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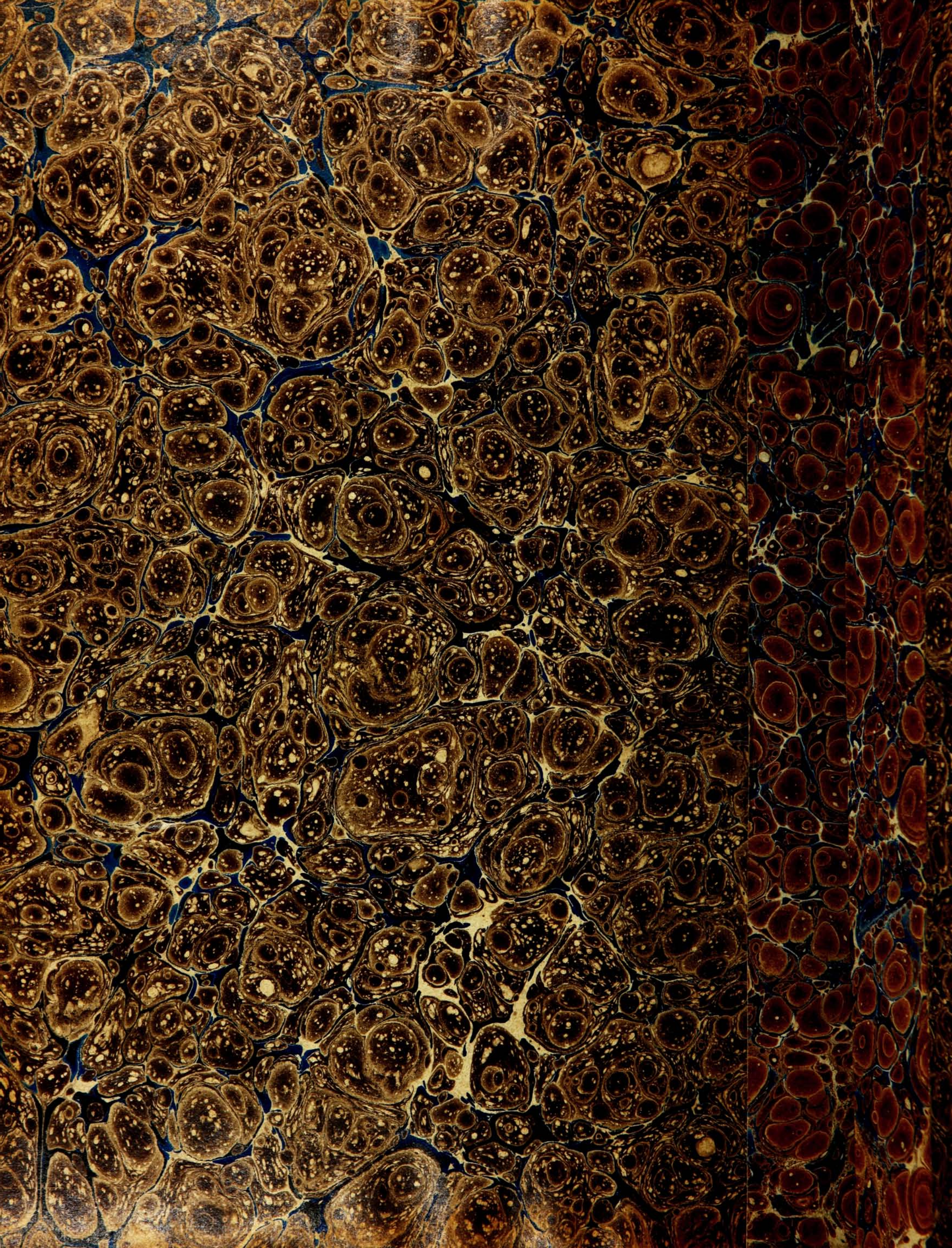

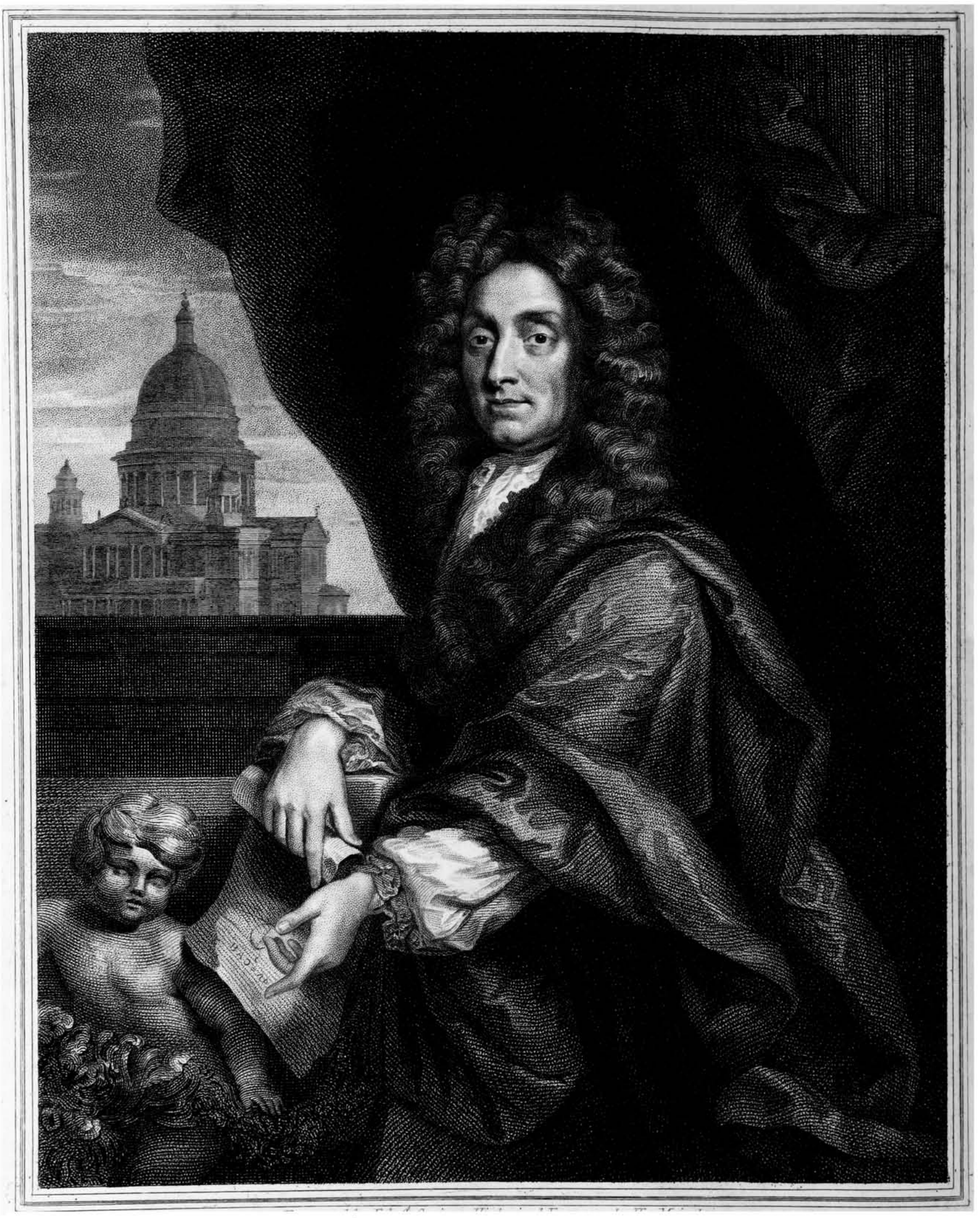

Sr. Wren

for Elmes's Life of Wren, from a Drawing by W. Behnes, after the Original Picture by Sir Godfrey Kneller's, in the Council Chamber of the Royal Society.

London, Published by Priestley & Weale, High Street, Bloomsbury, 1823.

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MEMOIRS

OF THE

LIFE AND WORKS

OF

SIR CHRISTOPHER WREN,

WITH A BRIEF VIEW OF THE

Progress of Architecture in England,

FROM THE BEGINNING OF THE REIGN OF CHARLES THE FIRST TO THE END OF THE SEVENTEENTH CENTURY;

AND AN

APPENDIX OF AUTHENTIC DOCUMENTS.

BY JAMES ELMES, M.R.I.A. ARCHITECT,

AUTHOR OF HINTS FOR THE CONSTRUCTION OF PRISONS; TREATISE ON DILAPIDATIONS; LECTURES ON ARCHITECTURE, &c.

"Certissime constat, ut præcociores neminem unquam prætulisse spes, ita nec maturiores quemquam fructus protulisse: prodigium olim pueri, nunc miraculum viri, imo dæmonium hominis, suffecerit nominâsse ingeniosissimum et optimum CHRISTOPHERUM WRENNUM."

DR. BARROW'S Oration at Gresham College, 1662.

LONDON:

PRIESTLEY AND WEALE,

HIGH-STREET, BLOOMSBURY.

1823.

LONDON:
PRINTED BY THOMAS DAVISON, WHITEFRIARS.

TO

SIR HUMPHRY DAVY, BART.

PRESIDENT,

TO THE VICE-PRESIDENTS, COUNCIL, AND FELLOWS

OF

THE ROYAL SOCIETY:

THE FOLLOWING MEMOIRS,

ILLUSTRATIVE OF

SIR CHRISTOPHER WREN;

THE ORNAMENT AND PRIDE OF ENGLISH SCIENCE AND ART, THE ASSOCIATE OF THAT ILLUSTRIOUS BAND OF PHILOSOPHERS, WHOSE DISCOVERIES AND INVENTIONS DO HONOUR TO OUR NATION, AND WHOSE UNION FORMED THAT SOCIETY, OF WHICH HE WAS ONE OF THE FOUNDERS AND EARLIEST PRESIDENTS, AND WHOSE MEMBERS WERE THE PATRONS, FOSTERERS, AND PROMULGATORS OF THE NEWTONIAN PHILOSOPHY, AND OF ITS IMMORTAL AUTHOR,

ARE,

WITH THEIR OBLIGING PERMISSION,

MOST RESPECTFULLY INSCRIBED AND DEDICATED,

BY THEIR FAITHFUL AND OBEDIENT SERVANT,

JAMES ELMES.

London, February 25, 1823.

PREFACE.

THE following Memoirs, illustrative of the life and works of our greatest architect, were began by me nearly fourteen years ago, as introductory to a large work which I proposed to publish on the Cathedral of St. Paul, his greatest architectural performance. This being abandoned, and my drawings being engraved for another publication*, I then intended to reprint the Parentalia, with the new matter which I had collected as an appendix; but subsequent and important additions, and an attentive perusal of that part of Parentalia which relates to Sir Christopher Wren, induced me to attempt an enlarged and entirely new life.

This was to have been published more briefly last

* Mr. Britton's Fine Arts of the English School.

spring; but the press had hardly been set to work, when some new and most important documents presented themselves to me, which, with a journey to Ireland, on professional purposes, where I met with other important documents, alluded to in the body of the work, induced the delay, the enlargement, and, I trust, also the improvement of the work.

The various hitherto unpublished original papers which I have obtained and printed, are valuable additions to the Life of this great man; who experienced the ingratitude of cotemporaries, and the apathy of successors, in a more extraordinary degree than perhaps ever befel a man of equal talents, of equal public utility, and of equal celebrity.

With Pope, Addison, Swift, Atterbury, Arbuthnot, and Gay, for witnesses of his full-blown fame, not a solitary distich could either afford him at his unnoticed death; though the German Kneller has been more immortalized by the pen of Pope than by his own pencil. But the man from whose comprehensive mind arose the majestic cathedral of St. Paul, and the fifty

parochial churches of London—the royal and magnificent hospital of Greenwich—the no less appropriate and useful one at Chelsea—the most splendid ornaments of our metropolis—the most useful structures of our two universities,—he, who was at once our greatest architect, mathematician, and philosopher; the most learned man of his day, who may be most justly named the British Archimedes, was old, was the victim of political intrigue, and had no longer the countenance of royalty, which had smiled upon him for nearly three quarters of a century. He and native talent were out of fashion; and when ingratitude and the injustice of intriguing foreigners robbed him of his rights, his honours, and his well-earned rewards, the wits, the poets of the day, suffered this unequalled man to sink into the silent grave unnoticed but by his beloved son, Christopher, who erected the small mural monument in the crypt of St. Paul's, and began his work * illustrative of his honoured ancestors. This

* Parentalia; or, Memoirs of the Family of the Wrens. Folio. London, 1750.

work was not completed till nearly thirty years after the great architect's death, when it was published by Stephen Wren, his grandson, who liberally sent a number of copies to the two universities, for distribution among those who honoured his name.

The following letters, transcribed from the originals in the possession of his daughter, Miss Wren, whose attention and services I have had several occasions to record, accompanied the parcels of books. They are neither of them directed; but the first is evidently to some friend at Oxford, and the second to another at Cambridge. The book is now scarce, and at a high price; but no part of it which relates to Sir Christopher is omitted in the present work.

The letters, with the presentation copies, are as follow:—

"Great Russell-street, April 1, 1751.

"SIR,

"My grandfather, Sir Christopher Wren, was so well known, and his memory is so much esteemed at

Oxford, that the history of his life and works will not, I am convinced, be thought a disagreeable present. I have, therefore, sent thirty books by the waggon, and as I had the honour of being educated under the judicious Dr. Newton, have fixed upon that most worthy friend of mine to present every college and hall in the university with one of them. Desiring he would also do me the favour to accept of the remaining copies, and distribute them among those he thinks most worthy. I shall make a tour into the country in a day or two, when I hope to have the pleasure of seeing you; but if the holidays prevent my having that pleasure, you will please to favour me with a line to let me know what reception the books met with.

" I am, Sir, &c.

" STEPHEN WREN."

" Great Russell-street, April 1, 1751.

" SIR,

" Mr. Ames acquainted me a few days ago that he had seen you, and that you had been so kind as to

promise to present, in my name, one of my books of Parentalia to every college and hall in your university, for which I return you thanks. I have therefore sent twenty books; but as I am informed that exceeds the number of colleges, I desire you will accept of the remaining copies to be distributed among those you think most worthy; and I should be particularly obliged to you, if you would favour me with an answer, to let me know what reception the books met with.

" I am, Sir, &c.

" STEPHEN WREN."

Of Sir Christopher's lineal living descendants, are Miss Wren, the daughter of his grandson Stephen, who has a sister residing at Bristol Hot Wells, and a cousin's son, Christopher Wren, Esq., of Wroxhall Abbey, in Warwickshire, formerly a seat of our architect's, and where his only son, Christopher, lies buried. To this gentleman, as well as to the above-mentioned ladies, I am under considerable obli-

gations for friendly aid in this work. The former lady procured me the honour of an introduction to the late Sir Joseph Banks from Mr. Edgeworth, and the subsequent use of the manuscript copy of Parentalia in the possession of the Royal Society.

To several professional friends I also take leave to return my thanks for kind assistance and good wishes, particularly to Mr. Soane for the use of scarce and expensive books from his valuable library, and to Messrs. C. R. Cockerell and Joseph Gwilt for the loan of their excellent and accurate drawings, and for other friendly aids.

It is at present my intention to commence, ere long, a graphic illustration of the principal architectural works of Sir Christopher, illustrative, not only of his designs, but of his unrivalled and unequalled principles of construction, to correspond in size with the present work, and of which due notice will be publicly given.

J. E.

London, Feb. 25, 1823.

ERRATA.

Some of the sheets having been printed during the author's absence in Ireland, has occasioned a few inaccuracies, which may be remedied by a pen.

Page 19, line 1, *for* Hank *read* Haak.
92, 1 and 2, *for* is now in the possession of the Earl of Macclesfield, President, *read* was in the possession of the Earl of Macclesfield, formerly president.
101, 1 of note, erigendi should be in italics.
110, last of note, *for* 1731 *read* 1631.
123, last but four, *for* Stephins *read* Stepkins.
143, 8, *for* way wirer *read* way wiser; as also in page 144, line 11.
186, note 3, *for* ΛΟΙΜΟΛΟΤΙΑ *read* ΛΟΙΜΟΛΟΓΙΑ; and *between* nuperæ and populum *add* apud.
243, 1 of note, *for* Sheldoniacum *read* Sheldonianum.
248, 1 of note, *for* Refectory *read* repertory.
263, 4 of note 2, *for* Calenarian *read* Catenarian.
267, last of note 1, *for* 08 *read* 108.
269, 1 of note 1, *for* 240 *read* 241.
315, last but one, *for* Stone *read* Strong.

By an inadvertency of the writing engraver, the Elevation of the College of Physicians is inscribed *Section*, and Section *Elevation*.

ADDENDA.

About the year 1652 may be added the following note, for which I am indebted to Mr. Mathews, a promising young architect, a son of our great comedian:

In an old quarto play, translated from the Plutus of Aristophanes, is the following manuscript remark, in the handwriting, and with the signature, of Isaac Reed, the commentator:—"This is the play in which Sir Christopher Wren, our great English architect, performed the character of Neanias" (Νεανίας adolescens) "before the Elector Palatine, Dr. Seth Ward, and many others, probably in 1652."—Isaac Reed, 1801. The title of the comedy is as follows:

Πλουτοφθαλμία Πλουτογαμία.
A Pleasant Comedie;
Entituled,
Hey for Honesty, down with Knavery.
Translated out of Aristophanes his Plutus, by Tho. Randolph: augmented and published by F. J.
Dives Fabula sum superque:
At Pauper satis et super Poeta.
London: Printed in the year 1651.

THE

LIFE

OF

SIR CHRISTOPHER WREN.

PART I.

INTRODUCTION.

VIEW OF THE PROGRESS OF ARCHITECTURE IN ENGLAND, FROM THE BEGINNING OF THE REIGN OF CHARLES I. TO THE END OF THE SEVENTEENTH CENTURY.

When Charles the First ascended the peaceful throne of his father, he found the people over whom he was to reign in a state of intellectual culture and civilization, highly susceptible of mental improvement and moral progression. They had arrived, just to that state of incipient refinement, which seeks to add embellishments to necessities:—to that point of civilization, which, restless after novelty, elicits discoveries the most important to mankind, and effects revolutions in art, science, literature, and polity, that form the leading features of history.

Architecture, like poetry, like painting, and like all other intellectual excellencies that exalt and refine our nature, has its

rise, its progress, its perfection, and its decline. Its rise with us, was with the Aborigines of the island; its progress with the Anglo-Saxons, the Normans, and that mixed people afterwards called the English; but when it will arrive at its perfection in this country, is not the immediate object of inquiry.

The refined and elegant taste of the young king, caused by his excellent education, by his association with accomplished companions, and by his recent travels into France and Spain, where he became acquainted with Rubens and his gorgeous works, had rendered him a fit monarch for a people in a more settled and decided state of manners, religion, and policy, than he found his English subjects, particularly the leading parties of the metropolis. But the rigid puritanism of the more violent of the reformers, both in religion and in government, counteracted the tasteful propensities and resolves of the sovereign, as well as the less public spirited intention of his policy. Hence, that love of art, the most graceful laurel in the coronal of a patriot king, which distinguished the accomplished and unfortunate Charles, and his polished but proud and intemperate friend, George Villiers, Duke of Buckingham, aided as they were by the richer and more respectable portion of the ancient families, many of whom were Roman catholics by religion, became odious to the mass of their newly-proselyted protestant fellow-subjects.

The first refinements and improvements in architecture, as well as all its subsequent additions, whether intrinsic as in style, or additional as in the embellishments of the painter and the sculptor, generally begin in the capital of a nation, and spread to the provinces, but are often last seen in the castles or mansions of

the great. London began, in the reign of James, to increase beyond that monarch's conceptions of due metropolitan size; and its inhabitants to cultivate metropolitan architecture beyond what pleased the British Solomon, who dealt out his wishes, like commands, in oracular apophthegms and pedantic proverbs. Lord Bacon informs us, that King James was wont to be very earnest with the country gentlemen to abandon London for their country seats; and that he would sometimes say to them: "Gentlemen, at London you are like ships in a sea, which show like nothing; but in your country villages you are ships in a river, which look like great things *."

The growth of London in this reign was prodigious. Sir William Petty computes its population to have doubled every forty years from the year 1600; consequently, in 1680, it must have contained four times as many inhabitants as at the beginning of the century. Although James attempted to drive his opulent subjects from the metropolis to their country residences, few of our monarchs had a greater number or more splendid palaces in London than the successor of Elizabeth, from whom he probably inherited this metropolitan architectophobia. That powerful queen, who was one of the most absolute monarchs in our history, issued several rigid proclamations against the increase of new buildings in the city, which, however, failed in producing much effect. James, not content with reproving and exhorting his nobles and magnates, issued several proclamations to the same purport, yet employed Inigo Jones to design for him his splendid

* Apophthegms.

ideal palace of Whitehall, the banqueting-house of which, and its splendid ceiling, by Rubens, attest the grand imaginations of the king and his architect.

In the 2nd year of his reign, A. D. 1605, he issued the first of these prohibitory mandates, which forbade all manner of building within the city, and a circuit of one mile thereof. Among its commands was the salutary one to a wooden metropolis, that all persons henceforward should build all their fore-fronts and windows, either of brick or stone *. Had the monarch's learning discovered in his reading no action less worthy of imitation than that of Augustus' finding Rome of wood and leaving it of marble, it would have been better for his peace, and his son's fortune as a sovereign. The reason assigned in this proclamation for building with brick and stone is, " as well for decency, as by reason all great and well grown woods were much spent and wasted, so that timber for shipping became scarce †."

This proclamation produced as little effect as that of Elizabeth, which induced James to issue another, on October 10, 1607, to the same purport; and on the 16th of the same month, some offenders against it were censured in the star-chamber, for building contrary to the tenor of that proclamation ‡.

By another edict of the same nature, issued in 1614, the commissioners are required to proceed with all possible strictness against every offender of this sort. This had somewhat more effect, particularly as to the mode of building with stone and brick; and from this period may be dated the reformation of the

* Stowe. † Ibid. ‡ Ibid.

architecture of London, which is so much indebted to Inigo Jones, James's chief architect. This great artist was probably indebted to the King of Denmark, James's brother-in-law, for this appointment; as his great and various talents were well known to the Danish king; who so truly appreciated them, that he sent for him from Venice, where he was studying the works of Palladio, with that effect, to which all his works bear testimony.

The first house of note that was erected in conformity with this proclamation was one in the Strand, built for Colonel Cecil. After that, one near Drapers' Hall, Throgmorton-street, in the city, is celebrated; another built for an opulent goldsmith in Cheapside, opposite to Sadlers' Hall; and one for a leather-seller in St. Paul's Church-yard, near the north gate; the proprietor of which was compelled to take down and rebuild it according to the prevailing fashion, after he had constructed it of timber *.

Among the principal mansions of this period, are Hatfield, the seat of the Marquess of Salisbury, and Burleigh, the seat of the Marquess of Exeter, both built in the reign of Queen Elizabeth; and, being still in existence, with very little alteration, are fine specimens of mansions of this period. James built, or improved, in a similar style, Theobald's near Cheshunt, Hertfordshire; the gardens of which, Mandelso, a traveller who visited England about the year 1640, describes as being a large square, and having all its walls covered with fillery (trellis work), and a beautiful fountain in the centre. The parterre he describes as having many pleasant walks, part of which are planted on the

* Stowe.

sides with espaliers, and others arched over. Some of the trees were limes and elms, and at the end was a small mount, called the mount of Venus, which was situated in the midst of a labyrinth, and was in his opinion one of the most beautiful spots in the world. Mandelso also mentions the royal palace and gardens at Greenwich, which were also enlarged and improved by James.

Of the principal reformers of taste among the literary men and nobles of the period, the great Lord Chancellor Bacon stands in the foremost rank; and his opinions on architecture and gardening are decisive of the character of those arts, which he so much improved, in his days. His maxim, that houses are built to live in, and not to look on *, should never be forgotten by the domestic architect; and his description of a palace, in opposition to such huge buildings as the Vatican, the Escurial, and some others, which, he pithily observes, have scarce a fair room in them, is characteristic of the best style of this period, which Inigo Jones, Sir Henry Wotton, and the elegant minded Lord Keeper, had so much improved.

He informs his readers, and his opinions carried weight wherever they were received, that they could not have a perfect palace, except they had two several sides; one for the banquet, festivals, and triumphs, and the other for the household and for dwelling. These sides he ordains should be not only returns, but parts of the front, and should be uniform without, though severally partitioned within; and to be on both sides of a great and stately tower in the midst of the front, that as it were joineth

* Essays.

them together on either hand. He desires to have on the banqueting side, in front, only one goodly room above stairs, of about forty feet high; and under it a room for a dressing or preparing place at times of triumph. How far Inigo Jones followed this advice may be seen in his design for the new palace at Whitehall. On the other side, which is the household or dwelling side, he would have it divided at the first into a hall and chapel, with a partition between, both of good state and ample dimensions. These apartments were not to go all the length, but to have at the farther end a winter and a summer parlour; and under these rooms, a fair and large cellar sunk under ground, and likewise some privy kitchens, with butteries, pantries, and the like. As for the tower, he would have it of two stories, eighteen feet high each above the two wings, and handsome leads upon the top, balustraded, with statues interposed; and the same tower to be divided into rooms as shall be thought fit. The stairs he directs to be formed upon a fair open newell, and finely railed in with images of wood, cast into a brass colour, and a very fair landing-place at the top. He commands that by no means should the servants' dining-rooms be in any of these lower rooms; for otherwise, he says, you shall have the servants' dinner after your own; for the steam of it will come up as in a tunnel. And so much for the front: only he understood the height of the first story to be sixteen feet; the upper he had before ordered at about forty.

Beyond this front he designed a fair court, but three sides of it to be of a far lower building than the front; and in all the four corners of that court, handsome staircases, cast into turrets

on the outside, and not within the row of buildings themselves. But these towers were not to be of the height of the front, but rather proportionable to the lower building. He would not have this court paved all over, because it would strike up a great heat in summer, and much cold in winter; but only some side walks, with a cross, and the quarters laid with grass, kept shorn, but not too close. The row of return on the banqueting side was to be divided into stately galleries, in which were to be three or five fine cupolas in the length of it, placed at equal distance, and embellished with fine coloured windows of several works. On the household side were to be chambers of presence and ordinary entertainment, with some bed-chambers: and all three sides were to be formed as a double house, without thorough lights on the sides, that there might be rooms from the sun both for forenoon and afternoon. He would have it so disposed, that there might be rooms both for summer and winter; shady for summer, and warm for winter. He complains of some fair houses, so full of glass, that one cannot tell where to go to be out of the sun or the cold. Bowed windows he held to be good, except for cities, in respect of the uniformity toward the street; as being pretty retiring places for conference, and at the same time keeping off both the sun and the wind; for that, he observes, which would strike almost through the room, doth scarce pass the window. He would, however, confine them to few in number, not exceeding four in the court on the sides only.

Beyond this court he would have an inner court of the same square and height, which is to be environed with the garden on all sides; and in the inside cloistered or porticoed on all sides,

upon beautiful and well-proportioned arches, as high as the first story. On the under story, towards the garden, it was to be turned to a grotto, or place of shade or estivation; and only have opening and windows towards the garden, and be level upon the floor, and no way sunk under ground, to avoid damps. He proposed also a fountain, or some fair composition of statues, in the midst of this court, which was to be paved as the other court. These buildings were intended for privy lodgings on both sides, and the end for privy galleries; whereof one was to be for an infirmary on the second story, in case the prince or any special person should be sick; to have chambers, ante-chambers, bed-chambers, &c. joining to it. Upon the ground story he would have a fair gallery, open upon columns; and upon the third story likewise an open gallery, upon columns, to take the prospect and enjoy the freshness of the garden. At both corners of the further side, by way of return, he directs two delicate or rich cabinets to be formed, daintily paved, richly hanged, glazed with crystalline glass, and a rich cupola in the midst, and all other elegancies that might be thought upon. In the upper gallery he wished there to be some fountains running in divers places from the wall, with other conveniences of that nature.

And thus much, says our philosophical architectural theorist, for the model of the palace; save that there must be, before you come to the front, three courts, and a green court, plain with a wall about it; a second court of the same, but more embellished, with little turrets, or rather ornaments, upon the wall; and a third court, to make a square with the front, but not to be built, nor yet enclosed with a naked wall; but enclosed with terraces,

leaded aloft, and fairly garnished on the three sides, and cloistered on the inside with columns, and not with arches below. As for offices, he advises to let them stand at a distance, with some low galleries to pass from them to the palace itself*.

So far does this "Columbus of the philosophical world" direct the architectural taste of his day; the fruits of which were apparent, and coming to maturity, in the early part of the reign of the unfortunate Charles. This ideal palace would be an excellent task to try the abilities of a young architect to design on paper, and would make an admirable probationary gold medal study for the more advanced students of our Royal Academy. Bacon was not the only philosopher who considered architecture as worthy the attention of an elevated mind. The wise, the enlightened Sir Henry Wotton, who acquired the soundest elements of the art in the school of Palladio at Venice, where the only practical English architect of the day, the elegant and accomplished Jones, also imbibed the purest streams of art, entered still more deeply into its theory, and gave to the world his admirable "Elements of Architecture;" an art which he confesses requires no commendation, where there are noble men or noble minds. He modestly admits that he is but a gatherer and disposer of other men's stuff; he yet gives to the world the soundest doctrines of practice, and the purest ideas of taste.

The magnificence of the king and the nobility of England during the latter part of the reign of James, and the beginning of that of Charles, set all the most enlightened men of that period

* Essays.

to cultivate art and elegant literature; and gave the great architect of the day abundant opportunities of exercising those talents which have proved an honour to our country, and have pointed the way to the succeeding genius of Wren.

Jones's first style was less refined than his perfected manner after his return from his second visit to Italy. The Earl of Pembroke, and other tasteful men of the nobility, the Kings James and Charles, all appreciated his genius, and employed his talents to the embellishment of their country and to their own honour. The best of this great architect's works are his Banqueting-house, Whitehall, whether considered by itself, or as a part only of one of the grandest palaces ever designed; the new quadrangle of St. John's College, Oxford; the church of St. Paul, and the piazza and arcade of Covent garden; Lord Pembroke's fine villa at Wilton; the chapel of Lincoln's Inn, and part of the great square called Lincoln's-Inn-fields; the queen's chapel at St. James's; Coleshill, in Berkshire; Cobham Hall, in Kent; the Grange, in Hampshire; the queen's house at Greenwich; the lovely portico of old St. Paul's, of which Lord Burlington sarcastically said, in comparison with the new,—"When the Jews saw the second temple, they wept;"—and many others that may be seen in Campbell's Vitruvius, and in Kent's edition of his works.

An inspection of these works will show the grasp of mind, and the immense progress in the arts, during this period; exhibiting the state and style of our architecture in a memorable point of view.

Jones was the great practical man of this interesting period

of our history; Bacon the philosophical director of taste; Wotton the learned theorist; and James and his son, with their enlightened courts, the truly noble and royal patrons of the arts. These great architectural geniuses acknowledged Vitruvius for their principal master; and they valued Palladio, and the master spirits of the art, with a correct estimate. Wotton admits, in his preface, that it may be said that he handled an art no way suitable to his employments or his fortune, and so may stand charged both with intrusion and with impertinency. To the first he answered, that though, by the ever-acknowledged goodness of his most dear and gracious sovereign, he had born abroad some part of his civil service; yet when he came home, and was again resolved into his own simplicity, he found it fitter for his pen to deal with these plain compilements and tractable materials, than with the labyrinths of courts and states; and less presumption in him, who had long contemplated a famous republic (Venice), to write then, of architecture, than it was anciently for Hippodamus *, the Milesian, to write of republics, who was himself but an architect.

To the second, he shrunk up his shoulders, as he had learned abroad, and confesses that his fortune is very unable to exemplify and actuate his speculations in this art, which yet made him rather, from this very disability, take encouragement to hope that his present labours would find the more favour with others, since it was undertaken for no man's sake less than for his own. With that confidence he fell into these thoughts, of which there were two ways, he informs us, for him to be delivered; the one

* Aristot. Polit. lib. ii. cap. 6.

historical, by description of the principal works, performed already in great part by Vasari, in his Lives of Architects; the other *logical*, by casting the rules and cautions of this art into some more comportable method, whereof he had made choice, not only as the shortest and most elemental, but indeed as the soundest. For though, he adds, in practical knowledge, every complete example may bear the credit of a rule; yet, peradventure, rules should precede, that we may by them be made fit to judge of examples.

When monarchs, like James and Charles, patronize architecture as they did; when statesmen like Buckingham, Richelieu, and Colbert; when magnates, like Pembroke and Bedford, encourage it from principle, and from conviction of its importance; when legislators like Bacon, ambassadors like Wotton, and architects like Jones, study, practise, and write upon it and its principles—the art is ennobled and ennobles, and must flourish. Jones and Wren, two of the greatest names in our history, *loved* architecture *as an art*, practised it as a *profession*, but despised it as a *trade* *. When architecture is so patronized, so studied, and so practised, it will rise to a level with the best days of Greece and Rome, and not till then.

* This part of Wren's character has been duly acknowledged and praised by foreigners, however he may have been neglected by his countrymen. Milizia, in his "Memorie degli Architetti Antichi e Moderni," says of him, "Egli era d'un merito tragrande; egli non seppe lodar le sue opere, nè arrichirsi; difetto rarissimo agli architetti." And also, "Che stimava non il più dotto, ma il *meglio* dotto." And a writer in the Journal Britannique pour Oct. 1750, page 187, agreeing in this just praise, says, "doublement blamable il y joignit le defaut peu commun à un architecte, *de ne pas savoir s'enricher*."

Architecture did not burst forth into the full-blown splendour of Jones's best style all at once, nor was the reign of Charles the cradle, so much as it was the school of our art. The introduction of the architecture of the countries called classical, or rather the Italian version of the orders of Greece and Rome, into England, may be attributed to Hans Holbein, in the reign of Henry VIII. whose style, though far from pure, was picturesque, and such as might have been expected from a painter. Holbein, among other things, designed the porch at Wilton (the celebrated seat of the Earl of Pembroke, which was afterwards enlarged and improved by Inigo Jones), parts of Windsor castle, and other fragments, in a mongrel Greco-gothic style; yet his ornaments are pleasing and well designed, although mostly misapplied. The splendour and taste of Henry VIII. brought this eminent artist into England, where he gave him a royal welcome and munificent patronage. England at this time possessed no native talent in art: William of Wickham was the preceding magnate of the profession, which had been carried on by wandering freemasons under the protection of the popes; till "the majestic lord, that burst the bonds of Rome *," discarded the reverend architects, who were also often emissaries of mischief, with the legates and legends of the holy father. To introduce a race of eminent foreigners into his court, for the purpose of raising and fostering a school of native artists, was part of Henry's wise policy; and he therefore transplanted the celebrated John of Padua from Italy to the regions of the Thames, as superintendent

* Gray's Installation Ode.

of the royal palaces. Hilmsby House, Wollaton Hall in Nottingshamshire, and the portico or porch to Chalcot House—buildings whose glories have long faded—are enumerated among other specimens of his skill *.

Among other artists who practised architecture in this reign, were Girolamo da Treviso, a painter; an Englishman of the name of Richard Lea, and another named John Thynne, who built Somerset House, in 1567, in a mixed style of Italian and Gothic. John Shute, an English painter and architect, who flourished in the reign of Queen Elizabeth, was sent by the Duke of Northumberland, his noble patron, to study the art under the best masters in Italy. He published, in 1563, a folio volume of the principles of architecture, as developed in the most celebrated monuments of antiquity.

