February 16. The experiment with the two balls was made again by the contrivance of a bow; and they ſeemed to moſt of the members to come to the ground at one and the ſame time. Yet, for the ſake of greater certainty, the experiment was ordered to be tried again at the next meeting.

Mr. HOOKE produced a model of a little box to be thruſt into the body of a tree bored, to find out the aſcent and deſcent of the ſap. The care of making this experiment was committed to Mr. CHARLES HOWARD, who promiſed to undertake it.

Mr. HOOKE produced likewiſe a picture done by himſelf upon taffeta after an unuſual way, viz. by printing it, and then giving it the colours, which appear equally well on both ſides, being varniſhed over and tranſparent. He ſaid he had the varniſh from Mr. WYLDE.

Mr. OLDENBURG gave an account of the *Miſcellanea curioſa medico-phyſico academiæ naturæ curioſorum*; and ſome of the obſervations contained in that work were eſteemed conſiderable, and the compilers of it worthy to be encouraged in the proſecution of it.

Mr. RICHARD REED having ſent ſome red-ſtreak grafts out of Herefordſhire, with a letter to Mr. OLDENBURG dated January 30, $167\frac{5}{6}$, concerning cider made of rotten and frozen apples, and the quantity of cider lately made in that county, and the nature of red-ſtreak, which is delicate with reſpect to its ſoil; thoſe grafts were diſtributed to ſeveral of the members.

Feb. 23. Mr. HOOKE reported concerning the air-veſſel, that he had been in it for about a quarter of an hour, and found not any inconvenience upon the exhauſtion of the little air drawn out of it. He added, that he conceived, that a man could not endure much more than the evacuation of a fourth part of the air contained in this veſſel.

He was ordered to proſecute this experiment, and to take ſome animals and lighted candles &c. with him into the veſſel.

Letter-Book, vol. iv. p. 196.

It was alſo reſolved, that on the Monday following in the afternoon as many of the ſociety as pleaſed ſhould meet in Greſham-college at Mr. HOOKE's lodgings, and be preſent at the experiment.

Mr. HOOKE mentioned, that he intended to employ a pair of bellows in the veſſel, in order to blow out the air more readily and more effectually.

Mr. OLDENBURG read a letter to him from Mr. LISTER, dated at York Feb. 15, $167\frac{0}{1}$ [h], containing an account of his conſiderations and trials relating to the circulation of ſap in trees; as alſo his thoughts and obſervations about colours, and particularly how he had been led to a method of fixing colours, of which he promiſed to ſhew the experiment before the Royal Society, when he ſhould have an opportunity; adding, that he had found out a colour (yielded him by an Engliſh vegetable) which might be compared to the beſt ink, and would not change either by fire or ſalts.

March 2. Sir JOHN WILLIAMS, bart. was propoſed candidate by the lord biſhop of CHESTER.

Mr. HOOKE made a report of the ſucceſs of the experiment made in the veſſel for rarefying the air, viz. that himſelf had been in it, and by the contrivance of bellows and valves blown out of it one tenth part of the air (which he found by a gage ſuſpended within the veſſel) and had felt no other inconvenience but that of ſome pain in his ears at the breaking out of the air included in them, and the like pain upon the readmiſſion of the air preſſing the ear inwards.

It was ordered, that this veſſel ſhould be in readineſs to make the experiment for thoſe of the ſociety, who ſhould be at leiſure to go to Greſham-college, and be preſent at it on the Monday following in the afternoon.

The biſhop of CHESTER renewed his former propoſal of cutting the kidney of a dog, which experiment he had formerly made twice with good ſucceſs. He was ſeconded by Dr. KING, who affirmed, that he had made the like experiment with good ſucceſs, the dogs having in both experiments recovered and lived.

It was ordered, that Dr. GODDARD, Dr. CLARKE, Dr. NEEDHAM, and Dr. KING, who were then preſent, ſhould be deſired to take care of making this experiment, and to agree on the Monday following about the time of making it.

Dr. NEEDHAM propoſed to try the cutting off a piece of the guts, for inſtance of the colon, and to ſtitch together the two ends, to ſee whether they would heal up again; which, if it ſucceeded, might be of good uſe in the iliac paſſion.

The phyſicians, who were preſent, were deſired to take care of this experiment likewiſe.

[h] Letter-Book, vol. iv. p. 211. It is printed in the Philoſ. Tranſact. vol. vi. n° 70, p. 2121 and 2132. for April 1671.

Dr. CLARKE propoſed, that a man hanged might be begged of the King, to try to revive him; and that in caſe he were revived, he might have his life granted him.

Mr. OLDENBURG mentioned, that there were come to London two noble Florentines, the marquis BARTHOLOMEI and count BARDI, who were deſirous of being preſent at a meeting of the ſociety, and of ſeeing ſome experiments; and that they would come to the next meeting: on which account Mr. HOOKE was appointed to prepare ſome experiments againſt that meeting for their entertainment.

March 9. Sir PHILIP MATTHEWS was propoſed candidate by Dr. ALLEN.

There were preſent at this meeting the marquis BARTHOLOMEI and count BARDI, as alſo the reſident of Venice; and the following experiments were made, 1. One furniſhed by Mr. BOYLE of water falling in an exhauſted tube to the bottom like a metallic body, there not being air to break the fall. 2. One contrived by Mr. HOOKE, whereby ſome flour put in a wide ſhallow glaſs, with a large ſloping brim and a pretty tall foot, was made to riſe and run over like a fluid, by the knocking of the glaſs, and by the forcible moving of one's finger round about the upper edge of the ſame. Leaden bullets likewiſe being put in this glaſs moved in it like a fluid upon its being knocked.

This was propoſed, in order to conſider, what might be the cauſe of this motion, eſpecially of the phænomenon, that the flour aſcending ran over, and did not fall any way back into the veſſel. Mr. HOOKE mentioned, that he thought, that it might contribute to explain the cauſe of gravity, and ſuggeſt an hypotheſis for explaining the motion of gravity by.

It was ordered, that veſſels of different metal ſhould be prepared for the making of this experiment, eſpecially of braſs, to ſtrike the more forcibly.

After this there was produced a burning concave of ſixteen inches diameter, lately made by Mr. CHRISTOPHER COCKS, who was ſaid to be ready to undertake the making one of ſix feet diameter for one hundred pounds ſterling. It was thought fit, that he ſhould be encouraged to perform his undertaking, a burning concave of that ſize being likely to increaſe heat to ſuch a degree, as nothing elſe in nature would be able to effect the like.

The air-veſſel being again ſpoken of, it was ordered, that ſince Mr. HOOKE had failed in making the experiment at the time before appointed, it ſhould be made on the Monday following in the afternoon, ſeveral members promiſing to be preſent.

Mr. HOOKE obſerved, that he had lately obſerved 4 March the congreſs of the moon with the *media trium in caudâ arietis*, a fixt ſtar of the third magnitude, and had found the time of its ſubingreſs pretty near to that calculated by Mr. FLAMSTEAD, who ſet down the time to be 10 *h.* 14′. 52″. which was found to be 10 *h.* 12′ *circiter.* Mr.

Mr. HOOKE remarked likewiſe, that he had obſerved, that whereas a ſtar, as ſoon as it touches, uſes to diſappear, this ſtar touching the ſouth part of the moon ſlid all along the ſides of the edge of the moon, which he thought could proceed from nothing but the refractive air about the moon.

It was moved, that perſons reſiding in far different latitudes might be engaged to correſpond with the members of the ſociety in making ſuch obſervations as theſe; and that capt. HUBBARD, then going to Jamaica, might be ſolicited to take care of them.

Mr. OLDENBURG read a letter to him from Mr. LISTER, dated at York, March 4, 167$\frac{2}{3}$[1], containing a confirmation of what he had before written about an Engliſh black to be made out of a vegetable; as alſo an account of the kermes-berries in Languedoc breeding worms, and of the drying and preparing them for medical uſes. "When I was, ſays he, in Languedoc, I was credibly informed, "that ſome of the gatherers of the reputed berries [kermes] did not wait until "the worm had made itſelf up within a round huſk or chryſalis, affixed to the "branches of the ſhrub-oak, but did take the worms themſelves, and expoſing "them to the ſcorching ſun in a ſheet ſuſpended by the four corners, beating ſtill "upon it, as the worms crept up, to make them periſh by heat, and thus dried, "they prepared them for farther uſe, either medical or ornamental. Again, that "they uſe in that country to ſet fire on the ilex or ſhrub-oak (as we in England "burn up our ling, i. e. *erica* in the moors) when it is grown old and dry barked, "to the end it may put up again with more tender and ſucculent ſhoots fitter for "the nouriſhment of the kermes-inſect."

March 16. The SOCIETY did not ſit.

March 23. Sir JOHN WILLIAMS and Sir PHILIP MATTHEWS were elected.

ROBERT REDDING, eſq; was propoſed candidate by the preſident.

Mr. HOOKE brought in a report of the experiment, which he had again made in the air-veſſel; which was, that he had blown out one fourth of the air that was in the veſſel, eſtimated by a gage; and that he had continued in it ſomewhat above a quarter of an hour without any other inconvenience than feeling ſome pain in his ears, and finding himſelf deaf, whilſt the ſtraining of the air was upon him in blowing out the air; which pain and deafneſs he likewiſe found upon the forcible ruſhing in again of the air into his ears: but that when he was come out, and had walked a little while up and down, his hearing returned. He added, that having taken a candle burning with him into this veſſel, the candle went out long before he felt any of that inconvenience in his ears.

The preſident, who had been at this experiment, remarked, that though Mr. HOOKE had continued ſomewhat above a quarter of an hour in this engine, yet a

[1] Letter Book, vol. iv. p. 224.

quarter

quarter of the air in the veſſel had not been kept out all that while, but that now and then freſh air had been let in. In the mean time Mr. HOOKE had endured for a little while the abſence of a quarter of the air without any other inconvenience than the above-mentioned.

Mr. HOOKE exhibited again the experiment of making flour move in a bell-glaſs like a fluid ſeveral ways, upon the knocking of that veſſel in ſeveral places; upon which he thought conſiderable things in philoſophy depended, but declared no particulars.

He alſo ſhewed a method of making a very great burning concave by means of ſeveral pieces of glaſs lined with a mixture of mercury and lead, and put together upon the concave ſide of ſome hemiſpherical body of wood. He was deſired to make a trial of it.

Mention being again made of Mr. COCKS's readineſs to make a great burning concave, it was ſuggeſted, that the King might be moved to command it to be made.

Mr. OLDENBURG produced and read ſeveral letters ſent to him from abroad. Firſt two letters from Mr. WINTHROP dated at Boſton in New-England; one addreſſed to the lord BRERETON, October 11, 1670, giving an account of the removing and overturning a hill in thoſe parts.

This letter was as follows[k]:

" My Lord,

" THE relation, which I am now preſenting to your lordſhip, is of a very " ſtrange and prodigious wonder, this laſt ſummer in this part of the world: " that the like hath been known for the whole manner of it, I do not remember, " that I have read or heard. There was a hill near Keenebank-river, in the " province of Meane, the eaſtern part of New-England, which is removed out of " its place, and the bottom turned upwards. The time is not certain when it was " done; but that it is ſo, is very certain, and it is concluded by thoſe, who live " neareſt to it, that it was removed either the latter end of June, or beginning of " July laſt. The relation, that I have from credible perſons concerning the manner " of it, is this; viz that the hill being about 8 rods from Keenebank-river-ſide, " on the weſt ſide of the river, about 4 miles from the ſea, was removed from " its place over the dry land about 8 rods or perches, and over the tops of the trees " alſo, which grew between the hill and that river, leaping as it were over them " into the river, where it was placed, the upper part being downward, and dammed " up the river, till the water did work itſelf a paſſage through it. The length of " the hill was about 250 foot; the breadth of it about 80, the depth of it about " 20 foot. The ſituation of the place, as to the length of it, was N. W. and S. E. " The earth of it is a blue clay without ſtones: many round bullets were within it, " which ſeem to be of the ſame clay hardened. I have not yet ſeen the place myſelf,

[k] Letter-Book, vol. iv. p. 93.