Stickles is the name of another architect, who practised in England about 1596, and is spoken of by Milizia as an excellent artist. Robert Adams, an architect of repute, who died in 1595, was superintendent of the royal buildings to Queen Elizabeth; and wrote a description of the river Thames, and of the best method of fortifying it against an enemy. Under the same illustrious queen, flourished Theodore Havens, an architect, sculptor, and painter, who affected grandeur on a small scale, and was rich in Italian conceits. He erected Caius College, Cambridge, which is a fair specimen of the architecture of the age—pedantic, eccentric, affected, and trifling. This college was rebuilt, and

* Milizia, " Memorie degli Architetti Antichi e Moderni." Vol. II. p. 177.

founded by Dr. Caius, physician to Queens Mary and Elizabeth; and three of its gates are of curious, if not of elegant designs, being among the first constructed after the Italian manner in England. The first is inscribed "Humilitas," and, as the gate of Humility, is of low proportions: the second, which is loftier, and embellished with a portico and emblematical figure, is dedicated to Virtue, and is inscribed "Virtutis. Io. Caius posuit Sapientiæ," and conducts to Caius' court, and the public schools: and the third, which is inscribed "Honoris," and is called the Gate of Honour, is of still larger dimensions, and decorated with the various orders of Roman architecture, overlaid with ornaments in the style of the sepulchral monuments of the period.

About the same time Rodolph Simmons built in Cambridge the colleges of Emmanuel and Sidney Sussex, and rebuilt great part of Trinity College.

In the reign of James, flourished Bernard Jansen, an eminent Flemish architect, of the school and style of Dieterling, a very celebrated architect of the same country, who wrote much on his art. Jansen erected, during his residence in England, the splendid mansion Audley End in Suffolk, and a great part of Northumberland-house, London. The façade is the work of Gerard Christmas.

Among the architects of this period, whose names have reached us, are John Smithson, who died in 1648, and who, under the patronage of the Duke of Newcastle, travelled into Italy to instruct himself in his art, and to acquire a knowledge of good design. The mansion-house at Welbeck, and the

castle at Bolsover, were of his execution. Stephen Harrison designed the triumphal arches erected in London on the accession of James I. to the throne of Great Britain.

The tempestuous reign of Charles I., which began with such flattering prospects for the arts, and which was the epoch of good taste in architecture, has been already noticed. The administration of Oliver Cromwell was fatal to all the elegant civilizations of humanity; but the reign of Charles II. was favourable to architecture, as much by the dreadful fire which consumed the metropolis, as by the innate love of magnificence and art which distinguished the king.

The state of architecture in his reign can best be learned from the life of his chief architect, Wren, who designed and executed more works than any other architect, ancient or modern. What a situation was he placed in! and what a terrific visitation occurred to the nation in his time!—A burning metropolis, whose inhabitants had just been ravaged by a pestilential plague—the nation burdened with imposts, a foreign war, and an extravagant monarch:—their energies, however, equalled their tasks, and they relieved themselves from the onerous weight of such burdens, with boldness, patience, and alacrity. The king's exertions, and that of his court, are above all praise; and to him and our ancestors of his reign do we owe the possession of the healthiest and finest metropolis in Europe.

Charles invited Perrault, with whose abilities he became acquainted when in France, to England; but, fortunately for Wren and English talent, he declined: and the rebuilding of the

city, its cathedral, its churches, halls, and all the architecture of the country devolved on Wren.

The state of our art during his long presidence over it can be gathered from his works and writings. He was sole monarch of the art, and his laws were founded on good sense, taste, and knowledge. He carried on his works with zeal, activity, and satisfaction to all his patrons; yet the purity of Wren himself in his high office was not free from detractions.

No one is free from the attacks of malignity and malevolence. Censure has been well said to be the tax a man must pay for being eminent, and Wren did not escape his proportion of the modus. Towards the completion of his great and unrivalled career, after many inefficient attacks, in the year 1712, a virulent pamphlet was published, called "Frauds and Abuses at St. Paul's; in a Letter to a Member of Parliament." The author appears to be either one of the committee which was dissolved for undue influence and hindrance of the great architect's proceeding, or a person employed to write their defence. Instead of a defence of the persons who were omitted in the formation of the new list of commissioners, a delicate way of discharging them, the author commences with hinting at charges of corruption against Sir Christopher Wren, insinuating that it was "well enough known who promoted, underhand, the petition for Greenwich church, and for what end they did it; that it was to be revenged on the late commissioners for rebuilding St. Paul's, and particularly on the dean and chapter, who had the honour to be part of them, for presuming to disturb the sweet gains and assumed

power of some persons employed in the work, and inquiring so strictly into frauds and abuses as they did *."

From a careful perusal of the whole pamphlet, which I heard of long before I could obtain it, and is now very rare,—the only copies I have been able to see being the one at the British Museum, which I first used, and another that I was favoured with by my friend, Mr. C. R. Cockerell, the architect to the cathedral, who has recently reinstated the beautiful ball and cross with such skill and such regard to the memory of its great original constructor; from a careful perusal of this pamphlet, I take leave to repeat, I am prepared to prove, that it is nothing but a splenetic attack upon the architect by a disappointed individual.

Sir Christopher, it is true, condescended to answer it †; but it carries its own condemnation within itself; it bears its own antidote.

The self-interested character of the author appears early in the book. He complains of the power that procured the dissolution of the commission he defends, and says, "but since those commissioners who were so zealous in the trust reposed in them, and so faithful both to the public and the church, are now no more, the *church* implores the favour of *the house* ‡, *by the pen of one who knows its state*, and is very truly concerned it should be finished in a manner answerable to the whole design §." Who, I would confidently ask, was so capable of finishing it in this manner

* Frauds and Abuses, p. 1.
† See also the years 1710 and 1711 of the Life.
‡ *i. e.* of Commons. § Frauds and Abuses, p. 2.

as that illustrious man whose genius framed and completed the whole?

This commission was most properly dissolved, and a new one recomposed of the leading men of the former; who did not disgrace themselves by joining the cabal against whom Sir Christopher felt himself bound to complain in the petition and representations, which are printed in the second part of this work *.

The author asserts †, that "the fault, in short, is in Sir Christopher Wren;" and after much lachrymose declamation, and to set the matter in a true light, he brings a series of charges against Mr. Jennings, the master carpenter: the principal of which is, "that he charged," as is usual, "more wages than he paid." This the commission endeavoured to remedy, not by complaining to their architect, but by removing Jennings, and endeavouring to substitute James, who was employed under Sir Christopher, at Greenwich, with a salary of two hundred pounds a year, as a sort of "viceroy over" Sir Christopher. "The commissioners," he very innocently says, "thought they had done something." The architect, however, would not submit. The charges appear in the representation of the dean and chapter to the Archbishop of Canterbury ‡, who was too ill to attend to business §.

One great and principal cause of the success of Wren in St. Paul's has been the excellence of his workmen. Such men as Strong, his master mason; Bateman, his deputy surveyor; Jennings,

* See page 498, Part II. † Page 5. ‡ Appendix, No. 18.
§ Frauds and Abuses, page 18.

his master carpenter; Bird, Cibber, and Gibbons, his sculptors and carvers; Tijoue, his smith; were not to be discharged without his consent; and men over whom he could have no control, like James, appointed in their places. "Mr. Jennings," complains the author of this pamphlet, "was not only supported by Sir Christopher against the commissioners * while this examination was pending, but also continued by him in the work, in defiance of the commissioners †." Jennings put in the best possible plea; "he delivered to the commissioners a testimonial in his behalf from Sir Christopher Wren ‡.

The attack having failed against Sir Christopher, as appears by the petition of the cabal to the Duke of Shrewsbury §, which the writer admits was their last act ‖: and losing favour by their attempted persecution of Jennings, and substitution of James, they pounce upon Bateman, the deputy surveyor, who, says their defender, "is known to have no little influence over him; a weakness that may well be pardoned in a person of his great age." Kind hearted soul, to commiserate, twelve years before the frame of this great man failed under unmerited persecutions, his *great* age!

The author attacks from behind the coverts of anonymous assault: let us try if we can unmask him. In the pamphlet he complains that "the persons accused of arbitrary proceedings are not only the dean and chapter, but Sir Thomas Meeres, Sir

* Frauds and Abuses, p. 19. † Ibid. p. 13. ‡ Ibid. p. 21.
§ Appendix, No. 17. ‖ Frauds and Abuses, p. 32.

Nathaniel Lloyd, Dr. Bettsworth, and"—oh, the climax!—" Dr. Harwood *."

> " The whole of London resounds with his fame,
> And Hoxton too has heard of the same."

" The same Dr. Harwood," he observes, " who, while I am writing, *I hear* is turned out from being one of the commissioners of the wine licence †."

The end of this mountain in labour was, that the cabal was broken up, and a new set of more impartial commissioners appointed. " The old commission," says our author, " consisted of twenty-eight persons; the two archbishops, five other bishops, the dean and chapter, seven of the *principal* persons of Doctors' Commons," Dr. Harwood and all, " the lord mayor and sheriffs, the attorney and solicitor-general, Sir William Turnbull, Sir Thomas Meeres, Sir Thomas and Sir H. St. George, and Sir Christopher Wren: of these, six made a quorum, of which the Bishop of London or the dean to be always one, as being most concerned in the interest and service of the church ‡.

" This was the old commission, from which the new one is very different." Alas! the principal persons of Doctors' Commons, and Dr. Harwood, are not restored. " It consists of

* Frauds and Abuses, p. 26.

† Ibid. Mr. Upcott, in his work on English topography, thinks Dr. Hare to be the author; but I rather ascribe it, from internal evidence, to Dr. Harwood: perhaps both had a hand in it.

‡ Ibid. p. 37.

fifteen persons, of whom five to be a quorum: in it, besides Sir Christopher, *none* of the old members are continued," but who shall we suppose? Something like the Irishman who lost all his twenty cows, all but—nineteen. "None of the old members are admitted, except—the two archbishops! the Bishop of London!" The other four bishops' names were rarely found among the attenders on the committee, and were, therefore, omitted for more effective persons. "The lord mayor! the attorney and solicitor-general! and the dean!" Oh, but the chapter? Indefensible.—Well, "these then, with Sir Christopher, are eight of the new commissioners; the other seven are," only "the great officers of state, the lord keeper, the lord treasurer, the lord chamberlain, the lord privy seal, &c."

There can be no occasion to trouble Sir Christopher for his defence. The charges in "Frauds and Abuses" refute themselves; the works were carried on to a satisfactory conclusion, and the grandest protestant cathedral, and the second Christian church in the world, bears record of his talents and integrity.

Towards the close of Sir Christophen Wren's life, a school of architects arose; whereas, at the time of the fire, this great man was the only one.

At this eventful period, Vanbrugh sprang up, a bold but erratic genius, picturesque and poetical in his imagination, but neither learned nor refined in his art. He rather resembled the painter-architects of Henry the VIIIth's time, than a follower of Palladio, Jones, and Wren. He began Blenheim, one of the best of his works, (the secret history of which forms so amusing a feature in D'Israeli's Anecdotes of Literature) in 1705, Edward Strong, one of Sir Christopher's master-masons, being

THE

LIFE

OF

SIR CHRISTOPHER WREN.

PART II.

CHRISTOPHER WREN, one of the most eminent architects and mathematicians whom the world has produced, was born at East Knoyle, in Wiltshire, the rectory of his father, Dr. Christopher Wren, afterwards dean of Windsor, between the hours of seven and eight in the afternoon, of Friday, the 20th of October *, 1632.

* This, and many other of the authorities quoted in this work, are from a manuscript in the Lansdowne Collection at the British Museum, entitled, "Chronologica series vitæ et actorum, Hon^{mi}. Patris mei D^{ni}. Ch^{r}. Wren, Eq: Aur: &c. &c. &c. (Quem Deus conservat)" and witnessed in Sir Christopher's hand-writing. "Collata* Oct^{r}. 1720, *C. W.*" The following entry is the first: "Octob. 20, 1632, D^{s}. Christophorus Wren à Christophoro natus est apud *Knoyle Epi* in agro *Wiltoniensi*, Die ♀, inter 7^{am} et (juxta) 8^{am} horam post merid: cyclo solis, 17; Lunæ 18; literâ dominicali B; 3^{o} post bissextum * *ex schedis avitis.*" This manuscript, which is in the hand-writing of Sir Christopher's son, countersigned by himself, and is as curious as it is valuable, I shall distinguish in future by the title *MS. Wren.*

His father, a most respectable and learned divine, was descended from an ancient and distinguished English family of Danish * origin, which was settled at Binchester, in the county palatine and bishopric of Durham; and his mother, Mary, the daughter and heiress of Robert Cox, of Fonthill in the county of Wilts, Esq., was of a family of equal respectability and worth. Of this marriage he was the only son.

His uncle, Dr. Matthew Wren, occupies a prominent figure in the ecclesiastical history † of England. He was the elder brother of Sir Christopher's father, and was, after several other considerable preferments, dean of Windsor, registrar of the order of the Garter, and successively Bishop of Hereford, Norwich, and subsequently of Ely. He had four sons, of whom Matthew, the eldest, was first a student of Cambridge, and then at Oxford. After the restoration, he became secretary to Lord Clarendon, representative in parliament for St. Michael's in Cornwall in 1661, and afterwards secretary to James, Duke of York. Thomas, the second son, became Archdeacon of Ely; Charles, burgess in

* Parentalia.

† As a specimen of the character of the times, the following titles of some of the pamphlets of the day against this distinguished prelate, which are all in the library of the British Museum, are cited: namely, Articles of Impeachment of the Commons, against Matthew Wren. 4to. London, 1641. Articles exhibited in Parliament against Matthew Wren, with the Resolutions of the Commons, touching the Queen of Bohemia. 4to. London, 1641. The Wren's Nest defiled; or, Bishop Wren anatomized. 4to. London, 1641. Wren's Anatomy. 4to. 1641. A most strange Letter, that was found in the Old Change, directed to Matthew, Bishop of Ely. 4to. London, 1642. Speech of Sir Thomas Widdrington, on the Impeachment of Bishop Wren. 4to. London, 1642.

parliament for Cambridge in 1685; and William, Sir Christopher's youngest uncle, received the honour of knighthood.

He was impeached, by order of the House of Commons, July 5, 1641, shortly after the impeachment of Archbishop Laud, and compelled to give ten thousand pounds security. At the treaty of Uxbridge, which was signed November 23, 1644, he was one among many other persons of distinction who were to expect no pardon*.

On March 14, 1648, the council of state reported to the House of Commons, "That Dr. Wren, Bishop of Ely, and the Marquis of Winchester, be not tried for their lives, but imprisoned till farther notice†."

On March 15, 1659-60, it was ordered, "That Dr. Wren, Bishop of Ely, be discharged of his imprisonment; and that the lieutenant of the Tower of London be, and is hereby required, to discharge him accordingly."

He was never brought to trial, although he was imprisoned nearly twenty years, which deprived him of delivering his very able defence, which is extant in the Parentalia, or, Memoirs of the Family of the Wrens, by his grandson, Mr. Christopher Wren, the son of the architect. This defence is clearly and well written, in an excellent style, and abundantly refutes every article of the impeachment against him.

These articles are published in a quarto pamphlet, of the date of 1641, with a most violent puritanical speech of Sir Thomas

* Short View of the Troubles of England, and Treaty of Uxbridge, p. 741. Oxford, 1681.

† Whitlock's Memoirs, p. 380.

Widdrington, to the House of Lords, which rivals, in style, the cant of the celebrated William Prynne, who was one of the most violent of his accusers.

Of his firmness in adversity the following anecdote of him and his illustrious nephew is a lively and illustrative proof.

Some time before the decease of Oliver Cromwell, Mr. Christopher Wren, the bishop's nephew (afterwards Sir Christopher), became acquainted with Mr. Claypole, who married Oliver's favourite daughter. Claypole being a lover of the mathematics, had conceived a great esteem for young Wren, and took all occasions to cultivate his friendship, and to court his conversation, particularly by frequent invitations to his house and table. It happened at one of these invitations that Cromwell came into the room as they sat at dinner, and without any ceremony, as was his usual way in his own family, he took his place. After a little time, fixing his eyes on Mr. Wren, he said, "Your uncle has been long confined in the Tower." "He has so, sir," replied Wren; "but he bears his afflictions with great patience and resignation."

CROMWELL.—"He may come out if he will."

WREN.—"Will your highness permit me to tell him this from your own mouth?"

CROMWELL.—"Yes, you may."

As soon as Wren could retire with propriety, he hastened with no little joy to the Tower, and informed his uncle of all the particulars of this interview with Cromwell. After which the bishop replied, with warm indignation, that it was not the first time he had received the like intimation from that miscreant; but

he disdained the terms proposed for his enlargement, which were a mean acknowledgment of his favour, and an abject submission to his detestable tyranny; that he was determined to tarry the Lord's leisure, and owe his deliverance, which was not far off, to him only *.

This illustrious prelate died at Ely-House, Holborn, April 24, 1667, aged 81, and upwards. He was buried at Cambridge, the whole University attending his funeral. Dr. John Pearson, then master of Trinity, and afterwards bishop of Chester, delivered his funeral oration in Latin.

Among other distinguished persons of this family was GEOFFREY WREN†, who was chaplain to King Henry VII. He was presented to the rectory of Bolden, in the county of Durham, June 27, 1502; was instituted to the prebend of South Cave, in the cathedral church of York, in the year 1508, which he exchanged for that of Knaresborough *cum* Bickhill, in the same church, Dec. 16, 1512. His next preferment was that of being admitted prebendary of Curborough in the cathedral of Lichfield, April 4, 1511, which he resigned, and was re-admitted, Dec. 7, 1512. At that time he was rector of St. Margaret's, Fish-street, in the city of London, and of Hanslap, in the county of Buckingham. He was privy counsellor to Kings Henry VII. and VIII. In the year 1515 he was installed a canon of Windsor; was collated to the mastership of Sherbourn Hospital, in the county of Durham, about the year 1522, and died April 5, 1527. He was buried in the north aisle of the choir of St. George's chapel at

* Parentalia. † From a MS. in my possession.—J. E.

Windsor, with the following incription on a ledge of brass around his tomb-stone: namely,

" Hic jacet humatum corpus venerabilis viri magistri Galfridi Wren, quondam hujus collegii canonici necnon illustriss
qui obiit quinto die mensis Aprilis, anno Domini millesimo quingentesimo vicesimo septimo. Cujus animæ propicietur Deus, Amen."

On the middle of the same stone was his effigies in brass, decorated with the mantle of St. George, and the following inscription under his feet:

" Sub saxo ponor, et vermibus ultimis donor,
Et sicut ponor, ponitur omnis honor.

Dr. Christopher Wren, the father of Sir Christopher, was the youngest son of Francis Wren, a distinguished citizen of London. He was educated at Merchant Tailors' School, and became a fellow of St. John's College, Oxford; where he took his degree of bachelor of divinity in 1620, and held the office of senior proctor of the University in 1619. About the same time, he became domestic chaplain to Dr. Launcelot Andrews, Bishop of Winchester, and also chaplain in ordinary to King Charles I.; and rector of Knoyle, in the county of Wilts. On April 4th, 1635, he was installed dean of Windsor, and the 29th of the same month, made registrar to the order of the Garter. In 1638, he drew up a catalogue of the knights of this illustrious body, which was extant a few years since at Gonvile and Caius College, Cambridge.

This latter situation afforded him the opportunity of performing a great public service, and for which posterity will be for ever indebted to him. After the chapel of St. George at Windsor, and the treasury belonging to it, had been plundered by the rebels, he sedulously exerted himself in recovering as many of the records as could by any means be procured, and had the good fortune to redeem, for a considerable sum of money, the three registers of the order of the Garter, distinguished by the names of the Black, the Blue, and the Red books. These he carefully preserved to his death, and committed them to the custody of his son, who, soon after the restoration, delivered them to Dr. Bruno Ryves, then Dean of Windsor, and registrar of the order; thus restoring to the most illustrious order of chivalry in Europe their invaluable records.

Sir Christopher's father was a man of great scientific knowledge, and of extensive attainments in literature and mathematics. He early directed the mind of his son to those pursuits for which he became afterwards so distinguished: and the precocious tractability of the child delightfully repaid the attentive cares of the anxious parent. He was one of the most learned, pious, and amiable men of his time, and was associated with all who were eminent in the literary and scientific pursuits of that enlightened period. He possessed considerable skill in the noble art of architecture, and a specimen of his abilities in this department of scientific knowledge is preserved in the state papers of Edward earl of Clarendon; by which it appears that he was employed, in 1634, as an architect to a building, about to be erected for the queen of Charles I. Whether the building was erected does not

appear; but as the estimate is a curious document, I have appended it as a note *.

The period of Dean Wren is distinguished as one of important discoveries, useful inventions, and of brilliant talents. The year preceding his birth is memorable for the discovery of the circulation of the blood, by Dr. William Harvey. Sully, Galileo, Rubens, Vandyke, Inigo Jones were among his contemporaries. In his day, and with his co-operation, the first meetings took place of those illustrious men, who afterwards, under the mature

* "Estimate of a building to be erected for her majesty,—

Being the whole south side of the privy garden double; the ground story eleven feet high; the second story nineteen, containing the gallery and the queen's apartment; and the chapel the height of both the stories. The ground story to be fitted with deal wainscot into lodgings and offices for the treasury, secretaries, lord chamberlain and others: the second story and galleries to be finished as the king's new lodgings, and the chapel decently adorned.

For the queen's apartment, with the rooms under and in the roof, and the chapel, containing 84¼ squares, at £100 the square	£8425	0	0
For the gallery and rooms under, containing 52 squares, at £75 the square	3900	0	0
For altering, raising, and adorning the vane room .	500	0	0
For alterations that may happen in piecing the old works to the new, and joining the banqueting house, the council chamber, the lord chamberlain's and the old lodgings . .	1500	0	0
Sum	£14325	0	0
The old buildings to be pulled down, when the charge of carting away the useless rubbish is defrayed, may be valued at	1020	0	0
Which being reduced, remains	£13305	0	0

May 15, 1635. CHRIST. WREN."

concoction of his son and associates, formed the Royal Society; and about the same time Louis XIV. established the French Academy, and the Royal Academy of Painting, at Paris.

Having distinguished himself by his learning, his loyalty to his unfortunate sovereign, his submission to afflictions in his latter days, his affection for his family, and his piety to his God, he died May 29, 1658, a few months before his persecutor Cromwell, at the house of his son-in-law, Dr. William Holder, at Bletchington, in the county of Oxford, and was buried in the chancel of the church of that parish *.

The parental fondness and anxiety of this excellent father, that his only son should support his ancient and illustrious family name with dignity, led the way, aided by an early and careful education, to a precocity of intellect in the child, rarely equalled; to a soundness of learning and understanding in the man, seldom found in such youthful prodigies; and to a retention of an unimpaired intellect to the verge of a patriarchal age, still seldomer witnessed in a nonagenarian.

The period in which Sir Christopher was born, whose name embellishes the civil records of our country, was one of the most important and brilliant in modern history. The seventeenth century was distinguished by the long and disastrous civil wars, and the first instance of the decapitation of a Christian monarch, by a self-constituted court of his subjects; by the brilliant reign, both for glory and for literature, of Louis XIV., which influenced the affairs of all Europe in its commencement, till curtailed and

* Athen. Oxon. Vol. I. p. 216.

shorn of its beams by the English; and for the numerous illustrious and great men, whose talents made art, science, and literature flash from one end of Europe to the other, and presented a collision of intellect as magnificent as it was beneficial to the cause of humanity.

The contemporary monarchs were Charles I. of England, Louis XIV. of France, and Pope Urban VIII.

Among the great military characters of this period were Mansfield, the duke of Saxe Weimar, Walstein, Tilly, Blake, Monk, Turenne, Condé, Luxembourg, Catinat, Tourville, Vauban, De Ruyter, Von Tromp, and Montecuculli; and of the poets, artists, and learned men, we find Hobbes, Waller, Milton, Dryden, Cowley, Otway, Temple, Wycherley, Butler, Pope, Swift, Steele, Addison, Congreve, Gay, Corneille, Boileau, Racine, Prior, La Fontaine, Moliere, Newton, Locke, Barrow, Des Cartes, Bruyere, Pascal, Bossuet, Boyle, Bourdaloue, Fenelon, Puffendorf, Leibnitz, Grotius, Halley, Harvey, Sydenham, Bernini, Rubens, Vandyke, Guido, Poussin, Rembrandt, Girardot, Mignard, Le Brun, and Vauloo. In short, the illustrious contemporaries of Sir Christopher Wren embrace the greater part of the luminaries of modern Europe, the wits, the writers, the artists, the warriors, the ministers of the times of Charles I., Cromwell, Charles II., James II., William and his successors, till nearly the beginning of the reign of the second George.

At the time of the birth of Wren, Bernini was employed in finishing the cathedral of St. Peter's at Rome. In 1633, the baldachino, or altare maggiore of that edifice, was constructed from Bernini's designs, and under his direction, by order of Pope

Urban VIII. This sumptuous work stands under the centre of the great cupola, and is composed of an immense canopy, in a gaudy Italian taste, supported by four spiral columns of the composite order, thirty-four feet high, raised on seven steps. Four colossal angels stand on each corner; behind which spring four lofty, fluted, and foliated brackets, which support a globe, surmounted by a cross. The whole of this imposing structure is composed of bronze, and is said to weigh 186,392 pounds. Twenty-five thousand pounds sterling are estimated to have been expended in its workmanship, and forty thousand golden crowns in its gilding. Its height is eighty-six feet English, nearly eight feet higher than the top of the balustrade of Inigo Jones's celebrated chapel at Whitehall; although it does not appear so, from the immense height of the cupola, which covers it like the vault of heaven itself over a sculptured mountain.

Whatever renown Urban VIII. may have acquired by his completion of St. Peter's, and his splendid embellishments of the great altar, his memory will always be held in deserved execration for his robbing the Pantheon, the grandest monument of ancient Roman skill and grandeur, of its bronze roofing—to accomplish this work; and for his allowing the condemnation of the illustrious Galileo by the Inquisition at Rome, in the same year.

To the searcher after coincidences it may appear worth noticing, that St. Peter's at Rome was completed nearly about the year which gave birth to the architect of St. Paul's, London, its formidable rival in skilful construction and mechanical execution. About this time, Bernini, under the same pope, attempted the spoliation of Michael Angelo's cupola, by adding to it a spire,

which was obliged to be demolished, from the dangerous cracks and settlements that it occasioned.

Wren, the great supporter of legitimate architecture, and, next to Jones, the greatest architect that England has produced, grew with the growth of literature and the arts. In 1635 the French Academy was instituted at Paris; and it may not be amiss to record, that regular posts for the delivery of letters, an institution to which our literature is so much indebted, were established in England the same year.

The fine arts, particularly architecture, which had begun, under the protection of Charles and his minister Buckingham, to flourish in the early part of that unfortunate monarch's reign, had now begun to wither under the pestilential blasts of civil war. Brother armed against brother, and fellow-countrymen armed against fellow-countrymen, agitated the kingdom from end to end; and the fatal battle of Nazeby, which took place June 14, 1645, was but a specimen of the awful visitations of this afflicted country. It decided the fate of Charles, and of the peaceful arts, who fell together, under the predominating influence of regicides and iconoclasts.

Art and literature, the social blessings of refinement, the results of a high state of civilization, had just begun to put forth their buds in England, when they were blighted and absolutely rooted from the soil by the turmoils and contentions between their enlightened friends and their bitterest enemies.

In this year the drama lost one of its brightest ornaments by the death of Lope de Vega, the Spanish Shakspeare; a voluminous and redundant author, who wrote on every subject,

and mixed fable, history, tragedy, comedy, the ludicrous and the serious, with greater carelessness, and with fewer redeeming beauties, than our dramatic idol, Shakspeare. The *theatre* of de Vega, which occupies twenty-five volumes, of twelve plays each, is the admiration of his countrymen, and will always hold a prominent situation in dramatic literature.

The infancy and youth of Wren were marked by a peculiarly delicate state of health. As he was an only son, and his father one of the kindest of human beings, this delicate temperament occasioned him to be educated at home, where the common occupations of childhood were early banished; and he commenced a regular course of education under his able father, assisted by the Rev. William Shepheard, as a domestic tutor. His progress was rapid, and his disposition as gentle as his capacities were great.

Nature, or the ruling principle by which the great Creator of all governs our sphere, is full of compensating qualities; and there is rarely a succession of great men of any description taken away, but some of the same, or other branches of human genius, spring up. The death of Lope de Vega, the contemporary and illustrious rival of Shakspeare, has just been mentioned; and the year 1638 took our great dramatic writer, "RARE BEN JONSON," from his earthly duties to those of a higher nature. Jonson was one of the splendid galaxy of the reign of Elizabeth: his rank, compared with that of Shakspeare, is well known, and honestly settled; but his disputes with his great contemporary, Inigo Jones, whom he descended to call, in his serious works, Iniquity Jones, too well confirm the charge of his captious temper and jealous

disposition. As a dramatic writer, he justly ranks high in English literature. To compare Jonson with Shakspeare, is as absurd as to compare Annibale Caracci with Rubens, or Cowper with Pope. The scholastic trammels of the former, and the natural genius of the latter, form contrasts rather than parallels. Jonson was learned, well read, fluent in ancient literature, pure in taste, laborious in detail. Shakspeare—but who can define Shakspeare? He was all that the other was not. It is an uncomparable comparison, and should not be raised.

The education of the youthful Wren still continued under the same able guides; and at a very early age he was placed under Dr. Busby, at Westminster. At the same period he had for his mathematical tutor Dr. William Holder*, who was sub-dean of the chapel royal, and a canon residentiary of St. Paul's and Ely.

His infancy was not undisturbed by cares; for, in his ninth year, his uncle Matthew, the Bishop of Ely, was impeached by the Commons, as mentioned in a former page. England began

* The Wiltshire antiquary, the preceptor and friend of the celebrated Thomas Hobbes, and one of the earliest members of the Royal Society, in his Lives of Eminent Men, says of Dr. Holder, that he married, about 1640, the daughter of Dean Wren. In the troublesome times, he says he was with his father-in-law at the garrison of Bristol. "He was very helpful in the education of his brother-in-law, Mr. Christopher Wren (now knighted), a youth of prodigious inventive wit, and of whom he was as tender as if he had been his own child, who gave him his first instructions in Geometrie and Arithmetique; and when he was a young scholar at the university of Oxford, was a very necessary and kind friend."

His wife, Sir Christopher's sister, was very skilful in practical surgery, and cured King Charles II. of a hurt in his hand.—*Aubrey's Lives of Eminent Men.*

to be in a most disturbed state. The civil war between Charles I. and his parliament had commenced. In Wren's tenth year the battle of Edge-Hill was fought; and his next saw Laud, Archbishop of Canterbury, brought to the block, for his reverence and gratitude to his royal master. Whatever may have been the faults of this munificent * prelate, his age and infirmities might have spared him the ignominy of the scaffold. He, however, met his fate, in the seventy-second year of his age, on Tower-hill, January 10, 1643.

Hampden, the illustrious patriot, died also the same year, from the wounds he received in a skirmish with Prince Rupert, near Thame, in Buckinghamshire. This illustrious man, who was so respected by the king, although in arms against him, that he sent his own physicians to visit him, possessed such extraordinary talents and vigour, that his great enemy, Lord Clarendon, said of him, " he had a head to contrive, a tongue to persuade, and a hand to execute any mischief."

The genius and taste for learning and the mathematics of the youthful architect, began to develope themselves at a very early age, and his industry and perseverance in his studies to produce the most promising results. In 1645, while only in his thirteenth year, he invented a new astronomical instrument, which he dedicated in Latin of a superior style to his father †. He also pro-

* Witness his munificence and generosity to the University of Oxford, as displayed in the many noble buildings which he erected, the expensive collections of books and manuscripts which he presented to it, the charter which he gained for it, and the Arabic lecture which he founded.

† See Appendix, No. 1.

duced in the same year an exercise in physics, and invented a pneumatic machine.

This year is also memorable, for being the first in which those meetings first took place, which gave birth to the Royal Society. The discussions at these meetings, doubtless, tended much to the formation of the mind of the youthful Wren, whose father was one of the first members. Upon the defeat of Charles I. at the battle of Nazeby, and the national troubles which immediately ensued, and subverted the regular course of lectures and studies at Gresham College, in the city of London, many of the most learned and scientific men*, both of London and Oxford, were led to pursue their studies and investigations in private, rather than in the open lecture rooms, which were deserted by the public, and even pillaged by the outrageous soldiery.

In this year (1645), while Dr. Wallis, the eminent mathematician, resided in London, he had the opportunity of becoming acquainted with many worthy persons, who were inquisitive concerning natural philosophy, and other branches of learning, particularly what was then called the new, or experimental philosophy. They met weekly, by agreement, on an appointed day, to consider and debate on these affairs. Of this number were, Dr. John Wilkins, afterwards Bishop of Chester; Dr. Jonathan Goddard; Dr. Wren, Sir Christopher's father; Dr. George Ent, Dr. Glisson, Dr. Merret, doctors in physic; Mr. Samuel Foster, then professor of astronomy at Gresham College;

* Ward's Lives of the Gresham Professors.

Mr. Theodore Hank, a native of the Palatinate, then resident in London, who was the first to suggest these meetings; and many other eminent men of the day. These meetings were held occasionally at Dr. Goddard's residence in Wood-street, on account of his having a workman in the house, who was skilful in grinding glasses for microscopes and telescopes.

At other times they met at the house of others of their members, near Cheapside; occasionally at Gresham College, and other convenient places in the neighbourhood. Theology and politics were excluded from their discussions, which chiefly consisted of philosophical inquiries, or such as related to them; as physic, anatomy, geometry, astronomy, navigation, statics, magnetics, chemistry, mechanics, and experiments on subjects connected with these studies.

About the years 1648 and 1649, Drs. Wilkins, Wallis, and Goddard, being successively removed to Oxford, the party separated: those who remained in London continued their meetings as before; and the Oxonians attended them, when they were in town, or specially required: and those who had taken their residences at Oxford, with Dr. Ward, afterwards Bishop of Salisbury; Dr. Ralph Bathurst, President of Trinity College, Oxford; Sir William, then Dr. Petty, professor of anatomy, the illustrious ancestor of the present marquis of Lansdowne; Dr. Willis, then an eminent physician at Oxford; and many others of less public celebrity, continued similar meetings in Oxford, and set a fashion for such studies and disquisitions. The Oxford meetings were first held at the lodgings of Dr. Petty, on account of their being at the house of his apothecary,

whose dispensatory and drugs were convenient for experiments and investigation.

After the removal of Dr. Petty to Ireland, where he was appointed physician to the army, and where he rendered himself so celebrated by the accuracy of his survey, they met, though not so frequently, at the apartments of Dr. Wilkins, then warden of Wadham College; and after his removal to Trinity College, Cambridge, at the rooms of the celebrated Robert Boyle.

The meetings in London continued as usual till after the restoration of Charles II., when the number of the members was increased by the accession of many respectable and honourable persons, who were afterwards incorporated by the name of "the Royal Society."

The usual meetings of these illustrious founders of this admirable institution were held at Gresham College, after the Wednesday and Thursday lectures of Sir Christopher Wren and Mr. Rook. Among other eminent persons who joined the society, just before the restoration, were Lord Viscount Brouncker, Lord Brereton, Sir Paul Neil, Mr. John Evelyn, Mr. Henshaw, Mr. Slingsby, Dr. Timothy Clark, Dr. Ent, Mr. Ball, Mr. Hill, Dr. Crone, and others of similar inclinations.

These assemblies were held once or twice a week in term time, till they were broken up by the miserable distractions of the year 1658, when the continuance of their meetings at Gresham College, says Dr. Sprat, "might have made them run the hazard of the fate of Archimedes; for then the place of their meeting was made a quarter for soldiers*."