" but ſent purpoſely to enquire into the truth of what had been reported concern-
" ing it, and had this relation from major WILLIAM PHILIPS, who dwelleth not
" far from the place: And M. HERLAKENDON SYMONS, who went to the place,
" and took very good notice, brought me the ſame report of the truth and
" manner of it, which I had before received by a letter from major PHILIPS in
" anſwer to my letter of enquiry, and told me, that the earth of the hill did not
" lie between the former place of the hill and the river, but was carried together
" over the tops of the trees into the river, which ſeems to be, as if it were blown
" up by ſuch a force, as carried the whole body of it ſo far together. I had from
" them ſome few of thoſe round bullets; I think there were but two or three, and
" ſome pieces of earth in other forms, which were found upon that now upper
" part, which was before the lower, or the inner bowels of that hill; as alſo a
" ſmall ſhell or two, of a kind of ſhell-fiſh, like ſome ſhell-fiſh commonly found,
" where the ſea flows: but how they ſhould be within that hill, is ſtrange to con-
" ſider. I have ſent all, that I had thence, to the Royal Society for their repoſitory.
" I underſtand alſo from thoſe parts, that there was no notice taken of an earth-
" quake about that time; nor did I hear of any in other parts of the country. I
" give your lordſhip only a relation of this prodigy, as I had it upon the beſt
" enquiry I could make, leaving the diſcuſſion of the natural cauſes, which might
" concur; a matter too hard for me to comprehend, but the power of his Al-
" mighty Arm is manifeſt to all, who weigheth the hills in a balance, and in whoſe
" preſence the heavens drop, the hills are melted like wax, Sinai itſelf is moved.
" I hope to have opportunity to ſee the place; and if any other matter conſide-
" rable upon my obſervation, or further enquiry ſhall appear, I ſhall be obliged
" to give your lordſhip a further account thereof; and for the preſent am bold, only
" to ſubſcribe myſelf,

" Right honourable,

" Boſton, Oct. 11, 1670.

" Your Lordſhip's humble ſervant,

" J. WINTHROP."

The other letter of Mr. WINTHROP was written to Mr. OLDENBURG of the ſame date [l], containing an enumeration of ſeveral things ſent by him to the ſociety for their epoſitory, viz. 1. A peculiar ſort of ſhell-fiſh, called in New-England the horſe-foot. 2. A feathered fly. 3. A humming-bird's neſt with two eggs in it. 4. Some ſhells and bullets and hardened clay found within that mountain, which had been overturned.

A letter of Signor MALPIGHI to Mr. OLDENBURG from Bologna, Feb. 20, 1671, N. S. [m] was read, containing ſeveral curious remarks on the communication between the bronchiæ and lungs in frogs, lizards, and tortoiſes; as alſo on the fibres of the ſpleen not being nervous but carneous.

[l] Letter-Book, vol. iv. p. 91.

[m] Ibid. p. 221. It is printed in the Philoſ. Tranſact. vol. vi. n° 71. p. 2149. for May 1671.

The

The biſhop of CHESTER moved, that Sir GEORGE ENT being concerned in this letter, a copy of it might be given him to conſider it, and to make a report of it to the ſociety: which was ordered to be done.

There was likewiſe read part of a letter to Mr. OLDENBURG from GODFREY WILLIAM LEIBNITZ, doctor of both laws, and counſellor to the elector of Mentz, dated March 11, 167$\frac{0}{1}$[n], containing a ſhort account of a new (as he thought) phyſical hypotheſis of his for ſolving the phænomena of nature, of which he had ſent part already printed, and dedicated to the ſociety, deſiring their judgment. The title of it was *Hypotheſis phyſica nova, quâ phænomenûm naturæ plerorumque cauſæ ab unico quodam univerſali motu in globo noſtro ſuppoſito, neque Tychonicis neque Copernicanis aſpernando, repetuntur* [o].

It was ordered, that Mr. BOYLE, Dr. WALLIS, Dr. WREN, and Mr. HOOKE ſhould be deſired to peruſe and conſider this book, and report their ſenſe of it to the ſociety, in order that a proper anſwer might be returned to the author.

March 30, 1671. Mr. SAMUEL MARTIN was propoſed condidate by Dr. HOLDER.

Mr. HOOKE repreſented by quickſilver in a triangular veſſel ſharp at one end the reaſon of the tide's riſing ſo high upon the coaſt of Briſtol and in ſome other places; which however was thought by ſome of the members not ſufficient to explain the exceedingly high tides upon the coaſt of Bretagne in France.

Mr. HOOKE produced his glaſs-bell with flour in it, to ſhew to the eye, that, according to the ſeveral ſtrokes or pulſes made upon the glaſs, the air thence receives as many ſeveral impreſſions; it being manifeſt by this experiment, that as every different ſtroke made a different ſound, ſo the making a different impreſſion upon the flour gave it as many ſeveral motions. It appeared alſo, that the powder goes from the place, whence the pulſe comes; and that in a perpendicular pulſe the powder hath a kind of vibration: as alſo, that as long as the ſound of the bell laſts, the powder ſeems to be fluid, but, as ſoon as that ceaſes, the powder alſo lies ſtill.

It being conceived, that this experiment might much contribute to the explicatipn of the nature of the internal motion in bodies, Mr. HOOKE was ordered to proſecute it.

[n] Letter-Book, vol. iv. p. 234. In the ſame volume p. 51. is a letter of Monſr. LEIBNITZ to Mr. OLDENBURG dated at Mentz, Auguſt 23, 1670, expreſſing his regard for the Royal Society, and mentioning his *new hypotheſis* for explaining the phænomena of nature. There is likewiſe p. 85. another letter of his to Mr. OLDENBURG dated at Mentz Sept. 28, 1670. concerning the true rules of motion, the continuity and conſiſtency of bodies, the nature of points, variety &c.

[o] This is the title of the edition of Mentz in 1671; but that of the London edition in 1671 in 12°. is *Hypotheſis phyſica nova, ſive theoria motûs concreti, una cum theoria motûs abſtracti.*

He reported concerning the experiment made in the air-veſſel, that when he was in it, he found not his heart beat quicker, his pulſe continuing the ſame.

Mr. HENSHAW produced a ſmall twig ſurrounded in part of it with circles of the eggs of an inſect, very curiouſly and orderly laid together and faſtened about it; which he ſuppoſed would be hatched in due time. It was delivered to Mr. OLDENBURG to be ſent to Mr. WILLUGHBY for obſervation.

Mr. HENSHAW gave in his Engliſh tranſlation of Signor MONTANARI's Italian manuſcript concerning the phænomena of the glaſs drops, and the cauſe aſſigned by him of them. It was ordered, that it ſhould be read at the next meeting, and the members deſired to meet preciſely at three of the clock on account of the length of theſe papers.

Mr. OLDENBURG read a letter of Mr. LISTER to him dated at York March 17, 167$\frac{0}{1}$ [p], containing accounts of ſome very aged perſons in the North of England, one 126 years old, another 112, two 108; and ſeveral remarkable experiments, in order to examine the truth of theſe queries, viz. Whether ſaps are not to be found at all times of the year in a much like conſiſtence and quantity in the reſpective parts of a vegetable; and what communication one part of a plant may have with another, in relation to the aſcent and deſcent of ſap.

Mr. OLDENBURG preſented to the ſociety the fifth volume of the *Philoſophical Tranſactions*.

Dr. WALTER NEEDHAM communicated a letter to himſelf from Mr. JOHN TEMPLER of Braybrook in Northamptonſhire [q], giving an account of two hurricanes, that happened in that county, one October 30, 1669, the other October 13, 1670.

April 6. Dr. WALTER NEEDHAM was admitted.

Mr. HENSHAW read part of his tranſlation of Signor MONTANARI's paper concerning the glaſs drops: and as this diſcourſe was long, and deſerved conſideration, fifty copies of it were ordered to be printed by Mr. MARTYN, the ſociety's printer, that it might be the more conveniently diſtributed amongſt the members for their peruſal.

Mr. HOOKE mentioned a method, which he had, for diſcovering the texture of wood by filling all the ſeveral pores thereof with mercury, of which he exhibited a ſpecimen in charcoal, promiſing to ſhew the manner of doing it at the next meeting.

April 13. The ſociety did not meet.

[p] Letter-Book, vol. iv. p. 251. It is printed in the Philoſ. Tranſact. vol. vi. n° 70. p. 2123. for April 1671.

[q] Letter Book, p. 291. Philoſ. Tranſact. n° 70. p. 2156.

April

April 20. Mr. Hooke ſhewed the way of filling the ſeveral pores in wood with quickſilver, doing it at this time upon a piece of charcoal. He was deſired to bring in an account in writing of the manner of doing it; as alſo of what was diſcovered by it: and this experiment was ordered to be made at the next meeting upon wood not charred.

He mentioned, that he intended to try the ſame with fine plaiſter of Paris, conſidering, that if it will ſoak in, it will look white enough, and reflect not ſo much glaring light as mercury does.

Mr. Oldenburg read two letters to him, one in Latin by Dr. Wallis from Oxford April 7, 1671, containing his thoughts of Monſr. Leibnitz's *Hypotheſis phyſica nova*, recommended by the ſociety to the examination of him among others.

It was ordered, that the doctor ſhould receive the thanks of the ſociety for this good account; that his letter ſhould be entered [r], and hereafter compared with the ſentiments of thoſe other perſons, who had been deſired to conſider the *hypotheſis*; and that thereupon an anſwer ſhould be written by the ſecretary to Monſr. Leibnitz, containing the judgment of the ſaid perſons concerning that *hypotheſis*.

The other letter was written by Mr. Liſter from York, April 8, 1671 [s], containing partly ſome more experiments about the motion of juices in vegetables, brought within the air of the fire; partly an intimation of a little *paſtillus*, or cake of Engliſh black drawn by him out of a vegetable, and ſent to be examined by the ſociety, who referred the ſaid cake to Mr. Boyle.

The buſineſs of the burning concave being again ſpoken of, it was thought neceſſary, that the preſident, Dr. Wren, and Mr. Hooke ſhould be deſired to agree upon the portion of the ſphere or parabola, that is ſufficient to make all the rays meet in a point; and that Mr. Hooke ſhould bring in at the next meeting a demonſtration, ſhewing how many degrees are juſt neceſſary to make all rays thus unite.

Mr. Hooke advanced an aſſertion, importing, that a concave made of a little ſphere, reducing all the beams of the ſun into a narrow focus, ſhall burn ſtronger than a concave made of a greater ſphere, leaving the ſun-beams more at large. This he ſaid was demonſtrable.

Mr. Oldenburg produced Signor Montanari's Italian diſcourſe of the glaſs drops in print, with a ſecond part; and ſaid, that upon the receit of this he had ſtopped the printing of the firſt part, which had been ordered 6 April.

Mr. Henshaw was deſired to tranſlate into Engliſh this ſecond part, as he had done the firſt; which he promiſed to do.

[r] Letter-Book, vol. iv. p 264. It is printed in the Philoſ. Tranſact. vol. vi. n° 74. p. 2227. for Aug. 1671.

[s] Letter Book, p. 268. The firſt part of it is printed in the Philoſ. Tranſ. n° 70. p. 2120.

April

April 27. There were read two letters of Mr. WILLUGHBY to Mr. OLDENBURG dated at Middleton, the one March 16, $167\frac{0}{1}$ [t], the other April 21, 1671 [u], containing ſome experiments about the bleeding of trees, but eſpecially about the tranſmitting of water through ſycamore, walnut, and birch-trees.

It was ordered, that this experiment of tranſmitting water through the branches of trees be made before the ſociety at their next meeting.