* Sprat's Hist. of the Royal Society, p. 57.

From these small beginnings did the Royal Society of London emanate, and Sir Christopher's name is identified in all their proceedings, from its birth to the time of his death.

In the 14th year of his age, he was sent from Westminster school to Oxford, where he was admitted a gentleman commoner of Wadham College, Oxford*. "The exact time," says Ward, in the lives of the Gresham professors, "is not known, his name not being entered in the register." But the important manuscript quoted in the note decides the fact, and fills up the blank. His extraordinary talents and acquirements soon procured him the friendship and regard of the most illustrious men who then dignified the University of Oxford.

Among his distinguished friends and patrons, at this youthful period of his life, were Dr. John Wilkins, afterwards Bishop of Chester, then warden of Wadham College; Dr. Seth Ward, the learned philosopher and mathematician, who then resided at Wadham; and the no less celebrated Mr. Oughtred, who speaks of him, in his preface to the Clavis Mathematicus, in the highest terms of commendation†. Dr. Wilkins introduced him as a prodigy in science to Prince Charles, Elector Palatine, to whom he presented a variety of mechanical instruments of his own invention, and

* 1646. Admissus in collegio de *Wadham*, Oxoniæ, commensalis generosus. *Ex sched. avit.* MS. Wren.

† Dn. Christophorus Wren, collegii Wadhamensis commensalis generosus, admirando prorsus ingenio juvenis, qui, nondum sexdecim annos natus, astronomiam, gnomonicam, staticam, mechanicam, præclaris inventis auxit, ab eoque tempore continuo augere pergit. Et revera is est, a quo magna possum, neque frustra, propediem expectare. *Parentalia.*

addressed to him a letter full of the freshness of youthful enthusiasm*. Among these instruments, was one for planting, which is ingenious for its day. He was also honoured by a flattering letter from Thomas Aylesbury, an eminent mathematician†.

Another of his juvenile pieces, written in his fourteenth year, as a scholastic exercise, entitled "de ortu fluminis," which was suggested by his father, has been deservedly commended. In 1647, then only in his fifteenth year, he became acquainted with Sir Charles Scarborough, at whose request he undertook the translation of Oughtred's Geometrical Dialling into Latin‡. In the

* See Appendix, No. 2. † See Appendix, No. 3.

‡ "Gulielmi Oughtred *geometriam, horologium, sciotericorum rationem,* ex Anglico idiomate in Latinum vertit, nondum sexdecim annos natus. Wren, MS.

Partem autem illam quæ geometriam horologium, sciotericorum rationem tradit, ex Anglico idiomate in Latinum vertit Dominus Christophorus Wren, collegii Wadhamenis commensalis generosus, admirando prorsus ingenio juvenis, qui, nondum sexdecim annos natus, Astronomiam, Gnomonicam, Staticam, Mechanicam præclaris inventis auxit; ab eoque tempore continuò augere pergit; et reverà is est a quo magna possum, neque frustrà, propediem expectare.—*Clavis Mathematicæ Præfatio. Oxoniæ*, 1652, Edit. 3.

One highly praised specimen of his skill in Gnomonics, at that age, was a curious *Reflecting Dial*, designed on the ceiling of a room, with this inscription, embellished with various devices; particularly two figures, representing Astronomy and Geometry, and their attributes, tastefully drawn with his pen, viz.

Chr. Wren.
Angustis satagens his laquearibus
Ad cœli methodum tempora pingere,

same year he had a patent granted him for seventeen years, for a diplographic instrument for writing with two pens*. It is an extraordinary coincidence, and a proof of the mental activity of the age, that another celebrated man, Sir William Petty, the founder of the noble family of Lansdowne, returned this year from France, with a similar invention†, for which he also obtained a patent for the same term of years from the parliament.

Petty describes his invention‡ as "an instrument of small bulk and price, easily made, and very durable; whereby any man, even at the first sight and handling, may write two resembling copies of the same thing at once, as serviceable and as fast (allowing two lines upon each page for setting the instruments) as by the ordinary way, of what nature, or in what character, or what matter soever, as paper, parchments, a book, &c. Rushworth, a learned contemporary, describes it in nearly the same manner, and adds; "It might be learnt in an hour's practice; and that it was of great advantage to lawyers, scriveners, merchants, scholars, registrars, clerks, &c. it saving the labour of examination, discovering or

A Phœbo obtinuit luminis ut sui
Idæam, speculo, linqueret æmulam
Quæ cœlum hoc peragret luce vicariâ,
Cursûsque effigiem fingeret annui;
Post annos epochæ——
VIRGINEO QVIBVS
VERE FACTVS HOMO EST EX VTERO DEVS,
ETATISQVE SVÆ NVPERÆ.—Paren. p. 184.

* Parentalia, p. 216. † Martin's Biographia Philosophica, p. 407.
‡ Petty's advice to Mr. Samuel Hartlib.

preventing falsification, and performing the whole business of writing, as with ease and speed, so with privacy also."

Wren describes the uses of his diplographical instrument and its qualities:

First. That by the help of this instrument only, every ordinary penman may at all times be suddenly fitted to write two several copies of any deeds and evidences, from the shortest to the longest length of lines, in the very same compass of time, and with as much ease and beauty, without any dividing or ruling; as, without the help of the instrument, he could have dispatched but one.

Secondly. That by this diminishing the tedious labour of transcriptions of the greater sorts of deeds, indentures, conveyances, charters, and all other duplicates, the works of the pen, (which in so many several kinds and several offices are yearly numberless) are not only shortened, but the penmen themselves both relieved and recompensed by an honest gain, with half the wonted toil.

Thirdly. There will be in both copies thus drawn such an exact likeness in the same number and order of lines, and even of words, letters, and stops, in all places of both copies, that being once severed, there shall hardly be discerned any difference between them, except such as is merely casual, as spots and marks in the parchment.

Fourthly. This instrument will undoubtedly prevent the mischievous craft of corruption, forgery, and counterfeiting of hands and seals; or, if any such foul practice be attempted, will effectually and manifestly discover it; for what will it avail to counter-

feit a seal, or the hand that signs, unless a duplicate could be made in every line, letter, and dot, like the twin copy, which, without the help of the same instrument, is impossible? So expedient might it be to all intents and uses of the state, in matters of the greatest consequence, that public acts be written by this instrument, for testimony and assurance to all times."

Three years after he had brought this invention to maturity, it appears that other persons in LONDON publicly assumed to be the authors. He appears to have felt great indignation at the suspicion of copying another's invention, and asserts his right to it in the following letter to a friend, whom the author of Parentalia supposes to be Dr. John Wilkins, who, among others, had been a judge of the first experiments.

"SIR,

"The account you gave me in your last letter, that a double-writing instrument hath of late been at London pretended to by several, as a production of their own, and so divulged to divers, hath given me occasion of putting into your hands (what certainly I have more right to dispose of than any late pretender) that double-writing instrument, of the effect of which, about three years ago, yourself, sir, as I remember, among other the ingeniosi were judges, at the same time when, accidentally, it was commended to the view of the then great, now greatest person * in the nation. I confess my thoughts were then to suffer it to be made public; and friends spurred me to it, apprehending it not

* Oliver Cromwell.

as a mere curiosity, but of very excellent and general use. Moreover, to copy out, in every punctilio, the exact resemblance, or rather the very identity, of the two copies, as if one should fancy such a piece of magic as should make the same thing really two, or with drunken eyes should see the same thing double, is what might be thought almost impossible for the hand of man. But business drew me suddenly from London, and from the opportunity of publishing it: content that I had at least communicated it to the ingenious few, I willingly left it. And, indeed, the thing always appearing to me but of obvious, though useful invention, I was easily drawn off to neglect it all this while, by the intervening of studies and designs that I much more esteemed; among which this took up so little a place, that I am beholding to the person who, vindicating it to his own, hath put me again in the mind of it.

" I accuse none of plagiary, because, having shown it to few, I think it would be more trouble to any knowing person to inquire it out of others, than to invent it anew; and, therefore, had it been thought on by any other about that time I showed it, I should have readily imagined, because of the obviousness of the experiment, that it might as easily have had a double father, as have produced a twin copy; but I am apt to believe, from good information, that those who now boast of it had it from one who, having fully seen the author's, and examined it carefully, (as it is easy to carry away, being of no complicate composure,) described it justly to his friend, and assisted him in the making of it; and the very glorying in a thing of so facile composure sufficiently discovers a narrowness of spirit in things of invention,

and is, therefore, almost argument enough, that he was not justly so much as a second inventor; nor hath the author reason to take it for an injury, that one, reported for a deserving person in other abilities, would please to own a cast-off toy of his, but rather owes him a civility out of gratitude for fathering it, and saving him that labour of education he intended, which will now be needless—the dispersing of divers instruments among the merchants, with directions for the use. But it may be, there are divers, who knowing such a thing to have been talked of some years ago, as coming from another hand, will be easily ready to turn all this with advantage upon myself: indeed, though I care not for having a successor in my invention, yet it behoves me to vindicate myself from the aspersion of having a predecessor*."

His great and early proficiency in learning and mathematics may be discovered in several specimens of his juvenile studies, which are extant. In 1647, his fifteenth year, he informed his father of the friendship he had gained from Doctor, afterwards Sir Charles Scarborough, an eminent physician and mathematician, who was Lecturer on Anatomy† at Surgeons' Hall, and

* This draught of a letter bears no date; yet, by the contents, the time may be nearly computed; it appears the first device and experiment was made three years before the *Protectorate*, *scil.* 1650. The time of his justifying his right, and appealing to his judges, was in 1653, when the *great man* above mentioned was invested with the office of Protector, and so became the *greatest person* in the nation.—*Paren.*

† This able philosopher was particularly respected as a man of uncommon talents, in the College of Physicians, of which he was a fellow. In 1658, by the special appointment of the president, he introduced, with an elegant Latin oration, the Marquis of Dorchester, for his admission to the college that year. In the mean time Dr. Scarborough began to deliver his

employed young Wren as a demonstrating assistant. This patronage he conceived to be of such importance, that nothing less than a Latin epistle* would properly convey the satisfactory information. At the same time he availed himself of the opportunity to acquaint his father with his inventions of a weather-clock; an instrument to write with in the dark; a treatise on spherical trigonometry; his proposal to translate Mr. Oughtred's treatise before mentioned, and other subjects. The letter was probably written in Latin, as a specimen of his ability to undertake such a work, as well as his Latin epistle to Mr. Oughtred† on the same occasion. To these he added some metrical essays in Latin, one of which was a reformation of the fables of the signs of the zodiac‡.

These juvenile essays prove the fecundity, the ripeness, and the highly cultivated state of his mind; his zeal and his ardent enthusiasm in the pursuit of knowledge and literary honours.

This year, while the incipient architect of our beautiful metro politan cathedral was cultivating the abundant soil of his natural genius, St. Peter's at Rome, its prototype and rival, was declared to the world of art as finished, under the auspices of Innocent X., and the superintendance of Bernini. This announcement of the completion of the largest and richest Christian temple in the world was an epoch in art, and was an affair of sufficient con-

highly celebrated lectures at Surgeons' Hall, which he continued for sixteen or seventeen years, and was the first who introduced geometrical and mechanical reasonings upon the muscles.

* Appendix, No. 4. † Appendix, No. 5.

‡ Appendix, No. 6.

sequence to attract the attention and secure the investigation of architectural principles by the youthful and aspiring Wren, who, more than any man, could say, *nulla dies sine linea*.

Of the superiority of St. Paul's over St. Peter's, in point of mathematical construction, I shall speak in its proper place; but the completion of such a structure as St. Peter's, which was intended as the central church of the Christian world, was an affair of too much importance to the world, particularly to that of science, such as congregated about the Wrens, the Wards, the Wilkinses, the Oughtreds of the day, the patriarchs of English science and art, not to have attracted notice and excited disquisitions.

This highly important epoch had doubtlessly an influence on Wren, and assisted him to accomplish St. Paul's *alone*, while St. Peter's was the work of more than *twenty* architects, supported by the treasure of the Christian world, and by the protection and under the pontificates of nineteen successive popes.

St. Peter's was began by Bramante, the uncle, patron, and friend of Raffaelle, under the reign of the celebrated Julius II., the contemporary of our Henries VII. and VIII., and was continued by able architects, men of mark and likelihood in art and science: by Bramante; Guilio di San Gallo; Raffaelle da Urbino; Balthazar Peruzzi; Antonio di San Gallo; Giocondo; Michelangiolo Buonarotti; Guilio Romano, the pupil of Raffaelle; Domenico and Giovanni Fontana; Giacomo della Porta; Carlo Maderno; Luigi Cigoli; Borromini; Carlo Rainaldi; and Bernini: to say nothing of the other Fontana; Vignola; Pirrho Li-

gorio; Filippo Ivara; Antonio Cannevari, and the dozen other little ones who were successively employed to bring this structure to its present state.

The popes who successively patronized and employed these eminent men on this splendid work were, Julius II., Leo X., Clement VII., Paul III., contemporaries of Henry VIII. of England: Julius III., Marcellus II., Paul IV., contemporaries with our Edward VI.: Pius V. who, with a year or two of his predecessors, lived at the time of Mary the wife of Philip of Spain: Gregory XIII., Sextus V., Urban VII., Gregory XIV., Innocent IX., Clement VIII., who flourished during the long and auspicious reign of the powerful Elizabeth: Leo XI., Paul, Gregory XV., contemporaries of the British Solomon, James I.: Urban VIII., and Innocent X., the patron of Bernini, and contemporaries of the unfortunate Charles I.

While the future architect of St. Paul's was thus pursuing his studies, the nation was agitated from end to end by civil wars.

The year that gave to the world his learned translation of the *Clavis Mathematicæ*, at the early age of sixteen, deprived England of one of the most elegant minded patrons of the arts and sciences which she has ever possessed, by the beheading of King Charles I. This occurrence was fatal to literary and scientific pursuits, and the brilliant prospects of art, science, and literature were clouded by the furious proceedings of the rough warriors and puritans of the commonwealth.

Charles had a knowledge and love of art surpassing all his predecessors, and had almost adopted a plan for their naturaliza-

tion in England, that his contests with his subjects forced him to abandon. His well-known collection of pictures and other works of art, so shamefully dispersed by the regicides; his patronage of Vandyke and other able artists, are among many authenticated proofs of his taste and love for the arts which adorn and civilize human nature.

The domestic troubles in which the kingdom was embroiled do not appear to have disturbed the studies of this aspiring youth. In his eighteenth year, he proceeded to the degree of B. A. at Wadham College*, and is recorded as being the first inventor of the †micrographic art; that of drawing enlarged views of subjects as they appear through a microscope. In these attempts he was assisted by the ingenious Robert Hooke, whose graphical knowledge, acquired during his studies with Sir Peter Lely, enabled him to assist with his pencil in these micrographical delineations. Hooke afterwards published an account of their discoveries under the title of Micrographia.

These pursuits, so interesting to the natural philosopher, and so apparently trifling to the bustling politician, gave occasion of a sneer to Harrington, the author of Oceana: who, in his "prerogative‡ of popular government," reflected upon Mr. Matthew Wren, Sir Christopher's cousin, who had answered his Oceana, "as one

* March 18, 1650. Bacalaureus in artibus.—*Fasti Oxon.* p. 772.

† Primus erat inventor *artis micrographiæ*, seu *delineandi* et *describendi* minutissima corpora et invisibiles antehac corporum partes, operâ microscopii. SPRAT Hist. Reg. Soc. et ex autographis D^ni^ Paul Neil, Robt. Murray, Eq. D.D. Wilkins et Ward, Drs. Hooke, Microg. Præf.—*Wren, MS.*

‡ Quarto, London, 1658.

of those virtuosi who had an excellent faculty of magnifying a louse, and diminishing a commonwealth."

The letter before quoted concerning his double penned instrument, the invention of which was also claimed by Sir William Petty, is supposed to have been written in 1650, as also his celebrated tract on the theory of the planet Saturn*, which is the result of an investigating and deeply thinking mind, was produced to the little society, which afterwards enlarged themselves into that of the ROYAL SOCIETY OF LONDON.

Des Cartes, the French philosopher, whose doctrines of motion were afterwards furthered and illustrated with experiments by Sir Christopher, died this year. Charles II. was defeated at Worcester by Cromwell, whose power as protector of the commonwealth of England seemed now completely fixed.

In the following year, he wrote an algebraical treatise on the Julian period, which was published in the Prolegomena to the fifth edition of Helvicus's Theatrum Historicum et Chronologicum†. This work, which is the only one by Helvicus whose use has not been entirely superseded, is a series of chronological tables which has gone through several editions, since its first in 1609. The tract by Mr. Wren, containing a method of finding any particular year which may be required, upon giving the cycles, was much esteemed by the most eminent mathematicians

* Observationes de *Saturno* et theoriam istius planetæ instituit, prius quam dissertatio Hugenii de isto argumento erat edita.—*Hist. Reg. Soc.*—*Wren. MS.*

† *Oxon*, 1651.

of this learned period, and has been continued in later editions of Helvicus's work. The author's name is not mentioned; but that it was written by Sir Christopher, and at this period, is manifest, says Ward, the author of the Lives of the Gresham Professors, from a note indorsed on the title-page of the book in the hand-writing of his father the dean, then in the possession of his son, the reputed author of the Parentalia. The words are as follows.: " Denique filio meo modestius renitenti incentivum adhibui, ut tractatulum illum algebraicum, Julianæ periodo (e cyclis in historiâ datis) expiscandæ accommodatissimum, sudante jam (hoc) prælo Oxoniensi, præfigi finiret*." By the date of its first publication, Wren could not have been more than nineteen years of age when he wrote it.

From the manner in which Wren was educated, from the circumstance of his family connexion with the royal cause, from the severe persecution of his father and uncle by Cromwell, the anxiety of himself and his family concerning the important events then in progress can easily be surmised. It had such an effect upon Wren, as to cause in him a remarkable dream, which Aubrey, in his account of " divine dreams of some that I have the honour to be intimately acquainted with, persons worthy of belief†," relates on his friend's own authority.

" Sir Christopher Wren," says this author (then a young Oxford scholar) " being at his father's house at Knoyle, in Wiltshire, in the year 1651, dreamed that he saw a fight in a great market-

* Ward's Lives of the Gresham Professors, p. 107.—fo. Lon. 1740.

† Miscellanies.—8vo. Lon. 1696.

place, which he knew not, where some were flying, and others pursuing; and among those who fled, he saw a kinsman of his, who went into Scotland with the king's army. They heard in the country that the king was come into England, but whereabout he was they could not tell. The next night his kinsman came to his father's house at Knoyl, and was the first who brought the news of Charles II.'s defeat at Worcester."

Aubrey, who has collected in the volume of miscellanies all the extraordinary relations of dreams, spectres, second sight, visions, supernatural transportations, &c., that he could procure, asserts, as well as the compiler of Parentalia, that he had it from Sir Christopher's own mouth. The story is remarkable, but resolvable into the cause I have before ventured to offer; namely, his anxiety concerning the royal cause, which, no doubt, haunted his mind by night and day.

While Wren was pursuing, by sure and certain steps, his road to fame and eminence, Inigo Jones, his great predecessor and most formidable rival in architecture, died; as if to make way for his worthy successor in proper time, before he was thrust from the stage. This great and tasteful artist was born about the year 1572, in the neighbourhood of St. Paul's, London. He was apprenticed to a carpenter and joiner, where his love for, and skill in drawing, received practice; and he acquired that knowledge in construction which he afterwards exercised with such ability. Like Wren, he distinguished himself early, by his extraordinary talents. His skill in the arts of design, particularly in landscape-painting, was much admired; and it is said by one of

his biographers *, that there is still a specimen by him, in the latter art, at Chiswick-House.

These talents recommended him to the notice of the Earl of Arundel, or, as some say, of William, Earl of Pembroke, who took him under his patronage, and sent him to France, Italy, and the politer parts of Europe, with a handsome allowance. He was no sooner at Rome, says Walpole, than he found himself in his sphere, and acquired such reputation, that Christian IV., king of Denmark, sent for him from Venice, the chosen place of his studies, as possessing the master-works of Palladio, and made him his architect.

He returned to England in the train of his Danish majesty, who paid a visit to James I., the husband of his sister, the Princess Anne of Denmark. On his arrival in his native country, he was appointed architect to the queen, and shortly afterwards to Prince Henry, at whose death, in 1612, he revisited the classic shores of Italy. He discharged his duties with such fidelity and judgment, that, previously to his departure, King James gave him the reversion of the place of surveyor-general of his works.

On his second return to this country, he entered upon his office, and executed those splendid works which are indicated by a greater purity of taste, and a less mongrel style, than some of his earlier performances.

Upon the death of King James, he was continued in his post by his son Charles I., and was associated in his honourable and tasteful employments with Rubens, Vandyke, Chapman, Sir Wil-

* Chalmers.

liam Davenant, Daniel, and Ben Jonson. He designed and executed buildings for Rubens, the prince of painters, to decorate with his gorgeous pencil; and scenes, decorations, dresses, and machinery for the most illustrious poets of his time.

His works are too numerous, and perhaps too well known, to be quoted in this work. His style of composition was grand but unequal; as may be witnessed in his celebrated work, the Chapel, or Banqueting-house, Whitehall; the conception of which, as a part, and but a small part, of an immense palace, is undoubtedly noble; its primary divisions are few and simple, its openings large and handsome; but it is unequal in composition and in style. The play of light and shade produced by the breaks over each column is in a minute taste, the direct opposite to the grand. The front being divided into two orders, gives the spectator an idea of the inside being of two stories; and the Ionic of the lower tier is one of the worst and most impure he could have chosen: the modillons do not appertain to the order, and approach too nearly one of the distinctive characters of the Corinthian. The Composite order is better; but if one order over another be admissible in a building of one internal story, at all events the Corinthian should not have been rejected for the purpose of introducing the Composite.

Compared with Wren, Jones was more of an artist by education; had more taste, had seen more of the great works of the Italian and ancient Roman masters. But he was less of a mathematician, had a less expanded mind, and was less of a philosopher. Perhaps nothing of Wren's equals Jones's Water-gate, York Buildings, in point of invention and taste; and nothing of

Jones's equals, in scientific construction, any thing of Wren's. Jones may be called the English Palladio; Wren our Vitruvius.

At the death of Charles I., Inigo Jones adhered to the party of his royal master. He was persecuted and fleeced as a matter of course, and stigmatised as a malignant. He died in grief, poverty, and obscurity, July 21, 1652, and was buried in the chancel of St. Bennet's church, Paul's Wharf, London.

To return from this digression, for which the splendid talents of Inigo Jones, and his associated connexion with my subject, may claim excuse. Mr. Wren, in Nov. 1653, was elected * a fellow of All Souls College, Oxford; and, in the December following, proceeded to the degree of Master of Arts †, before he left Wadham College, as appears from the authority of Wood, and soon after he became a member of that excellent society which I have mentioned before, who then were meeting at Oxford for the improvement of natural and experimental ‡ philosophy.

With all these pursuits, and in the midst of these early and richly-deserved honours, he found time to come to London to justify his right to his invention of the diplographical instrument, and appealed to his judges in confirmation of his claim.

To continue our historical parallel, this was the memorable year when Cromwell, to whom Wren appealed about his right to the character of inventor of the double writing instrument, calling

* Nov. 2, 1653, Electus in *societatem* collegii *omnium animarum* communi omnium consensu. Ex sched. avit.—*Wren, MS.*

† Dec. 12, 1653, Ad gradum magisterii evectus. Ex sched. avit.—*Fast. Oxon.* Vol. II. cap. 102.—*Wren, MS.*

‡ Preface to Ward's Lives of the Gresham Professors.

him the " now greatest person in the nation," dissolved the long parliament, put an end to the Commonwealth, and proclaimed himself sovereign, under the title of the Lord Protector of England. Peace was made between England and Holland; and Christina solemnly abdicated her crown, that she might be at liberty to execute a plan of life, which presented itself to her imagination as a life of true happiness.

During this period of political storms, philosophy still flourished. The year 1654 is the reputed year of the invention of the air-pump by Otto Guericke, counsellor to the elector of Brandenburg, and one of the greatest philosophers of his time. Among other of his discoveries was that of the two brass hemispheres, which, being applied to each other, and the air exhausted by his newly-invented air-pump, sixteen horses were not able to draw them asunder. He also invented the marmoset of glass, which descended in a tube in rainy weather, and rose again when it became fair. This last machine fell into disuse on the invention of the barometer, which has been attributed to Sir Christopher Wren, as will be discussed in its proper place. Guericke made use of his marmoset to foretell storms; whence he was looked upon as a sorcerer by the common people. His house having been struck by lightning, and several of his machines, which he had employed in his philosophical experiments, having been broken, they asserted that it was a punishment from heaven.

While the fury of civil war was raging in the metropolis, Wren was pursuing his studies at Oxford, and calmly preparing himself for those situations, in which he so served his country and mankind, that his worth has never yet been appreciated, nor his

invaluable services acknowledged. Men of the standard of intellect which marked many of this important period, were obliged to enter into the active scenes of life, yet did not bid farewell to their adored studies. Evelyn, who everywhere does justice to his young contemporary, says, in his diary, under the date of this year:—" 1654, July 11, was the Latin sermon, which I could not be at, though invited, being taken up at ALL SOULS, where we had music, voices, and theorbes, performed by some ingenious scholars. After dinner I visited *that miracle of a youth, Mr. Christopher Wren*, nephew to the Bishop of Ely." In another of his works, his admirable " Sculptura," or history of chalcography, he bears the following testimony:—" Such at present is *that rare and early prodigy of universal science*, DR. CHRISTOPHER WREN, our worthy and accomplished friend."

Such was this extraordinary man, who at this time was but in his twenty-third year: and such were the sentiments of one of the ablest, one of the most amiable, and one of the most truth-telling of men, JOHN EVELYN.

In the following year (1655) he greatly assisted in perfecting, even if he did not invent, the great philosophical instrument, the barometer. His was the age of philosophical inquiry, experiment, and discovery, and one of the capacity and inclinations of Wren was sure to dart on a hint, and improve it to his purpose. Oldenburg*, a Saxon of respectable family, who was settled in

* He entered himself a student in the university of Oxford in 1656, by the name of Henricus Oldenburg, Bremensis nobilis Saxo. Biographia Philosophica, p. 409.

England, and was consul for his countrymen in the reign of Charles I., and during part of the usurpation of Cromwell, a member of the incipient Royal Society, and its first secretary, was strongly suspected of clandestinely conveying the discoveries and inventions of his philosophical companions to foreign countries, particularly to Germany and France. The compiler of Parentalia* asserts positively that he did so, and particularly many of Wren's, which were afterwards unfairly claimed by others, and published under other names.

The circumstance of Oldenburg's imprisonment in the Tower, on suspicion of a treasonable correspondence with the enemy, and his subsequent enlargement, somewhat corroborates this opinion. Evelyn mentions in his diary†, that he visited him a close prisoner in the Tower, being suspected of writing intelligence; and expresses his conviction that he will prove innocent. The discovery of his correspondence not being political doubtlessly procured him his discharge; but, at the same time, fixes the accusation of betraying the secrets of the society, with which government had no concern, with redoubled proof.

This breach of trust may or may not have carried the improvements making in this very important discovery to the philosophers of the continent; but the time attributed to Torricelli, the presumed inventor or discoverer of the phenomenon of the weight of the atmosphere on the tube of mercury, must take away all claim to the privilege of *first* discoverer from Wren,

* Page 199. † Aug. 8, 1667.

whatever he may have to collateral or simultaneous discovery. Torricelli, the pupil and assistant * of Galileo, died October 25, 1647, when Wren was but in his fifteenth year; yet Wren was at that time known for his great inventive talents, and as being an experimentalist of the highest reputation. Torricelli, like Wren, Boyle, Hooke, and their associates, turned his attention, in this science-dawning age, to the phenomena of nature, which were no longer proscribed by the bigotry of superstition, to the microscope, the telescope, and similar philosophical inventions and discoveries, to which he had the honour and delight of furnishing many essential improvements. The invention of the instrument in question, the barometer, or baroscope, as it was then sometimes called, is generally attributed to Torricelli, and he has been dignified by its affiliation, under the title of the Torricellian tube. The Rev. Dr. William Derham, an eminent philosopher and divine, to whom the world is indebted for an account of the philosophical experiments of the celebrated Robert Hooke, the rival and controversial adversary of Newton, relates, that the first inventor was Torricelli, in 1643. Yet, to do every man justice, he says, that the real use of it, and the discovery that it was the gravitation of the atmosphere which kept up the quicksilver to such a height, which the learned abroad, particularly Torricelli, had only before suspected, was first proved by Boyle, at the suggestion of Wren. Its rise and fall in the tube had been principally attributed to the moon's influence upon fluids.

* Martin's Biographia Philosophica, p. 414; Buonaventuri's Life of Toricelli, &c.

Torricelli, says Dr. Derham, on the authority of an ingenious friend, whom he does not name, first invented it at Florence in 1643; from whence Father Mersenne brought the discovery into France the year following; and M. Pascal being informed of it by M. Petit, the engineer, they both tried it in 1646 at Rouen *, and was assured of its truth by repeated experiments, which were made with the same success as in Italy. Some time after which an experiment was made with a tube † forty-six feet in length, filled with water, and also with wine, which experiments M. Pascal published an account of in his "Equilibrium of Fluids, and on the Weight of the Air," published in 1647, the year he was first informed of Torricelli's solution of the phenomenon of the weight of the atmosphere. This able experimental philosopher, whose precocious talents were only surpassed by those of Wren, devised the celebrated experiment with two tubes, one within the other, which he describes in a letter written in November, 1647, and with further particulars in 1648. Pascal, also, made his experiments on the summits of hills and buildings, in valleys, &c., which were claimed by Des Cartes, who affirmed that it was at his desire that Pascal made them, and that he predicted their results contrary to Pascal's opinion. After this, Otto de Guericke, the consul at Magdeburg, was informed of it by Father Valerian at Ratisbon, in 1654, who probably had his information from Oldenburg at Oxford, where Boyle, Wren, and Hooke, were then performing their experiments.

* Martin's Biographia Philosophica, p. 414.

† Dr. Derham's Collection of philosophical Experiments of Dr. Hooke and others, London, 1726.

After this, Guericke's experiment, called, from the place of operation, the Magdeburg experiment, became much talked of.

Wren's share of this illustrious discovery may be gathered from the Register Books of the Royal Society, where, under the head of Feb. 20, 1678-9, Mr. Henshaw *, vice president, in the chair, the following interesting and important minutes are to be found: namely, "The minutes of the last meeting of the 13th being read, gave occasion to discourse † *farther* concerning the

* This gentleman, whose name is often mentioned in the Philosophical Transactions of this period, was an intimate friend of John Evelyn, and is frequently mentioned with great respect in his diary. He travelled much with him, and was recommended by him as ambassador to Constantinople; which, however, was obtained by Lord Winchelsea, who, on his return through Sicily, was eye-witness to the dreadful eruption of Mount Etna, in 1669, and published an account of it, with an etching by Hollar. Mr. Henshaw became French secretary to King Charles II., and was once residentiary at Denmark, on the death of the Duke of Richmond, who was ambassador. He published an history of saltpetre. Mr. Evelyn's opinion of this excellent man may be collected from his letter to him in his diary, and from the following dedication of some etchings of views between Rome and Naples to his friend and fellow-traveller.

"Domino Dom. Thomæ Henshaw, Anglo, omnium eximiarum et præclarissimarum artium cultori ac propugnatori maximo, et συνοψάμενῳ ἀυτῷ (non propter operis pretium, sed ut singulare amoris sui testimonium exhibeat) primas has ἀδοκιμασίας aquâ forti excusas et insculptas, Jo. Evelynus delineator, D. D. C. Q.

† At the meeting alluded to, the president, Lord Brouncker, being in the chair, the meeting began with a discourse about the barometer, and the pressure of the atmosphere, concerning which it was debated, what might be the reason why the air should press less in rainy than in dry weather. Mr. Hooke supposed that it might proceed from the circumstance of the air, being at such time peculiarly heavy, taking up more of the dense parts of

theory of the barometer, from what causes the alteration thereof might proceed.

" Some were of opinion, that the cause thereof might proceed from the extraordinary height of the air only ebbing and flowing, as it were, like a tide, but with unconstant motions.

" Mr. Hooke gave his opinions, and promised to elucidate his theory at the next meeting, with experiments. Sir Jonas Moore acquainted the society, that he had by him some papers of Mr. Townley's observations on that subject; as also some later of Mr. Flamstead, and that he would produce them at the next meeting.

" It was desired, that the experiments formerly propounded by Mr. Hooke to be tried at the column on Fish-street-hill might be anew prepared; and in order thereunto, Mr. Hooke was desired to provide convenient glasses, and other conveniencies for the perfecting that trial; and that then the trial might be made again, with all the care and exactness necessary.

" Hereupon it was queried, *how this experiment of the different pressure of the atmosphere came first to be thought of;* and it was related, *that it was first propounded by* Sir Christopher Wren, in order to examine Mons. Des Cartes's hypothesis, whether the passing by of the body of the moon presses upon the air, and consequently also, upon the body of the water: and that the first trial thereof was made at Mr. Boyle's chamber, in Oxford."

The rest of the debate was occupied by Messrs. Henshaw and Halley, Drs. Grew and Croune; but enough has been quoted,

other bodies, and keeping them suspended; whereas in moist and stormy weather, the air being of another nature, could not be charged with such vapours.—*Birch's Hist. of Royal Society*, vol. iii. p. 460.

I trust, to establish our illustrious countryman's claim to the merit of being the discoverer of the barometer, as then (1679) used: Des Cartes' hypothesis being only as to the theory of the influence of the moon upon the tides, and Torricelli's, Pascal's, and de Guericke's experiments being essentially different, and founded on different theories.

Dr. Derham farther states in his work before quoted, that he has heard Mr. Hooke say, it was first observed, that the height of the mercury in the barometer did not conform itself to the moon's motion, but to that of a different gravitation of the air, as has been since sufficiently verified.

Yet, in a French treatise*, printed in Paris, 1664, several years before these experiments at Oxford, the discovery of the gravitation of the air is attributed to Pascal, deduced from several experiments, made about the year 1650, at Clermont, in Auvergne, by M. Perier; at Paris, by others; and at Stockholm, by Messrs. Des Cartes and Chanute, which, if it be true, as is there related, and the inferences from that experiment such as are mentioned, "it is strange," very properly observes Dr. Derham, "they should not have been applied to the use of so beneficial an instrument sooner, which is nowhere proved they were, till after these experiments and observations at Oxford."

Several other of Sir Christopher's discoveries and inventions were thus disputed, which shall be spoken of in their proper places. Of the claim to the barometer, I think it clear that Toricelli has a fair title to that of first discoverer of some aerial

* Traitez de l'Equilibre des Liqueurs, &c.

pressure on fluids, attributed to the moon; but the real suggester of the true theory, and of its application to use, is clearly, from the high authorities which I have adduced, Sir Christopher Wren.

This year, 1655, our young philosopher was honoured with letters on astronomical subjects from Sir Paul Neil, which were continued in the four successive years: and about the same time he joined the society of Dr. Wilkins, and other eminent inquirers into experimental and natural philosophy, at Oxford, which I have before alluded to. Evelyn, in his diary, sets down as a memorabilia, his dining at Oxford, July 13, 1654, at "that most obliging and universally curious Dr. Wilkins's, at Wadham College;" where, among many curiosities, the invention of the scientific doctor, most of which, he says, were the doctor's "owne, and that prodigious young scholar, Mr. Christopher Wren, who presented me with a piece of white marble, which he had stained with a lively red, very deepe, as beautiful as if it had been natural *."

Of this little association of brilliant geniuses, Robert Hooke, of whom I shall have occasion to speak more fully hereafter, as one of the brightest and most inventive men that England has produced, thus speaks: "At these meetings, which were about the year 1655, (before which time I knew little of them) divers experiments were suggested, discoursed, and tried with various successes, though no other account was taken of them, but what particular persons, perhaps, did for the help of their own memories; so that many excellent things have been lost, some few

* Evelyn's Diary, vol. i. p. 279.

only, by the kindness of the authors, have been since made public. Among these may be reckoned the Honourable Mr. Boyle's pneumatick engine and experiments, first printed in the year 1660; for in 1658 or 1659, I contrived and perfected the air pump for Mr. Boyle, having first seen a contrivance for that purpose, made for the same honourable person by Mr. Greatorix, which was too gross to perform any great matter *."

Thus were these illustrious men employing their leisure, their geniuses, their invention, and all their energies in those great designs which bless and do honour to human nature, during the most convulsed periods of our history; proving that times of peace and calm prosperity are not always the most prolific in the production of the milder arts, nor the most congenial with their culture and growth.

From this period till death parted them, the names of Wren and Hooke, with those of Newton, Boyle, Ward, Petty, Wilkins, Bathurst, Rook, Sprat, Evelyn, and other ornaments of the English nation, are constantly in association in the greatest works, inventions, and discoveries of modern times.

Another illustrious contemporary and associate, Dr. Thomas Sprat, the elegant historian of the Royal Society, and afterwards Bishop of Rochester, thus speaks of this learned junto:—"Their first purpose was no more than only the satisfaction of breathing a fresher air, and of conversing in quiet one with another, without being engaged in the passions and madness of that dismal age. And from the institution of that assembly it had been enough, if

* Waller's Life of Dr. Hooke, p. 111.

no other advantage had come but this, that by this means there was a race of young men provided against the next age, whose minds receiving from them their first impressions of sober and generous knowledge, were invincibly armed against all the enchantments of enthusiasm. But what is more, I may venture to affirm, that it was in good measure by the influence which these gentlemen had over the rest, that the university itself, or at least any part of its discipline and order, was saved from ruin. And from hence we may conclude, that the same men have now no intention of sweeping away all the honour of antiquity in this their new design, seeing they employed so much of their labour and prudence in preserving that most venerable seat of ancient learning, when their shrinking from its defence would have been the speediest way to have destroyed it. For the truth of this, I dare appeal to all uninterested men, who knew the temper of that place; and especially to those who were my own contemporaries there: of whom I can name very many, whom the happy restoration of the kingdom's peace found as well inclined to serve their prince and the church, as if they had been bred up in the most prosperous condition of their country. This was undoubtedly so; nor, indeed, could it be otherwise; for such spiritual phrenzies which did then bear rule can never stand long before a clear and a deep skill in nature. It is almost impossible, that they, who converse much with the *subtilty of things* should be deluded with such *thick deceits*. There is but one better charm in the world, than real philosophy, to allay the impulses of the *false* spirit; and that is, the blessed presence and assistance of the *true*.

" Nor were the good effects of this conversation only confined to Oxford; but they have made themselves known by their printed works, both in our own and in the learned language, which have much conduced to the fame of our nation *abroad*, and to the spreading of profitable light *at home*. This, I trust, will be universally acknowledged, when I shall have named the men: the principal and most constant of them were, Dr. Seth Ward, the present lord Bishop of Exeter, Mr. Boyle, Dr. Wilkins, Sir William Petty, Mr. Matthew Wren *, Dr. Wallis, Dr. Goddard, Dr. Willis, Dr. Bathurst, Dr. Christopher Wren †, Mr. Rooke, besides several others, who joined themselves to them upon occasions ‡."

In another part of the same history, this learned prelate, who, as his friend John Evelyn observes, wrote in 1668 a very honest and handsome letter to the commissioners ecclesiastical, excusing himself from sitting any longer among them, he by no means approving their prosecuting the clergy who refused to read the declaration of king James II., in favour of popery §, says, " their meetings were as frequent as their affairs permitted; their proceedings rather by action than by discourse, chiefly attending some particular trials in chemistry or mechanics. They had no rules nor || method fixed; their intention was more to com-

* Cousin of Sir Christopher. † Afterwards Sir Christopher.

‡ Dr. Sprat's History of the Royal Society. 4to. Lond. 1667.

§ Evelyn's Diary, vol. i. p. 653.

|| This was also the case with that celebrated, that *second* Royal Society, *the Asiatic Society*, founded by Sir William Jones; who, in his introductory discourse, copying, I have no doubt, this admirable original, after convincing

municate to each other their discoveries, which they could make in so narrow a compass, than an united, constant, or regular inquisition." Thus commenced, and thus flourished, the glorious seeds of those bright plants of science, which to this day have been producing abundant stores of the richest and ripest fruit.

During the residence of Mr. Wren at Oxford, he pursued his studies; and in anatomical science, he stood among the first professors of the day. I have already mentioned * his abilities as an anatomical demonstrator, at the lectures and dissections of Drs. Scarborough and Willis: he assisted the latter in dissections and a treatise on the brain, besides making all the drawings, as the learned author has testified in his preface †.

In his ardour for philosophical pursuits, he is allowed to have been the author or discoverer of the anatomical experiment

his clear and investigating mind of its beneficial tendency, adds, "perhaps it may be advisable at first, in order to prevent any difference of sentiment on particular points not immediately before us, to establish but one rule, namely, *to have no rule at all.* This only I mean, that in the infancy of any society, there ought to be no confinement, no trouble, no expense, no unnecessary formality."—Sir William Jones's *Discourses, Selected and Edited by J. Elmes.* 12mo. 1821. So did the wise founders of the Royal Society, whose laws, growing with their necessity, and increasing with their greatness, have become what their present fellows now find them, a code of wisdom and utility. So has the compendium of laws and practice, which govern the commonwealth of England, from the king to his meanest subject, called *the constitution*, grown from a state with no laws, but those of convention, and increased to be the admiration and imitation of all Europe; and as superior to any ready made code for a new state, as it is possible for the mind to conceive.

* See page 28 of this work. † Cerebri Anatome. Lond. 1664.

of injecting liquors into the veins of animals *, which Bishop Sprat calls "a noble experiment," exhibited by Wren at the meetings at Oxford, and thence carried into Germany, and published abroad, no doubt by the treachery of Oldenburg. Sir Christopher himself, in a letter to a friend in Ireland, probably Sir William Petty, asserts that he made the first experiments of infusion about the year 1656. After reciting other new experiments in anatomy and philosophy, he thus proceeds: "The most considerable experiment I have made of late is this; I injected wine and ale into the mass of blood in a living dog, by a vein, in good quantities, till he became extremely drunk; but soon after voided it by urine. It will be too long to tell you the effects of opium, scammony, and other things which I have tried this way. I am in further pursuit of the experiment, which I take to be of great concernment, and what will give great light to the theory and practice of physic †."

The French, as usual, laid claim to this discovery, in their journals of 1667; "because," they say, "we are witnesses that a Benedictine friar, one Robert de Gabets, discoursed of it at Mons. de Montmor's ten years ago." On the contrary, the whole body of the Royal Society, and the Philosophical Transactions for 1665 ‡, 1667, and 1668, bear witness to the title of Wren to this important experiment, and how many years § since he first

* Primus erat inventor (Oxoniæ) nobilis istius experimenti anatomici, injiciendi quoscunque liquores in venas animalium, et massam sanguinis. *Wren, MS.;* also *Phil. Trans.* No. vii. p. 128. *Nat. Hist.* Ox. p. 30.

† Parentalia, p. 228. ‡ Page 128.

§ Circa finem Anni 1656, aut circiter, Mathematicus ille insignissimus,

proposed it; which, from infusion, soon advanced to transfusion *, a trial of which latter was ordered at their public meeting of May 17, 1665, as may be seen in their journals, where it was registered by their secretaries, obliged by oath to secresy.

In addition to these irrefragable witnesses, it is also unquestionably attested by the Honourable Robert Boyle, who was an eye-witness of the experiments, and testifies that "their (himself and associates) knowledge of his (Christopher Wren) extraordinary sagacity, made them very desirous to try what he proposed †."

It was now time that the great abilities of Wren should be applied to public advantage; he therefore left the studious privacy of the college for the bustling action of the metropolis. On the retirement of Laurence Rooke ‡ from the professor's chair of astronomy at Gresham College, which he had held with great repute for some years, to that of geometry in the same college, Wren

D. D. Christoph. Wren primus infusionem variorum liquorum in massam sanguineam viventium animalium excogitavit et Oxonii peregit, and much more to the same effect—*Extract of a letter from Dr. Timothy Clark, one of the king's physicians, to Mr. Oldenburg, secretary to the Royal Society.*

* Aubrey, in his Lives of Eminent Men, the MSS. of which are still extant in the Bodleian Library, states, that the Reverend F. Potter, B. D. a great mathematician of his day, "at the Epiphanæ, 1649, when I was at his house, he then told me his notion of curing diseases, &c. by transfusion of blood out of one man into another, and that the hint came into his head, reflecting on Ovid's story of Medea and Jason."—*Aubrey's Lives.* 8vo. Lond. 1813.

† Essays of Natural Experimental Philosophy, Part II. Postscript. Oxon, 1663.

‡ Ward's Lives of the Gresham Professors, p. 90.

was chosen to succeed him *, August 7, 1657, then being in his twenty-fifth year.

His inaugural oration, delivered in Latin † from the astronomy chair, to perhaps as learned an audience as was ever assembled, and which is preserved in Ward's Lives of the Gresham Professors, is an elegant and elaborately finished piece of latinity. He addresses himself with respectful awe to his great and eminent auditory, so different, both in *audience* and *lecturers*, to the Gresham lectures of this day. He finds among them the learned, the polite, the noble of his time. He was succeeding an able and a favourite professor. He was young, inexperienced, and unused to a metropolitan society, whom he knew and felt to be more of the quality of judges than auditors or students, and, therefore, modestly apologized for his juvenile blushes and failings, which, at his age, might appear as if prematurely covetous of fame. Entering into his theme, he boldly censured the Dutch writers, whose swelling title-pages announced to whom their works were useful; and declined giving any encomium on astronomy, as being as useless as to commend the strength of Hercules, or the brightness of the sun. He entered deeply, and, as it

* Aug. 7, 1657. Electus professor Astronomiæ in Collegio Greshamensi Londini.—*Ex. Sched. avit. et Fasti Oxon*, p. 820. *Wren, MS.*

1657. Oratio inauguralis, habita in Collegio Greshamensi Lond. cum Cathedram Astronomiæ Professor electus conscendisset. Anno æt. 25. *Wren, MS.*

† Appendix, No. 8. This oration was first, and I believe *only*, published, till now, in Ward's Lives of the Gresham Professors, from a copy presented by Christopher Wren, esq., the architect's son, to Dr. Mead, by whom it was given to Ward.

appears, satisfactorily to his enlightened and inquiring auditory, into all the necessary investigations of his subject. He wrote it, as he did every thing else, with care and much revision; and the first sketch or draught of it in English being preserved in the Parentalia, a scarce and expensive work, I have reprinted it, as a valuable and interesting document, among a selection of his works in the Appendix *. The variations in the finished oration are curious specimens of the changes of his mind, from the first sketch in English, to the finished performance in Latin.

This year took from the world of science the illustrious discoverer of the circulation of the blood, the celebrated Harvey, in his eightieth year †. Like most authors of important discoveries, his claims were disputed; but he had the satisfaction of seeing his merits acknowledged by his brethren, in an unusual and most honourable manner. By a vote of the College of Physicians, of which he was a member, and elected president, but declined on the account of age and infirmities, his bust, in marble, was placed

* Appendix, No. 9. Paren. fol. 195.

† The history of this eminent physician and philosopher is comprised by his friend, John Aubrey, in the following concise notice: "Gul. Harveus natus 1578, Apr. 2. Folkston in Com. Cantii, primogenitus Tho. Harveii et Joannæ Halk. Frat. Germani, Tho. Jo. Dan. Eliab. Mich. Mat. Sorores, Sarah, Aurey. An. ætat. 10, in schola Cantuar. primis doctrinæ rudimentis imbutus; 14, Col. Gonvil et Caii Alumnus; 19 peragravit Galliam et Italiam; 23, Patavii præceptores habuit Eust. radium, Tho. Minad. H. Fab. ab Aquapend. Consul Angl. 16 * fit; 24 Doctor Med. et Chirurg. Reversus Lond. praxin exercuit, et uxorem † duxit; 25, Coll. Med. Socius; 37, Anatom. et Chirurg. Professor; 54, Medicus Regius factus. Scripsit de motu sanguinis, et de Gen. Animal. Obiit 30 Jan. MDCLVII. ætat. 80."

* Sic Edit. † Smyth.

in their hall, with a suitable inscription, of which * Aubrey gives the following as a transcript :—

GULIELMO HARVEO,
Viro,
Monumentis suis immortali,
Hoc insuper
Coll. Med. Lond.
Posuit.
Qui enim SANGUINIS MOTUM
(ut et ANIMAL. ORTUM) dedit
Meruit esse
STATOR perpetuus.

Aubrey, who knew him well, and who attended his corpse to the grave, as a friend and a real mourner, describes him as " not tall, but of the lowest stature, round-faced, olivaster (like wainscot) complexion ; little eie, round, very black, full of spirit ; his haire was black as a raven, but quite white, twenty yeares before he died."

After the inaugural oration, which at once established the reputation of the young professor, he continued his lectures on astronomy at Gresham College, every Wednesday in term time, which were attended by the same company of eminent † and learned persons, who were the auditors of Mr. Rooke, his predecessor.

* Aubrey's Lives, vol. ii. part 2, p. 378.
† Ward's Lives of the Gresham Professors, p. 96.

The lectures of Wren became celebrated in his day for their intrinsic merit, and are to be regarded with veneration by us of the present, as they occasioned the formation of the chief portion of the nucleus of our Royal Society, confessedly the first institution of its kind in Europe. In 1658, the greatest part of the Oxford Society, which Sir William Petty, in a letter* to the Honorable Robert Boyle, calls, by way of distinction, " the club," coming to London, usually assembled at Gresham College, at the Wednesday's lecture upon astronomy by Christopher Wren, and at the Thursday's upon geometry by Laurence Rooke; where they were joined by William Lord Viscount Brouncker†, William Brereton, esq. afterwards Lord Brereton; Sir Paul Neile; John Evelyn, esq. author of the Sylva; Thomas Henshaw, esq.; Henry Slingsby, esq.; Dr. Timothy Clark; Dr. and afterwards Sir George Ent, the friend and Latin assistant of Dr. William Harvey;

* February, 17, 1658.

† This nobleman, who was the first president of the Royal Society, after its incorporation, was born about 1620, and having received an excellent education, he became very eminent in mathematics. He was created M. D. at Oxford, June 23, 1646. In 1657 and 8, he was engaged in a correspondence in mathematics with Dr. John Wallis, which was published in the " Commercium Epistolium, Oxford, 1658. 4to. With other of the nobility and gentry who adhered to Charles I. he signed the memorable declaration in April, 1660. After the restoration he was appointed chancellor to the queen consort; and by royal charters of July 15, 1662, and April 22, 1663, the first president of the Royal Society on its foundation, which office he resigned November 30, 1677. He died at his house in St. James's-street, Westminster, April 5, 1684. An account of his lordship's works may be found in Bishop Sprat's History of the Royal Society, Martin's Biographia Philosophica, Biog. Brit. Athen. Ox. vol. ii. Chalmers's Biog. Dict. &c. &c.

William Balle, esq.; Dr. Croune, founder of the algebraical lectures at Cambridge; and other persons of similar pursuits and inclinations.

In 1658, his productions increased with his employments. In spite of his duties at Gresham College, his attendances on "the club," which met in his lecture room, his other studies, and the melancholy circumstance of the death of his beloved father, which took place the 29th* May, 1658, he found leisure to solve Pascal's problem†, which was propounded to the learned of England; and proposed another, which had formerly been proposed by Kepler, and solved by himself geometrically, which however was never answered.

Pascal's problem was thus introduced: "Spectatissimos viros matheseios professores, et alios præclaros in Angliâ mathematicos, ut hoc problema solvere dignentur Jean de Montfert‡ maxime desïderat," and was as follows; "Extremis ellipseos diametris, distantia centri ab aliquo puncto in axi transverso, ubi linea eundem secet sub angulo dato, in numeris datis: Segmenta ejusdem lineæ (si opus est) productæ, et intra transversum axem, et elipsin terminatæ, in numeris invenire."

Wren's problem was stated thus: Aream datam semicirculi dati, vel elipseios datæ, ex quocunque puncto diametri cujuscunque, etiam si libet productæ, in data ratione secare.—Adding: Rogo igitur præstantissimos in Galliâ mathematicos, ut problema

* See page 11, of this work.

† 1658. Solutio problematis, propositi à Jean de Montfert, ad Matheseios professores, et alios Mathematicos in Angliâ, ut solvere dignarentur. *Imprim. et apud nos.—Wren, MS.*

‡ A fictitious name assumed by Pascal.

Kepleriarum solvere dignentur, numerice quidem, si fieri possit, saltem geometriæ*?

The speedy solution of Pascal's proposition, which he entitled Solutio problematis mathematici†, and the silence of the French mathematicians as to that of Kepler's, which was proposed to them and solved by Wren, proves the soundness of his mathematical learning, and that his high celebrity was as well founded.

In July, he communicated four mathematical tracts to the learned Doctor Wallis‡, the confuter of Hobbes, which were afterwards published by the doctor as an appendix to his valuable Tractatus de Cycloide.—Their titles are, 1. De rectâ tangente cycloidem primariam. 2. Εὐθυσμὸς curvæ lineæ cycloidis primariæ secundum methodum antiquorum demonstratus. 3. De dimensione cycloidum contractarum et protractarum. 4. De problemate Kepleriano per cycloidem solvendo§.—Besides this he corresponded with Pascal on the subjects of their disputations‖.

The discovery of a straight line equal to a cycloid and its parts was also effected by him this year¶, and testimony to his claims and merits is amply borne by Lord Brouncker and Dr. Wallis. In that year also, while his colleague, Laurence Rooke, the pro-

* J. Wallis Opera Mathemat. Vol. I. p. 540.

† Fo. Lond. 1658, one sheet.

‡ Savilian professor, and keeper of the archives at Oxford, in 1660.

§ 1658. De cycloidibus, eorumque segmentis, necnon de sphæroidibus cycloidalibus, et segmentorum cycloidalium solidis rotundis.—*MS. apud nos. Wren, MS.*

‖ Literæ ad D. Pascal, Parisiis. De doctrina cycloidum. Literæ à D. Pascal. De eodem argumento, datæ Parisii, 1658.

¶ Philosophical Transactions, No. 98, p. 6146.

fessor of geometry, was carrying on his investigations upon the satellites of Jupiter, he made a series of observations upon the body and different phases of the planet Saturn; the results of which he disclosed in one of his lectures at Gresham College*. Thus not only performing his duty sedulously, but establishing himself a reputation at once brilliant and solid.

On September 3, of this year, Oliver Cromwell died, and was succeeded in the protectorship of England by his son Richard.

This was an event of too great moment not to interest the feelings of the whole nation. Wren must have felt it in particular. His family had been persecuted and imprisoned by the protector; his favourite pursuits were hated or despised by him: he, it is true, from his love of quiet and study, and from his intimacy with Mr. Claypole†, Cromwell's son-in-law, was not personally molested; yet a settlement of some regular government was most ardently desired by every body.

"The club" continued their custom of meeting once, if not twice, in a week in term time, till they were dispersed by the public distractions of that year, and the place of their meetings became a quarter for soldiers‡.

Bishop Sprat, an eye-witness of the passing scenes, hastens, he says in his history of the Royal Society, through the detail of "those dreadful revolutions, which cannot be beheld upon paper

* 1658. Prælectiones Greshamenses in astronomiam Kepleri.—*Wren, MS.*

† See page 6, of this work.

‡ Bishop Sprat's History of the Royal Society, p. 57 and 58.—Birch's History of the Society, Vol. I. p. 3.—Parentalia, p. 254.

without horror; unless we remember that they had this one happy effect, to open men's eyes to look out for the true remedy *."

The same learned prelate writes to his friend Professor Wren at Oxford, just after the death of Cromwell†, as follows, dated London 1658, at which time he says Gresham College was garrisoned by the rebels, and the professors driven out.

" DEAR SIR,

" This day I went to visit Gresham College, but found the place in such a nasty condition, so defiled, and the smells so infernal, that if you should now come to make use of your tube, it would be like Dives looking out of hell into heaven. Doctor Goddard of all your colleagues keeps possession, which he could never be

* Sprat's History, p. 58.

† Birch, in attempting to correct what he calls an error in Dr. Sprat's account, has fallen into a much greater one himself. He says, " he," Dr. Sprat, " has evidently mistaken the year 1658 for 1659, in which these distractions happened after Richard Cromwell had resigned the protectorship in May of the latter year; nor was Gresham College possessed by the soldiers till October following, *as appears* from a letter of Mr. Matthew Wren to his cousin Mr. Christopher Wren, then at Oxford, dated the 25th of that month, and printed in the Parentalia as memorials of the lives of Bishop Wren, &c., which letter must have been written in 1659, as it mentions likewise Serjeant Bradshaw as *going into another world*, who, according to Whitlock's Memorials, p. 686, died on the 31st of that month." Now, unfortunately for this corrector of Sprat's errors, Matthew Wren's letter in the Parentalia, which is now before me, is dated October 25, 1658, and just preceding is another from Bishop Sprat, also dated 1658. As to the fact of Serjeant Bradshaw, it proves nothing, as his fears upon Oliver Cromwell's death, and his own infirmities, may have occasioned the appearance that Matthew Wren describes.

able to do, had he not before prepared his nose for camp perfumes, by his voyage into Scotland, and had he not such excellent restoratives in his cellars. The soldiers by their violence, which they put on the Muses' seats, have made themselves odious to all the ingenious world; and if we pass by their having undone the nation, this crime we shall never be able to forgive them: and as for what concerns you, they have now proved, that their pretensions to religion were all feigned, since by hindering your lectures they have committed so manifest a mischief against Heaven. Yet your many friends here hope you will hereafter recompense this unhappy leisure which is afforded you, by making those admirable discourses which you had intended for this place more public; and that you will imitate Cicero, who being hindered from pronouncing his oration *pro Milone*, by the guards of Pompey's soldiers that encompassed his chair, set it forth afterwards more perfect than all the rest*."

His cousin Matthew, eldest son of Matthew Bishop of Ely, wrote him from London at the same time, and on the same account, the following letter, which admirably depicts his own feelings, and the state of the metropolis.

" DEAR COUSIN,

" Yesterday being the first of the term, I resolved to make an experiment, whether Dr. Horton entertained the new auditory of Gresham with any lecture; for I took it for granted, that if his divinity could be spared, your mathematics would not be expected. But at the gate I was stopped by a man with a gun, who told me there

* Paren. p. 254.

was no admission upon that account, the college being reformed into a garrison. Then changing my pretension, I scarce got permission to go in to Dr. Goddard, who gave me assurance enough, that none of your colleagues intended to appear this term, unless the soldiers be removed, of which there is no probability. Upon these premises, it is the conclusion of all your friends, that you may save that journey hither, unless some other occasion calls you: and for these I expect you will make me your agent, if they be such as I am capable of dispatching. But it will not perhaps be amiss to take from hence the occasion of a short and civil letter to the committee, signifying that you hope you have not deceived their expectations in choosing you, and that you are ready to attend your duty, but for this public interruption and exclusion from your chamber; or what else you will that looks towards this. I know no more domestic news, than what every body talks of. Yesterday I was in Westminster-hall, and saw only Keudigate and Windham in the two courts, and Wild and Parker in the Exchequer; in the Chancery none at all, for Bradshaw keeps the seal as if it were to be carried before him in the other world, whither he is going. Glyn and Fountain pleaded at the bar. They talk much of the mediation of the two crowns, and proceed so far as to name Marshall Clerambault for the ambassador, who is to come hither from France. My service to all friends.

" Dear cousin,

" Your most humble servant,

" MATTHEW WREN.

" London, October 25, 1658."

The distractions of the times were most unfavourable to the progress of science. Men the most fitted for public works declined their assistance from disinclination to the existing government of the country. John Evelyn relates being summoned to London* by the commissioners for new buildings, and also by the commissioners of sewers; but because there was an oath to be taken of fidelity to the government as then constituted, he excused himself and returned home.

The regal state affected by Cromwell and his family, and the worn out apathy of the people, are strongly depicted by Evelyn, who this year† "saw the superb funeral of the protector. He was carried from Somersett House in a velvet bed of state drawn by six horses, housed with the same; the pall held up by his new lords; Oliver lying in effigy in royal robes, and crowned with a crown, sceptre and globe, like a king. The pendants and guidons were carried by the officers of the army; the imperial banners, achievements, &c. by the heralds in their coats; a rich caparisoned horse, embroidered all over with gold; a knight of honour armed cap-a-pie; and after all, his guards, soldiers, and innumerable mourners. In this equipage they proceeded to Westminster: but it was the joyfullest funeral I ever saw, for there were none that cried but dogs, which the soldiers hooted away with a barbarous noise, drinking and taking tobacco in the streets as they went."

The desire for knowledge, and particularly for natural and experimental philosophy, still increased; and the formation of a regular society employed the thoughts of many distinguished

* Evelyn's Diary, October 19, 1659. † Ibid. October 22, 1658.

persons. Among others, Evelyn * communicated to the justly celebrated Robert Boyle his proposal for erecting a philosophical and mathematical college.

Chemistry was also among the studies of Wren, and his zealous determination of acquiring every branch of human knowledge is proved by the pains he took in procuring the ablest instructors for his guides. Wood, the historian of Oxford, records that in this year †, " the noted chemist and rosicrucian, Peter Sthael of Strasburgh, in Royal Prussia, was brought to Oxford by the honourable Mr. Robert Boyle, A. D. 1659. Among the chiefest of his scholars were Doctor John Wallis, Mr. Christopher Wren, afterwards a knight, and an eminent virtuoso, with others of great names in physic and learning ‡." His lectures this year at Gresham College were on the nature and properties of light and refraction §.

The ensuing year, 1660, was one of eminent distinction, and forms an epoch in the history of science and of the country. Its leading feature is the restoration of Charles II. Evelyn calls it ANNUS MIRABILIS 1660, and blesses God, in his diary, for the restoration of a monarchical government without the shedding of blood.

On the resignation of Doctor Seth Ward from the Savilian professor's chair at Oxford ‖, Wren was chosen to succeed to that

* Diary, Sept. 1, 1659. † 1659.

‡ Life of Ant. a Wood, by himself, p. 559, *Oxon.* 1730.

§ 1659. Lecturæ Anglice et Latine Greshamenses de luce et refractione. —*Wren, MS.*

‖ Jan. 31, 1660. Resignante clarissimo viro doctore *Setho Ward*, postea episcopo Sarisburiensi.—*Wren, MS.*

honourable office *, and was admitted the 15th of May following, a few days before the restoration of Charles II.

Among others who proposed schemes for a philosophical society or college was Cowley the poet, which Dr. Sprat admits much hastened the formation of the Royal Society. His intention was, that in some place near London there should be bestowed liberal salaries on a competent number of learned men, to whom should be committed the operations of natural experiments †. Dr. Sprat observes, that " this model was every way practicable: unless, perhaps, in two things, he did more consult the generosity of his own mind than of other men's: the one was the largeness of the revenue, with which he would have his college at first endowed: the other, that he imposed on his operators a second task of great pains, the education of youth ‡."

The restoration of Charles II. gave confidence to the country. The joy of all classes was unbounded. The whole nation flocked round their returned sovereign with gratification and delight. Plans for the improvement of national manners, of education, of philosophy, were in abundance, and the Royal Society was founded. The purpose of its founders, says its first and best

* Feb. 5, 1660. Electus professor *Savilianus* astronomiæ in academiâ Oxon. ex autographo electorum.—*Wren, MS.*

Christophorus Wren, A. M. Collegii Omnium Animarum socius electus erat in professorem astronomiæ Savilianum in academiâ Oxon. Feb. 5, 1660, admissus 15 Maii sequentis. Doctoratum posteà in jure civili suscepit; et regiæ majestati rei architectonicæ procurator supremus, sive generalis, meritissimus audet.—*Hist. et Antiq. Univer. Oxon.* Lib. II. p. 42.

† Sprat's Hist. of Royal Society, p. 59. ‡ Ibid.

historian*, "was to make faithful records of all the works of nature or art which can come within their reach: that so the present age and posterity may be able to put a mark on the errors which have been strengthened by long prescription: to restore the truths that have lain neglected: to push on those which are already known to more various uses: and to make the way more passable to what remains unrevealed. This is the compass of their design. And to accomplish this, they have endeavoured to separate the knowledge of nature from the colours of rhetorick, the devices of fancy, or the delightful deceit of fables. They have laboured," continues this learned prelate, "to enlarge it, from being confined to the custody of a few; or from servitude to private interests. They have striven to preserve it from being overpressed by a confused heap of vain and useless particulars; or from being straitened and bounded too much up by general doctrines. They have tried to put it into a condition of perpetually increasing; by settling an inviolable correspondence between the *hand* and the *brain*. They have studied to make it not only an enterprise of one season, or of some lucky opportunity; but a business of time; a steady, a lasting, a popular, an uninterrupted work. They have attempted to free it from the artifice and humours and passions of sects; to render it an instrument whereby mankind may obtain a dominion over *things*, and not only over one another's judgments. And, lastly, they have begun to establish these reformations in philosophy, not so much by any solemnity of laws, or ostentation of ceremonies, as by *solid prac-*

* Bishop Sprat.

tice and examples: not by a glorious pomp of *words;* but by the silent, effectual, and unanswerable arguments of *real productions.*

"As for what belongs to the members themselves, that are to constitute the society; it is to be noted, that they have freely admitted men of different religions, countries, and professions of life. This they were obliged to do, or else they would come far short of the largeness of their own declarations. For they openly profess, not to lay the foundation of an English, Scotch, Irish, popish, or protestant philosophy; but *a philosophy of mankind**."

This is a true definition of the philosophy then cultivated by this band of brethren: and Wren was a brilliant example of their school. I have shown how he is identified with their original structure, and will proceed to their incorporation by †royal charter, wherein he is no less noticeable.

On the 28th of November, 1660, as appears from the journal book of the society‡, Lord Brouncker, the Hon. Robert Boyle, Mr. Bruce, Sir Robert Moray, Sir Paul Neile, Dr. Wilkins, Dr. Goddard, Dr. Petty, Mr. Balle, Mr. Rooke, Mr. Christopher Wren, and Mr. Hill, some of whom had been companions of the king in his exile, after the lecture of Mr. Wren at Gresham College, withdrew for mutual conversation into the professor's apartment, where, amongst other matters, they discussed the proposed foundation of a college or society for the promotion of physico-mathematical experimental learning. And because they had these frequent occasions of meeting with one another, it was proposed,

* Sprat's Hist. of the Royal Society, p. 62.

† The draught of the preamble was intrusted to Wren. See the Appendix, No. 10.

‡ Vol. I. p. 1.

that some course might be thought of to improve this meeting to a more regular way of debating things; and that, according to the manner of other countries, where there were voluntary associations of men into academies for the advancement of various parts of learning, they might do something answerable here for the promoting of experimental philosophy.

In order to this, it was therefore agreed that the company should continue their weekly meetings on the days of Mr. Wren's lectures at Gresham College, and in the vacation at the chambers of Mr. Balle, in the Temple, and that towards the defraying of occasional expenses, every one should, at his first admission, pay down ten shillings; and, besides, engage to pay one shilling weekly, whether present or absent, whilst he should please to keep his relation to the company.

At this meeting, Dr. Wilkins was appointed to the chair; Mr. Balle to be treasurer; and Mr. Croune, though absent, was named register. At the same time, to enable them to ascertain how many were the elected members of the society, it was desired that a list might be made of the names of such persons as were known to those present, and judged by them fit and willing to be joined with them in their design; and who, if they should desire it, might be admitted before any others.

A list was then offered of the following distinguished persons:

Mr. Ashmole.
Mr. Austen.
Dr. Bate.
Dr. Baynes.
The Hon. Robert Boyle.
The Hon. Mr. Brereton.
Dr. Clarke.
Mr. Coventry.

Dr. Cowley *.
Dr. Coxe.
Mr. Croune.
Mr. Denham †.
Sir Kenelme Digby.
Dr. Ent.
Mr. Evelyn.
Dr. Finch.
Dr. Frazier.
Dr. Glisson.
Lord Hatton.
Dr. Henshaw.
Mr. Henshaw.
Mr. Jones.
Dr. Merett.
Dr. Morgan.
Mr. Newbury.
Mr. Oldenburg.
Dr. Petty.
Mr. Povey.
Mr. Rawlins.
Dr. Scarborough.
Mr. Slingsby.
Mr. Smith.
Mr. John Vaughan.
Dr. Wallis.
Dr. Ward.
Dr. Willis.
Mr. Christopher Wren.
Mr. Matthew Wren.
Mr. Wyle ‡.

Of such illustrious, learned, and scientific men, was the first list of the Royal Society composed.

After Mr. Wren's next lecture, on the 5th of December, 1660, Sir Robert Moray brought them the welcome news, that the king had been acquainted with the design of the meeting, that he well approved of it, and would be ready to give it every encouragement.

* The poet, created Doctor of Physic at Oxford, Dec. 2, 1657.—*Wood, Fasti Oxon.* Vol. II. col. 120.

† Afterwards Sir John Denham.

‡ Birch's History of the Royal Society, Vol. I. p. 4.

Their first order was, that Mr. Wren* be desired to prepare, against the next meeting, for the pendulum experiment: and, among others, that he, with Dr. Petty, be desired to consider the philosophy of shipping, and to bring in their thoughts about it to the society. On the 12th of December, the seeking a proper place for the weekly meeting of the society was referred to him, his cousin, Mr. Matthew Wren, Lord Brouncker, Sir Robert Moray, Sir Paul Neile, and Dr. Goddard. They fixed on Gresham College till further notice. In several places it is referred to Mr. Christopher Wren, Lord Brouncker, and others, concerning the barometer, which is called "the quicksilver experiment."

At the first institution of the Royal Society, its principal members were chiefly of the class called *gentlemen*, yet it admitted very many of particular professions. During the late presidency†, a sort of aristocratic feeling arose in the society, and certain professions and trades, and even mercantile pursuits, were proscribed as unworthy of its honours. It is, however, to be hoped, that, under its present government, a return to its original destination may be effected, and its utility be increased with its comprehensiveness. In its origin, says Bishop Sprat, they embraced every assistance that was useful to them, and, "which is the more remarkable, inasmuch that they diligently search out, and join to them, all extraordinary men, though but of ordinary trades‡."

The royal founder himself set the society an example, in this

* Birch's History of the Royal Society, Vol. I. p. 4.
† That of Sir Joseph Banks. ‡ Hist. Roy. Soc. p. 67.

way, that ought to preside at all their meetings, and govern the direction of many of their members in their nomination of proposed fellows. At one of their earliest meetings, Dr. Whistler brought in a book, called "Natural and Political Observations upon the Bills of Mortality, by JOHN GRAUNT, *Citizen of London;*" and the doctor read the dedication to Sir Robert Moray, the president, by the author, who sent fifty copies of the book to be distributed among the members of the society; for which the thanks of the society were ordered to be presented to him, and he was proposed a candidate *. Dr. Sprat adds, "that it was on the recommendation of the king himself, and so far from its being a prejudice to him, that he was a shopkeeper of London; that his majesty gave this particular charge to his society, that *if they found any more such tradesmen, they should be sure to admit them all,* without any more ado. From hence," says the bishop, who well knew the king's inclinations, "may be concluded, what is their inclination towards the manual arts; by the careful regard which their founder and patron has engaged them to have for all sorts of mechanic-artists."