There was made a microſcopical experiment with a *fungus* of wood, which appeared in the microſcope to be all fibrous, and to reſemble in its texture ſkin tanned.

Mr. HOOKE being put in mind of performing at leaſt his promiſe of meaſuring the quantity of a degree upon the earth, engaged to do it within a month.

He was likewiſe exhorted to proſecute the obſervation of the parallax of the earth's orb; concerning which he ſaid, that he thought indeed he ſhould find a parallax, unleſs it be ſaid, that there may be a variation in the perpendicularity.

He was alſo called upon to give the demonſtration, which he had promiſed, of the quantity of the ſphere, that is ſufficient to make all the ſun-beams meet for a burning concave: which not having ready, he was deſired to bring it in at the next meeting.

It was likewiſe ordered, that what he had prepared for the menſuration of the earth, as alſo his apparatus for obſerving the parallax of the earth's orb, ſhould be by him brought in writing, to be entered in the regiſter-book, in order to ſecure both from the claims of ſtrangers.

It was moved, that the experiment with the glaſs bell and powder ſhould be proſecuted for the diſcovery of the internal motion of bodies: and

That a receiver ſhould be fitted to the pneumatic engine, for the putting in of an arm, and exhauſting the air.

May 4. There was made an experiment of tranſmitting mercury through wood, by putting a plug of willow-wood at the bottom of a glaſs-cane, and pouring mercury upon it: the ſucceſs of which was, that the quickſilver made its way through the wood from the ſmaller end downwards more eaſily than from the thicker end to the ſmaller, agreeably to Mr. WILLUGHBY's experiment, who having poured water through branches of birch, holding the great ends upwards, found the water to drop out at the ſmaller ends; and doing the ſame through the like branches by holding the ſmaller ends upwards, found the water to drop out faſter through the wood at the larger ends.

[t] Letter-Book, vol. iv. p. 249. It is printed in the Philoſ. Tranſact. vol. vi. n° 70. p. 2125.

[u] Letter-Book, vol. iv. p. 278. The ſubſtance of it is publiſhed in the Philoſ. Tranſact. n° 70. p. 2142.

This

This piece of wood being cut, the mercury appeared in all the parts of it, except the pith and bark, in both which there appeared none at all.

This experiment was alſo made by blowing air through the ſame wood with ſpittle on it, which paſſed readily one way, namely from the ſmaller end to the greater, and difficultly the other way.

It was moved, that this experiment ſhould be tried with ſeveral ſorts of wood of different ages and lengths, in canes of ſeveral lengths, to ſee, what weight of quickſilver will paſs through what lengths of wood: and that the like might be tried upon ſtones and metals, and eſpecially copper and iron.

Mr. OLDENBURG mentioned, that the curious abroad had began to ſee again the new ſtar about the beak of the ſwan, which was firſt ſeen the laſt year: as alſo that obſervations were begun to be made of Saturn, it being preſumed, that, according to Monſr. HUYGENS's ſyſtem of that planet, the *anſulæ* thereof would not be ſeen that year.

Mr. OLDENBURG deſired, that Mr. HOOKE might be put in mind to obſerve the obſcuration of a fixt ſtar, which would happen, according to Mr. FLAMSTEAD's pre-advertiſement, on the 6th of that month of May.

Mr. HOOKE was accordingly deſired to take notice of theſe particulars, and to join with Dr. POPE in obſerving them.

There was produced by Mr. OLDENBURG a manuſcript ſent to him from Paris by Monſr. MARIOTTE, one of the Royal Academy of Sciences there, about levelling, and ſome new methods of performing it, written in French; the author deſiring in a letter written by Monſr. JUSTEL, April 29, 1671, that it might be communicated to the Royal Society.

This manuſcript was delivered to Dr. WREN, who was deſired to examine it, and to make a report of his thoughts about it to the ſociety.

There was produced a printed paper ſent from France to Mr. COLLINS, giving an account of ſome odd qualities of a certain ſtone of Mexico, being a ſtrainer of many ſorts of liquor, particularly of wines, rendering them aqueous by percolation.

Dr. CROUNE remarked, that ſuch ſtones were to be had at Malaga, and promiſed to endeavour to get one of them brought to the ſociety.

Mr. OLDENBURG mentioned, that Mr. BOYLE had ſuch a ſtone dug up in Northamptonſhire, called the Kettering ſtone, which alſo proved a ſtrainer; and that divers experiments were intended to be made with it.

Monſr. LEIBNITZ's *Hypotheſis phyſica nova* was delivered to Mr. HOOKE to be examined by him.

May 11. At a meeting of the COUNCIL were preſent

The Preſident

Mr. AERSKINE	Dr. TIMOTHY CLARKE
Sir ROBERT MORAY	Dr. GODDARD
Sir JOHN LOWTHER	Mr. COLWALL
Sir PETER WYCHE	Dr. BROWN
Sir JOHN BANKES	Mr. OLDENBURG.
Sir JAMES HAYES	

Dr. CLARKE and Sir JOHN LOWTHER were ſworn as members of the council.

There was read a petition of ROBERT THORNHILL, eſq; to the Royal Society relating to Chelſea-college; which being debated, it was ordered,

That Mr. CHARLES HOWARD, Sir ROBERT MORAY, Sir PAUL NEILE, Sir JOHN LOWTHER, Sir PETER WYCHE, Mr. HENSHAW, or any two or more of them, be a committee to conſider of the ſaid petition, and to treat with Mr. THORNHILL about the particulars contained therein; and that they meet the firſt time on the Monday following, being May 15, at ten of the clock, at Sir ROBERT MORAY's chamber, calling in for their aſſiſtance, if they ſhould think fit, his Majeſty's ſurveyor-general Dr. CHRISTOPHER WREN, and Mr. HOOKE.

It was ordered, that the treaſurer continue to pay to Mr. HOOKE his ſalary of thirty pounds a year, from the time of his laſt payment, which was appointed to be made to him by an order of the council of April 27, 1670: and

That the treaſurer pay likewiſe five pounds, to be left in the hands of the preſident, and by his lordſhip to be diſpoſed of to SPENCER HICKMAN ſtationer, for his encouragement in printing Mr. HORROX's manuſcripts relating to aſtronomy.

There was licenſed Dr. NEHEMIAH GREW's book, intitled, *The Anatomy of vegetables begun, with a general account of vegetation founded thereon*; and it was ordered to be printed by the ſociety's printer [x].

At a meeting of the SOCIETY on the ſame day,

Mr. HOOKE being called upon for making the experiments appointed at the laſt meeting, of tranſmitting mercury through ſeveral ſorts of wood and through iron, ſaid, that he had made one at home with elder-wood, and found no mercury at all in the pith of it. He added, that he conceived the pith to be a congeries of bladders, having no viſible communication with the other parts of the wood, as the pith of quills is nothing but a congeries of bladders.

It was ordered, that more of this ſort of experiments be made at the next meeting before the ſociety; and that that with iron and quickſilver be not neglected.

[x] It was printed at London in 1671 in 8vo.

It was ordered, that more of this ſort of experiments be made at the next meeting before the ſociety; and that that with iron and quickſilver be not neglected.

Mr. HOOKE gave ſome account of the obſervations made by him of the moon obſcuring a fixt ſtar of the fourth magnitude, 6 May, 1671, pre-advertiſed by Mr. FLAMSTEAD, viz. that whereas by Mr. FLAMSTEAD the time of its ingreſs had been calculated 9°. 9′. 57″. he found it enter about 23 minutes after 9 of the clock; and that its *mora* under the moon was as long as had been calculated, unleſs there were a difference of a few ſeconds. He added, that he had made this phyſical obſervation, that the ſtar at an equal diſtance from the light of the moon did not appear above a quarter as big on the light ſide as on the dark ſide.

Mr. HOOKE returned Monſr. LEIBNITZ's *New Phyſical Hypotheſis*, which had been committed at the laſt meeting to his peruſal, and ſaid, that he was not ſatisfied with it. Whereupon Sir ROBERT MORAY took it with him to recommend it to the examination of Dr. PEEL.

Mr. OLDENBURG read a letter to him from Mr. HEVELIUS, dated at Dantzick, May 1, 1671, N. S. [x], giving an account 1. Of the occultation of two ſtars *in cauda arietis*, 2. Of the occultation of *ſpica virginis*; both by the moon, the former 14 March 167$\frac{0}{1}$, the latter 22 April 1671, N. S. according to the pre-advertiſements of Mr. FLAMSTEAD ſent to him. 3. Of the ſecond appearance of the new ſtar, firſt diſcovered the laſt year, *circa roſtrum cygni*. 4. A deſcription of an odd fiery meteor lately ſeen at Dantzick.

This gave occaſion to mind Mr. HOOKE to obſerve this new ſtar in the Swan; as alſo to obſerve the preſent phaſis of Saturn preſumed to appear now with the *anſæ*.

There was again produced by Mr. OLDENBURG the French manuſcript compoſed and ſent by Monſr. MARIOTTE about levelling; upon which the author deſired the judgment of the ſociety, who ordered it to be delivered to Dr. WREN then preſent, for his conſideration.

Mr. HOOKE promiſed to ſend Mr. HEVELIUS a ſcheme of the inſtrument for meaſuring the diameters of the ſtars, and taking ſmall diſtances; as alſo to ſend to Mr. FLAMSTEAD his late obſervation of the ſtellar eclipſe of May 6, 1671.

May 18. MARTIN LISTER, eſq; was propoſed candidate by Mr. OLDENBURG.

An experiment was made with a piece of green willow cut aſunder, and the ſmall ends dipt in a coloured liquor, which filtred up through it.

The pith of an elder was alſo dipt in a coloured liquor, and it run up the ſides of the pith, and not at all in the inner parts of it.

[x] Letter-Book, vol. iv. p. 295. An Extract of it is printed in the Philoſ. Tranſact. vol. vi. n° 73, p. 2197, for July 1671.

Mr. FLAMSTEAD's letter to Mr. OLDENBURG, dated at Derby May 13, 1671 [y], was read, giving an account of the ſtellar eclipſe May 6, 1671.

Mr. HOOKE was ordered to communicate his obſervation of that eclipſe to Mr. FLAMSTEAD, who earneſtly deſired it.

Dr. WALLIS's letter to Mr. OLDENBURG, dated at Oxford 13 May, 1671 [z], was read, containing his thoughts concerning the experiment, wherein the mercury, when perfectly freed from air, is found to ſtand top-full in the cane, without ſubſiding to the uſual ſtation; which ſhewed, that this experiment is not ſolvable by any equiponderancy of the air, but requireth ſomething elſe to be taken in to ſolve it.

A letter was read likewiſe from Monſr. LEIBNITZ to Mr. OLDENBURG, dated at Francfort 29 April, 1671, O. S. [a] accompanied with his *Theoria motus abſtracti*, recommended to the judgment of the ſociety, which piece was delivered to Mr. HOOKE to examine it.

May 25. There was made a microſcopical obſervation of the pith of an elder and of that of a quill, to ſhew, that ſuch pith is nothing but a congeries of little bubbles or bladders, that ſeem to be ſevered from, and to have no communication with the reſt of the plant.

It being queried, how the pith groweth, it was thought worth farther inquiry, whether there be any minuter pores in them, than have yet been diſcovered, through which any nouriſhment may paſs.

Mr. HOOKE being aſked, what obſervation he had made of the late eclipſe of Saturn by the moon, ſaid, that he had miſſed of that obſervation.

He acquainted the ſociety, that he had peruſed and conſidered Monſr. LEIBNITZ's *Theoria motus abſtracti*, but was of opinion, that he had not hit right.

Mr. OLDENBURG was deſired to ſend it to Dr. WALLIS for his opinion:

There was read a letter of Mr. LISTER to Mr. OLDENBURG from York 22 May, 1671 [b], giving an account of certain *matrices* or inſect-huſks of the kermes kind, obſerved on many trees.