Among other works of Wren, in this year, is a method for the construction of solar eclipses, which was discovered by him about this time, and considered so excellent, that it was published by Flamstead, the astronomer royal, in his doctrine of the sphere, and was followed for many years as the most concise and plain †. He also commenced a series of papers on the longitude, which his

* Birch's History of Roy. Soc. Vol. I. p. 75.

† Sir Jonas Moore's System of the Mathematics, 4to. Lond. 1681.

son in the Parentalia asserts is a subject that occupied his thoughts very early in life, and was always kept in view by him afterwards. They are arranged in the manner of an introduction and discourse. The introduction, which, excepting the last paragraph, appears, says the compiler of Parentalia, to have been written about the year 1660, contains accounts of the various ways made use of by the ancients, and those of later times, for finding the longitude. Some parts of the discourse that follows it were written in the year 1612; others so late as 1720: and the whole consists of various methods, proposed by Mr. Wren for that purpose, with diagrams of several instruments proper for the requisite operations. The same author says they were engraved on copper plates, and that they were in the possession of Mr. Christopher Wren, his son *.

In a former part of this work †, I have alluded to the memorable service rendered by Sir Christopher and his excellent father to the knights of the most noble order of the Garter, by redeeming and preserving from destruction their invaluable records, called, from their binding, the Black, Blue, and Red Books; with other books, papers, and documents of the institution. This service can never be too much acknowledged, and should alone, without so many other causes of gratitude, endear the name of Wren to the whole of the world of honour.

These important records remained during the whole of the period from their redemption by Dean Wren, till the 11th of August, 1660, in the custody of himself and his son, when they

* Parentalia, page 247. † Page 9.

were delivered to the new registrar of the order, Dr. Brune Ryves, his father's successor in the deanery of Windsor, as appears from the following receipt * in the possession of the family.

" I do acknowledge, that I have received of Mr. Christopher Wren, the son of Mr. Dean Wren, a box, in which are the three register books, and other note-books, all relating to the most noble order of the Garter; in testimony whereof, I have hereunto set my hand, this 11th day of August, in the year 1660.

(Signed) " BRUNE RYVES."

They had not, however, the like success in their endeavours to preserve the George and Garter of the great Gustavus Adolphus, king of Sweden; which contained four hundred and ninety-eight diamonds, and were returned after his death by a solemn embassy, in pursuance of the statutes of the order. By the king's (Charles I.) command, they were committed to the custody of the dean and chapter of Windsor, to be laid up in their treasury for a perpetual memorial of that renowned king, who died in the field of battle, wearing some of those jewels, to the great honour of the order, and as a true martial prince and companion thereof†." Dean Wren, to prevent the irretrievable loss of such valuable remembrances, by the plunder of the regicides in 1642, took the extraordinary care, with hazard of his life, to bury them under the floor of the treasury; and deposited a sealed note in the care of a responsible friend, intimating where they might be found in the event of his decease.

* Ex autograph. Parentalia, p. 136.

† ASHMOLE's Order of the Garter, pp. 203 and 641.

In this place they remained in security till about the middle of March *, 1645, when, being discovered by Cornelius Holland, a regicide, and taken thence by Colonel Ven, then governor of Windsor Castle, who delivered them to Colonel Whitchcott, the person who succeeded him in the government, and who would not suffer the common prayer service to be used at the interment of Charles I., they were at length taken away by John Hunt, treasurer to the trustees appointed by the Long Parliament for the sale of his majesty's property, and sold by them to Thomas Beauchamp, then clerk.

Wren lost this year his early friend and mathematical instructor †, William Oughtred ‡, the most celebrated mathematician of his day, and author of the Clavis Mathematicæ, which Wren translated into Latin §.

Among other illustrious pupils of this useful man and eminent mathematician, were Seth Ward, afterwards Bishop of Salisbury,

* Ashmole's Order of the Garter, pp. 204 and 641.

† Aubrey's Lives of Eminent Men, Vol. II. p. 472.

‡ This eminent mathematician was born at Eton in 1574. He was educated as a scholar upon the foundation of that school; was elected thence in 1592 to King's College, Cambridge; of which, after the regular time of probation, he was admitted perpetual fellow. In 1596 he took his bachelor's degree; and in 1599 proceeded M. A. After receiving orders, he was, in Feb. 1605, instituted to the vicarage of Shalford in Surrey, which he resigned on being presented, in 1610, to the rectory of Albury, near Guilford, whither he repaired, and continued his mathematical pursuits as he had done at college, without neglecting the ministerial duties of his office. After passing a long and useful life, he died at his rectory, June 30, 1660, aged 86, and lies buried in the chancel of Albury church.

§ See page 22 of this work.

Sir Jonas Moore, Sir Charles Scarborough, Mr. Henshaw, and Sir Christopher Wren *.

Aubrey, his contemporary, describes him as a little man, with black hair, black eyes, and a great deal of spirit. His wit was always working, and he would draw lines and diagrams in the dust. His eldest son, Robert, told Aubrey that his father used to lie in bed till twelve o'clock, ever since he could remember; that he studied late at night, had his tinder-box by him, and on the top of his bedstaff had his ink-horn fixed. He was so celebrated abroad for his learning, that several great mathematicians came over to England to be acquainted with him. He believed in astrology, and, according to Aubrey, was very lucky† in giving his judgments in nativities. He was a great lover and practiser of chemistry, and told Mr. Evelyn, but a year before he died, that if he were but five years younger, he doubted not but he should discover the composition of the philosopher's stone. This gentleman mentions him in his Diary more than once, and gives the following interesting account of his venerable friend:—"Came that renowned mathematician Mr. Oughtred, rector of Albury, to see me, I sending my coach to bring him to Wotton, being now very aged. Amongst other discourse he told me he thought water to be the philosopher's first matter, and that he was well persuaded of the possibility of their elixir; he believed the sun to be a material fire, the moon a continent, as appears by the late selenographers; he had strong apprehensions of some extraordinary event to happen

* Aubrey's Lives, Vol. II. p. 471. † Ibid. p. 473.

the following year, from the calculation of coincidence with the deluvian period; and added that it might possibly be to convert the Jews by our Saviour's visible appearance, or to judge the world; and therefore his word was *parate in occursum*. He said original sin was not met with in the Greek fathers, yet he believed the thing; this was from some discourse on Dr. Taylor's late book which I lent him*."

Ralph Greatrex, or Greatorix, his friend, a celebrated mathematical instrument maker, says, that Oughtred died for very joy at the restoration of Charles II., which was only a few days before his death. "Are ye sure he is restored? then give me a glass of wine to drink his sacred majesty's health! His spirits were then quite upon the wing, and they fled away†."

Wren and the philosophic club, as John Evelyn calls their society, in his interesting Diary, daily increased in public favour. Their new year began with admitting Messrs. Evelyn, Boyle, Oldenburg, Rawlins, Ashmole, Henshaw, and Sir John Denham, as fellows‡. Jan. 6, 1661. "I was now chosen§ and nominated by his majesty for one of the council, by suffrage of the rest of the members, a fellow of the philosophic society, now meeting at Gresham College, where was an assembly of divers learned gentlemen. This being the first meeting since the king's return; but it had been begun some years before at Oxford, and was continued with interruption here during the rebellion."

"16. I went to the philosophic club, where was examined

* Evelyn's Diary, Aug. 28, 1655, Vol. I. p. 295.

† Aubrey's Lives, Vol. II. p. 476. ‡ Birch's Hist. Roy. Soc. Vol. I. p. 8.

§ Evelyn's Diary, Vol. I. p. 329.

the Torricellian experiment. I presented my circle of the mechanical trades, and had recommended to me the publishing of what I had written of chalcography*."

On the 6th of March following, Sir Robert Moray† was chosen president; but as the society was not incorporated till some time afterwards, when Lord Brouncker was named president in their charter, he is mostly spoken of as the first president of the Royal Society. The 10th of April, Mr. Wren was appointed of committee with Lord Brouncker, Sir Robert Moray, Sir Paul Neile, Dr. Wallis, and Dr. Goddard, to consider all sorts of tools and instruments for making glasses proper for perspectives, for the use of the society, and to meet together on Fridays for that purpose‡; and, on the same day, his friend, Sir Robert Moray, was again chosen president for another month. Thus it may be perceived that the industry of the indefatigable Wren knew no bounds; for while he was occupied for the philosophic society in forwarding improvements in every branch of science, he was pursuing his studies at Oxford for his degrees with equal perseverance.

The whole of Wren's discoveries, works, and inventions will, perhaps, never be recovered. His carelessness of present fame, his modesty, and his merits were alike transcendant, and he printed nothing himself. He complained sharply that Oldenburg neglected to enter his papers, and often sent his inventions and papers abroad, where they were claimed by others§. As an

* Evelyn's Diary, Vol. I. p. 329.

† Birch's Hist. Roy. Soc. Vol. I. p. 17. See Appendix, No. 11, for the first list of this illustrious body.

‡ Ibid. p. 20. § Parentalia, p. 247.

example, this very Doctor Wallis, who is associated with him on this last-mentioned committee, and stands justly celebrated as a philosopher, a mathematician, and a divine; whose works are honoured in being published by the curators of the university press; whose celebrated controversy with Hobbes, of Malmesbury, and animated reply to his Στιγμαι *, procured him an extensive and lasting reputation, is not entirely clear from the foul charge of appropriating the discoveries of Wren, and other eminent careless ones, to his own careful self. "'Tis certain," writes Aubrey in the life-time of them both, "that he is a person of real worth, and may stand with much glory on his own basis, and need not be beholden to any man for fame, of which he is so extremely greedy, that he steals feathers from others to adorn his own cap. For example, he lies at watch for Sir Christopher Wren's discourse, Mr. Robert Hooke, Dr. William Holder, &c.; puts down their notions in his note-book, and then prints it without owning the authors. But, though he does an injury to the inventors, he does good to learning, in publishing such curious notions, which the author, especially Sir Christopher Wren, might never have leisure to write himself †." Is it not, then, fair to conclude, that Wallis's demonstration of the equating of a straight line to a parabola, published in 1659, and his work, called De Cycloide et Corporibus inde Genitis, &c. &c., and other subjects, on which we know Wren employed his capacious and versatile invention, have been thus borrowed from the well-plumed cap of his illustrious friend.

* Martin's Biog. Phil. p. 276.

† Aubrey's Lives of Eminent Men, Vol. II. p. 570.

In the May of this year, Wren was pursuing his studies at Oxford; and his absence was much felt at the new society. Among their earliest records we find that, on the 8th of May, 1660, "it was proposed, that the society write to Mr. Wren, and charge him in the king's name to make a globe of the moon; and likewise to continue the description of several insects as he had begun *."

The king's commands were communicated to Mr. Wren, at All Souls College, Oxford, under letters from Mr. Powle; a joint one from Sir Robert Moray and Sir Paul Neile, and a separate one from his friend Sir Robert Moray.

That from Mr. Powle is as follows:

To † Dr. ‡ Wren, *at All Souls College, in Oxford.*

"Sir,

"I am commanded by the Royal Society § to acquaint you, that his majesty expects you should prosecute your design of making the representation of the lunar globe in *solido;* and that you should proceed in drawing the shapes of little animals as they appear in

* Birch's Hist. Roy. Soc. Vol. I. p. 21.

† Ex autograph. Paren. p. 210.

‡ There appears some discrepancy between these dates and his taking his doctor's degree, which, as will be seen, was not till some months afterwards.

§ Nor was yet installed as the Royal Society by charter or incorporation, although by courtesy they were so called.

the microscope; and that he doth expect an accouut of this from you shortly.

" I am, Sir, &c.

" HEN. POWLE."

That from Sir Robert Moray, then president, and Sir Paul Neile, is no less flattering, and begins:

To DR. WREN, *Savilian Professor of Astronomy at Oxford.*

" MUCH HONOURED FRIEND,

" The king hath commanded us to lay a double charge upon you, in his name, to perfect a design, wherein he is told you have already made some progress, to make a globe representing accurately the figure of the moon, as the best tubes represent it: and to delineate, by the help of the microscope, the figures of all insects, and small living creatures you can light upon, as you have done those you presented to his majesty. If it were needful to add any further excitement to your industry, we should tell you how much our whole society is rejoiced, that his majesty has a just esteem of your parts, and honours you with his commands, which we are confident will prevail with you, and therefore we reserve all other motives for other things, only we expect you will signify to us your readiness to comply with his majesty's pleasure; and you may be sure we will improve it as much to

your honour and advantage as is possible for, much honoured friend,

" Your most affectionate humble servants,

" R. MORAY, P. NEILE.

" Whitehall, May 17, 1661."

The other letter on this topic is from Sir Robert Moray, his active, warm, and sincere friend.

To DR. WREN, &c.

" MY WORTHY FRIEND,

" Since my last I told the king you had finished your lunar globe, and desired to know what are his further commands; and he commanded me to let you know, he would have you bring it hither to him. I have also to tell you, that in compliance with your desire to be eased of the further task of drawing the figures of small insects by the help of the microscope, we have moved his majesty to lay his commands on another, one Vander Diver; and we have also persuaded Mr. Hooke to undertake the same thing. This is all the trouble you shall now have from, my worthy friend,

" Your real humble servant,

" R. MORAY *.

" Whitehall, August 13, 1661."

* This excellent person, as Evelyn, who knew him well, justly calls him, and admirable philosopher, was, with Wren, one of the first founders of the Royal Society. He was well versed in natural philosophy, and was uni-

In pursuance with the king's commands, and by directions of the Royal Society, the globe of the moon was accurately finished and presented to his majesty at Whitehall, who received it with peculiar satisfaction, and ordered it to be placed among the most valuable curiosities of his cabinet.

Bishop Sprat, the elegant historian of the Royal Society, describes it as "representing not only the spots and various degrees of whiteness upon the surface, but the hills, eminences, and cavities moulded in solid work. The globe, thus fashioned into a true model of the moon, as you turn it to the light re-

versally beloved and esteemed. He was the first president of the society afterwards called Royal, and continued, with only one monthly intermission, of Dr. Wilkins, till its incorporation by royal charter. Sir Robert was generally the organ of communication between the king and the society, and was a privy counsellor and prime minister for Scotland. As I have shown, he was the first bearer of the royal message to the society; so was he, according to Bishop Burnet, the life and soul of that body. He was as assiduous as his friend Wren in promoting its valuable purposes; and their names are to be met with in almost every page of Dr. Birch's very circumstantial history of the society. He was universally beloved and esteemed; and "of so great piety," says Burnet, "that in the midst of armies and courts, he spent many hours a day in devotion. He had an equality in him that nothing could alter; and was in practice a stoic. He had a superiority of genius and comprehension to most men, and a most diffused love to all mankind, delighting on every occasion of doing good." A character so parallel in all points with that of Wren, naturally produced a most friendly and inviolable attachment to each other. He died suddenly at his pavilion at Whitehall; and being particularly in the king's favour, was, at his majesty's own charge, buried in Westminster Abbey, near the remains of Sir William Davenant.—*Burnet. Parentalia.*

presents all the monthly phases, with the variety of appearances that happen from the shadows of the mountains and the valleys *."

The globe was fixed on a handsome turned pedestal of lignum vitæ, with a scale of miles, and the following inscription engraved upon it:—

CAROLO SECVNDO
M. BR. FR. ET HIB. R.
CVIVS AMPLITVDINI QVIA VNVS NON
SVFFICIT
NOVVM HVNC ORBEM SELENESPHAERIO
EXPRESSVM
D. D. D.
CHR. WREN †.

Professor Ward relates, in his Lives of the Gresham Professors ‡, that both this curious piece of art, and the letters signifying the king's commands for making it, were, at the time of his writing (about 1640), in the possession of his son, Christopher Wren, Esq.

The lunar globe met with much abuse in a Voyage to Eng-

* Sprat's History of the Royal Society, p. 315. Lond. 1667.

† The family manuscript in the Lansdown Collection gives a different date from this, namely, 1663; but I have followed the other authorities as more probable. 1663. Selenographia vera, *i. e.* globus hunc in solido, opere geometricè, formatus (hunc orbem selenosphærio expressum), serenissimo Regi Carolo II. cujus amplitudini quia unus non sufficit, D. D. D. I. Apud nos.—*Wren, MS.*

‡ Page 100.

land, then just published, by one Mons. de Sorbiere, the Pilet of his day; a schemer, says Evelyn, who had "passed through a thousand shapes to ingratiate himself in the world; after having been an Aristarchus, physician (or rather mountebank), philosopher, critic, and politician*." Bishop Sprat, for the honour of his country and his friend, answered the slanderer: and, in speaking of Wren's lunar globe, asks, "in which is Mons. de Sorbiere more ridiculous, his history or his policy? His history, in speaking so many false reproaches aloud; his policy, in whispering such trifles with so much caution? I beseech you, sir†, let us allow him the reputation of this new invention entire; though he did not think fit to name the famous author of the lunar globe, which he saw in the king's closet‡." The good bishop might have left this "Mons. de Sorbiere, Historiographe du Roi," to his countrymen, who knew him too well to be duped by his falsehoods:—"I would not," says Voltaire, "imitate the late Mons. de Sorbiere, who, having stayed three months in England, without knowing any thing of its manners or its language, thought fit to publish a relation, which proved but a dull scurrilous satire upon a nation he knew nothing of." Among other impositions in which he was detected, was a correspondence with Hobbes of Malmesbury, who used to write to Sorbiere on philosophical subjects; and those letters being sent by him to Gassendi, seemed so worthy of notice to that great man, that he

* Evelyn's Memoirs. London, 4to. 1819. Vol. II. p. 138.

† The bishop's observations on Mons. de Sorbiere's Voyage into England were dedicated to Sir Christopher Wren.

‡ Edit. 1708. p. 148. The first edition was published in 1665.

set himself to write proper answers to them. Gassendi's answers were sent by Sorbiere to Hobbes, who thought himself happy in the correspondence of so profound a philosopher: but, at length, the artifice being discovered, Sorbiere was disgraced *. Among his works are many plagiarisms from the English philosophers of this period, such as "Discours sur la Comete, 1665;" "Discours sur la Transfusion de Sang d'un Animal dans le Corps d'un Homme," &c.

This Protean sycophant and arch manœuvrer, like most of his class, outmanœuvred himself, and in most instances obtained more praise than profit for his flatteries and his falsehoods. For his abuse of England, his own government then on good terms with ours, banished him by a lettre de cachet, to Nantes †; and he was deprived of his title of *Historiographe du Roi* by the king himself. Pope Clement IX., whom he flattered from his hat to his tiara, rewarded him with some little honours; but not with much regard to his purse, which occasioned him to bemoan to the pope—"Most holy father, you give ruffles to a man who is without a shirt."

About this time Wren added to the many inventions which he presented to the society, one for the more correct delineation of optical lines ‡, which was ordered to be printed in their transactions.

Although, as appears by the letters of Sir Robert Moray and others, he was addressed early in the year as Dr. Wren, yet it

* Chalmers's Biographical Dictionary; Aikin's do. &c. † Moreri.

‡ 1660, vel ante ab ipso. Descriptio Machinæ inventæ ad delineandas lineas exteriores cujuscunque rei, opticâ projectiones.—*Phil. Trans.* No. 45, p. 898. cum fig.—*Wren, MS.*

was not till September 12 of this year that he took his degree of Doctor of Civil Law * at Oxford, being then in the twenty-ninth year of his age. About the same time he was honoured by admission to the same degree from the university of Cambridge †, whither his growing reputation had reached.

On the 18th of the same month ‡ the petition to the king was read, for his majesty's royal grant, authorizing the Philosophical Society to meet as a corporation with various privileges.

Among other eminent accomplishments in which Dr. Wren excelled, he had acquired so considerable a skill in architecture, that he was sent for the same year from Oxford by the king, who had gained much knowledge and taste in art by his long residence abroad, to assist Sir John Denham, who held the situation of surveyor-general of his majesty's works.

The king's good sense in this appointment is apparent. Sir John Denham, who is better known as the elegant author of Cowper's Hill than for any notoriety as an architect, was appointed by Charles I. to this situation in reversion, as a remuneration for his loyalty, during the life of Inigo Jones, and succeeded to it on his death. It would have been ungrateful in Charles II. to have discharged Denham, and unsafe to have entrusted him in any great works. The king had proposed to himself the reparation of St. Paul's, the reinstatement of Windsor Castle, the building a new palace at Greenwich, and other important works.

* Sept. 12, 1661. Ad gradum doctoralem in jure civili promotas *Oxoniæ*.—*Fasti Oxon*, p. 820.—*Wren, MS.*

† Ad eundum gradum *Cantabrigiæ*.—*Wren, MS.*

‡ Evelyn's Diary, Vol. I. p. 339.

His knowledge of all the men of skill in his kingdom, from his intimacy with " the club," led him to select Wren for this very important task, and he was appointed Denham's coadjutor.

Of Denham's skill, or rather want of skill, Evelyn gives us a lively instance from his Diary:—" Oct. 19, 1661, I went to London to visit my lord of Bristol, having first been with Sir John Denham, his majesty's surveyor, to consult with him about the placing of his palace at Greenwich, which I would have had built between the river and the queen's house, so as a large square cut should have let in the Thames like a bay; but Sir John was for setting it on piles at the very brink of the water, which I did not assent to, and so come away, knowing Sir John to be a better poet than architect, though he had Mr. Webb (Inigo Jones's * man) to assist him †."

May we not without much stretch of imagination conjecture, that, from Evelyn's unconstrained freedom and intimacy with the king ‡, Sir Robert Moray's well-known friendship to Wren, and his majesty's own insight into character, have led to his appointment, on which so much of his own good fortune, and of the character of the country for its architecture, at that moment depended.

The increase of his employments, and the accumulation of his honours, did not prevent his attentions to the philosophic

* He was son-in-law to that great artist.

† Evelyn's Diary, Vol. I. p. 341.

‡ They are apparent every where. The 24th of the following month he records, " his majesty fell into discourse with me concerning bees."—*Ibid.* p. 342.

club. In September we find it registered, that he be desired to deliver a copy of his observations and hypothesis of Saturn to the amanuensis, to be transmitted by Sir Kenelm Digby to Mons. Frenicle *; and on November 27 following, another copy of the same paper was ordered to be transcribed and sent to the celebrated Mons. Huygens †.

As a specimen of the usual occupations of the new society, on October 9, of this year, a very interesting meeting was held at their rooms, and many subjects of great interest were canvassed. Dr. Henshaw presented to the society a living cameleon, from Mr. Clayton. Mr. Povey proposed to the society to procure a correspondence in Africa. Mr. Croune, Dr. Pope, and Mr. Rooke were appointed a committee to view the propositions for inquiries into foreign parts. Dr. Ent brought in his reason of the causes of heat in summer, and of cold in winter, which was read by Lord Brouncker, and ordered to be registered in a book of theories, which was directed to be provided. Mr. Clayton was admitted a member. Lord Viscount Brouncker read a letter from Dr. Christopher Wren to Sir Paul Neile, concerning his hypothesis of Saturn, which letter was ordered to be entered in the letter book ‡ of the society. It was written from Oxford, and dated October 1, 1661, as follows:

" Honoured Sir,

" You know of what prevalency your commands alone are with me, although they had not been seconded by the votes of the best

* Birch's History of the Society, Vol. I. p. 43. † Ibid. p. 66.
‡ Vol. I. p. 16.

society in Europe; to disobey which would not be rudeness alone, but Gothicism and enmity to the progress of learning. Yet if it were not my resolution, that I ought to suffer any thing rather than be deficient to so much duty, you should not have obtained of me to expose myself so many ways, as I must of necessity do in this little trifle, the hypothesis of Saturn. For had it been so fortunate as to come into your hands, while it could have told you any news, it might possibly have been as well received as the first messenger of a victory is wont to be, though he brings but an imperfect story. But when *Hugenius* hath outrid me, who staid to bring a fuller relation, to give you a stale account will undoubtedly be as pleasant a thing to you, as unseasonable well-meanings are wont to be, but cannot give you any serious satisfaction. I must confess, I have often had the pusillanimity rather to neglect that right I might in justice have vindicated, than by challenging it too late, incur the jealousy of being a plagiary: and since you it is that will not suffer me to continue in this peaceable humour, I shall not need to fear that you will entertain any such suspicion, especially since this kind of Saturn was long before hatched by your influence at White-Waltham, upon the observation of December, 1657, when first we had an apprehension, that the arms of Saturn kept their length, which produced this hypothesis, made first in two pasteboards; not to say any thing of our attempts in wax, in January, 1655. The hypothesis made more durable in metal, was exposed on the top of that obelisk, which was erected at Gresham College, in May, 1658 (if I mistake, be pleased to rectify me), to raise the thirty-five feet telescope of your donation. At the same time I was put

upon writing on this subject, for which I supposed I had tolerable observations and materials at hand. But first, I was enjoined to give that short and general account of it, which about that time I drew up in this sheet. But when, in a short while after, the hypothesis of *Hugenius* was sent over in writing, I confess I was so fond of the neatness of it, and the natural simplicity of the contrivance agreeing so well with the physical cause of the heavenly bodies, that I loved the invention beyond my own. And though this be so much an equipollent with that of *Hugenius*, that I suppose future observations will never be able to determine which is the truest, yet I would not proceed with my design, nor expose so much as this sheet any farther than to the eye of my bosom friend, to whom even my errors lie always open. Neither had I now been persuaded to it, but that I could not endure a regress in a real learning, having always had a zeal for the progress of it: and to see ingenious men neglecting what was determined before, to do worse on the same subject, because they would do otherwise, was always wont to make me passionate; and, therefore, I could not, with charity, suffer a person (whose great wit unusefully tried would be a loss to the world), to trouble himself with this less considerable hypothesis; which, if he had known not to be new, he had certainly despised. And yet this is very well advised of him, that we should not so build upon *Hugenius*'s hypothesis, as to neglect the observations about the full phasis; which, till they are obtained, little more can be determined in this thing, than what *Hugenius* hath done. And, therefore, though I might have suggested some new hypotheses, yet, considering they would be as yet but mere conjectures, I have let alone those thoughts. And if it

be suspected, that any thing said in this superficial draught of Saturn be of this sort, that is, contrived since the seeing of *Hugenius's*, I have a double appeal to make; one to my honoured friend Mr. *Rooke*, who at first saw the only copy; and another to the style, which speaks I had not yet used the industry to refine it, above what might have proceeded from my childish pen, having not then been so sufficiently convinced of the necessity of words as well as things: neither would I change it now, that I might be conscious to myself of sincerity, but where too much obscurity in the expression only forced me in two or three places. For these reasons, I earnestly beg this favour of you (as a friend, I desire it), that you would keep it in your hands, and restore it again; which, as the case stands, will give me almost as much satisfaction, as if I had found the confidence to have excused myself, when it was enjoined me at the Society; which I might well have done, considering that divers there had been at the trouble to hear the astronomy reader at Gresham give fuller discourses on the same subject *, which he thought then was publication enough, and might have saved the impertinency of these apologies for that, which he thinks deserves not now so much of his care, otherwise than as a command from them to

" Your obedient humble servant,

" CHRISTOPHER WREN.

" Oxford, October 1, 1661."

* The original manuscript of a lecture of his read at Gresham College, intituled, *De corpore Saturni ejusque phasibus Hypothesis*, was in the library

After the reading of this scientific and able letter, another was produced and read by Sir Robert Moray, from Mons. Christian Huygens de Zuylichem, dated from the Hague, July 24, 1661, containing observations on the planet Saturn, which was ordered to be entered * in the letter-book of the society.

Early in 1662, Dr. Wren is found in full activity at the society. On January 1, they desire him to draw up a scheme for a weathercock, against the next meeting †; and is requested to prosecute his design of trying, by several round pasteboards, their velocity in falling. At their next meeting, on the 8th, he brought in his scheme for the weathercock, which was examined and discussed; and on the 15th was appointed, with Messrs. Balle and Rooke, to consider the observations that had been sent to the society by the Earl of Sandwich. On the 22d he exhibited an experiment of a vessel, which, being filled with water to a certain height, emptied itself ‡; and on the 29th read a paper, concerning the nature and property of the barometer §. At this meeting the Genoese ambassador visited the society, and Mr. Boyle's air pump was exhibited for his gratification.

The leading members of this illustrious society were constantly alert in the pursuit of useful experiments; and it was their constant practice to urge their ablest members to consider

of the late William Jones, Esq., F. R. S.; which library is now in the possession of the Right Honourable George, Earl of Macclesfield, president of the Royal Society.

* Letter-book of the Royal Society, Vol. I. p. 19. 1662.

† Birch's History of the Royal Society, Vol. I. p. 68.

‡ Ibid. p. 74. § Ibid.

subjects which they conceived to be of the greatest public utility: as, for instance, their register-book of this year, under the date of February 5, says, Sir William Petty *, Dr. Baynes, Mr. Brooke, Mr. Rooke, the Lord Viscount Brouncker, and Mr. Balle, were appointed a committee, to examine a paper concerning music, read by Mr. Brooke; and Dr. Wren was desired to think of an easy way for an universal measure, different from that of a pendulum †. On the 12th, he proposed black lead as a better means than oil for preserving the pivots of the wheels of watches or clocks from grating or wearing out ‡; and proposed to try a watch in Mr. Boyle's engine, the air pump, but the results are not communicated §.

On March 5 the amanuensis was ordered to attend Dr. Wren, to take directions concerning the experiment of the water in the long tube ‖; the parent of the barometer. Such were the pursuits of this society, and such were the opinions of the first philosophers of Europe of their able and illustrious colleague Wren, that one can hardly turn over the leaves of their transactions without finding his name associated with the most important discoveries, and with the greatest men.

Among other of Wren's productions this year, were his *Prælectiones Astronomicæ*, published at the Oxford press, which

* He was knighted by Charles II., April 11, 1661.

† Birch's Hist. of Royal Society, p. 75.

‡ Plumbago, made into an ointment with tallow or lard, according to the weather, is the much puffed anti-attrition of our times.

§ Birch's Hist. of Royal Society, Vol. I. p. 76. ‖ Ibid.

are mentioned among his philosophical works, in the family manuscript so often quoted *.

This year Wren sustained a loss in the death of his friend and fellow professor at Gresham College, the celebrated Lawrence Rooke†, who died at his apartments at Gresham College, June 27. He was buried by his friend Dr. Seth Ward, whom he left his heir by a nuncupatory will, in the church of St. Martin Outwich,

* 1662. Prælectiones Astronomicæ Oxoniæ lect. de problematibus sphæribus: de Pascale, De re nauticâ verum (apud nos).—*Wren, MS.*

† Laurence Rooke was born of a good family at Deptford, in Kent, in 1623. He was educated at Eton school, and admitted to King's College, Cambridge, in 1639. Took his bachelor's degree by *proxy*, on account of illness, February 29, 1643. In 1647 he commenced Master of Arts, and then retired to his estate in Kent. In 1650 he went to Oxford, and settled at Wadham College, for the sake of its society; among which was Dr. Wilkins, Dr. Seth Ward *, Mr. Christopher Wren, and other luminaries of the day. He assisted Boyle in many of his chemical operations and experiments. At the death of Mr. Foster, he was chosen professor of astronomy at Gresham College, July 23, 1652. On August 7, 1657, he resigned his astronomy professorship, in which he was succeeded, as I have before stated, by Wren, and was elected to the chair of geometry. His share with his friend Wren I have before stated. He was also, with him, one of the earliest members of the Royal Society, and was very zealous and serviceable in promoting that great and useful institution; but did not live till it received its establishment by the royal charter. He permitted his heir, Dr. Ward, to receive what was due to him on bond, on conditions only, that the persons bound offered payment willingly; for, he said, as he never was in law, or had any contention with any man in his life, neither would he after his death.

His friend, Bishop Ward, in commemoration of his talents and virtues, presented the Royal Society with a handsome and valuable pendulum clock,

* Athen. Oxon. Vol. II. c. 297.

Bishopsgate-street. The funeral was attended by most of the fellows of the Royal Society then in London *.

The death of Rooke, which had been a great loss to literature and science in general, and to Gresham College in particular, was happily compensated by the election of the celebrated Dr. Isaac Barrow to be his successor, as professor of geometry, July 16, 1662, upon the recommendation of Dr. Wilkins. In the new professor's Latin inaugural oration, delivered previous to his lectures, and which is published in his Opuscula †, and in the Appendix to Ward's Lives of the Gresham Professors ‡; after a handsome encomium upon the founder of the college, Sir Thomas Gresham, he gave a just and laudatory character of several of the

made by Fromentel, then esteemed a great rarity, with the following inscription on the dial plate:—

SOCIETATI REGALI AD SCIENTIAM NATVRALEM PROMOVENDAM INSTITVTAE
DONO DEDIT
REVERENDVS IN CHRISTO PATER SETHVS WARD EPISCOPVS EXON
EIVSDEM SOCIETATIS SODALIS
IN MEMORIAM
LAVRENTII ROOKE
IN OMNI LITERARVM GENERE INSTRVCTISSIMI
IN COLLEGIO GRESHAMENSI PRIMVM ASTRONOMIAE
DEIN GEOMETRIAE PROFESSORIS
DICTAEQVE SOCIETATIS NVPER SODALIS QVI OBIIT IVNII XXVI MDCLXII.

* Ward's Lives of the Gresham Professors, p. 92.

† Opuscula, p. 100.

‡ Appendix to Ward's Lives, p. 44. "Oratio habita in lectura geometrica Collegio Greshamensi, anno 1662, ab Isaaco Barrow, A. M." See also the fourth volume of his collected Works, published in 1787, consisting of determinations, conciones ad clerum, &c. &c.

former professors. His eulogium upon Wren is as elegantly written as it is true and forcible: it is as follows; for it would but weaken to translate it:

" Quid alios, dum vita suppeteret, florentes famâ, nunc placide quiescentes, ab umbrarum tranquillo hospitio producerem in scenam? quos certe omnino tacitos præstat, quam male tractatos inficetâ concione, et mutilâ cum laude memoratos (unum * saltem gratitudo publica vetat omnino intactum præterire, stupori etiamnum nostro superstitem, geometricam hanc qui nuperrime, ni fallor, et sane fallar haud invitus, nunc astronomicam Oxonii cathedram meritissime occupat ornatque †, a facillimâ nescio divinitate ingenii, an a suavissimâ morum humanitate magis commendandus: (id certissime constat, ut præcociores neminem unquam prætulisse spes ‡, ita nec maturiores quenquam fructus protulisse,) prodigium olim pueri, nunc miraculum viri, imo dæmonium hominis; atque, ne mentiri videar, suffecerit nominâsse ingeniosissimum et optimum Christophorum Wrennum. De quo ne plura addam, cum virtus facit ejus toti spectata mundo, vobisque intimius explorata, meisque adeo attenuanda potius, quam amplificanda encomiis; tum delicatum viventis ne rudius offendam pudorem,

* " Totus hic locus de Christophero Wrenno in priore editione uncinulis inclusus est, quod in nonnullis forsan ob scripturam maculis deletam auctoris mentem editor haud satis assequi posset. Et profecto non semel depravatus esse mox apparebit."

† Cathedram geometricam nunquam occupavit, sed solum astronomicam, primum in collegio Greshamensi, deinde Oxonii, vir ille egregius; quod auctorem fugere non potuit.

‡ Sic in priori editione legitur. Vid. Opuscula, p. 93.

meamque simul in tam luculentâ materiâ prodam temere infantiam.")

To be so complimented by a Barrow, is merited by few besides a Wren.

Science experienced this year another loss in Wren's great adversary, Blaise Pascal, whom he had conquered in the face of all Europe in 1658*; the particulars of which are before enumerated†. This eminent mathematician, whose precocity of genius and inveterate love for the mathematics are familiar to most persons, died at the early age of thirty-nine, on the 19th of August, 1662.

The greatest event of this year was the incorporation of the society by royal charter. This important occurrence took place the 15th July. Evelyn records the reading of it in his Diary under its proper date. "Our charter being now passed under the broad seal, constituting us a corporation, under the name of the ROYAL SOCIETY, *for the improvement of natural knowledge by experiment*, was this day (Aug. 13, 1662,) read, and was all that was done this afternoon, being very large‡."

At a meeting of the society on the 9th of July of this year, Dr. Wren's friend, Sir Robert Moray, being president, after other business had been transacted, Lord BROUNCKER reported to the society that Sir Heneage Finch, his majesty's Solicitor-general, having signed the docket of the bill prepared by him for his ma-

* 1658. Epistolæ ad D. Dominos de Carcavy et Pascal; Parisiis; cum solutione problematis ab illis missi et propositi, *de cycloidis ejusque solidis, centrisque gravitatis. MS. apud nos.*—Wren, MS.

† Page 58 of this work. ‡ Evelyn's Diary, Vol. I. p. 350.

jesty's signature, in order to execute letters patent for incorporating the society, had refused the fees due to him for the same out of respect to the said society; it was therefore put to the vote, and resolved, that Mr. Solicitor-general be esteemed and accounted a benefactor to the society: and it was likewise ordered, that Sir John Finch, Dr. Baynes, Sir William Petty, Dr. Goddard, and Mr. Palmer, be appointed a committee to wait upon Mr. Solicitor, and give him the thanks of the society for his said favour and respect to them *.

Dr. Wren and Dr. Pope were desired to continue their observations of Jupiter's satellites.

Before the next meeting, a charter passed the great seal on the 15th of July, 1662, for the incorporation of the society under the title of the president, council, and fellows of the Royal Society of London, for the improvement of natural knowledge †, and appointing William Lord Brouncker the first president, and Sir Robert Moray, knt. and member of the privy council for Scotland; Robert Boyle, Esq.; William Brereton, Esq. eldest son of William Lord Brereton; Sir Kenelm Digby, knt. and chancellor to the queen mother; Sir Paul Neile, knt. one of the gentlemen of the privy chamber; Henry Slingesby, Esq. another of the said gentlemen of the privy chamber; Sir William Petty, knt.; John Wallis, D. D.; Timothy Clarke, M. D. and one of the physicians to his majesty; John Wilkins, D. D.; George Ent, M. D.; William Aerskine, Esq., cup-bearer to his majesty; Jonathan Goddard, Esq., M. D. and professor of physic in Gresham College; Chris-

* Birch's Hist. Roy. Soc. Vol. I. p. 88.

† Bishop Sprat's Hist. Roy. Soc. Lond. 1667, p. 134.

topher Wren, L.L.D.*, and Savilian professor of astronomy at Oxford; William Balle, Esq.; Matthew Wren, Esq.; John Evelyn, Esq.; Thomas Henshaw, Esq.; Dudley Palmer, of Gray's Inn, Esq. and Henry Oldenburg, Esq. of the council; William Balle, Esq. the first treasurer; and Dr. John Wilkins and Mr. Oldenburg, the first secretaries †.

The letters patent, incorporating the society, were read on the

* In the charter he is, by mistake, entitled, M. D.

† . . . volentes quod prædictus WILLIELMUS vicecomes BROUNCKER, cancellarium præclarissimæ consorti nostræ reginæ CATHERINÆ, fore et esse primum et modernum præsidem Regalis Societatis prædictæ; . . . . . Assignavimus etiam, constituimus, et fecimus, ac per præsentes pro nobis, heredibus, et successoribus nostris facimus, delectos nobis et fideles ROBERTUM MORAY militem unum a secretioribus nostris conciliis in regno nostro Scotiæ; ROBERTUM BOYLE armigerum; WILLIELMUM BRERETON armigerum filium primogenitum baronis de Brereton; KENELM. DIGBY militem, præcharissimæ matri nostræ MARIÆ reginæ cancellarium; PAULUM NEILE militem unum generosum cameræ privatæ nostræ; HENRICUM SLINGESBY armigerum alium generosum prædictæ privatæ cameræ nostræ; WILLIELMUM PETTY militem; JOHANNEM WALLIS in theologiâ doctorem; TIMOTHEUM CLARKE in medicinis doctorem et unum medicorum nostrorum; JOHANNEM WILKINS in theologiâ doctorem; GEORGIUM ENT in medicinis doctorem; WILLIELMUM AERSKINE unum a poculis nostris; JONATHAN GODDARD in medicinis doctorem et professorem Collegii de Gresham; CHRISTOPHORUM WREN *in medicinis* doctorem;* SAVILLE professorem in academiâ nostrâ Oxoniensi; WILLIELMUM BALLE armigerum; MATTHEUM WREN armigerum; JOHANNEM EVELYN armigerum; THOMAM HENSHAW armigerum; DUDLEY PALMER de Gray's Inn, in comitatu nostro Middlesexiæ; et HENRICUM OLDENBURG armigerum, fore et esse primos et modernos viginti et unum de concilio Regalis Societatis prædictæ.—*Extract from the Charter of the Royal Society.*

* Error; see last note.

13th of August by Mr. Oldenburg; and it was voted, "that the president, attended by the council, and as many of the society as can be obtained, should wait upon the king, after his coming from Hampton-Court to London, to give him humble thanks for his grace and favour; and that, in the mean time, the president should acquaint his majesty with their intention: and that, afterwards, the Lord Chancellor (Clarendon) be thanked likewise, as also Sir Robert Moray, for his concern and care in promoting the constitution of the society into a corporation*."

Among other important powers, granted to the council on behalf of the society, is one that they would do well to exercise at the present day; for it may well be asked, why should not London be an university as well as Paris, Edinburgh, or Dublin? If the powers of a full university be likely to prove injurious to Oxford and Cambridge, or the dissipations of a metropolis to the scholars—at all events, a college, or polytechnic academy, where youths, natives of the metropolis, might be educated, and reside with their parents, residents of London, at a less expense than boarding at the universities, as at present, would be well worth the consideration of the society. They have, by their charter, "full power and authority granted on the behalf of the society to the council, *to erect and build one or more colleges within* LONDON *or ten miles thereof, of any form or quality soever, for habitation, assembling, or meeting of the president, council, and fellows*, about any affairs or businesses of the society†."

* Birch's Hist. Roy. Soc. Vol. I. p. 104.

† . . . concedimus præfatis præsidi, concilio, et sodalibus Regalis Societatis prædictæ et successoribus suis plenam potestatem et authoritatem

The new society was patronized by all the men of rank, influence, and ability in the kingdom. They were grateful for their honours, and deserved them. Bishop Sprat, the learned historiographer of the society, in his history, drawn up at their desire, says: "In this place I am to render their public thanks to the Right Honourable the Earl of Clarendon, Lord Chancellor of England; to Sir Jeffery Palmer, attorney general; and to Sir Heneage Finch, solicitor general*; who, by their cheerful concurrence and free promotion of this confirmation, have wiped away the aspersion that has been scandalously cast on the profession of the law, that it is an enemy to learning and the civil arts†."

The society continued their meetings, their experiments, and their discoveries; Boyle, Wren, Evelyn, and other illustrious members regularly contributing.

On July 16, they received the accession of Sir Robert Harley, and were perpetually adding the names of the most celebrated men in Europe, who sought to enroll themselves among, and contribute to the essays of the society. August 27, WREN was entrusted with the important matter of perusing the Earl of

erigendi, *ædificandi, et extruendi, aut erigi, ædificari, et extrui faciendi vel causandi, intra civitatem nostram* LONDON. *vel decem milliaria ejusdem, unum vel plura collegium vel collegia cujuscunque modi vel qualitatis, pro habitatione, assemblatione, et congregatione prædictorum præsidis, concilii, et sodalium prædictæ Regalis Societatis et successorum suorum,* negotia sua et alias res eandem Regalem Societatem concernentia ad ordinandum et disponendum. —*Extract from Charter of the Royal Society.*

* See this work, page 97.

† Sprat's Hist. Roy. Soc. Lond. 4to. 1667, p. 143.

Sandwich's observations made by him in his late voyage to Portugal and the Straits, and to compare them with those made here of the same kind. At the same time, it was ordered that the thanks of the society be given to the earl, by Sir Paul Neile, for his care and favour in making and communicating these observations; concerning which, he should receive a farther account hereafter*.

On the 29th, he accompanied the president and the rest of the council, with other members of the society, who waited upon the king at Whitehall, to return his majesty the thanks of the society for the patent of their establishment†. Upon which occasion the president made the following speech to his majesty‡.

* Birch's Hist. Roy. Soc. Vol. I. p. 106.

† John Evelyn was of the party, and thus records it in his Diary. August 29, 1662. "The council and fellows of the Royal Society went in a body to Whitehall to acknowledge his majesty's royal grace in granting our charter, and vouchsafing to be himself our founder; when the president made an eloquent speech, to which his majesty gave a gracious reply, and we all kissed his hand. Next day we went in like manner with our address to my lord chancellor, who had much promoted our patent; he received us with extraordinary favour. In the evening I went to the queen mother's court, and had much discourse with her." Evelyn's Diary, Vol. I. p. 352.

‡ Dr. Pell's MS. Birch's Hist. Roy. Soc. Vol. I. p. 107. This Dr. Pell, who is quoted by John Birch as authority for the following speeches, was an eminent mathematician, born March 1, 1611, at Southwich, in Sussex, where his father was minister. He went to school at Steyning, and sent properly qualified to Cambridge at thirteen years of age, understanding Latin, Greek, and Hebrew. He took his degree of Master of Arts in 1630, and finished his education at Oxford. In 1632, he married Ilhamaria, second daughter of Mr. Henry Regenolles of London. In addition to his

"MAY IT PLEASE YOUR MAJESTY,

"We your majesty's most loyal subjects, newly incorporated by your majesty's charter, and honoured with the name of the Royal Society, do with all humility present ourselves before your majesty, the royal founder thereof, to offer you our most hearty thanks, as the only way we have at present to express our deep sense of your majesty's grace and favour to us, and to assure your majesty of our constant veneration for your sacred person, our devotion to your majesty's service, and our firm resolution to pursue sincerely and unanimously the end for which your majesty hath founded this society—the advancement of the knowledge of natural things, and all useful arts, by experiments: a design, sir, that is deservedly accounted great and glorious, and is universally reputed to be of that advantage to mankind, that your majesty is

former acquirements, he had now added those of Arabic, Italian, French, German, and Dutch. In December, 1643, he went to Amsterdam, where he was appointed professor of mathematics, and became colleague to Gerrard Vossius. In 1646, the Prince of Orange sent for him to be professor of philosophy and mathematics in the schola illustris at Breda. While residing at Breda, he had under his tuition William Lord Brereton, who made great progress in mathematics. In 1652, Mr. Pell returned to England, and in 1654 was sent by Cromwell to the protestant Cantons of Switzerland, where he resided with the title of Ablegatus. June 23, 1658, he took leave of the Cantons in a Latin oration, and returned to England. His negotiations abroad gave general satisfaction at home; and as he had rendered services to Charles II. and the church of England, he was ordained, March 31, 1661, a deacon, and in June following a priest; and died, after many scenes of poverty and distress, December 12, 1685, in the 74th year of his age.—*Martin's Biographia Philosophica.*

highly admired and extolled for setting it on foot; and this society is already taken notice of, and famous throughout all the learned parts of Europe; and doubtless, in time, will be much more by the continuance of your majesty's gracious favour, and the happy success of their endeavours, to the great increase of fame of your majesty's prudence, which has justly entitled you to the honour of laying the first foundation of the greatest improvement of learning and arts, that they are capable of, and which hath never heretofore been attempted by any: so that men cannot now complain, that the favour and assistance of a potent monarch are wanting to this long wished for enterprise.

" And, sir, our assurance of this your majesty's favour and assistance is that, which gives vigour to our resolutions, and is the life of our hopes, that in due season we shall be able to make your majesty an acceptable present of choice and useful experiments, and accomplish your great design, being thereto engaged by so many powerful motives.

" And in the mean time we shall daily pray, that God will be eminently gracious to your majesty, and accumulate upon you all the blessings answerable to the largeness of your heart, the height of your condition, the weight of your charge, the multitude of your virtues, and the desires and wishes of all your faithful subjects."

To which his majesty gave a suitable reply, and the president and members paid the customary respects to the king.

The next day they waited on the lord chancellor, to whom the president spoke as follows.

"My Lord,

"All of us, whom your lordship hath thought fit to be members of the Royal Society, are come solemnly to acknowledge your lordship's favour to us, and to present our thanks, together with an assurance of our readiness to serve your lordship upon all occasions, and of our desires to contribute the best we can to the greatness of your name, which is already far more illustrious than that of a learned predecessor of yours, a great and renowned chancellor of England, who is famous for having but pointed at that improvement of solid learning, which is now by your hand so vigorously and effectually carried on.

"My lord, we are sensible of the importance of that duty now incumbent upon us, to pursue diligently the ends for which our society is constituted; and hope that our endeavours shall, by God's blessing, become successful for the honour of the king, the royal founder of this society, and of your lordship, our noble patron, as well as for the good, not only of his majesty's kingdoms, but of all mankind, and suitable to the great expectations of the learned abroad, who are already pleased to take notice of us. And the continuance of your lordship's favour to us will both strengthen our confidence, and quicken our endeavours, and withal give us cause to glory daily more and more in those vows, by which we have dedicated ourselves to your lordship's service."

Hyde the lord chancellor (afterwards Lord Clarendon), received this flattering address with satisfaction and favour. He

assured the deputation, among other testimonials of his regard, that it was his intention to attend the society, to express his acknowledgments to them in person*. This was reported by the president at the meeting of September 3, with his majesty's answer, and assurances of his peculiar esteem for the society, and his readiness to give them all due encouragement. The president Lord Brouncker was desired to deliver in a copy of the speech, which he made to his majesty, and of that to the lord chancellor in the name of the society†.

At the same meeting, it was referred to Dr. Wren to make the several experiments mentioned at the last meeting, concerning the *aquæ salientes*, which had been suggested by Sir Robert Moray; who proposed to inquire, by experiments, what bore made a jet of water rise highest; and of what figure the end of the pipe must be for that purpose; alleging that the end of the pipe being tapered, the cylinder of water incumbent on that figure presses more upon it, than by its own weight‡. The opinions of WREN upon every subject were held in such esteem by his philosophical companions, that they were continually urging him upon all points of great and momentous subjects. This meeting did not break up without a formal request to him, that he would continue his investigations of the Earl of Sandwich's experiments: but it being a business of great difficulty and much calculation, it required more time than he could yet spare from his other employments§. At the next meeting of the society

* MS. of Dr. Pell. Birch's Hist. Roy. Soc. Vol. I. p. 108.
† Ibid. ‡ Ibid. § Ibid.

WREN was present, and was reminded of prosecuting Mr. Rooke's observations concerning the satellites of Jupiter, which the members had entrusted to his experienced ability.

There is scarcely any subject in the whole round of modern improvements and discoveries, that had not at times engaged the inquiring mind of this great experimental philosopher. The eminent discovery of Dr. Carmichael Smith, for fumigating the apartments of the sick and contagious, and which obtained a parliamentary reward, had been thought of and tried by Wren. He produced to the society an explanation of the apparatus, which he described as a vessel constructed for the purpose of cooling and percolating the air at once, by the action of certain ingredients, and left it in the hands of his philosophical friend, the Honourable Robert Boyle. By this experiment he clearly showed that some other qualities than mere coolness and freedom from the fuliginous vapours and moisture with which it is infected in respiration, are requisite in air for the sustaining of life; for all these were deposited in its circulation through the instrument. Upon a suggestion that *nitrous* vapour might be found requisite, he contrived ways to supply that deficiency, by placing some "benign chemical spirits, that by fuming might infect the air within the vessel*."

This ardour in the pursuit of knowledge was such, that he made it no small part of his business to have a furnace frequently at work in the laboratory, for the more select experiments in chemistry, well knowing that many parts of philosophy are not to be penetrated without this aid. He took many opportunities

* Parentalia, p. 213.

of entertaining Charles II. and Prince Rupert, both lovers and practisers of chemical experiments, with scientific elucidations of his discoveries. The prince, as a distinguishing mark of his regard, enrolled him in a list of his especial friends, to whom he yearly sent a present of his choicest wine from his estates on the Rhine*.

The mode of impressing pictures by light and shade on copper, commonly known by the name of engraving in mezzotinto, owes improvement if not its invention to Wren. The journals of the Royal Society for October 1, in this year, record that Dr. Wren presented some cuts done by himself in a new way of etching; whereby, he said, he could almost as soon do a subject on a plate of brass or copper as another could draw it with a crayon on paper†. On this subject, the editor of Parentalia speaks with decision, that "he was the first inventor of the art of graving in mezzotinto; which was afterwards prosecuted and improved by his Royal Highness Prince Rupert, in a method somewhat different, upon the suggestion, as it is said, of the learned John Evelyn, Esq. Of this art some original essays are extant: viz. The head of a Moor, &c. by the inventor: the executioner of St. John the Baptist, by Prince Rupert‡." On the sword is marked R. P. f§, and over it an electoral coronet.

Evelyn himself, in his diary, says, "February 13, 1661, Prince Rupert first showed me how to grave in mezzotinto‖." "March 13, 1661. This afternoon Prince Rupert showed me

* Parentalia. † Birch's Hist. Roy. Soc. Vol. I. p. 114.
‡ Parentalia, p. 214. § Rupertus Princeps fecit.
‖ Diary, Vol. I. p. 333.

with his own hands the new way of graving, called mezzotinto, which afterwards by his permission I published in my History of Chalcography; this set so many artists to work, that they soon arrived to that perfection it is since come, emulating the tenderest miniatures*."

Besides this improvement or discovery in art, the society received at the same meeting communications from him on horticulture, pneumatics, and hydrostatics. In the latter he informed them that, on an experiment, he found that when he forced water up two pipes of different diameters and equal altitudes, but having both in the lower end equal bores, the water in the larger pipe would be forced out with less strength than that in the smaller pipe†. On October 8, he submitted an experiment about the undulation of mercury in a curved tube; which he suggested was, for the velocity of it, proportionable to the vibrations of a pendulum. The society desired him to prosecute this experiment further, and to report upon it.

The year 1663 saw WREN in a situation of activity and public employment worthy of his great talents. He had been appointed assistant surveyor-general nearly two years, but had received no public commissions in architecture.

This year peace was concluded with Tangier and Tripoli, and the former, which was given as part of the portion of Catherine the Infanta of Portugal, queen of Charles II., was declared to be a free port‡. A commission was proposed to him to survey and direct the works at the mole, harbour, and fortifications of the

* Diary, Vol. I. p. 334. † Birch's Hist. Roy. Soc. Vol. I. p. 115.
‡ Sandford, p. 616.

citadel and town of Tangier, he being then esteemed one of the best geometricians in Europe. This flattering and honourable service was offered to him with an ample salary, and promise of other royal favours, particularly a dispensation for not attending the duties of his professorship during his continuance in his majesty's service abroad; and a reversionary grant of the office of Surveyor-general of the royal works, on the decease of Sir John Denham. These offers were signified to him by letter from his cousin Matthew, secretary to the Lord Chancellor Hyde *. This employment he declined accepting, being inconsistent with his health, praying his majesty to allow of his excuse, and to command his services in England.

In 1662 the dean and chapter of St. Paul's had fitted up, for divine service, the east part of the church beyond the old choir, enlarging it the length of one arch until the repairs which they anticipated were performed †. Dr. Wren, as assistant surveyor-general, was ordered to survey the fabric, and to prepare proper designs for that purpose. Inigo Jones, his illustrious predecessor, had put the choir ‡, which was supposed to have been built by Richard, Bishop of London, in the first year of Richard I., into very good repair; had cased a good part of the church with Portland stone, had rebuilt the north and south fronts, and also the west end, with that exquisitely beautiful portico of the Corinthian order, which has received so much and such well-merited praise.

* Parentalia, p. 260. † Dugdale's Old St. Paul's, p. 146.
‡ Pursuant to a royal commission, 1731, 7 Car. I.

For the expediting this proposed general repair, a royal commission passed the great seal in 1663, appointing Wren to this great work. In allusion to this employment, and his proposed works at Tangier, his friend and associate, Bishop Sprat, wrote to him from his college the following playful and kind-hearted letter.

"Oxford, 1663.

"MY DEAR SIR,

"I must confess I have some little pique against you; therefore am not much displeased that I have this occasion of telling you some ill news. The vice chancellor did yesterday send for me, to inquire where the astronomy professor was, and the reason of his absence, so long after the beginning of the term. I used all the arguments I could for your defence. I told him, that Charles the Second was king of England, Scotland, France, and Ireland; that he was, by the last act of parliament, declared absolute monarch in these his dominions; and that it was this mighty prince who had confined you to London. I endeavoured to persuade him that the drawing of lines in Sir Harry* Saville's school was not altogether of so great a concernment for the benefit of Christendom as the rebuilding of St. Paul's, or the fortifying of Tangier; for I understand those were the great works in which that extraordinary genius of yours was judged necessary to be employed. All this I urged; but, after some discourse, he told

* Founder of the Savillian professorship, then held by Wren.

me, that he was not to consider you now as Dr. Bayly*, for so he owed you all kindness, but as *vice-chancellor;* and under that capacity he most terribly told me, that he took it very ill you had not all this while given him any account what hindered you from the discharge of your office. This he bid me tell you, and I do it not very unwillingly, because I see that our friendships are so closely tied together, that the same thing which was so great a prejudice to me (my losing your company all this while here) does also something redound to your disadvantage. And so, my dear sir, now my spite and spleen are satisfied, I must needs return to my old temper again, and faithfully assure you, that I am, with the most violent zeal and passion,

Your most affectionate
and devoted servant,
THOMAS SPRAT†."

Another letter of the same amiable and eminent prelate, in the same year, to his friend Wren, throws such light upon their mutual tempers and conversations when together, that I cannot refrain from giving it entire.

"I owe you, my dear friend, an ill turn. Your late plot against me was most barbarous; your design was as bloody as Venner's; you endeavoured to raise a new rebellion in my heart,

* Dr. Richard Bayly, president of St. John's College, vice-chancellor of the university, and dean of Sarum.

† Parentalia, p. 260.

just after a long civil war: for this I have vowed a severe revenge, and have laid a thousand policies to catch you. I have looked over all my treasures of malice, and have at last found a good old engine which never failed me in time of need; and that is, writing a long letter. With this I have made many fatal experiments, and have, on all occasions, satisfied my wrath on those who have displeased me; so that for fear of it, some have wholly forsaken my acquaintance, and rejected my passion; some have fled the kingdom; and some, (for what I know), have gone into another world. It is with this murderous instrument that I now come to assault you; and I trust its operation will confirm the opinion of you philosophers, that any thing, though never so innocent, may be a poison, if taken in too great a quantity. It shall, I promise you, be as long as the paper will give me leave, and to the length of it I will also add, that it shall be written on a subject on which I have heard you yourself speak many admirable things: that so you may undergo the torment to read your own thoughts disfigured by my expressions; which, I hope, will be as great a grief to you as it was to that king, whose name I have forgot, when the Scythians sent home his own ambassadors to him with their ears, and noses, and lips cut off.

"Now, then, my dearest friend, you may recollect we went lately from Axe-yard to walk in St. James's Park, and though we met not the incomparable person, whose company we sought, yet he was enough present to our thoughts to bring us to discourse of that in which he so much excels, the wit of conversation. Some part of what you then said, you shall now hear over again; for though I have a most treacherous memory in other matters, yet my love to *Kit*

Wren makes it always faithful in preserving whatever *he* commits to it. The wit, therefore of discourse, is as different among the several parts of mankind, as the temper of their air, and constitution of their bodies; and so it is to be divided into *general*, and *particular*. The *general* is that which consists of terms, and similitudes, and humours, which are received by many nations. This either prevails by conquest, and so the Roman language and wit have obtained over all the countries where they sowed civility by their victories: or else by the situation, authority, and commanding genius of one people above another. Thus the Grecians became teachers of the art of talking to the ancients; and the French, of late, to the moderns, whose tongue and customs have gone farther in Europe than their present king, how terrible soever he appears, is likely to carry their armies. Of this general wit there are manifest differences to be observed. That of the Chinese consists in the skill of writing several characters; that of the Egyptians, in giving things themselves, instead of words, for similitudes: a lion, for courage; the sun, moon, and stars, for a thousand conceipts. A strange kind of laborious expressing their minds, which, if the orators of our times should use in their luxuriancy of metaphors, they would stand in need of the ark, to carry about with them any one of their orations. The eastern wit in all ages has been principally made up of lofty and swelling comparisons, as we may see at this day in the titles of the Sophy, and Grand Seignor, which no doubt are some of their noblest fancies; and yet to our understanding, they require the assistance of Mahomet's dove to make sense of them. That of the Moors was the same of the Spanish at this time. The Italian,

French, English, Dutch, (if they have any) is somewhat alike, according to their common original the Latin. Of the Muscovitish, or Tartarian, I can give but little account; but I assure you, even the Irish had a wit of their own, though you will hardly believe it, till some of our friends went thither. Nay, to say more to their advantage, they had this peculiar to themselves, that almost all their whole nation was at the same time both poets and saints. The *particular* wit is that which arises from the frequent meetings of private assemblies: and this too is capable of infinite divisions; for, there is hardly the least company in the world which rendezvouses together but has its common sayings, figures, characters, and observations, which are great raillery in their proper compass, but tasteless to strangers. This is evident in several shires of England*. When I was in the *north, there was a buffoon that was a dreadful* droll among the Yorkshire gentlemen, and yet scarce spoke a grain of salt to our southern tastes. This likewise appears in several professions of men. The lawyers will laugh at those jests in the Temple, which, it may be, will not move us at Charing Cross; and it is likely that *Tom Kiligrew* himself would not seem good company to a table of benchers. The wit beyond Fleet bridge has another colour from that on this side. The very watermen on the Bank side have their quipps and their repartees, which are not intelligible but upon the Thames. But, to say no more; this is to be seen in every private family: I had almost gone so far as to say, that there is scarce a husband and wife in the world, but have a particular way of wit

* See Pope's imitation of this.

among themselves; but this I will not affirm, because this evil age believes, that few married persons are wont to delight so much in one another's company as to be merry and witty alone. Now, then, having discovered this mighty Proteus, which puts on so many various shapes in several places and occasions, let us try to define it. The wit of discourse is (to speak magnificently) the greatest art about the smallest things: for to confess a secret, as Sir William Davenant's way differs very little from Frank Bowman's, and yet one is the gayest and the other the most insipid; so the true pleasant talk and the vainest tattle are not very much distinguished. The subjects of both of them are a thousand little trifles, and the difference lies only in the management. Nor does this meanness of matter prejudice the art; for then it would follow, that your divine works* in the king's closet are the worse, because they are the descriptions of a louse, a flea, a nit. This wit, therefore, is made up of many inexpressible excellencies. It must have a general evenness of humour; it must perfectly observe all the rules of decency, to know when enough is said; to forbear biting things not to be touched; to abstain from abusing honest and virtuous matters.

"It must apply itself to the condition and inclination of the company; it must rather follow than lead; it must not always strain to speak extraordinary things, for that is a constant walking on the ropes, in which, though a man does often well, yet he may have one fall that may chance to break his neck. It must allow

* Forms of little animals, and minute bodies, drawn by the help of microscopical glasses. See page 31 of this work.

every one their turn of speaking; for it is natural to all, better to love their company who give them occasions of speaking well, than those that do it themselves. It must mingle stories with arguments, pleasant things with solemn: it must vary the subject often, and not pump itself dry at once. This, if you will believe Mr. Cowley, is a wise quality: for, in a copy of verses which you have not seen, he says,

'So the imperial eagle does not stay
Till the whole carcase he devour
That's fallen into his power;
As if his generous hunger understood
That it can never want plenty of food;
He only sucks the tasteful blood,
And to fresh game flies cheerfully away,
To kites and meaner birds he leaves the mangled prey.'

"This generous eagle-wit therefore, uses the best and easiest words, is not the first that takes up new ones, nor the last that lays down old ones. But, above all, its chiefest dominion is in forming new significations, and images of things and persons. And this may be so suddenly practised, that I have known, in one afternoon, new stamps, and proverbs, and fashions of speech raised, which were never thought of before, and yet gave occasion to most delightful imaginations. You see now, my dear friend, of what extent and difficulty this art is. The truth is, it is seldom to be found among men of large and full and high thoughts; because such minds overlook the little passages, and fly presently to general axioms, which it may be are most useful,

yet they do not affect our thoughts with such an immediate and familiar delight. But to speak truth, the perfection of this glorious faculty, without which life were no life, belongs not so much to men as to the softer sex: for they have usually their heads less disturbed with busy thoughts, their minds are quicker and readier for new impressions, they talk more of circumstantial things, they sit longer together, and (which you used to say is of great concernment in our northern and phlegmatic climate) they keep their feet warmer and drier, and go less into the moist and open air. But that women are the best speakers I could give you two undeniable instances, in your Laura, (as I think you call her) and her who was once my Clelia: the one speaks with a great freedom and spirit, and abundance of sweet words; the other talks less, but with as much sweetness and nature: from the one nothing can be taken away, to the other nothing ought to be added. But I dare not go farther in this description on remembrance of an old story; that while a painter was drawing a most beautiful lady, he fell desperately in love with her, and it had cost him his life had not Alexander bestowed her on him. The first part of this tale, I am sure would be my fortune, if I should longer employ my thoughts on such a lovely object; and I am as certain, that I should perish long enough before I should find an Alexander to pity me. To go on then in my first purpose. Wit consists in a right ordering of things and words for delight. But stay—now I look about me, what need have I to go any farther? you are without question already sufficiently tired, and so my end is obtained; and then it will be useless to speak more on this subject, seeing the age wherein we live runs already

so mad after the affairs of wit. All the world are at present poets: the poetical bees are all at work: comedies, tragedies, verses, satires, burlesques; songs buzz every where about our ears; and (to ease my hand a little by changing my pace)

> Wits we have now as many (if not more)
> As we had sects, or preachers, heretofore;
> And Heaven in mercy grant this crying sin
> Don't the same judgments once more usher in.
> We have our northern wits, wits of the east,
> Wits of the south, and witlings of the west*;
> South and by west, south-east, east and by north,
> From every point like winds they bluster forth.
> We have our wits that write, only to sway
> At York or Hull, or ten miles thence each way.
> Each corporation, sea-port, borough-town,
> Has those that will this glorious title own.
> Like Egypt's frogs they swarm, and like them too,
> Into the chambers of our kings they go.

"What is to be done with this furious generation of wits and writers? To advise them to leave off is in vain.

> ——— Too strong the infection is
> To be destroyed by such quick remedies:

* When Reynolds asked Johnson at the club how he liked his countrymen (the Plymouthians), answered, "Why, Sir Joshua, the farther I went west, the more I was convinced of the truth of the assertion, that the wise men originally came from the east."

No, no, it is a sweet and flattering kind
Of poison, and deceives the clearest mind:
Cowley himself (Cowley whom I adore)
Often resolved, nay, and I think he swore,
That he no more those barren lands would plough,
Where flowry weeds, instead of corn do grow.
Perchance (as Jesuits' Powder does) each vow
Kept the fit off from him three weeks, or so,
But yet, at last, his vows were all in vain,
This writing ague still returns again.

" Well then, if they are incurable let them write on. But while others are exalting such dangerous trophies of their wit, I will be content to give but one instance of my own; but it is such that no critic can lay hold on; and it is, that I infinitely love one of Sir Harry Saville's professors: you may guess which I mean, or whether it be to Doctor Wren or yourself that I am

" A most affectionate servant,

" THOMAS SPRAT*."

While I am upon the letters of this excellent man, and eminent prelate, which show the amiability of the characters of both him and his friend Wren, I take leave to introduce another in this place, being unable to discover the exact date. Wren, it appears, cultivated the arts of the muses, as well as those of the sciences, and his translation of Horace's Epistle to Lollius, gave

* Parentalia, p. 256.

birth to the following letter, which exhibits Wren in his colloquial and every-day habit.

" My dear friend,

" I received two of your letters together, for both which I heartily thank you; but you must give me leave to dissent from your sense in one of them, wherein you maintain that Horace cannot be well translated; for, by that elegant epistle *ad Lollium*, which you sent me, you have confuted yourself. You have admirably well hit his genius; your verse is numerous; your philosophy very instructive for life; your liberty in translating, enough to make it seem to be an English original, and yet not so much but that the mind of the author is still religiously observed. So that if you have not adorned the fat droll, (as you most pleasantly call him) with feathers, yet you have with jewels, which is a more stately, though not so flanting a bravery. Most other attempts on him, (nay even those of Ben Jonson himself) appear to me to have been hitherto very unfortunate, and his translators have seemed not so much to have remembered that he was friend to Augustus, as that he was *libertino patre natus:* so rudely and so clownishly have they handled him.

" You perfectly well agree with my opinion, in approving this poet above others; for, ever since I have had the good fortune to read him otherwise than as a school-boy, I have always respected him as one of the most accomplished men of that incomparable age. He was almost the first writer that brought poetry from the fables of their ridiculous religion, and from flattering women's beauties, to speak of human affairs, and to show mankind to

themselves. The decency of his order and invention is admirable; all things so justly and measurely said, that even the hypercritical Matt. Clifford himself cannot find one word in him whereon to use his sponge: so natural he is that every fancy seems to flow into his pen, without any contention of brain, and yet he was the slowest and severest of his time; the wit which he shows is just enough for the subjects which he undertakes; and no more. This I esteem one of the surest and noblest of perfections that belong to an excellent pen; and I like very well what *Jack Birkenhead** has somewhere said—' that a great wit's great work is to refuse.' Moderation of fancy is a thing most commendable, and most difficult; it being hard for men of hot and violent minds, (such as most commonly great writers have) to stop themselves in full speed, and to understand when they have done enough.

" He meets, I confess, with some *Tuccas*, that blame him for his many downright and proverbial sentences, and for the roughness of his style. But as for the first, it must be said, that if his plain morals are not wit in this age, yet they were then,

* Sir John Birkenhead, a native of Nantwich, in Cheshire, was educated at Oxford, became a fellow of All Souls, and secretary to Archbishop Laud. He was a scholar and a poet, and conducted the *Mercurius Aulicus*, an Oxford newspaper, while Charles I. held his court there. He was deprived of his fellowship during the protectorate, and at the restoration of Charles II. was made master of the faculties, and one of the masters of the requests. Aubrey, who knew him, says, " he was exceedingly confident, witty, not very grateful to his benefactors, would lie damnably."—*Aubrey's Lives*, Vol. II. p. 239.

and that too so great, that we have nothing else left us of all the eldest and most applauded Grecians, but some few such sayings, of which we meet many hundreds in Horace. And if we consider his style too, we shall find it was very smooth, compared to those who writ before him; for the best judge of poetry in the world gives this judgment of the best of the ancienter Romans, *Lucilius*, that he was 'durus componere versus*.' Nor can his way of writing be called crabbed, or harsh, but rather a masculine plainness, and ductile course of verse. If there be any unevenness, or ruggedness in it, it is such as that of his own Rome was, to which it was not an injury but an advantage that it was built on hills. Nor are all things presently to be praised that are smooth, for then it may be Quarles might come in competition with Cowley; and if to be oiled were to be harmonious, I know not why a coach wheel, or a jack, does not make good music.