This gave occaſion to ſome of the members to diſcourſe of the various excreſcences of plants, conceived by ſome to be produced by flies or other inſects caſting their ſeed upon plants, which ſending up juice to the plant thus fly-blown bred an intumeſcence there, which became a matrix to the ſeed to grow into a living creature of that kind of inſect, that had caſt its ſeed there; and this coming

[y] Letter-Book, vol. iv. p. 300.
[z] Ibid. p. 303.
[a] Ibid. p. 285.
[b] Ibid. p. 305. It is printed in the Philoſ. Tranſact. vol. vi. n° 71, p. 2165, for May 1671.

to

to maturity eat its way out of the matrix, and flew away; whence are produced the holes in thoſe excreſcences.

Mr. HOOKE promiſed to ſhew at the next meeting an inſtrument for meaſuring exactly all the way of a journey, with all the angles thereof.

June 1. The SOCIETY did not meet.

June 8. There were preſented to the ſociety Mr. BOYLE's ſecond tome of *the Uſefulneſs of experimental natural Philoſophy*, printed at Oxford 1671, in 4°, and Dr. EDWARD CHAMBERLAYNE's *Angliæ Notitia*, firſt and ſecond part in one volume.

Mr. HOOKE produced an inſtrument for ſurveying, to be applied to a chariot, whereby what line or angle ſhall be made by a chariot thus fitted, ſhall be deſcribed upon paper.

He was ordered to get a chariot made, and to apply this inſtrument to it againſt the next meeting.

He mentioned, that he had a way to ſhew the ſeveral quarters of the world in a travelling chariot, ſo that wherever a perſon goes, he ſhall have a hand ſtanding always north and ſouth. He was deſired to produce it before the ſociety.

The ſecretary mentioning, that this being a proper ſeaſon for making obſervations of the needle's variation, it was agreeed, that on the Saturday following the preſident, Sir ROBERT MORAY, Mr. HOOKE, and ſuch others of the ſociety as pleaſed, would meet at Sir ROBERT MORAY's chamber at Whitehall, and take a good meridian by the ſun in the forenoon and afternoon, and by the north ſtar in the evening. Mr. HOOKE was deſired to have the apparatus ready for that time.

Dr. WALTER NEEDHAM communicated to the ſociety ſome curious obſervations concerning glow-worms by Mr. JOHN TEMPLER, ſent in a letter to the Doctor, dated 31 May, 1671 [c].

The preſident made a report of Monſ. MARIOTTE's treatiſe about levelling and certain new inſtruments deſcribed by him for exact levelling, viz. that he thought the author had well conſidered that whole matter, and that his inſtruments were well contrived for exact practice; and that the manuſcript deſerved to be publiſhed.

Mr. OLDENBURG read a letter to him from Mr. LISTER dated at York 30 May, 1671 [d], concerning an inſect, which, though feeding upon hen-bane, a plant of a moſt offenſive ſmell, hath yet itſelf an aromatical and agreeable one.

[c] Theſe obſervations are printed in the Philoſ. Tranſact. vol. vi. n° 72, p. 2177, for June 1671.

[d] Letter-Book, vol. iv. p. 309. It is printed in the Philoſ. Tranſact. n° 72, p. 2176.

June 15. The experiment appointed at the laſt meeting of trying the application of the new ſurveying inſtrument to wheels was made with good ſucceſs: And it was thought, that if the whole apparatus neceſſary for it be accurate, it would anſwer the deſign. Mr. HOOKE was deſired to bring in a deſcription of it in writing.

There was produced a Latin paper of Monſr. BULLIALDUS concerning the late appulſe of the moon to *ſpica virginis*; which happened 12 April, 1671, O. S. and comparing his *calculus* with the obſervation of Monſr. HEVELIUS. It was ordered to be entered in the Regiſter-book [e].

Mr. COLLINS preſented to the ſociety from the author JOHANNIS ALPHONSI BORELLI *de Motionibus naturalibus à Gravitate pendentibus* printed *Regio Julio* 1670, in 4[to].

Mr. HOOKE mentioning, that he wanted conveniencies at Greſham-college to make aſtronomical obſervations, it was referred to the council to conſider of building a turret there for that purpoſe.

The obſervation for taking an exact meridian by the north ſtar was again recommended to the preſident, Sir ROBERT MORAY, and Mr. HOOKE.

It was appointed, that at the next meeting the curator ſhould make the experiment to ſhew the various motion in the internal parts of liquors.

June 22. The experiment for ſhewing the internal motion of liquors was made, by putting ſome ſmall pieces of charcoal into ſpirit of wine in an open glaſs, which being viewed through a large microſcope appeared to have a very vehement motion every way, though to the naked eye there appeared none.

It was remarked, that this experiment is to be made with liquors, that are not diſſolvents of the bodies ſwimming in them, ſuch as ſpirit of wine is in reference to coal.

Mr. HOOKE ſaid, that there was no ſuch motion in common water or vinegar; and that he was of opinion, that all ſpirituous liquors would exhibit ſuch a motion.

The preſident moved, that this experiment might be tried in a ſmall glaſs-bubble ſealed up, to ſee, whether the abſence of the ambient air had any influence in producing this effect, or not; as alſo, that convenient bodies ſhould be put into the ſpirit, and left in it for ſome time, to examine them till they were at reſt, if they would be ſo. This was ordered to be tried at the next meeting.

Mr. SMETHWICK ſhewed the ſociety a ſmall teleſcope of ſix inches and a half long, of his own contrivance and workmanſhip, which being compared with ano-

[e] Vol. iv. p. 120.

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ther of fourteen inches long, eſteemed to be a good glaſs of the kind, ſhewed the objects as diſtinctly, and magnified them almoſt as much as the longer glaſs, in the opinion of ſeveral members of the ſociety, looking through them both. He was encouraged to proceed to the making of bigger glaſſes.

A piece of lignum aloes with gum in it was preſented by Mr. BOYLE for the repoſitory.

Mr. OLDENBURG read a letter to him from Mr. LISTER dated at York June 14, 1671 [f], concerning the hatching of a very ſmall kind of bees out of the *Patellæ Kermi-fermes* ſent formerly by him.

June 30. The ſpirit of wine in the experiment for ſhewing the internal motion of liquors, being hermetically ſealed up, according to the order of the laſt meeting, was found by this excluſion of the air to have no ſuch vehement motion, as it had before, when expoſed to the air, but only the motion of gravity.

Mr. OLDENBURG read a letter to the ſociety from Dr. FRANCIS DE LA BOE SYLVIUS, Profeſſor of Phyſic in the univerſity of Leyden, dated there 19 June, 1671, N. S. [g] accompanied with nine copies of his *Praxis Medicæ Idea nova*, printed there in 1671, and ſix copies of his *Oratio de affectus epidemii A.* 1669. *Leidam depopulantis cauſis naturalibus* printed there in 1670, in 12°. The nine former were diſtributed, one to the ſociety for their repoſitory, one to the preſident, two to the two ſecretaries, and the remaining five to Sir GEORGE ENT, Dr. GLISSON, Dr. TIMOTHY CLARKE, Dr. GODDARD, and Dr. WILLIS. Of the ſix orations, one was delivered to Mr. HOOKE for the repoſitory, one to the preſident, and the other four to Sir GEORGE ENT, Dr. CLARKE, Dr. GODDARD, and Mr. OLDENBURG.

It was ordered, that Mr. OLDENBURG ſhould write a letter of thanks in the name of the ſociety to Dr. SYLVIUS; and he having conſidered with himſelf, that the ſociety might diſcontinue their meetings for the preſent, and for that reaſon having prepared a draught of ſuch a letter [h], it was read, approved of, and ordered to be ſent away.

The ſociety adjourned their meetings till the preſident ſhould think proper to ſummon them again.

November 2. The ſociety reſumed their public meetings.

ROBERT REDDING, eſq; and MARTIN LISTER, eſq; were elected.

NEHEMIAH GREW, M. D. was propoſed candidate by Mr. HOOKE.

[f] Letter-Book, vol. iv. p. 313. An Extract of it is printed in the Philoſ. Tranſact. vol. vi. n° 73, p. 2196, for July 1671.

[g] Letter-Book, vol. iv. p. 320.

[h] It was ſigned by the preſident and dated July 3, 1671, and entered in the Letter-Book, vol. iv. p. 332.

Mr. OLDENBURG produced many letters written to him during the ſociety's receſs, both from abroad and out of the country; together with ſeveral preſents for the library and repoſitory of the ſociety:

1. A Latin letter of Signor JOHN ALFONSO BORELLI dated at Meſſina 10 April, 1671 [i], accompanied with a preſent of ſix copies of his *Hiſtoria & Metereologia Incendii Ætnæi anni* 1669, printed *Regio Julio* in 1670, in 4^to^, one of theſe copies to be preſented to the body of the ſociety, another to the preſident, and the reſt to be diſtributed amongſt the members of the ſame. Beſides a copy of Signor REDI's anſwer to Monſr. CHARAS's book about the ſeat of the poiſon of vipers.

2. A Latin letter of Signor CASSINI to Mr. OLDENBURG, dated at Paris Aug. 20, 1671 [k], accompanying his printed account of the ſpots lately ſeen in the ſun, together with his obſervations on Saturn's rings: Which account and Signor BORELLI's book on the burning of mount Ætna were referred to the peruſal of Dr. POPE and Mr. HOOKE to report to the ſociety the contents of them.

3. Two Latin letters of Mr. HEVELIUS to Mr. OLDENBURG, one of 19 June, 1671 [l], about an occultation of Saturn by the moon; another of October 7, 1671 [m], containing ſeveral obſervations, as the late immerſion of one of the Satellites of Jupiter into his ſhadow, the late eclipſe of the moon, the late tranſit of Jupiter and the moon, and the preſent phaſis of Saturn in regard of his rings; as alſo the reappearance of the two new ſtars in the neck of the whale, and near the beak of the Swan.

Theſe letters were referred to the profeſſors of aſtronomy and geometry in Greſham-college to conſider and make report of them to the ſociety.

4. A Latin letter to Mr. OLDENBURG from Monſr. SLUSIUS, dated at Leige July 18, 1671, N.S. [n] containing his thoughts of the edition of Diophantus by Monſr. FERMAT printed at Thouloufe, in 1670, in fol. and divers other books lately publiſhed; as alſo concerning a ſublimation of his of antimony *per ſe* into a true ſublimate, and a remark on the German Spa waters, with an experiment about nitre.

6. A Latin letter from Dr. FOGELIUS of Hamburgh to Mr. OLDENBURG, dated there 11 Aug. 1671 [o], containing CASSINI's ephemerides of the immerſions of the Stellæ Mediceæ into the ſhadow of Jupiter, and concerning Monſr. PICART's obſervations of the late ſpots in the Sun made by him at ſea.

The obſervations on the Satellites of Jupiter were recommended to the profeſſors of aſtronomy and geometry at Greſham-college.

[i] Letter-Book, vol. iv. p. 373.
[k] Ibid. p. 382.
[l] Ibid. p. 326. It is printed in the Philoſ. Tranſact. vol. iv. n° 78, p. 3027, for Decemb. 1671.
[m] Ibid. vol. v. p. 3. An Extract of it is printed in the Philoſ. Tranſact. vol. vi. p. 3028.
[n] Ibid. vol. iv. p. 342.
[o] Ibid. p. 349.

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7. A letter of Mr. WILLUGHBY to Mr. OLDENBURG, dated at Middleton 24 Aug. 1671 [p], containing ſome obſervations about that kind of waſps, called *veſpæ ichneumones*, eſpecially their ſeveral ways of breeding, and among thoſe, that of laying their eggs in the bodies of caterpillars, &c.

8. A letter of Mr. LISTER to Mr. OLDENBURG dated at York 25 Aug. 1671 [q], confirming his former obſervation about muſk-ſcented inſects, and adding ſome notes upon Dr. SWAMMERDAM's book on inſects, and on Mr. STENO's *Prodromus* concerning petrified ſhells.