"They who blame him for the equality and familiarity of his style, are not worth confuting; let such be still ignorant, who admire nothing but what is lofty and swelling; such who prefer

> The fair abbess of the skies,
> With all her nunnery of eyes;

or to make another instance of the same author, not yet published,

> Go, call me Stephins† for the sun,
> And hang green sarsenet 'fore the moon;
> For, since my Celia's eyes appeared
> Those illustrious lights are bleared.

* Hor. Sat. IV. lib. 1. † An eminent oculist of that time.

Before

> Fountains and trees our wearied pride do please,
> Even in the midst of gilded palaces;
> And in our towns, that prospect gives delight
> Which opens round the country to our sight.

" And thus much, my dear friend, for your poet,

" THOMAS SPRAT*."

To revert from this digression to the subject which led to it, the projected repairs of St. Paul's Cathedral. The first business that Dr. Wren entered upon, before forming designs for the general repairs, was to take exact plans and sections of every part, upon an accurate survey and minute inspection of the whole fabric. In the prosecution of this survey, he expressed his surprise at the carelessness and want of accuracy in the original builders of the structure; the arches and intercolumniations varying considerably in their size: nor were they true, he reported, in their levels. This however might have arisen from the sinking of the foundations. The building, it appeared, had been constructed of old materials, which the founder, Mauritius Bishop of London, had procured of William the Conqueror, out of the ruins of the Palatine tower. He found other defects, both original and of decay, and busied himself in providing remedies.

No better account of the state of this ancient cathedral can possibly be found than in the architect's description of the condition in which he found it. Among the improvements which he suggested was to add an Italian cupola to Jones's Corinthian por-

* Parentalia, p. 256.

tico, which would but have increased the jumble of that discordant edifice. His proposals to the commissioners for conducting the reparations, together with the respective drawings and designs, were afterwards laid before the king and commissioners.

" Amongst the many propositions, that may be made to your lordships, concerning the repair of St. Paul's, some may possibly aim at too great a magnificence, which neither the disposition nor extent of this age will probably bring to a period. Others again may fall so low as to think of piecing up the old fabric, here with stone, there with brick, and cover all faults with a coat of plaster, leaving it still to posterity as a further object of charity.

" I suppose your lordships may think proper to take a middle way, and to neglect nothing that may conduce to a decent, uniform beauty, or durable firmness in the fabric, or substantialness to the expense already laid out on the outside: especially since it is a pile both for ornament and use; for, all the occasions either of a quire, consistory, chapter-house, library, court of arches, preaching-auditory, might have been supplied in less room, with less expense, and yet more beauty; but then it had wanted of the grandeur which exceeds all little curiosity; this being the effect of wit only, the other a monument of power, and mighty zeal in our ancestors to public works in those times, when the city had neither a fifth part of the people, nor a tenth part of the wealth it now boasts of.

" I shall presume therefore to enumerate as well the defects of comeliness as firmness, that the one may be reconciled with the other in the restitution. And yet I should not propose any thing

of mere beauty to be added, but where there is a necessity of re-building, and where it will be near the same thing to perform it well as ill.

" First, it is evident by the ruin of the roof, that the work was both ill designed and ill built from the beginning: ill designed because the architect gave not abutment enough to counterpoise, and resist the weight of the roof from spreading the walls; for, the eye alone will discover to any man, that those pillars, as vast as they are, even eleven foot diameter, are bent outwards at least six inches from their first position; which being done on both sides, it necessarily follows, thus the whole roof must first open in large and wide cracks along by the walls and windows, and lastly drop down between the yielding pillars.

" The bending of the pillars was facilitated by their ill building; for, they are only cased without, and that with small stones, not one greater than a man's burden; but within is nothing but a case of small rubbish stone and much mortar, which easily crushes and yields to the weight: and this outward coat of free stone is so much torn with age, and the neglect of the roof, that there are few stones to be found that are not mouldered, and flawed away with the saltpetre that is in them; an incurable disease, which perpetually throws off whatever coat of plaster is laid on it, and therefore not to be palliated.

" From hence I infer, that as the outside of the church was new flagged with stone of larger size than before, so ought the inside also: and in doing this, it will be as easy to perform it, after a good Roman manner, as to follow the Gothic rudeness of the old design; and that, without placing the face of the new

work in any part many inches farther out or in, than the superfices of the old work, or adding to the expense that would arise were it performed the worse way.

" This also may be safely affirmed, not only by an architect taking his measures from the precepts and example of the ancients, but by a geometrician, (this part being liable to demonstration) that the roof is, and ever was, too heavy for its abutment; and therefore any part of the old roof new pieced, will still but occasion further ruin, and the second ruin will much sooner follow than the first, since it is easier to force a thing already declining. It must therefore be either a timber roof plastered, (which, in such buildings, where a little soke of weather is not presently discovered, or remedied, will soon decay) or else, a thinner and lighter shell of stone, very geometrically proportioned to the strength of the abutment. The roof may be brick, if it be plastered with stucco, which is a harder plaster that will not fall off with the drip of a few winters, and which to this day remains firm in many ancient Roman buildings.

" The middle part is most defective both in beauty and firmness without and within: for, the tower leans manifestly by the settling of one of the ancient pillars that supported it. Four new arches were, therefore, of later years, incorporated within the old ones, which hath straightened and hindered both the room, and the clear thorough view of the nave, in that part where it had been more graceful to have been rather wider than the rest.

" The excessive length of building is no otherwise commendable, but because it yields a pleasing perspective by the continued optical diminution of the columns; and if this be cut off by

columns ranging within their fellows, the grace that would be acquired by the length is totally lost.

"Besides this deformity of the tower itself within, there are others near it; as, the next intercolumniation in the navis or body of the church is much less than all the rest. Also the north and south wings have aisles only on the west side, the others being originally shut up for the consistory. Lastly, the intercolumniations or spaces between the pillars of the quire next adjoining to the tower are very unequal. Again; on the outside of the tower, the buttresses that have been erected one upon the back of another to secure three corners, or the inclining sides (for the fourth wants a buttress), are so irregular, that upon the whole matter, it must be concluded, that the tower from top to bottom, and the next adjacent parts, are such a heap of deformities, that no judicious architect will think it corrigible by any expense that can be laid out upon new dressing it, but that it will still remain unworthy the rest of the work, infirm and tottering; and for these reasons, as I conjecture, was formerly resolved to be taken down.

"I cannot propose a better remedy than by cutting off the inner corners of the cross, to reduce the middle part into a spacious dome or rotunda, with a cupola, or hemispherical roof, and upon the cupola (for the outward ornament) a lantern with a spring top, to rise proportionably, though not to that unnecessary height of the former spire of timber and lead burnt by lightning.

"By this means the deformities of the unequal intercolumniations will be taken away; the church, which is much too narrow for the height, rendered spacious in the middle, which may be a

very proper place for a vast auditory; the outward appearance of the church will seem to swell in the middle by degrees, from a large basis rising into a rotunda bearing a cupola, and then ending in a lantern, and this with incomparable more grace in the remoter aspect, than it is possible for the lean shaft of a steeple to afford. Nor, if it be rightly ordered, will the expense be much more than that of investing the tower and corners yet unfinished with new stone, and adding the old steeple anew; the lead of which will be sufficient for a cupola; and the same quantity of ashlar makes the corners outward, that would make them inward as they now are: and the materials of the old corners of the aisles will be filling stone for the new work: for I should not persuade the tower to be pulled down at first, but the new work to be built round it, partly because the expectations of persons are to be kept up; for, many unbelievers would bewail the loss of old Paul's steeple, and despond if they did not see a hopeful successor rise in its stead; and chiefly because it would save a great quantity of scaffolding poles, the scaffolds which are needful being fixed from the old to the new work; and when the *tholus* or inward vault is to be laid, the tower taken down to that height will rest the centers of the vault with great convenience, and facilitate the planting of engines for raising the stones; and after all is finished and settled, the tower that is left may be taken clear away from within; all which can only from the design be perfectly understood.

" And for the encouragement and satisfaction of benefactors that comprehend not readily designs and draughts on paper, as

well as for the inferior artificers' clearer intelligence of their business, it will be requisite that a large and exact model be made, which will also have this use, that if the work should happen to be interrupted or retarded, posterity may proceed where the work was left off, pursuing still the same design.

" And as the portico built by Inigo Jones, being an entire and excellent piece, gave great reputation to the work in the first repairs, and occasioned fair contributions; so to begin now with the dome may probably prove the best advice, being an absolute piece of itself, and what will most likely be finished in our time, and what will make by far the most splendid appearance; may be of present use for the auditory, will make up all the outward repairs perfect, and become an ornament to his majesty's most excellent reign, to the church of England, and to this great city, which it is a pity, in the opinion of our neighbours, should longer continue the most unadorned of her bigness in the world.

" In the mean time, till a good quantity of stone be provided, things of less expense, but no less consequence, ought to be regarded; such as fixing again all cramps that the roof hath been spoiled of, covering all timber from weather, taking down the falling roofs, searching the vaults beneath, and securing them. And before the foundations be digged for the dome, the arches on which the tower stands must be secured after a peculiar manner represented in the designs.

" P. S. I shall crave leave to subjoin, that if there be use of stucco, I have great hopes, from some experience already had, that there are English materials to be brought by sea at an easy

rate, that will afford as good plaster as is any where to be found in the world; and that with the mixture of cheaper ingredients than marble-meal, which was the old, and is now the modern way of Italy.

"The proposer also (considering that high buildings grow more and more expensive as they rise, by reason of the time and labour spent in raising the materials), takes this occasion to acquaint your lordships, that having had the opportunity of seeing several structures of greater expense than this, while they were in raising, conducted by the best artists, Italian and French, and having had daily conference with them, and observing their engines and methods, he hath promoted this geometrical part of architecture yet farther, and thinks the raising of materials may yet be more facilitated, so as to save in lofty fabrics a very considerable part of the time, and labourers' hire."

Besides the great work of preparing plans for the reparation of St. Paul's, Wren was commissioned to design a new theatre, to be built at Oxford, for the public acts of the University; and on April 29, 1663, he showed his model to the society. It was much commended, and he was desired to communicate in writing a scheme and description of the whole construction, to remain as a memorial among the archives of the society *.

This theatre, which is well known for its admirable roof and scientific construction, was the first public building erected by Wren. Dr. Plot, in his Natural History of Oxon †, has given

* Birch's Hist. Roy. Soc. Vol. I. p. 230.

† Chap. IX.

an excellent description of its construction, which will be noticed in the year of its completion. He says, " it was contrived by our English Vitruvius, the right worshipful and learned Sir Christopher Wren, and erected at the sole charge of his Grace Gilbert Sheldon *, Archbishop of Canterbury, and chancellor of the University, who, besides the expense of the structure, gave two thousand pounds to purchase land for the perpetual repair of it, which is like to stand a most magnificent and lasting monument of his grace's munificence and favour of good learning to all posterity.

The fame of this building, our architect's first work, procured him, among other testimonials of approbation, the following elegant Pindaric ode: it was presented to him from Corbet Owen, of Christ Church.

* Dr. Gilbert Sheldon, educated in the University of Oxford, became warden of All Souls; and having been chaplain to King Charles I., and run through many difficulties, was, after the Restoration, made first, Bishop of London, and lastly, Archbishop of Canterbury, which see he held with great honour and reputation for above fourteen years, when he died, at seventy-nine years of age, anno 1677. Besides his learning and piety, he is particularly distinguished by his munificent benefactions, in which no man more readily signalized himself; and especially he immortalized his name in that glorious work the theatre of Oxford, which cost him more than sixteen thousand pounds, besides the gift of two thousand pounds to buy lands worth one hundred pounds per annum, to keep it in repair. We are assured from his relations, that from the time of his being Bishop of London to that of his death, it appeared in his book of accounts, that upon public, pious, and charitable uses, he had bestowed about three score and six thousand pounds.—*Paren.* 336.

Carmen Pindaricum in Theatrum Sheldonianum, et ejus Architectum.

I.

Quousque linguas oculis litamus
Victimas tacentes?
Quousque defixi stupemus
Saxei saxa, plumbeique plumbum,
Tanquam Nos vacuis parata conchis
Simulacra cœlo dedolasset artifex?
Vocales ecce lapides et trabes sonoræ
Ingratam humanis taciturnitatem
Cognatis exprobrant, Dryas quos obstetrix
Eduxit rupto frustrà de robore, frustrà
Deucalioneo mollibant numina jactu.

Eja quæ doctis musica pulsibus
Tot malleorum suave concinentium
Agrestes cecinit sonos!
Cedant Orphei tandem miracula plectri,
Atque Amphioniæ fides;
Ille feras olim sylvasque sequaces
Excivit et montes vagos:
Hic Architecto mœnia carmine
Stupenda Thebis addidit:
At ecce jam blando fragore
Ipsos murorum symphonia
Vates attonitos trahit:
At ecce ruderibus prosæ jacentem
Me me poetam extruit:
Cui tantos liceat sonos
Confusæ saltem pro more imitarier Echûs.

II.

At nullum eloquium, nulla sonantium
Decora verborum strues,
Vastarum trabium non enarrabile textum
Æquabit, solidamve exprimet harmoniam!
En ut sublimi pensilis aëre
Tenditur campus juga ponderosi
Sustinens plumbi, gravidumque fœto
Culmine montem!
O quam justa fides nectit amantes
Arbores, quondam solitas precari
Blando murmure, nutibusque blandis:
Connubio junctas stabili vis nulla revellat,
Divortium sera non faciens sæcula.
En audax quanto machina nisu
Muros deserit hinc et hinc relictos,
Metumque subjectis jocosum
Salvis incutit usque et usque tutis!
Non illa planispherii minacis
Secura lapsum magis expavescit,
Firma quam cœli camera arcuati
Æterni fornicis ruinam.
Tam stabilem jubet esse vastitatem
Ingenium potentis architecti,
Quo nil solidiusve latiusve,
Quod molem ætheream vi sustinet Atlanteâ,
Carcere quod veterum teneri
Orbiculorum nesciens
Augusti extendit latè pomeria cœli.

III.

Divina Wrennus heu! diu Mathemata
Vel docto nimium pulvere sordida

Evexit assurgens in altum,
Interque stellas luce donavit novâ
Stellis vel ipsis invidenda.
Illic sidereo spectator in Amphitheatro
Vidit ferarum splendida prœlia,
Iratisque coruscantes
Faucibus atque oculis rogos.
Illic serenarum pictis noctium scenis
Vidit planetas præscios cœli mimos
Humana ludentes fata,
Nunc ore risus comico futuros
Festivosque sales, atque hilares jocos,
Æthereis celebrare choris,
Nunc face lugubri radiisque pullis,
Et scelera, et cædes nepotum
Fingere materiem cothurnis.
Tandem rependit gratus hospes ætheris
Spectaculorum sideribus vices.
Mirantur astra posse mortales manus
Ditare terras æmula cœli domo.
Quin et rivalem lustrat amabilem,
Suamque cœlum deperiens imaginem,
Ut penitus speculo furatur
Jam plures oculos, et lumina plura requirit.

IV.

Quamvis hianti subtrahat popello
Modesta frontem fabrica, sicut decet
Sacro parente procreatam virginem
Non turbâ genitam promiscuâ;
Profanis subducat licet
Oculis plebis malè feriatæ
Intemerandum vultûs eximii decus;

Quale nec Etruscâ miratus victor in urbe
Negavit olim Carolus
Cuivis mortali fore fas profestâ
Luce videre;
Non illa cœli tamen intuentis
Criticum lumen fugit; ultro solem
Lynceum vocat, astraque curiosa
Centum receptat fenestris.
Ingentis populi videt capaces
Pegmatum moles attonitus Sol,
Mundi supervisor supremus,
Interque varios undique miratur foros
Tam bellam ordinis benignitatem,
Dum nulla lucem pars queratur amissam,
Tristemque pulla lugeat eclipsin.
Hic sole melius quilibet vel ipso
Et cunctos vidisse potest, cunctisque videri.

V.

Celandum nihil est, nihil tagendum;
Nullus hic error latebras requirit;
Perfecta surgit undequaque moles,
Et merito duplicis gerit ornamenta coronæ:
Quanta debitur quotuplexque WRENNO
Laurea victori, servatori civica,
Capitique decentior Architecto
Turrita Cybeles corona?
Devictam nimium diu
Oppressamque suis miserabilem ruinis
Tectonicen benignus
Artium civem reddidit urbi
Olim quæ rudibus dedit vagisque
Artibus urbem.

Wren's architectural employments increased with his fame, and he was required professionally in the sister University of Cambridge, to prepare designs for the new chapel of Pembroke College, of which his uncle, the Bishop of Ely, had been president and a great benefactor. He gave money and books to the college, and four thousand pounds for erecting the new chapel, of which his illustrious nephew was the architect. On May 13, of this year (1663) Dr. Frank, the master of the college, accompanied by the dean, archdeacon, and prebendaries of Ely, Dr. Pearson, of Trinity, and other heads of Colleges, laid the first stone of the foundation of the new chapel, in the name of Bishop Wren, which was built and finished at his sole charge *.

In spite of these numerous engagements, Wren did not neglect his beloved philosophy. About the same period with the foregoing, he was desired at a meeting of the society to acquaint Mr. Hooke with the apparatus, and progress which he had made in the experiment of hatching eggs by the equal and moderate heat of a lamp, in order to prosecute the experiment, which was said to have been so far advanced, as that thereby blood was produced in eggs †.

In the survey of the zodiac, which the society proposed this month, Lord Brouncker and Sir Robert Moray were assigned to Sagittarius; Mr. Balle, Libra; Dr. Pope and Dr. Croune, Aries; and Dr. Wren and his friend and fellow-labourer in science, Mr. Hooke, to Taurus ‡.

* From Bishop Wren's Autographum. Parentalia, p. 52.
† Birch's Hist. Roy. Soc. Vol. I. p. 233. ‡ Ibid.

The king* having expressed his intention of visiting the society, a meeting of the council was held on July 1, when, among other resolutions passed, it was ordered, that the council do again meet on the Monday following, at three o'clock, to consider of experiments proper for his majesty's reception; and that Colonel Long, Dr. Christopher Wren, and Mr. Hooke, be desired to meet with them on this occasion †.

At this meeting (Monday, July 6,) the council, consisting of Lord Brouncker, president, Drs. Wilkins, Goddard, and Clarke, Messrs. Neile, Aerskine, Slingesby, Balle, Evelyn, Palmer, Hill, and Oldenburgh, together with, says the original register of the society ‡, Colonel Long, Dr. Christopher Wren, and Mr. Hooke. They took the circumstance of the king's proposed visit, and the best mode of providing suitable entertainment for his majesty, into consideration, and ordered, that Mr. Hooke and the operator should so prepare the compressing engine that it might not fail in the trying of experiments therein: and that the operator take care to have the long tubes set up against the Monday following. Colonel Long promised to bring his apparatus of insects, some snake's eggs, his collection of curious stones, among which were some with natural screws; some ermines and lizards, natives of England; as also some exotic beasts' skins.

"Dr. Christopher Wren promised to think upon some experiments proper for the purpose, and to send them from Oxford to the president. He mentioned the turning glass thermometer, with an index, left with Dr. Goddard §."

* Charles II.
† Birch's Hist. Roy. Soc. Vol. I. p. 268.
‡ Vol. II. p. 249.
§ Birch's Hist. Roy. Soc. Vol. I. p. 271.

This promise led to the following letter from him to Lord Brouncker, the president.

" Oxford, July 30*, 1663.

" My Lord,

" The act and noise of Oxford being over, I retired to myself as speedily as I could, to obey your lordship, and contribute something to the collection of experiments designed by the society for his majesty's reception. I concluded on something which I thought most suitable for such an occasion; but the stupidity of our artists here makes the apparatus so tedious, that I foresee I shall not be able to bring it to any thing ere I am necessitated to take a journey, which I am unavoidably tied to. What in the meanwhile to suggest to your lordship I cannot guess. The solemnity of the occasion, and my solicitude for the honour of the society, make me think nothing proper, nothing remarkable enough. It is not every year will produce such a master-experiment as the Torricellian, and so fruitful as that is of new experiments; and, therefore, the society have deservedly spent much time upon that and its offspring: and if you have any notable experiment that may appear to open new light into the principles of philosophy, nothing would better beseem the pretensions of the society; though possibly such would be too jejune for this purpose, in which there ought to be something of pomp. On the other side, to produce knacks only, and things to raise wonder, such as Kircher, Scholtus, and even jugglers abound with, will scarce become

* Parentalia erroneously calls this July 30, 1661.

the gravity of the occasion. It must therefore be something between both, luciferous in philosophy, and yet whose use and advantage is obvious without a lecture; and besides that, may surprise with some unexpected effect, and be commendable for the ingenuity of the contrivance. Half a dozen experiments, thus qualified, will be abundantly enough for an hour's entertainment; and I cannot believe the society can want them, if they look back into their own store. For myself, I must profess freely, I have not any thing by me suitable to the idea I have of what ought to be performed upon this occasion. Geometrical problems and new lines, new methods (how useful soever) will be but tasteless in a transient show. New theories, or observations, or astronomical instruments (either for observation or facilitation of the calculi) are valuable to such artists only as have particularly experimented the defects that these things pretend to supply. Sciographical knacks (of which an hundred sorts may be given) are so easy in the inventions, that now they are cheap. Scenographical, catoptrical, and dioptrical tricks require excellent painting, as well as geometrical truth in profile, or else they deceive not. Designs of engines for ease of labour, or promoting any thing in agriculture or the mechanic trades, I have occasionally thought upon divers; but they are not intelligible without letters and references, and often not without demonstration.

"Designs in architecture are only considerable as they are appropriated to some work in hand, or else, as they are a kind of criticism and search into antiquity. In navigation, it will be presumptuous to proffer at any thing, while we expect from your

lordship an accurate theory, from the times of Noah unknown, and reserved for your lordship, a second great endeavour of human nature. The needle had possibly more of chance than invention; yet that gave us a new world. This will be the product of reason and philosophy, and may give us the undiscovered parts of our globe. In the few chemical experiments I have been acquainted with, I cannot tell whether there will be any, that will not prove too dirty or tedious for an entertainment. Experiments of anatomy, though of the most value for their use, are sordid and noisome to all but those whose desire of knowledge persuadeth them to digest them. Experiments for the establishment of natural philosophy are seldom pompous; it is upon billiards and tennis-balls, upon the purling of sticks and tops, upon a vial of water or wedge of glass, that the great Des Cartes hath built the most refined and accurate theories that human wit ever reached to; and certainly nature, in the best of her works, is apparent enough in obvious things, were they but curiously observed; and the key that opens treasures is often plain and rusty; but unless it be gilt, the key alone will make no show at court.

"If I have been conversant in philosophical things, it hath been principally in these ways, which I have recounted to your lordship, by which your lordship perceiveth how useless I am for this occasion. Yet if your lordship will still pursue me, I know not what shift to make, but to retire back to something I have formerly produced or discoursed of.

"I have pleased myself not a little with the play of the weather-wheel, (the only true way to measure the expansions of

the air) and I fancy it must needs give others satisfaction, if it were once firmly made, which I suppose may be done, if the circular pipes, which cannot be truly blown in glass, were made of brass, by those who make trumpets and sackbuts (who wire-draw their pipes through a hole to equal them, and then filling them with melted lead, turn them into what flextures they please); but the inside of the pipe must be varnished with china varnish, (which GRATERIX hath) to preserve it from the quicksilver; and the glasses must be fixed to the pipe with varnish, which I take to be the best cement in the world; for thus the Chinese fix glass and mother of pearl in their work. It would be no unpleasing spectacle to see a man live without new air as long as you please. A description for cooling and percolating the air at once, I formerly showed the society, and left with Mr. BOYLE: I suppose it worth putting in practice. You will at least learn thus much from it, that something else in air is requisite for life, than that it should be cool only, and free from the fuliginous vapours and moisture it was infected with in expiration; for all these will, in probability, be separated in the circulation of the breath in the engine. If nitrous fumes be found requisite (as I suspect) ways may perhaps be found to supply that too, by placing some benign chymical spirits, that, by fuming, may impregnate the air within the vessel.

"If an artificial eye were truly and dioptrically made, (which I would have at least three inches diameter), it would represent the picture as nature points it. The cornea and crystalline must be glass; the other humours water. I once surveyed an horse's eye as exactly as I could, measuring what the diameters of the

several spheres of the humours were, and what the proportions of the distances of the centres of every spherical superificies was upon the axis of the eye. The ways by which I did it are too long to rehearse, but the projection is triple the magnitude. Sir Paul Neile may possibly find out: or, if your lordship think it worth while, I shall reiterate the experiment.

" A needle, that would play in a coach, will be as needful to know the coast and the way, (joined with the way-wirer) as a pleasant diversion to the traveller; and would be an acceptable present to his majesty, who might thus, as it were, sail by land. The fabric of it may be such as this: in a sphere of glass of two inches diameter, half full of water, cause a short broad heavy needle to swim, being buoyed up by the chart, and both varnished. Instead of a cap and pin, let the perforated needle play about a small wire or horse-hair, extended like a perpendicular axis in the glass sphere; which being made weighty with lead, fixed to the nadir, and an horizon as it were cemented to it, let it play in circles like the vulgar compass. Then let an hemispherical concave box, containing the sphere in its circle, be hung upon strings after this manner: suppose a basis, upon which are erected three stiff wooden springs of yew; from the ends of which springs are strings or neives strained, forming an equilateral triangle, the middle of whose sides pass through three small loops on the brim of the concave, which therefore, hanging on the lutestrings, represents a circle inscribed in a triangle: from the middle of the brass ariseth a worm-spring, fastened by a spring to the nadir of the concave, drawing it down a little, and acting against the other three springs. Thus I suppose the springs will take

off much of the lateral and perpendicular concussions; the circles will take off oscillations; the agitations remaining will be spent in the water, and stilled by the chart covering the superficies of the water; for thus we see a trencher swimming in a bucket, keeps the water from spilling in the carriage; and the Chinese, instead of circles, have their compass swimming in water. Lastly, I would have all the bottom of the basis, near the edge, made like a brush, but with soft, thick, and inclining bristles, which will ease it like a thousand springs. It should be placed on the middle of the floor of the coach, where, by opening a window, you may likewise see the way-wirer placed on the perch.

"My lord, if my first designs had been perfect, I had not troubled your lordship with so much scribble, but with something performed and done; but being taken off by my occasions, I had rather be impertinent than disobedient, and am fain in this letter to do like the common chemist, who, when projection (his fugitive darling) hath left him threadbare, is fain to fall to vulgar preparations to pay his debts. And I must needs acknowledge, I am not only indebted to the society, but most part to your lordship, to whom I owe a double duty, both as to our president, and to my very good lord and patron.

"CHR. WREN*."

Wren continued his residence at Oxford for the rest of this

* Letter Book of the Royal Society, Vol. I. p. 97. Birch's Hist. Roy. Soc. Vol. I. p. 288, et seq.

year, pursuing his studies, his experiments, and his buildings, both at Oxford and at Cambridge*.

The barometer and its phænomena engaged much of his attention, as well as that of his scientific colleagues in London. At a meeting of the Royal Society on the 16th of September, his experiments on the changes of the weather being a portion of the discussions, Dr. Wilkins was desired to write to him for his scheme and description of the instrument†. At another meeting of the society Mr. Hooke was desired to lodge some days in Gresham College, to direct the operator in many experiments then under consideration, and to perfect Dr. Wren's new kind of thermometer, with two round glasses, and quicksilver in them‡.

Among these numerous and important avocations, Wren yet found leisure to assist his friend Dr. Thomas Willis, the grandfather of the eminent antiquary, Browne Willis, in his anatomical description and elucidations of the brain. The portion undertaken by Wren was the accurate drawings from which the plates were engraved of that celebrated work§.

* The Sheldonian theatre at Oxford, and the chapel of Pembroke Hall, Cambridge.

† Birch's Hist. Roy. Soc. Vol. I. p. 304. ‡ Ibid. p. 315.

§ Ath. Ox. Vol. II., &c.

1663. Clarissimo ac eruditissimo viro Doctori THO. WILLIS, suppetias attulit in opere suo celeberrimo, *cerebri anatome*, utpote qui dissertationibus istis interesse, et circa partium usus rationes conferre solebat: qui insuper plurimas cerebri et calvariæ figuras, quo exactiores essent operæ, eruditissimis suis manibus delineare non fuit gravatus.—*Willis*, Anatome Cerebri; *Wren*, MSS.

The physiological opinions of Dr. Willis* upon the brain, are replete with the reveries of the chemical philosophy of his day. The anatomical descriptions are good, and the drawings accurate. He appears to have had some notions of the modern quackery of phrenology, or craniology, and lodges common sense in the corpus striatum of the brain, imagination in the corpus callosum, and memory in the cineritious matter which encom-

* This illustrious English physician was, as well as Wren, a Wiltshire man, being born at Great Bedwin, in that county, Jan. 27, 1621. He received the elements of his education at a noted grammar-school kept by Mr. Edward Sylvester, in All Saints, Oxford, and became a member of Christ Church in 1636. He took his bachelor's degree in 1639, and that of master in 1642. When Oxford was turned into a garrison for the king, he, with other scholars, bore arms in the royal army, and devoted his leisure to physic, in which faculty he took a bachelor's degree in 1646, when Oxford was surrendered to the parliamentary forces. In 1660 he was appointed Sedleian professor of natural philosophy, and took in the same year the degree of Doctor of Physic. He discovered the celebrated medicinal spring at Alstrop, near Brackley, of which his contemporary Aubrey gives the following account. "About 1657, riding towards Brackley to a patient, his way led him through Alstrop, where he observed the stones in the little rill were discoloured of a kind of crocus martis colour; thought he, this may be an indication of iron: he gets galls, and puts some of the powder into the water, and immediately it turned blackish; then said he, 'I'll not send my patients now so far as Tunbridge;' and so in a short time brought these waters into vogue, and hath enriched a poor obscure village †." Dr. Willis was one of the first members of the Royal Society, and soon made his name as illustrious by his writings, as it was already by his practice. He died Nov. 11, 1675, and was buried among the illustrious dead in Westminster Abbey.

† Aubrey's MSS. Vol. II. p. 585.

passes the medullary. Dr. Willis was assisted in this work by Dr. Wren, Dr. Millington, and other scientific friends *.

The progress of intellect in Europe was now in full march. This year is celebrated for the establishment of the Royal Academy of Belles Lettres and Inscriptions at Paris †, for the founding of the colony at Carolina, and for Prussia's declaring itself independent of Poland. The Royal Society of London was increasing in fame, and the learned of all nations sought and were proud of its notice. Communications were sent from the Montmorian ‡

* Præter suppetias ab hujus manu (Doctoris Lower) in dissecando peritissima allatas, celare non decet, quantas insuper acceperim a viris clarissimis, domino Tho. Millington, M. D., necnon a domino CHRISTOPHORO WREN, L.L.D., et astronomiæ professore Saviliano; qui utrique dissectionibus nostris crebrò interesse, et circà partium usus rationes conferre solebant. Porrò prior ille vir doctissimus, cui privatò observationes meas, et conjecturas, de die in diem proponebam, me animo incertum, et propriæ sententiæ minùs fidentem, suffragiis suis sæpè confirmabat. Ceterùm alter vir insignissimus Doctor Wren, pro singulari quâ pollet humanitate, plurimas cerebri et calvariæ figuras, quo exactiores essent operæ, eruditissimis suis manibus delineare non fuit gravatus.—*Willis*, Anatome Cerebri, præfatio, Lond. 1664.

† This celebrated academy was established by Louis XIV. in the month of February, 1663. It was at first composed of only four or five members, whose duty it was to write inscriptions, invent designs and legends of medals, casts, and other monuments, to the glory of the king and the illustrious men of France. Among its principal publications is the Medallic History of Louis XIV., a work as celebrated for the beauty of its designs and execution, as it is for the egregious vanity of the self-called Grand Monarque, whose weakness it flatters.

‡ Birch's Hist. Roy. Soc. Vol. I. p. 317.

and other academies of France, and numerous valuable presents were made to its repository.

Many of its members, at this moment, turned their attention to the facilitating the mechanical operation of drawing in perspective, which began then to be much used. Dr. Potter, a celebrated mathematician, mechanic, and artist*, among other useful inventions, completed a machine for drawing in perspective. Aubrey, who knew him well, and corresponded frequently with him, relates having "a curious design of his to draw a landscape or perspective, but Sir Christopher Wren," he adds, "hath fallen on the same principle, and the engine is better worked †."

The diary of the Royal Society relates, that on November 11, Sir Robert Moray presented from Prince Rupert to the society an instrument of his highness's invention for casting *any platform* into perspective. It was ordered, that the president, Sir Robert Moray, Mr. Aerskine, Dr. Wilkins, Dr. Goddard, and Mr. Oldenburgh, wait upon the prince on the following Friday, the 13th inst., and return him the humble thanks of the society; and to

* The founder's portrait in Trinity College, Oxford, is of his copying. —Aubrey, Vol. II. p. 490.

† Aubrey also relates, that "he was smith and joiner enough to serve his turn, but he did not pretend to curiosity in each. He gave me," says he, "a quadrant in copper, and made me another in silver of his own projection, which serves for all latitudes. He showed me," he continues, "in 1649, the best way of making an arch, which was a parabola, with a chain; so he took off his girdle from his cassock, and applied it to the wall thus," (describing in dotted lines an inverted catenaria).—Aubrey, Vol. II. p. 501-2.

show him an instrument of Dr. Wren's invention for throwing *any natural object* into perspective *.

These dates and descriptions not only give the priority of invention, but also superiority of execution to the philosophical Wren; but his jealous coadjutor, Hooke, whose mind was always tormented by fear of rivalry, suggested that additions might be made to the invention of Prince Rupert, so that it might incline and recline, and be fitted to draw likewise solid bodies in perspective, and to describe all kinds of dials. He was desired to bring his propositions in writing, and then to give a description, and to show the practice of the whole. In the mean time the society wisely ordered that the prince's instrument should be left as it was, without any alteration whatever †. At a meeting on the 18th Nov. Mr. Hooke was reminded of his promise, which he performed on the 25th, and an engine, with his additions and improvements, was ordered to be made for the use of the society; but I can find no account of its superiority to that of Wren.

Among the numerous inventions which emanated from the fertile mind of Wren, his weather-clock, which he produced to the society in the December of this year, deserves enumeration. At a meeting on the second of December, Dr. Wilkins acquainted the society that he had received an answer from Dr. Christopher Wren concerning his promised weather-clock, with its diagram. The amanuensis was ordered to draw it out at large against the next meeting, at which it was to be considered, together with the letter describing it. The clock and its appendages are described

* Birch's Hist. Roy. Soc. Vol. I. p. 329. † Ibid.

in the first volume of Birch's History of the Royal Society, with an engraving *. Its principal advantages and description are, that to a common pendulum clock two wings are added; one of which has a cylindrical tumbril, containing a weather-wheel of quicksilver, on the surface of which a black lead pencil describes the various changes of the weather that occur, and registers the hour at which each change took place. On the other side is a wheel moved round by a vane, or weather-cock, outside the building, on which an index or black lead pencil described the changes of the wind. These surfaces were covered with printed paper slightly fastened down with glue, or of a proper durable white ground, on which the durable lines were stained, and the pencil-marks wiped off when copied. The whole machine possesses great ingenuity, and might be of service even in the present advanced state of science for registering the changes of the wind and weather at every minute of the time that the clock continued going.

While wars and tumults agitated the kingdom †, the new society cultivated the arts of peace. Wren, one of its most illustrious and useful members, continued his pursuits at Oxford. Evelyn ‡ records an interesting tour to Oxford this year, where, on a visit to the Hon. Robert Boyle, he found that great philosopher engaged with Drs. Willis and Christopher Wren in the tower of the schools, observing the passing of the planet Mer-

* Birch's Hist. Roy. Soc. Vol. I. p. 341.: also the original register, Vol. II. p. 321.