This letter gave occaſion to ſome of the members to diſcourſe on the ſubject of petrified ſhells, ſome applauding Mr. LISTER's notions of it; but Mr. HOOKE endeavouring to maintain his own opinion, that all thoſe ſhells are the *exuviæ* of animals.

Dr. CLARKE related, that in 1665, when the King was at Saliſbury, Dr. HAUGHTON, a phyſician of that place, ſhewed his Majeſty a ſtone of two and twenty pounds weight, which was found upon a caſtling, and taken together with it out of the uterus of a cow; and that the pieces of the ſtone being broken reſembled cockle-ſhells, and had plainly the ſhape of them.

Sir ROBERT MORAY produced a certain ſubſtance delivered to him by Monſr. SCHROTER, ſeeming to be a new kind of metal, and ſaid by him to be the remains of ſix ducats, and to weigh about eight or nine grains, the reſt having been, by means of a menſtruum not corroſive, volatilized and evaporated away. This remainder was malleable and endured the coppel, but was not diſſolvable by aqua fortis or aqua regia, and was lighter than copper, having been by Mr. BOYLE weighed in water.

It was delivered to Mr. HOOKE, to recommend it to Mr. SLINGESBY and the officers of the mint, in order that they might try, whether they could any way deſtroy it; with a requeſt, that they would impart to the ſociety the reſult of their trials.

Dr. WALTER NEEDHAM read part of a letter to him from Mr. TEMPLER, dated Octob. 28, 1671, containing an obſervation on ſome livers of eels, firſt dried in an oven, then kept in a glazed earthen pot in a warm place, and found to have huſks in the powder, to which they were reduced; which huſks were thought to be the *exuviæ* of ſome worm or maggot, when it turned to a fly.

Mr. OLDENBURG preſented to the ſociety in Dr. WALLIS's name the third part of his work *de motu*, printed at Oxford in 1671, in 4^to^.

[p] Letter-Book, vol. iv. p. 355. It is printed in the Philoſ. Tranſact. vol. vi. n° 76, p. 2279, for October 1671.

[q] Ibid. p. 358. It is printed in the Philoſ. Tranſact. vol. vi. n° 76, p. 2281.

He preſented likewiſe from Sir ROBERT SOUTHWELL, for the repoſitory, a bag with a great number of marcaſites or pyrites of a cubical figure; as alſo an odd bone with two ribs in it, both found in Ireland.

He preſented alſo from Mr. HOBBES his *Roſetum Geometricum*, printed at London in 1671, in 4°, together with three printed papers of the ſame author, addreſſed by him to the Royal Society for their judgment thereon: Which pieces were referred to the conſideration of the profeſſors of aſtronomy and geometry in Greſham-college and Mr. COLLINS.

November 9. At a meeting of the COUNCIL were preſent

The Preſident

The lord HOWARD of Norfolk	Dr. GODDARD
The lord biſhop of SALISBURY	Mr. COLWALL
Sir PAUL NEILE	Dr. CROUNE
Sir JOHN BANKES	Mr. OLDENBURG.

The preſident, Sir ROBERT MORAY, Sir PAUL NEILE, Dr. GODDARD were appointed a committee for auditing the accounts of the treaſurer.

N° 77 of the *Philoſophical Tranſactions* was licenſed.

SPENCER HICKMAN was ſworn as one of the printers of the Royal Society, after he had been conſtituted ſuch by the preſident, according to the power granted him by the additional charter.

At a meeting of the SOCIETY on the ſame day,

Mr. HOOKE produced a watch, to ſhew a way of making a clock to go twice as long as before, only by the contrivance of a little piece of wire added to an ordinary clock.

The matter having been debated, Mr. HOOKE was deſired to put it into effect; which he ſaid he intended to do in a clock of his, that went eighteen months; which by this means would go three years with once winding up.

Mr. RAY's letter to Mr. OLDENBURG, dated at Middleton Sept. 12, 1671 [r], was read, containing an account of the diſſection of a porpoiſe; for which the writer being preſent received the thanks of the ſociety.

There was alſo read a letter of Monſr. HUYGENS to Mr. OLDENBURG, dated at Paris November 7, 1671 [s], giving an account of his late obſervations of Saturn; as alſo of his having recommended to an obſerver travelling to America a pen-

[r] Letter-Book, vol. iv. p. 366. It is printed in the Philoſ. Tranſact. vol. vi. n° 76, p. 2274, for October 1671.

[s] Ibid. vol. v. p. 36. An Extract of it is printed in the Philoſ. Tranſact. n° 78, p. 3026.

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dulum watch of his, adjuſted after a new manner, for obſerving the longitudes, and in his opinion ſo contrived, that it may better reſiſt the agitation of the veſſel than his former.

This letter was accompanied with a printed paper, containing a ſequel of the obſervations of the Solar ſpots at their firſt appearance; as alſo ſome obſervations of the late and preſent phaſes of Saturn and his *anſulæ*.

A letter of Dr. FOGELIUS to Mr. OLDENBURG, dated at Hamburgh 1 Novemb. 1671[t], was read, treating of the obſervations of the Solar ſpots returned (after they had paſſed the Sun's hemiſphere, that is hid from us) from Auguſt 26 to Sept. 5, O. S. incluſive; as alſo concerning ſome uncommon plants.

Monſr. SCHROTER preſented the following paper concerning the manner of making at Nurenberg in Germany the foils, which goldſmiths uſe to put under precious ſtones[u].

" Concerning the preparing thoſe foliers, it is to be obſerved, 1. How and " out of what ſubſtance they are prepared. 2dly. How they are to be poliſhed. " 3dly. How they are to be coloured. 4thly. The furnace, wherein they are to " be made.

" The firſt, viz. the ſubſtance, out of which they are made, is nothing elſe but " copper, which either is beaten thin, or by a plate-mill is brought to that " thinneſs.

" Concerning the ſecond, viz. poliſhing; they make uſe of an half cylinder " made of braſs, upon which they lay thoſe foliers, and poliſh them with blood- " ſtone, wetting them during the poliſhing continually with pure v.

" Concerning the third, viz. the colour they do apply, I muſt firſt deſcribe the " furnace, which is neceſſary to that work. The ſame is made of clay, in a man- " ner as a muff, having in the front a channel or pipe, being four ſquare and " four fingers broad, through which the fumes do paſs, and behind it has a door " to cloſe it: then there muſt be made a large plate of iron, with a hole in the " midſt of it, having two feathers of ſteel, to keep the foliers cloſe to it; as " ſhall be ſaid.

" They cut theſe laminated copper plates four ſquare, as thoſe foliers commonly " appear, and lay as many as they pleaſe together, and with the ſaid feathers " hold them cloſe to the hole, which is in the iron plate as aboveſaid.

" Now to ſpeak of the colour itſelf, they firſt take good coals of a hard wood, " and put them into the furnace, and being almoſt burnt, they ſhut the door, that

[t] Letter-Book, vol. v. p. 30. An Extract of it is printed in the Philoſ. Tranſact. vol. vi. n° 78, p. 3033, for December 1671.

[u] Regiſter-Book, vol. iv. p. 110, 111.

" is behind, and put before the hole of the pipe or channel aboveſaid the iron " plate with the foliers affixed; ſo that the foliers come juſt before the ſaid orifice " or hole of the pipe; and thus one folier after another will by the ſmoke of the " coals draw a colour, and become of a dull reddiſh colour. The firſt folier " having thus contracted the ſaid colour, they take it off, and the other will do " the like, till all have done it. Then they lay the foliers again together, and fix " them to the plate the ſecond time as before, and apply them in the ſame manner " to the orifice of the ſaid prominent pipe. Now they make uſe of another iron " plate to put it in the furnace, and being hot, they lay a piece of a tail of a " ermelin on it, and the door behind being ſhut, the ſmoke of it will give them " a rubine-colour, and the longer they are ſmoked, the finer will be the colour, " but the ſmoke continuing longer, the ſaid rubine-colour will change into an " amethyſt, and at laſt into the colour of a ſapphire.

" It happens ſometimes, that ſome of theſe foliers have not their juſt and fit " colour, and for that cauſe are uſeleſs for this our purpoſe; and thoſe they ſepa- " rate from the reſt, and at laſt they do apply them with the reſt to the orifice of " the channel as aboveſaid; having firſt taken out of the furnace the iron-plate " with the ermelin tails, and put other red coals (but very few) into the furnace: " then the heat of the coals purgeth the foliers of the ſaid dull colour: Then they " obſerving, that the foliers incline to a blue colour, they judge them to be quali- " fied for their purpoſe; for then they take one after another with that blueiſh " colour off, and then jointly fix them again to the plate; put ſome more red " coals into the furnace with an iron plate upon it, which being hot they draw a " leaf of ſage upon it, the ſmoke of which affords a green colour to the foliers, " and one or two leaves of ſage not colouring enough, they put more upon the " hot plate, till the green colour is high enough: But above one leaf at once " muſt not be drawn upon it; otherwiſe it will be ſpoiled.

" The foliers thus being prepared, they cut them four-ſquare, that ſo that, which " at the ends ſeems of no colour but dull, might be cut off."

It being moved, that it was now a ſeaſonable time to make experiments of cold, and it being intimated by Mr. OLDENBURG, that Mr. BOYLE had examined a conſiderable one concerning the proceſs of freezing, related in the Florentine book of experiments, Mr. BOYLE was deſired to give an account of it to the ſociety; which he ſaid he would do at their next meeting by a paper, in which he had ſet down the particulars of his trials of this matter.

November 16. The five following members were nominated by the preſident, and choſen by ballot to be a committee for auditing the accounts of that year, viz. CHARLES HOWARD of Norfolk, Dr. WALTER NEEDHAM, Dr. POPE, Mr. CREED, and Mr. COLLINS; who agreed to meet for that purpoſe on the Thurſday following at Arundel-Houſe, ſome time before the public aſſembly of the ſociety.

Dr. GREW was elected into the ſociety.

Mr.

Mr. HOOKE promiſed a new way of dividing a ſmall quadrant to make aſtronomical obſervations with, as diſtinctly as with far greater ones. This he ſaid was demonſtrative, and he promiſed to bring in ſuch a one at the next meeting, together with the demonſtration, to be regiſtered.

There was read his account of the late ſolar eclipſe of the moon 8 Sept. 1671; which was ordered to be regiſtered [x].

Mr. OLDENBURG read a Latin letter written to him out of Iceland by PAUL BIORNONIUS, miniſter of a church there, dated 13 July 1671 [y], containing his anſwers to divers philoſophical queries ſent to him by Mr. OLDENBURG, dated 11 March 167$\frac{2}{1}$ [z].

It was ordered, that more queries be ſent to the writer of this letter, eſpecially ſuch as relate to the tides, and the magnetical declinations and inclinations in that country, and in ſeveral places thereof; in reſpect of which letter Mr. HOOKE was deſired to draw up ſome directions, and to cauſe a long magnetical needle to be made in order to be ſent thither.

Mr. OLDENBURG produced a letter from Mr. LISTER, dated at York Nov. 11, 1671 [a], accompanying a certain ſubſtance, called by him *Reſina nigra*, being the juice of a plant coagulated, and ſerving, as he affirmed, for a fixt black, he having written with it as well as with good ink. Some of it was ordered to be delivered by Sir ROBERT MORAY to Prince RUPERT, and the reſt by Mr. OLDENBURG to Mr. BOYLE, for trial; the ſucceſs of which they were deſired to communicate to the ſociety.

Mr. OLDENBURG read likewiſe a letter from JOHN WERDEN, eſq; the King's reſident in Sweden, dated at Stockholm 24 June 1671 [b], giving an account, that he had been informed by Dr. DURIER (or DU RIEDS) phyſician to the King of Sweden, that a more effectual remedy to prevent the hurtful effects of froſt on human bodies than ſnow is (as the Doctor had tried upon himſelf and others) to maſh and chew peaſe, and then cover over the frozen part, whether noſe, cheeks, or ears. Mr. WERDEN obſerved likewiſe, that on the day before at three in the afternoon the ſpirit in his ſealed weather-glaſs was up at $7\frac{7}{8}$ inches above $\ominus$, that is $12\frac{1}{4}$ inches higher than it was at the loweſt in February preceding; which made him apter to believe what divers perſons had aſſured him, that the heat at Stockholm, during the ſmall time it laſts, is greater than in Spain.

Sir ROBERT MORAY produced for the repoſitory a ſpecimen of vitriol, which he ſaid grew in ſome of the King's plantations in the Antilles.

[x] Regiſter, vol. iv. p. 108. It is publiſhed in the Philoſ. Tranſact. vol. vi. n° 77, p. 2296.
[y] Letter-Book, vol. iv. p. 374.
[z] Ibid. p. 239. It is publiſhed in Engliſh in the Philoſ. Tranſact. vol. ix. n° 111. p. 238, for Feb. 1674-5.
[a] Ibid. vol. v. p. 42.
[b] Ibid. vol. iv. p. 328.

It was moved, that trials might be made with it, to ſee, whether, when diſſolved, it would cryſtallize juſt like common vitriol, or differently.

Sir ROBERT MORAY exhibited a certain plant, which was called by Mr. RAY *Lichen terreſtris cinereus*, and ſaid by Sir ROBERT to be very good to cure dogs bitten by mad dogs; the duke of YORK having cauſed it to be given to a whole kennel of dogs bitten by a mad one, which were all cured, except one of them, to whom none of it was given.

November 23. Mr. HOOKE produced an inſtrument contrived by himſelf to ſhew the point of the compaſs, in which a perſon travels. He was deſired to bring in the deſcription of it in writing; as alſo to endeavour to compound this with that inſtrument, which he had produced before, whereby the way of a traveller may be traced upon a piece of paper, that ſo by one and the ſame inſtrument a traveller may make the map of the country, through which he paſſes, and at the ſame time know, to what quarter of the world he goes.

He produced a ſpecimen of his new quadrant, which being but of ſeventeen inches would perform the ſame as a quadrant of twenty four feet.

This quadrant was ordered to be fitted up in all its parts, that the uſe of it might the better appear.

A paper of Mr. BOYLE's was read, containing the phænomena of an experiment about freezing made by him upon the occaſion of his having read and conſidered that experiment publiſhed among thoſe of the Florentine academy *del Cimento*, wherein they ſay that they found a conſiderable intumeſcence or riſing of the water, which immediately precedes the glaciation; which Mr. BOYLE could never ſatisfy himſelf in. His paper was ordered to be regiſtered [c], as follows:

"We took a bolt-glaſs bigger than two turky-eggs, with a ſtem, which we "cauſed to be drawn out at a lamp, till it was as ſlender as a gooſe-quill or there-"abouts. This veſſel was filled with water, till the liquor reached to a pretty hight "in the ſlender part of the ſtem: then I put it into a mixture of beaten ice and "ſalt, in which mixture a cavity had been made before, to receive a good part of "it; but though, upon our putting the glaſs into this cavity, there would at the "top ſeem to be ſome little ſhrinking down of the water; yet that was very "ſmall, and ſometimes very ſcarcely, if at all diſcernible; nor did the water "afterwards appear to ſubſide and exhibit the other phænomena of freezing water, "mentioned by the excellent Florentine virtuoſi; only when the liquor began be-"low to be turned into ice, the quick aſcent of it was manifeſt enough.

"Wherefore we afterwards cauſed the ſtem of a round bolt-head of clear glaſs, "whoſe globous part was about 3 ½ inches in diameter (taken on the outſide with "calliper compaſſes) we cauſed, I ſay, this ſtem to be drawn out at the flame of "a lamp, till it was at leaſt as ſlender as a raven's quill, and the glaſs being filled

[c] Regiſter, vol. iv. p. 112.

"with

" with water to a competent hight, that the expanſions and dilatations of it might " be very manifeſt in ſo ſlender a pipe, we obſerved the enſuing phænomena:

" Firſt, as ſoon as the globous part of the glaſs came to be as it were immerſed " in the frigorific mixture, the water in the ſmall ſtem inſtantly aſcended, ſome- " times the length of a barley-corn, and ſometimes leſs and ſometimes more. " This aſcenſion was ſo haſtily made, that it often began and ceaſed almoſt in the " ſame moment; after which the water began (though more ſlowly) to ſubſide " again to its former ſtation or thereabout, which with other circumſtances made " it very probable, that, as the Florentine virtuoſi ingeniouſly labour to prove, " this ſudden change proceeded rather from the conſtriction of the glaſs itſelf " upon the firſt contact of the frigorific mixture, than upon the ſenſible conden- " ſation of the water, which is not likely to be ſo ſuddenly effected.

" Secondly, but whereas the newly named philoſophers recite as a conſtant " phænomenon, that after the firſt ſubſidence of the water, and a ſubſequent pauſe " for a pretty while, the water will be conſiderably depreſſed once more before " it begins to riſe, we could very rarely indeed and ſcarce ever obſerve ſuch a " thing to happen, though I cannot ſuſpect myſelf to have ever ſeen it for want " of attention: for my expectation of ſuch a ſubſidence of the water, and its not " appearing to me the firſt and ſecond time, invited me to repeat the experiment " ſeveral times one after another, and to look very attentively upon the water, " and the marks carefully ſtuck on the ſide of the glaſs to obſerve the motion of " the liquor. And this ſeemed the rather ſtrange to me, becauſe I had often for- " merly obſerved in trials purpoſely made on other occaſions, that water in conve- " nient glaſſes would ſuffer ſome degree of condenſation by the action of a frigo- " rific mixture before it would begin to diſcover any ice in it. But having re- " iterated the experiment, till I, and thoſe that aſſiſted me, grew weary, I was fain " to abandon it, leaving the proſecution of it to further trials; for I dare not ſu- " ſpect, that ſo many eminent virtuoſi, as ennoble the Florentine academy, could " miſtake or would miſrelate a matter of fact, not once but frequently and uni- " formly taken notice of by them: and beſides that (as I was ſaying) it is con- " ſonant to my own experiments on other occaſions, in one of the glaſſes, where- " in I tried this very experiment, I obſerved the ſecond ſubſidence to be very con- " ſiderable: ſo that I cannot but ſuſpect, that the ſo differing events of their trials " and mine, as to this phænomenon, may proceed either from ſome peculiarity in " the water they employed, or in the qualities of the glaſs, which the veſſels I uſed, " were made of, or in the length or ſleaderneſs of the ſtem, conſidered together " with the groſſneſs of our Engliſh air in ſnowy weather; the preſſure of the air " having elſewhere been ſhewn by me to have a great ſtroke in divers condenſa- " tions aſcribed to cold: but whether to any of theſe things, or to any other, " that which, we have related, is to be reduced, future trials muſt determine.

" Thirdly, I obſerved for the moſt part, that after that ſubſidence, that almoſt " immediately attends the firſt riſing of the water, there would be for ſome time, " more or leſs, a reſting of the ſurface of the water in the ſame place, which " continued till the upper part of the water began to aſcend upon the beginning

" of

" of its glaciation of its lower parts; and the duration of this pauſe or reſt of " the water I found to be very uncertain, being at ſome times at leaſt twice or " thrice as long as at other times, according as the frigorific mixture did more " or leſs vigorouſly operate upon the neighbouring water.

" Fourthly, though if the experiment were tried in glaſſes, whoſe ſtems were of " an unuſual bigneſs, the aſcenſion of the water in the ſtem upon the glaciation of " it in the globous part was not ſo quick as to be very remarkable; yet, when the " ſtem was drawn out to ſuch a ſlenderneſs as was before deſcribed, the water, after " having (as I lately noted) reſted a while, would upon its beginning to freeze be- " neath, aſcend ſo haſtily in the ſtem, as appeared ſtrange enough, eſpecially at " the firſt ſight: ſo that uſually its progreſs upwards was very obvious, and ſome- " times made with ſuch celerity, that in one minute of an hour or much leſs, it " would as it were ſhoot up ſeveral inches, and would have probably aſcended " much higher within half a minute more, if the ſlender part of the ſtem had " been long enough to permit it.

" Fifthly, but whereas the Florentine academians inform, that there is a conſide- " rable intumeſcence or riſing of the water, that does immediately precede the " glaciation, I never could ſatisfy myſelf, that I obſerved ſuch a phænomenon: " but in ſpite of frequently repeated trials (both alone, and before others) and of " ſuch a degree of attention, as perhaps is not often employed even in more nice " trials, it always appeared to me, that the aſcenſion of the water was at leaſt " accompanied, if not rather preceded, by the actual glaciation of ſome parts of " the water, that were moſt contiguous to the frigorific mixture, or expoſed to " thoſe portions of that mixture, which were the moſt operative. Nor did it ſeem " eaſy to me to aſſign any other, or, at leaſt, better reaſon of the aſcenſion of " the water in the ſlender ſtem, than the expanſion, that is wont to accrue to water " upon its being actually turned to ice. It is true, that in ſlender ſtems the riſing " of the water will be manifeſt upon the production of ſo thin and tranſparent films " of ice, at the bottom or ſome of the lateral parts of the globe the water is " contained in, that it has often deceived even attentive eyes, and would have " deceived me too, if the newly intimated conjecture at the reaſon of the intu- " meſcency of the water had not made me extraordinarily ſuſpicious, and invited " me to look upon the glaſs taken out of the frigorific mixture (and then wiped " and held againſt the light) in ſo many differing poſtures, that though in ſome of " them I could not, yet in others I did diſcover thin portions of ice, which ſome- " times I could within a minute or leſs make viſible to others, becauſe this ice " upon thawing would not unfrequently emerge to the confines of the globe and " ſtem, and there become eaſily enough diſcernible to a heedful eye. And " though, when I gueſſed, that the water was upon the point of beginning to " freeze, I took it out of the frigorific mixture, to try, if it would afterwards " freeze or make the liquor in the ſlender pipe aſcend; yet I never was ſo fortu- " nate to obſerve any aſcenſion of the water in the ſtem, but when there was " actually ſome particles of ice in the ball, which though I newly took out of the " mixture, as ſoon as I could perceive the leaſt beginning of riſing in the ſlender " part of the ſtem; yet I regularly found more or leſs ice to have been already

" actually produced at the bottom or ſides of the globe. The aſcenſion of " bubbles about the time of the water's congelation (eſpecially if the glaſs were " ſtirred) I do not here ſolemnly take notice of, it being an uſual concomitant of " the glaciation of water.

" Sixthly, it was remarkable and not unpleaſant in one experiment, that not " only, if the glaſs were taken out of the mixture, very ſoon after the water be- " gan to aſcend in the ſtem, the thaw, by reaſon of the extraordinary thinneſs of " the ice, would begin ſo quickly, that, within about half a minute or ſometimes " much leſs, the liquor would begin to ſubſide manifeſtly again; but when the " water was ſufficiently diſpoſed to congelation (which it uſually was, if the " glaſs were put into the frigorific mixture ſoon enough after the total diſſolution " of the little portions of ice newly mentioned,) it would upon the contact of the " frigorific mixture (though the globe were but half buried in it) begin to gla- " ciate in a trice; inſomuch that making obſervation by a minute watch, I have " had the water ſhoot up in the ſtem within half a minute ſo as to diſcover ice in " it, and within two minutes (from firſt to laſt) to exhibit ice in moſt parts of the " cavity of the globe."

Mr. RAY produced an extract of a letter written to him by Mr. FISHER out of Yorkſhire, giving notice, that the ſaid Mr. FISHER had newly found out a menſtruum, that diſſolved glaſs, and reduced it into a white calx; and that after the glaſs is well moiſtened with the menſtruum, it may be ſhaved with a ſharp knife almoſt like horn, though it be much more brittle than horn.

Mr. RAY was deſired to inquire of Mr. FISHER, 1. Whether he was ſo much maſter of this experiment, as to make it when he pleaſed. 2. Whether the menſtruum performed as well upon the beſt and fineſt, as the worſt and coarſeſt glaſs.

Mr. OLDENBURG produced Mr. FLAMSTEAD's paper concerning his predictions and calculations of the ſtellar eclipſes and tranſits, to happen in the year 1672: which paper was ordered to be immediately printed in the *Philoſophical Tranſactions*[a] for better communication.

Sir SAMUEL TUKE produced a narrative written by Mr. FRANCIS FINCH, Nov. 14, 1671, concerning a maggot, which by an extraordinary way of feeding was increaſed to the ſize of a man's thigh.

Mr. WILLUGHBY and Mr. RAY were deſired to try this experiment at a favourable ſeaſon.

Sir ROBERT MORAY acquainted the ſociety, that the lord WILLUGHBY had preſented them for their repoſitory with ſeveral curioſities of Barbadoes and other American iſlands; which were ordered to be produced by Mr. HOOKE on the Thurſday following the day of their anniverſary election.

[a] It is printed vol. vi. n° 77. p. 2297. for Nov. 1671.

Nov.

Nov. 30. At a meeting of the COUNCIL were preſent

Sir ROBERT MORAY Vice-preſident
Sir PETER WYCHE — Mr. HENSHAW
Mr. DANIEL COLWALL — Mr. OLDENBURG.

The report of the committee for examining the treaſurer's accounts was made and approved of, viz.

" At a committee of the council of the Royal Society for auditing the treaſurer's accounts, Nov. 21, 1671,

" Upon the examination of Mr. DANIEL COLWALL's accounts we find him " debtor

	l.	*s.*	*d.*
" To the arrears due to the ſaid ſociety for their quarterly " payments, this 21ſt Nov. 1671.	1696	0	0
" To monies he hath received for admiſſion	2	0	0
" To the balance of the laſt account	68	15	10
	1766	15	10
" He is creditor			
" By monies he hath paid to the uſe of the ſociety	202	1	4
" By arrears yet unpaid by the fellows of the ſociety	1554	4	0
" By balance reſting in caſh in his hands	10	10	6
	1766	15	10

" Signed BROUNCKER, P.R.S.
" R. MORAY,
" J. GODDARD,
H. OLDENBURG, Secr."

At a meeting of the SOCIETY on the ſame day,

Sir JOHN WILLIAMS, Mr. REDDING, and Dr. GREW were admitted.

This being the ſociety's anniverſary election-day, the members preſent, to the number of forty-ſix, proceeded to the buſineſs of the day, after they had received the report of the committee for auditing the accounts, which was as follows:

" At a committee of the Royal Society for auditing the treaſurer's accounts, " Nov. 23, 1671,

	l.	s.	d.
" We certify, that it appears the treaſurer hath received on " the quarterly payments of the ſociety in all to the 21ſt " Nov. 1671, —— ——	141	16	0
" That he hath received for admiſſion ——	2	0	0
" That he is debtor to his laſt account of the 10th of Nov. " 1670, —— —— ——	68	15	10
	212	11	10
" It alſo appeareth,			
" That he hath paid to the uſe of the Royal ſociety, by bills " and orders of the council —— ——	202	1	4
" That he hath reſting in caſh now in his hand ——	10	10	6
	212	11	10

The eleven members following were continued of the council,

The lord viſcount BROUNCKER	Sir ROBERT MORAY
The lord HENRY HOWARD of Norfolk	Sir PAUL NEILE
	Mr. HENSHAW
The lord biſhop of SALISBURY	Mr. COLWALL
The lord biſhop of CHESTER	Dr. GODDARD
Mr. AERSKINE	Mr. OLDENBURG.

The ten new ones elected were,

The earl of ANGLESEY	Sir JOHN FINCH
The lord viſcount STAFFORD	Sir WILLIAM PETTY
The lord BERKLEY	Sir THEODORE DE VAUX
The lord BRERETON	Dr. WALTER NEEDHAM
Mr. BOYLE	Mr. CREED.

Of theſe ten were ſworn,

The lord viſcount STAFFORD	Sir WILLIAM PETTY
The lord BRERETON	Sir THEODORE DE VAUX
Sir JOHN FINCH	Dr. WALTER NEEDHAM.

The officers elected were,

The lord viſcount BROUNCKER, preſident.

Mr. COLWALL, treaſurer [d].

[d] In neither the Journal nor the original minutes of Mr. OLDENBURG is there any entry of the election of ſecretaries either at this or the preceding anniverſary election. Mr. OLDENBURG and Mr. HENSHAW are mentioned p. 456, as rechoſen ſecretaries, upon theſe grounds, that the former is known to have held that office till his death in 1677, and that the latter had been choſen to it Nov. 30, 1669. But whether Mr. HENSHAW was continued in it at the election of Nov. 30, 1671, is doubtful, as I find in a liſt marked by Dr. PELL for that election Mr. EVELYN deſigned by him for ſecretary in conjunction with Mr. OLDENBURG; to which office Mr. EVELYN was undoubtedly choſen Nov. 30, 1672.

Mr. POVEY preſented the ſociety with a ſtaff, which he ſaid he was informed to have been either a ſcepter or a ſtaff of command of a king of Surinam.

There were produced, according to the order of the laſt meeting, the particulars preſented to the ſociety by the lord WILLUGHBY.

Dec. 7. There were preſented by SPENCER HICKMAN from Dr. GREW four copies of his *Anatomy of Vegetables begun; with a general account of vegetation founded thereon*, printed at London 1671 in 12°. one for the ſociety, one for the preſident, and two for the two ſecretaries.

Mr. COLLINS produced two books printed in France, the one intitled *La Dioptrique oculaire* by father CHERUBIN D'ORLEANS, a capuchin fryar, printed at Paris 1671 in fol. containing whatever belongs both to the theory and working teleſcopes: the other intitled, *Obſervationes diametrorum ſolis et lunæ apparentium: auctore* GABRIELE MOUTON *ſacerdote Lugdunenſi*. Theſe two books were ordered to be bought for the ſociety's library.

Mr. OLDENBURG produced a cut repreſenting an human uterus exquiſitively engraven, and particularly the *ovarium* and *ova*, pretended by ſeveral modern anatomiſts to be in the females of all kinds of animals: which figure was begun by Dr. HORNIUS of Leyden, and perfected by Dr. SWAMMERDAM.

It being mentioned, that in many places the curious were at that very time making a particular inquiry into the truth of this matter, eſpecially Monſr. PECQUET at Paris and Monſr. STENO in Italy, and Dr. GRAAFF and Dr. SWAMMERDAM in Holland; and it being thereupon urged, that ſome members of the ſociety might be deſired to join in that reſearch, it was ordered, that Dr. TIMOTHY CLARKE, Dr. WALTER NEEDHAM, and Dr. CROUNE ſhould be ſolicited to undertake this inquiry at the ſociety's charge; and that the operator, when called upon by them, ſhould attend them for that purpoſe.

Mr. HOOKE produced the repreſentation of the figure of the arch of a cupola for the ſuſtaining ſuch and ſuch determinate weights, and found it to be a cubico-parabolical conoid; adding, that by this figure might be determined all the difficulties in architecture about arches and butments.

He was deſired to bring in the demonſtration and deſcription of it in writing to be regiſtered.

The amanuenſis brought in a certain metal, which, he ſaid, came out of Germany, and was given him by a merchant of London, owner of the mine; adding, that the blue ſtarch was made out of it. He was ordered to inquire both about the place in Germany, where that mineral was digged, and the way of preparing that blue out of it.

On this occaſion Mr. HOSKYNS deſcribed the way of making blue ſtarch; which deſcription, at the deſire of the ſociety, he promiſed to give in writing.

Dr. WALTER NEEDHAM read part of a letter to himſelf from Mr. TEMPLER dated Dec. 3, 1671 [e], endeavouring to confirm what he formerly related about the breeding of inſects in the livers of eels dried and cloſed up; and that by an experiment of inſects bred in a beef's bladder, blown in July or Auguſt, and ſo cloſed, that no paſſage was left for any fly-blows.

Mr. RAY ſuggeſted, that flies might have blown on the outſide of the bladder; and that thoſe fly-blows might eat through the bladder.

He was deſired to try this experimeent in a ſeaſon proper for it, by including ſuch a bladder in a caſe, to defend it from fly-blows outwardly as well as inwardly.

Mr. OLDENBURG produced and read a letter of Signor MALPIGHI, dated at Bologna Nov. 1, 1671, N. S. accompanying a manuſcript containing an abſtract of his obſervations and conſiderations of the ſtructure of plants, which, he ſaid, he intended to inlarge and to illuſtrate with figures, if he ſhould find, that the ſociety approved of his attempt.

It was ordered, that he ſhould be ſolemnly thanked in a letter to be written by the ſecretary [f] for his ſingular regard to the ſociety, and his great care of improving natural knowledge: as alſo, that it be ſignified to him, that Dr. GREW had made the like attempt in his *Anatomy of vegetables* lately publiſhed in Engliſh; and that the ſociety would be very glad to ſee Signor MALPIGHI's labours on that ſubject brought to that perfection, which was intended by him.

Mr. OLDENBURG produced a preſent of curioſities ſent by Mr. WINTHROP to the ſociety from New-England, together with a letter from Mr. WAIT WINTHROP dated at Boſton Oct. 17, 1671 [g]. The particulars were

An Indian bow and quiver of a dog's ſkin with arrows differently headed; ſome with horſe-foot tails, ſome with ſtones, others with deer-horns or ſharks-teeth:

The ſword of a fiſh:

A ſmall fiſh with an horn on his back.

Dec. 14. Mr. HOOKE mentioned, that he had prepared an experiment, to ſhew what degree of force will make air and quickſilver paſs through wood; but that ſomething was broken in the carrying it, which obliged him to deſer this experiment till the next meeting.

[e] Letter-Book, vol. v. p. 63.

[f] Mr. OLDENBURG's letter was dated Dec. 14, 1671, and entered in the Letter-Book, vol. v. p. 72.

[g] Ibid. p. 24.

He produced three ſeveral new contrivances of cider-preſſes for both breaking and ſqueezing the apples and pears with eaſe and expedition. The one was with two pinions turning upon one another. The other he repreſented in a crooked line, having a kind of a mill-box and a roller at the bottom, and by its motion breaking, ſqueezing, and throwing out the fruit. The third was with four cylinders turning one another, the apples coming between on two ſides, and going out on the two croſs-ſides. He was deſired to bring in a deſcription of theſe engines in writing, to be entered in the Regiſter-Book.

Sir ROBERT MORAY produced a paper containing a relation made by his Royal Highneſs of ſome remarkable phænomena of the froſt near Croydon, in which pebbles and other hard ſtones had no marks of ice upon them, yet the pieces of chalk-ſtone or marl were covered with ice on the upper ſide.

Some of the members conceived, that in the marley ſtones being porous there might be a kind of ſalt, coagulating the moiſture, that was upon them.

Mr. OLDENBURG read two letters written to him, the one by father PARDIES, a jeſuit, from Paris, and the other by Mr. THOMAS HILL from Liſbon. The former in French dated October 20, 1671 [h], intimated, that as the writer had written a ſmall diſcourſe concerning motion, ſo he intended to proſecute that ſubject, and ſhould find a great ſatisfaction in ſo doing, if he might know, that his deſign was approved by the Royal Society. Beſides which, he deſired to be informed of what experiments had been made by the philoſophers of England about ſound *in vacuo*, he finding, that the Florentine academy had upon ſome trials declared, that they had found ſtrings and flutes to give the ſame ſound *in vacuo* as in the open air: which ſeemed very remarkable to him, if there were no miſtake in the matter of fact, &c.

The other letter in Engliſh, dated July 23, 1671 [i], offered the ſociety the ſervice of a Dutch jeſuit reſiding in Braſil at the Bahia, having lived there many years, and travelled through that country more than any man, and being willing to give ſatisfaction in ſuch inquiries, as the ſociety ſhould recommend to him.

Mr. OLDENBURG was directed to return the ſociety's thanks to father PARDIES, Mr. HILL, and the Dutch jeſuit, and particularly to encourage the firſt to go on in his work upon motion [k]; and to deſire the laſt to communicate to the ſociety his obſervations made in Braſil.

Father PARDIES's letter gave occaſion to Mr. BOYLE to acquaint the ſociety, that he had made ſome experiments of ſound in his engine, one with a pocket-watch, of which, when the air was well exhauſted, he could ſee the motion, but not hear any ſound, as he could do upon the readmiſſion of the air. Another was with two wire-ſtrings, being uniſons to one another, of which when he ſtruck one,

[h] Letter Book, vol. v. p. 24.
[i] Ibid. vol. iv. p. 345
[k] Mr. OLDENBURG's letter to Father PARDIES in French was dated 18 December, 1671, and entered in the Letter-Book, vol. v. p. 74.

the

the other was moved. Which experiments, he ſaid, deſerved to be farther proſecuted, to find, how far the air is neceſſary to ſounds; and whether indeed motion may be propagated where there is no air.

Sir ROBERT MORAY mentioned, that one of his Majeſty's muſicians had lighted upon a way of making two notes by tuning only one ſtring, which was received as a very ingenious contrivance; and Sir ROBERT MORAY was deſired to procure a deſcription of it.

Mr. HOOKE diſcourſed of a way of making a very compendious tablature of muſic; which he was deſired to give in writing.

It was ordered, that, beſides the experiments abovementioned, Signor MALPIGHI's manuſcript on the anatomy of plants ſhould be read; and the preſident deſired to be in the chair at four of the clock at the fartheſt.

Dec. 21. Mr. ISAAC NEWTON, profeſſor of mathematics in the univerſity of Cambridge, was propoſed candidate by the lord biſhop of SALISBURY.

Mr. HOOKE brought in a written account of what he had propoſed at the laſt meeting about the facilitating of a muſical tablature; which being read, he was deſired to complete it, and to bring in an example both of the common and this new way of tablature at the next meeting.

There was read part of Signor MALPIGHI's manuſcript diſſertation on the anatomy of plants; and it was ordered, that the papers ſhould be delivered firſt to Dr. GODDARD and then Mr. HOOKE for their peruſal; the former of whom accordingly took them with him.

The experiment formerly produced by Mr. HOOKE, to ſhew, what force would make air and mercury paſs through wood was called for, but not ſucceeding, was ordered to be repeated at the next meeting.

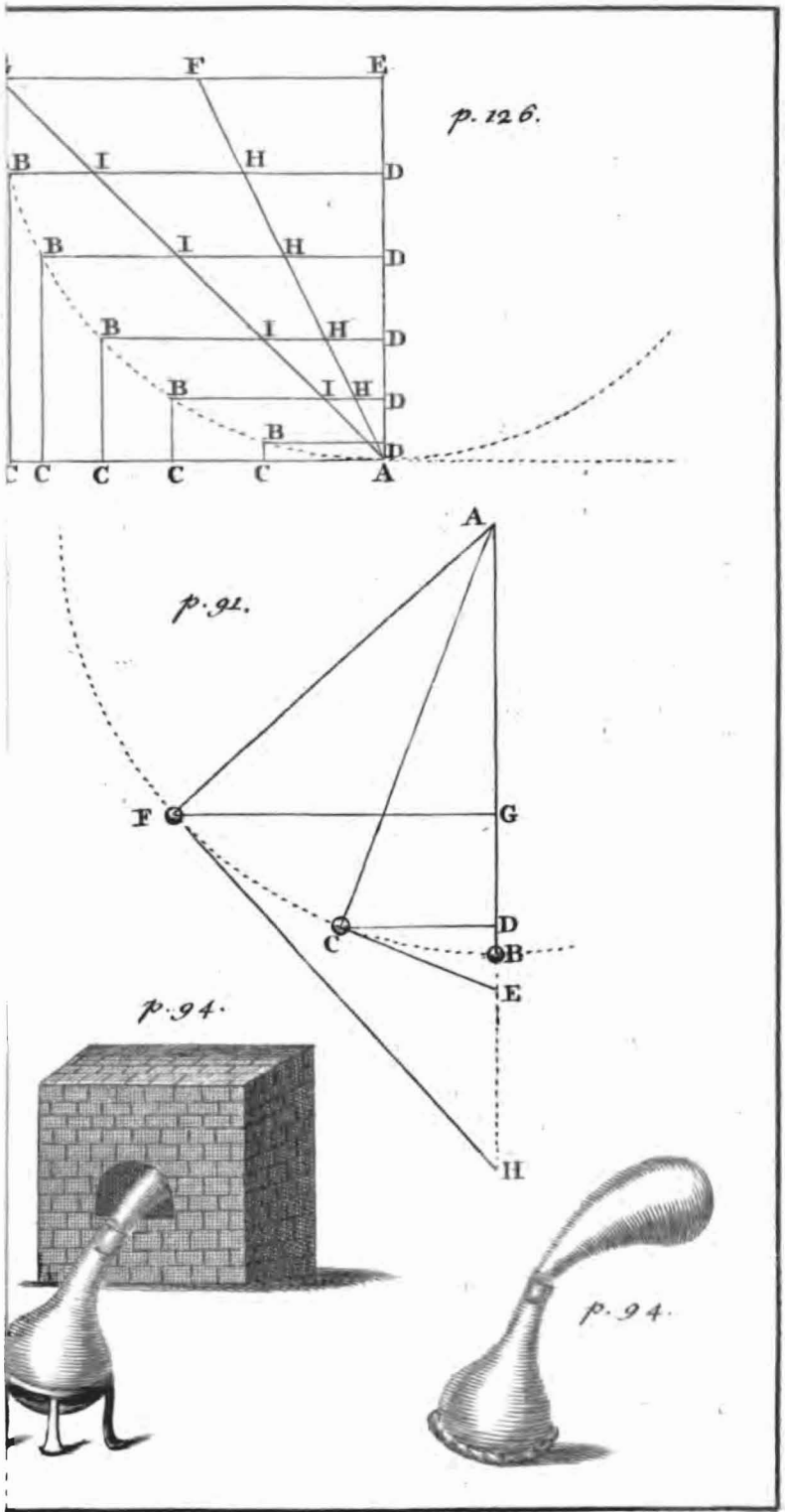
Mr. BOYLE mentioned, that he had made an experiment to ſhew, that air will paſs where water will not; which he was deſired to produce before the ſociety.

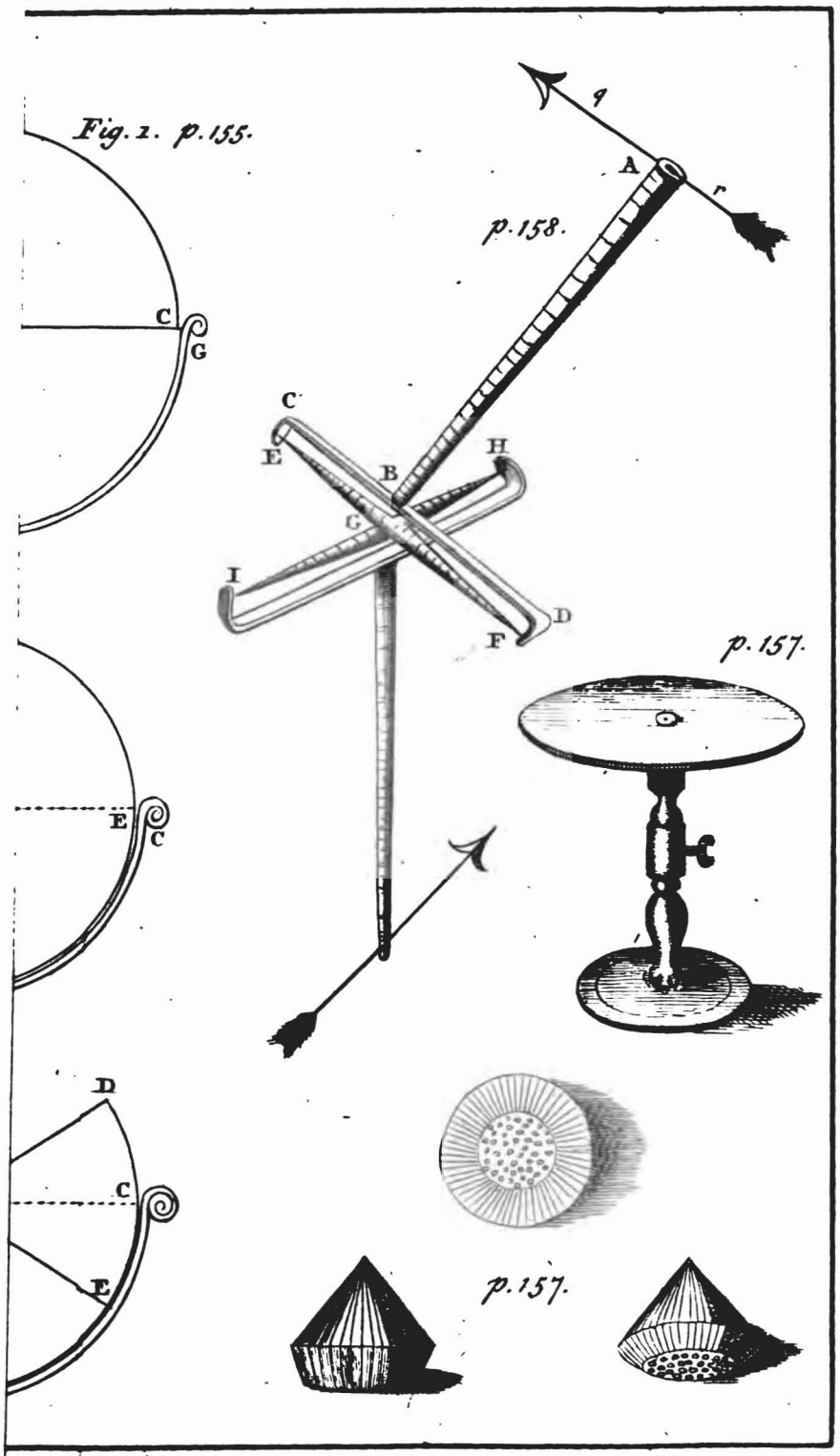
The ſociety adjourned till the 11th of January following.

The End of the SECOND VOLUME.

ERRATUM.

Page 5, laſt line but one, after *deſcribed* add *in his Micrographia.*





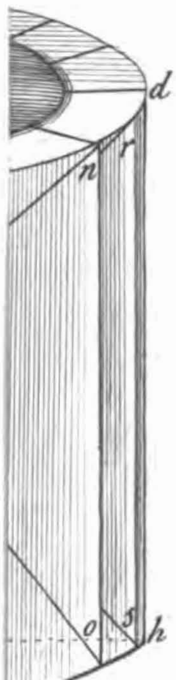
of the several Ancient Charecters engraven in Marble
and and Chahelmanar, alias Persepolis, in ye Kingdom
, as it was taken in November, 1667.

25.

rsians to be
h the most
understand

Note, this Greek Charecter with the first are engraven upon the Thighs or rather Chests of ye two Horses at the mountain call'd Nocturestand, whose Riders are said to be Alexander & Rustram.

The two Undermost at Chahelmanar or Persepolis, which is all that is this Day extant and of greatest Antiquity.



This Charecter which the Persians also conclude to be Syriac being written at the same Place with ye following, by none legible this Day is supposed to be written at the same time also.

This is the ancient Writing of the Gours now calld Gabers of greatest curiosity & difficulty, whose king was ye Rustram contending wth Alexander on horseback, carv'd out of ye marble Rock at ye mountains of Nocturstand.

*113130