† 1664. War was declared between the English and Dutch.

‡ Diary, Vol. I. p. 367.

cury over the sun's disk, with "an inverted tube or telescope." Thence he says he went to the new theatre then building at an exceeding and royal expense by the Lord Archbishop of Canterbury (Sheldon). "The foundation," he says, "had been newly laid, and the whole designed by that incomparable genius, my worthy friend, Dr. Christopher Wren, who showed me the model, not disdaining my advice in some particulars."

It must have been about this year, and perhaps at the anniversary, that Wren delivered the following discourse to the Royal Society*.

"MR. PRESIDENT,

"We begin a new year, and therefore may pause a little, and look back on what we have done, and consider what we may do. It is a great encouragement to us that, by the influence of his sacred majesty, the prudence and diligence of yourself, the ingenious performances of the Society, we have hitherto kept up our meetings full, and in good repute at home and abroad, and not without sufficient appearance of doing something considerable; so that we need not now fear lest the world, from all our experiments, should make this one, that there is little use of these

* In the preceding year Evelyn describes the first anniversary dinner, and does not mention his friend's discourse. The succeeding (1665) Wren was in Paris, and some authority, which I cannot now find, has led me to enter it under the head of this year, when I was collecting my materials for this work. The precise date is not very material, but except in this instance, I have scarcely ventured on a conjecture. I may, perhaps, before concluding, find my authority, which I will not fail to give either in the Appendix, or in a succeeding note.

inquiries: and I make no question but the design of so many excellent persons meeting in this society (besides the present satisfaction that accrues from the converse and communication of every one's thoughts in the disquisition of nature), carries along with it principally a zeal of approving themselves benefactors to mankind, and of perfecting something for which posterity may be really obliged to us.

"Of effecting this there seem three ways; by advancing, 1st, knowledge; 2, profit; 3, health, and conveniences of life.

"For the first of these, the improvement of theories, we need be least solicitous; it is a work will insensibly grow upon us, if we be always doing something in experiment; and every one is more prone to exercise fancy in building paper theories, than patient to first pile the unsure foundation, and hew solid materials out of the history of nature. This is rather our task, and in many things we must be content to plant crabstocks for posterity to graft on.

"The second, I make no question, will be excellently effected by two things now in hand; the carrying on the history of trades, and the improvement of the art of navigation; which being now committed to an excellent hand, cannot but produce something very extraordinary. Besides, there can hardly be any thing proposed worth our consideration, that will not itself, or some corollary from it, be reducible to this head.

"For the third, the health of mankind, the restoring part is properly the work already of one whole faculty, in which no age or nation affords more learned and inquisitive men than this of ours. Yet I wish we might incorporate with them so far, as to

have a fire going in the elaboratory for choicer experiments in chymistry, especially since many parts of philosophy are not to be pierced far into without this help; and little is to be done in the business of trades without it. Mechanical philosophy only teaches us what probably may be done in nature by the motion and figures of the little particles of things, but chymistry helps to determine what is actually done by the motions of those invisible parts of liquors, spirits, and fumes; and oftentimes gives light enough to contradict mechanical hypotheses, that otherwise seem well grounded. Thus in the body of a man, if we consider it only mechanically, we may indeed learn the fabric and action of the organical parts; but, without chymistry, we shall be at a loss to know what blood, spirits, and humours are, from the due temper of which (as of the spring in the barrel wheel), the motions of all the parts depend.

"To carry on both together, I could wish we were frequent in dissections of animals of any sort whatsoever, and that figures be drawn, where nature appears anomalous, as she is most in fishes and insects; especially in the parts that serve for concoction. And with this we may take in the experiments about generation. The spring should not be lost for observing the progress of hatching eggs; and likewise the springing of grain and seeds; which, in a ruder proportion, gives some light to the generation of animals. Tame rabbits may be kept purposely for dissection, as well because they are frequently pregnant, as because of late some observations have been made from them, which seem to thwart those of Dr. Harvey; how truly, will be worth our inquiry.

"Besides these, there is another part of physiology, which

concerns us as near as the breath of our nostrils, and I know not any thing wherein we may more oblige posterity, than that which I would now propose. It is not the work of any one person, and therefore fit for a society; nor of a little time, though of little trouble, and therefore fit to be proposed now at the beginning of the year, and to be carried on with other things. The history of seasons is this excellent work I would recommend to you, desired by all modern philosophers, though nobody hath had yet the patience to pursue it.

" It consists of two parts: 1. A meteorological history: 2. A history of things depending upon alteration of the air and seasons.

" The meteorological parts will be completed by five histories.

" 1. A punctual diary of the motion of the air, the winds; wherein should be noted, not only the rhumb, but force of the wind, as the seamen have these distinctions, if I mistake not: from a calm they begin with a soft wind, a fresh wind, a stiff gale, a storm, and sometimes a hurricane. These may be noted down by a cypher, and 1, 2, 3, 4, &c., and the rhumb by letters.

" 2. A punctual diary of the qualities of the air, as to heat and cold observed by a thermometer; and likewise of the moisture of the air observed by some other instrument.

" 3. The refractions should be observed, and the rising of any vapours, by the telescope, and the tremulation of the air.

" 4. A diary of the state of the air; as fair, cloudy, rain, &c.

" 5. A register of other accidental meteors, as figured snows, parelii, coronæ, unusual colours and shapes of clouds, called fights in the air, fiery meteors in the night, falling stars,

(in which I could give direction for finding if any thing falls from them in their extinction).

" The second part will be comprised in

" 1. The history of the growth of those annual things of food, as fruits and grain. The causes of dearth and plenty, and diseases. Especially the annals of the plough should be kept. How the weather retarded or accelerated seed time, springing, flowering, corning, ripening, and harvest; with the diseases and enemies of that year, as whether blighted, mildewed, smutted, choked with this or that weed, eaten with rook-worms, or infected with a blue mite, covering the ear while green, a calamity which I have observed, but wants a name. Lastly, the plenty, scarcity, and price of corn. We are enough to learn this in every county of England, by inquiring or corresponding with those that are a little more curious in country affairs.

" 2. The state of grass and hay, and consequently of cattle; the plenty, dearth, diseases and murrains of them.

" 3. Wines, which, though foreign, bear a great share in our diet, and therefore a note should be given of them, of their goodness or vices that year. So for coffee, tobacco, and such like of general use.

" 4. The seasons of fish and fowl are retarded or accelerated by weather; foreign fowl are observed to come in great multitudes, near the time of their departure, to some coasts of England, and there to stay for a wind, which, when it happens for their turn, in few hours there is not one to be seen in the whole country. The seasons of fish depend much upon the seasons of the water-flies and insects, their food: in two rivers, parted by

the same meadow, I have known the difference of ten days or more. The seasons of insects are, of themselves, very considerable. The multitudes or paucity of venomous creatures, and of many other the like things, are very well worth registering; and all other things found to be either consequences, signs, or presages of weather and seasons.

" 5. Above all, the physicians of our society should be desired to give us a good account of the epidemical diseases of the year; histories of any new disease that shall happen; changes of the old; difference of operation in medicine according to the weather and seasons, both inwardly, and in wounds: and to this should be added a due consideration of the weekly and annual bills of mortality in London.

" Thus, instead of the vanity of prognosticating, I could wish we would have the patience, for some years, of registering past times, which is the certain way of learning to prognosticate; experiment and reason is the only way of prophesying natural events. And I shall not therefore need to press the utility of this design, since I am confident there is none here but apprehends what excellent speculations, what a multitude of new ingenious consequences will hence arise conducible to profit, health, convenience, pleasure, and prolongation of life. And I dare be confident that no one part in the whole extent of philosophy will afford us more delightful or useful speculations, or render us more considerable to posterity.

" The only thing I fear is, lest we should want patience, and flag in the design, since, in a few years at the beginning, it will hardly come to any visible maturity. But as it is a long work,

so it is of no difficulty, nor will take up more time, than once a year to have an audit, wherein every one shall bring in his account of that part which, in this history, was enjoined him.

" The greatest difficulty will be in keeping the diary of the winds and air, because it seems to require constant attendance; but this at first may be delegated to four or five men, who near their abodes have weathercocks in view, and have diligently taken the position of their houses: these may sometimes compare notes; what have escaped the observations of one will be taken by another. So likewise for the thermometer.

" Some help may be given for the exacter observance of the wind, as thus: a point being taken in a convenient part of a window, where a square vane of a weathercock appears, the nearer and higher above the eye the better, an ellipsis may be drawn on the glass, and the rhumbs within the ellipsis so that it may be a projection upon the pane of the window of an imaginary card, placed horizontally upon the steeple, whose centre is the axis of the vane; therefore observing only with one glance how the edge of the vane lies amongst these lines of the window, you have the wind exactly given you. This way hath been put in execution with very good effect, and some other useful additions, at Oxford.

" But because it is convenient that the changes of winds in the night, too, should not pass unobserved, such a vane as is at Whitehall, showing by an index within a room, may be necessary for this purpose.

" But this is not yet enough, for many changes may happen while the observer is absent or asleep. I might seem to promise

too much should I say an engine may be framed, which, if you visit your chamber but one half hour in the day, shall tell you how many changes of wind have been in your absence, though there were twenty, and at what hour every change happened, and whether it were soft, stiff, or vehement. Neither shall the instrument be subject to be out of time, or if it be, your own hand may rectify it.

" Neither shall the thermometer need a constant observance, for after the same method may that be made to be its own register. Some errors likewise there are in the use of the thermometer, which should therefore be used with some cautions.

" For the pretended way of discovering the two other qualities of drought and moisture in the air, they are all uncertain that I ever heard of. Trials have been made of lute strings, which by their various tensure move an index; but these strings alter in their parts, and in the same temper of air will not return to the same degrees. The beards of oats are more uncertain.

" It is indeed an error to think there are any degrees of siccity, since all siccity is but less or no humidity: and therefore the degrees of humidity being nothing else but the quantity of moist vapour in the air, it is best done by collecting the very moisture of the air after a peculiar manner, which I shall be ready to produce.

" Many other things I might suggest of this nature, which if the design be once begun, I shall most willingly submit, upon occasion, to the judgment of the society *."

* Parentalia, p. 224.

Thus did this great man communicate, in the most unreserved manner, the whole contents of his rich and highly cultivated mind to his illustrious coadjutors; and it is satisfactory to find that they were duly estimated by the great characters to whom he addressed himself.

During the course of this year the Royal Society formed themselves into several committees, the better to extend the benefit and forward the views of their institution. These committees were 1. MECHANICAL, whose business it was to consider and improve all mechanical inventions. 2. ASTRONOMICAL AND OPTICAL. 3. ANATOMICAL. 4. CHEMICAL. 5. GEOLOGICAL. 6. FOR HISTORIES OF TRADE. 7. FOR COLLECTING ALL THE PHÆNOMENA OF NATURE HITHERTO OBSERVED, AND ALL EXPERIMENTS MADE AND RECORDED; and 8. FOR CORRESPONDENCE *. In three of these, namely, *Mechanics, Astronomical and Optical,* and *the general one for collecting all the phænomena of nature,* &c., was Wren nominated a member, and in each of them he perpetually exhibited the results of his transcendent powers of intellect and study.

The year 1665 is an important year in the life of Wren, and is but too well remembered in history as the era of one of the greatest disasters that ever befel the English nation, the fatal infection or plague which overspread the metropolis. The eloquent historian of the Royal Society, Dr. Sprat, whose hand was stopped, and his mind disturbed in the prosecution of his labours,

* This list of the committees of the Royal Society shows the extended nature of its researches in these early days of its institution compared with those of the last presidency.

describes it with all the liveliness and feeling of an eye-witness. "The plague was, indeed," says he, "an irreparable damage to the whole kingdom: but that which chiefly added to the misery was the *time* wherein it happened. For what could be a more deplorable accident, than that so many brave men should be cut off by the *arrow that flies in the dark*, when our country was engaged in a foreign war, and when their lives might have been honourably ventured on a glorious theatre in its defence?"

Honours were showered this year upon Wren with a profusion only equalled by his merits. His friend Dr. Sprat, Bishop of Rochester, dedicated to him, in the most flattering manner, his Observations on Mons. de Sorbiere's* Voyage to England; wherein Sprat chastizes with spirit the superficial foreigner who had vilified the country. And Robert Hook confessed in the preface to his Micrographia, that although he was first induced to undertake the work at the suggestion of Bishop Wilkins, yet he commenced it with reluctance, because he had "to follow the footsteps of so eminent a person as Dr. Wren, who was the first that attempted any thing of this nature; whose original draughts do now make one of the ornaments of that great collection of rarities in the king's closet. This honour which his first beginnings of this kind have received, to be admitted into the most famous place in the world, did not so much encourage, as the hazard of coming after Dr. Wren did affright me; for of him I must affirm, that since the time of Archimedes, there scarce ever met in one man, in so great a perfection, such a mechanical

* Biog. Brit. &c.; Paren. p. 212; See, also, p. 84 of this work.

hand, and so philosophical a mind*." The value of this compliment from such a man as Robert Hook will receive its due estimate from the learned and scientific. Added to these, his amiable and illustrious friend John Evelyn consulted him on the education of his son in the following beautiful letter, where the feelings and affections of a father are most naturally expressed

To Doctor Christopher Wren.

" Sir,

" You may please to remember that some time since I begged a favour of you on behalf of my little boy: he is now susceptible of instruction, a pleasant, and (though I speak it) a most ingenious and pregnant child. My design is to give him a good education: he is past many initial difficulties, and conquers all things with incredible industry. Do me that eternal obligation, as to inquire out and recommend me some young man for a preceptor. I will give 20*l.* per annum salary, and such other accommodation as shall be no ways disagreeable to an ingenuous spirit; and possibly I may do him other advantages: in all cases he will find his condition with us easy, his scholar a delight, and the conversation not to be despised. This obliges me to wish he may not be a morose, or severe person, but of an agreeable temper. The qualities I require are, that he be a perfect Grecian, and if more than commonly mathematical, so much the more accomplished for my design: mine own defects in the *Greek* tongue, and knowledge

* Preface to Hook's Micrographia, or Physiological Descriptions of minute Bodies, made by the Help of Magnifying-glasses, Lond. 1665.

of its usefulness, oblige me to mention that particular with an extraordinary note: in sum, I would have him as well furnished as might be for the laying of a permanent and solid foundation. The boy is capable beyond his years; and if you encounter one thus qualified, I shall receive it amongst the great good fortunes of my life, that I obtained it by the benefit of your friendship, for which I have ever had so perfect an esteem. There is no more to be said, but that when you have found the person, you direct him immediately to me, that I may receive and value him.

Sir, I am told by *Sir Jo. Denham* that you look towards *France* this summer; be assured I will charge you with some addresses to friends of mine there, that shall exceedingly cherish you; and though you will stand in no need of my recommendations, yet I am confident you will not refuse the offer of those civilities which I shall bespeak you. There has lain at *Dr. Needham's* a copy of the Parallel bound up for you, and long since designed you, which I shall entreat you to accept; not as a recompense of your many favours to me, much less a thing in the least assistant to you (who are yourself a master), but as a token of my respect, as the book itself is of the affection I bear to an art which you so happily cultivate.

" Dear Sir, I am,

" Yours, &c.,

" JOHN EVELYN."

" Says Court, 4 April, 1665."

The journey to France, alluded to in this letter, was commenced by Wren early in the year. While in Paris, he not only

inspected and studied all the principal buildings of that great metropolis, and made excursions to the principal places in its vicinity worth his attention, but, as might be expected from the structure of his mind, took particular notice of what was most remarkable in every branch of mechanics, and contracted intimacies with the most celebrated artists and men of letters. In a manuscript letter quoted by Ward in his lives of the Gresham professors, to his friend, the Rev. Dr. Bateman, he says, "he was so careful not to lose the impressions of these structures he had surveyed, that he should bring away all France on paper *."

Previous to Wren's departure for Paris he submitted to the society a new hypothesis and geometrical problem about the comets, which appeared the last and present years†; it was read to the society at their meeting on the 25th of January. At the same meeting Lord Sandwich communicated other observations on the same comets, which were referred to Dr. Wren and Mr. Hooke. This way of finding the parallax of comets Hooke declares to be wholly new, and though hypothetical, as supposing the annual motion of the earth and the motion of the comet in a right line, through equal spaces in equal times; yet, being founded on a problem in geometry, invented, as he says, by the incomparable mathematician, Dr. Christopher Wren, one may easily find the true parallax of comets from any four exact observations of it made at different times at the same place‡. Wren's cor-

* Ward's Gresham Professors, page 102.
† Birch's Hist. Roy. Soc. Vol. II. p. 12.
‡ See Appendix, No. 12.

rectness about the place of the comet was afterwards corroborated by Mr. Huygens in a letter to Sir Robert Moray, dated from the Hague *.

This hypothesis produced the following letter from Mr. Hooke to Dr. Wren, then at Oxford.

To Dr. Wren, *at Oxford.*

" London, May 4, 1665.

" Sir,

" I hope you received the globe and observations which I sent you: you had had them much sooner, but, in truth, I could not get the copy of your Hypothesis, though the amanuensis was ordered by the society to have had it ready above a week before. Those observations of my own making I have not yet had time to adjust so well as I desire; for the sun came upon me before I was aware, and so I must stay till the constellation of ♈ appear in the morning, before I can be able to rectify the places of the telescopial stars, by which I observed the comet to pass; which I hope I may do about a fortnight hence, about which time also I expect to see both the old, or first comet, with a telescope, and second, or last comet, with my eye; for, if the motion of them be regular, as I see not the least cause to doubt, I hope to be able to design their places among the fixed stars, without erring much more than I am able to see at once with a telescope; and therefore I hope it will be no difficult matter to find either of

* Birch's Hist. Roy. Soc. Vol. II. p. 19.

them, unless the first may be gone so far as to disappear by reason of distance, which is, indeed, the greatest part of my fear; for, if it continue to move those ways I have imagined it, whether we take the supposition of the motion of the earth, and imagine the comet to be moved in a circle, one side of which touches, or rather goes within the orb of the earth on one side, and without the orb of Saturn, or, at least, that of Jupiter on the other, whose plane is inclined to that of the ecliptic about twenty degrees, or whether we suppose the earth to stand still, and the comet to be moved in a great circle, whose convex side is turned towards the earth (which, supposing no certain parallax has been observed, may be supposed of any bigness, keeping only the same proportion between the nearest distance of it from the earth, and the radius or diameter of that circle), it must appear again very near the same place, about a fortnight hence. And I am apt to think the body of the comet is of a constitution that will last much longer than either a month or a year, nay, than an age; and if I can be so lucky to meet with it again, I hope to trace it to its second appearing. But I weary you with my conjectures; and I doubt not but that before this, you have perfected the theory of comets, so as to be able to predict much more certainly what we are to expect of these comets for the future; wherefore, if at your leisure you will please to afford me a word or two, you will much oblige me, &c. &c.

"ROBERT HOOKE."

This great mathematician, in another instance, bears witness to the depth of Wren's knowledge of the theory of comets: for,

in noticing some recent information from France of a Carthusian of Dijon, of the name of D. Anthelm, who pretended to the construction of a true theory of the cometary system, and of his ability to predict their periodical appearances correctly, he affirms, that it may be more exactly calculated than by Anthelm's principles, by those published by him in his Cometa, invented by Dr. Christopher Wren; by which from any four observations truly made, the line, distance, motion, inclination to the ecliptic, its place among the fixed stars, the length of its tail, brightness, &c., may be found with certainty *.

Many various, contradictory, and even humorous opinions were promulgated about this period concerning the nature and property of comets. Some considering them as fiery beacons, prognosticating evil, and others as portions of the universal system of nature yet to be discovered by the investigating philosopher of the human race. The following account of a discourse on comets, translated from the German language, published at Nuremberg by "A Lover of Astronomy" of about this period, and printed in Hooke's Philosophical Collections, is not more appropriate to the subject before us, than entertaining in itself, and curious from its elucidating some of the popular opinions of the day on the subject upon which Wren had thrown so much rational light. It is in the form of a dialogue between a naturalist, a statesman, or politician, and a minister of the church, concerning the nature and effects of comets.

Their first dispute arises about the name: they all agree that

* Hooke's Posthumous Works, pp. 104 and 105.

a comet signifies a hairy star, or a body covered with hair; only the minister endeavours to persuade, from the Revelation of St. John, ch. ix. ver. 8, That the name of comets might be of some use to terrify people from wearing perukes, being of opinion, that according to the Bible, all that wear such a hairy composition on their head, properly may be called *cometicale* animals.

The naturalist, leaving this fancy to the minister, explains farther the nature of comets, reducing all the opinions that are extant about the same to three several heads or classes.

In the first place, he puts the four elements, fire, water, earth, and air.

To the second he refers the sun with all its planets; and to the third the fixed stars and their vortices: and, according to this division, he shows how all the opinions about the nature of comets have been reduced to some of these three principles; and beginning with Aristotle and his peripatetical reasons, he tells us how the peripatetics fancy the comets to be composed of vapours and fiery exhalations, which are kindled by the motion of the upper part of the air, after the same rate as the French Jesuit, P. Garnier, pretended that comets have their original out of the fiery atoms or particles inclosed and dispersed through the whole atmosphere, which particles afterwards collected in the form of a globe or ball, and illustrated by the sun, do resemble and appear like a comet. Of such a fiery stuff the French mathematician Robbervale also composed the body of a comet; supposing that the vapours in the air take fire like gunpowder, and that the motion of a comet is nothing else than a continual firing of these exhalations, which put together in a straight line will make the

comet appear to move from one place to another, though it be only the dispersion of vapours, successively put into a flame. After this, the naturalist proposeth the opinion of Mr. Otto Guerike, who believes that a comet is only a great piece of the air, which, by violence of winds being broken off, and transported, like a cloud, into the æther, is illustrated by the sun; so that, according to his opinion, *there cannot appear any comet*, if a terrible wind or storm hath not happened before, and caused such a divulsion.

To all this the minister adds his opinion, thinking that the comets are moved by some angels, which, collecting a great quantity of terrestrial vapours, carry them afterwards beyond the moon, and put them up there, like a candle, to exhort the inhabitants of the earth to be good christians: and if this opinion should not be accepted, there could be given another, which hath been amongst the Romans, and other superstitious nations; as if the souls of some great persons, or saints, after death, did transform themselves into comets, which company of souls or saints, tied together like faggots, swarm and run all along the fixed stars, to see the wonders of the world.

But leaving this, the naturalist goes further to the second class of opinions, and tells us, by the sun and other planets, how a comet may be produced; it being the opinion of Hevelius, that not only out of the earth, but of the whole system of the world, such a sufficient quantity of exhalations may be collected, as to form a comet, which commonly doth happen after some great conjunction of the planets, and any other disposition of the celestial bodies, as may be seen by the spots observed in the sun:

which opinion the naturalist doth not like very well, because he doth not see how these exhalations can be joined together, every planet having his own vortex; and that scarce any thing can transcend, or slip out of the same. Likewise, he thinks, that the opinion of the Jews hath but little foundation, when, by their Hebrew tongue, they call comets זיקין, that is to say, wind bottles, or bladders, filled up with water, which being put near the fire, make a great noise, or wind coming out: for, after the same manner, the heat of the sun, parboiling the body of the comet, according to their opinion, produceth a stream of wind and vapours, which, by the beams of the sun, do appear like a tail.

After this opinion, he mentions of another jesuit, called P. Grandamicus, who thinks that comets are only sensified and rarified parts of the heaven; and that the rarified part maketh up the tail, as the rest the body of the comet. But because he doth not tell by what reason or manner the heaven is condensed or rarified, he leaveth him too, and cometh to the third class of opinions, which are related to the fixed stars, and uppermost part of the world. And first, he proposeth the opinion of one P. Arrais, supposing that comets are but a congregation, or meeting, of several little fixed stars, which, for a certain time, do join together, and afterwards leave one another, the same appearance being proved by good telescopes. Next he likes that of P. Petit, who is of opinion, that comets are some sort of stars or planets, which perpetually move, and sometimes, according to their nature, come downwards, and then ascend again; and that, by this hypothesis, the comet that did appear in 1618 might be the same with that of 1664; it being evident, by the history of comets,

that more than twenty of them have appeared in a revolution of forty-six years. But the naturalist, not agreeing with this hypothesis, because he maketh no distinction between new fixed stars that appear, and comets, he tells us, that it hath been the most ancient opinion of Pythagoras and the Chaldeans, revived by Des Cartes, that the fixed stars are sometimes covered with spots and darkness; and so being hindered in their natural course, do run from one vortex to another, till they recover their liberty; and in the mean time, having lost their brightness, do appear like comets: but what belongs to the tail of them, he thinks, that not only the reflection of the sun, but also the perspicuous subtilty of the air, and compression of the atmosphere by cold weather, may produce such an appearance; because the Egyptians, and other people to the south, according to Aristotle's relations, have observed both the fixed stars and planets, as Saturn, Jupiter, and Venus, with variety of tails.

For the rest, what concerns the astrological predictions, he thinks it best to leave them to the minister of the church; for he himself doth not believe that any one ought to be frighted at the appearance of any such natural body *.

In the course of this year Wren left England, with an intention of visiting the classic soils of France and Italy, to complete his studies as an architect. He was at this time considerably employed; his mathematical and constructive knowledge was undoubted: but, as a fine art, architecture had not been cultivated in England, except by Wren's great predecessor, Inigo Jones.

* Hooke's Cometæ.

In this department of his art he felt his deficiencies; and he appeared determined to read his Vitruvius amidst the ruins of the glorious edifices, on which this master of our art had founded his precepts.

Being engaged as architect to Trinity College, Oxford, which was then undergoing repairs and additions, he wrote the following letter to his friend Dr. Bathurst *, who was then president of that

* This learned person, who was a distinguished wit, and an elegant Latin poet, was among the earliest members of the Royal Society; the friend, associate, and fellow-student of Boyle, Wren, Sprat, South, Willis, Seth Ward, Aldrich, and other luminaries of the day; and one of the most eminent men in English literature. He was a native of Northamptonshire, and was born in 1620. He received the elements of his education at the Free School at Coventry; and was entered at Worcester College, Oxford, in the fourteenth year of his age. He was shortly afterwards removed to Trinity, where his grandfather, Dr. Kettel, was president. He took his usual degrees; and was ordained priest in March, 1644. In 1649 he read, in the hall of his college, his admired "Diatribæ theologicæ, philosophicæ, et philologicæ."

During the disturbed period of Cromwell, his abilities receiving but small encouragement, he studied physic with his friend Dr. Willis, and cultivated every branch of philosophical knowledge. With Wren and Boyle, he became a student under the celebrated chemist and rosycrucian, Peter Sthael. He practised physic; and was employed, as physician, to the sick and wounded of the navy, an office in which he gave universal satisfaction. His distinguished rank, as a philosopher, procured him the honour of admission as a Fellow of the Royal Society, on * the 19th of August, 1663. In 1688 he was elected president of the society; and of his college

* "Aug. 19, 1663. Sir John Pettus, Ralph Bathurst, M. D., and Mr. John Beale, were elected; and Dr. Bathurst being present, was admitted."—*Birch's Hist. Roy. Soc.* Vol. I. p. 293.

college. The original is preserved, among other valuable manuscripts, in the college bursary. It is dated June 22, 1665, and is as follows:—

" My honoured friend,

" I am convinced with Machiavel, or some unlucky fellow, 'tis no matter whether I quote true, that the world is generally governed by words. I perceive the name of a quadrangle will carry it with those whom you say may possibly be your benefactors, though it be much the worse situation for the chambers, and the beauty of the college, and of the particular pile of building. If I had skill in enchantment to represent the pile, first in one view, then in another, that the difference might be evidently seen, I should certainly make them of my opinion; or else I will appeal * to Mons. Mansard, or Signor Bernini, both which Ishall see at Paris within this fortnight.

in 1644. After the Restoration he reassumed his clerical gown; and was appointed chaplain to the king in 1663. In 1670 he was installed Dean of Wells; and in 1691 was nominated, by King William and Queen Mary, Bishop of Wells, which he declined accepting, lest it should too much detach him from his college, and interrupt the completion of the improvements in its buildings, which his friend Wren had commenced: but served Vicechancellor of the University for two years. He was a great benefactor to his college, and an example of private liberality.—*Warton's Life of Bathurst.*—*Wood's* Ath. Vol. II. &c.

* " Wren," says Milizia, " fu d'un carattere sì modesto che si attiro il disprezzo degl' ignoranti; egli era veramente dotti, e perciò studiò a non imparare le inutilità brillanti, e perciò non parlava che poco e di rado."

"But, to be sober, if any body, as you say, will pay for a quadrangle, there is no dispute to be made; let them have a quadrangle, though a lame one, somewhat like a three-legged table.

"I sent last week to Minchin, to give a full account of the design that was fitted for the grove: and if you resolve upon the other way, of seeing it in the garden (the fellows' garden), you have two designs for that also, neither of which do I know at present how to mend. I suppose the first of these two in the books may please you best, that to be set in the garden; I mean the loose paper, which contains a ground plot only, with one bed-room and two studies to each chamber, which Minchin cannot be at a loss in. In this design I intended the stories to be but ten feet high; and though I have not particularly expressed an upright for that, I meant to have used the same that is there glued to the other ground-plot, changing only the height of the stories. If you show this part of the letter to Minchin, I know he will apprehend it.

"You need not use any apologies to me; for I must beg of you to believe you may command me in things of greater moment, and that I love to serve you, as your most faithful and affectionate

"Friend and servant,

"CHRISTOPHER WREN."

Wren also gave a plan about this time for a building *, which

* The estimate for the shell amounted to seven hundred and thirty-five pounds. The west side of the quadrangle, alluded to in the letter, was

was never executed, that was intended to be placed in, or about, the common room garden of Trinity College, between part of the south side of the college and the north side of Baliol College Chapel.

The additions to Trinity College, Cambridge, were going on at the same time. The beautiful western quadrangle, called Nevile's Court, from its splendid benefactor, Dr. John Nevile, was then considered an example of excellence in architecture. Dyer, in his History * of Cambridge, says, " Such as know how favourable architecture has been, and still is, to the accommodations and conveniences of life; who have followed its progress from Egypt to Greece, from Greece to Rome, and thence to the states of modern Europe; who have studied the proportions, the appropriate decorations, nice arrangements, and the gradual intermixtures of the Grecian orders, might make a study of this spot. Here it was our great master of Palladian architecture, Sir Christopher Wren, surveyed his own work, and was satisfied. Any artist, too, might linger here long; and, with a proper exercise for his taste, might receive peculiar delight, and proportionable improvement."

The following letter, transcribed from the three folio volumes of manuscripts and drawings, in All Souls College, Oxford, gives

commenced, at the expense of the college, in July, 1681, and finished in 1682: the south side was completed in 1728, at the college expense. The building at the east end of the chapel, being intended as an enlargement of the president's lodgings, was completed, at the sole expense of Dr. Bathurst, in 1687. Its cost was four hundred and fifty pounds.—MSS. of WREN in All Souls College, Oxford.

* Vol. II. p. 331.

a fair insight into the character of Wren, and of the difficulties with which he had to contend.

" *Foul Copy of a Letter from Sir Christopher to some Gentleman (probably the Master) of Trinity College, Cambridge; being an Explanation of the six following Designs* * :—

" Sir,

" A building of that consideration you go about, deserves good care in the design, and able workmen to perform it; and that he who takes the general management upon him may have a prospect of the whole, and make all parts, inside and outside, correspond well together; to this end I have comprised the whole design in six figures.

" Fig. I.—Shows half the ground-plot of the substruction cloister, and first flights of the stair-cases. I have chosen middle pillars, and a double portico; and lights outward, rather than a middle wall, as being the same expense, more graceful, and according to the manner of the ancients, who made double walls (with three rows of pillars, or two rows and a wall), about the forum.

" Fig. II.—Shows half the ground-plot of the upper floor, the entrances from the stair-cases, and the disposition of the shelves, both along the walls, and breaking out from the walls, which must needs prove very convenient and graceful; and the

* The drawings are Nos. 39 to 46, of Vol. I. of the bound books of Sir Christopher's designs at All Souls College, Oxford.

best way for the student will be to have a little square table in each cell, with two chairs: the necessity of bringing windows and doors to answer to the old building leave two square places at the ends, and four lesser cells, not to study in, but to be shut up with some neat lattice doors, for archives.

" Fig. III.—Shows the face of the building next the court, with the pavilions for the stair-cases, and the section of the old buildings, where they join to the new. I chose a double order rather than a single, because a single order must either have been mutilated in its members, or have been very expensive; and if performed, would not have agreed with the lowness of the porches, which would have been too dark, and the solids too gross for the openings. I have given the appearance of arches in the order required, fair and lofty; but I have laid the floor of the library upon the imposts, which answer to the pillars in the cortile, and the levels of the old floors; and have filled the arches with reliefs of stone, of which I have seen the effect abroad in good buildings; and I assure you, where porches are low, with flat cielings, is infinitely more graceful than low arches would be, and is much more open and pleasant: nor need the mason fear the performance, because the arch discharges the weight, and I shall direct him in a firm manner of executing the design. By this contrivance the windows of the library rise high, and give place for the arches against the walls; and being high, may be afforded to be large; and being wide, may have stone mullions, and the glass painted; which, after all inventions, is the only durable way in our climate for a public building, where care must be had that snow drive not in. I have given no other frontispiece to the

middle than statues, according to ancient example, because in this case I find any thing else impertinent; the entrances being endwise, and the roof not suiting it. This may be done, if you please; you may make the three middle arches with three-quarter columns, and the rest with pilasters, of a third of their diameter, which will save some charge of stone; but it is best as it is designed.

" Fig. IV.—Shows half the outside of the building next the river, which I design, after a plainer manner, to be performed most with ashlar; the three portals, one against each cloister, and one in the middle, and the pavilions for the stairs, give it grace enough for the views that way.

" Fig. V.—Shows half the section the longest way, and discovers the insides of the staircase, the portico below the library, the disposition of the shelves, the side door from the old building, the division of the ceiling, and the roof. The stairs are so carried, and are made of marble, or hard stone, with iron rails; and if the middle alley of the library were paved with small marbles, you would much consult the quiet of the place; and for the cleanness of the books from dust, the cells may be floored with wainscot. I have added thin pilasters to the walls, which are easily performed in rendering upon brick-work. The cornices divide the ceiling into three rows of large square pannels, answering the pilasters, which will prove the best fret, because in a long room it gives the most agreeable perspective. I made the pavilion of the stairs so as I might not lose my end lights; and, lest the lights next the old buildings should be cut off within, would ad-

vise to lose the two last rooms in the garret, and lay a covering of lead upon the second story, which may be ordered not to be discovered in the court, the stone work continuing.

" Fig. VI.—Gives the transverse section through the middle arch, with the thicknesses of the walls, the manner of the roof, and the insides, to be compared with the other designs. I have given the ancient form of roof, which the experience of all ages hath found the purest; no other is to be trusted, without doubling the thicknesses of the walls. The statues will be a noble ornament; they are supposed of plaster: there are Flemish artists that do them cheap.

" I suppose you have good masons: however, I would willingly take a farther pains to give all the mouldings in great: we are scrupulous in small matters; and you must pardon us, the architects are as great pedants as critics or heralds. And, therefore, if you approve the designs, let the mason take his measures, as much as is necessary for the present, setting out the work; and be pleased to transmit them to me again, and I shall copy out parts of them at large, more proper for the use of the workmen, and give you a careful estimate of the charges, and return you again the original designs; for in the hands of the workmen they will soon be so defaced, that they will not be able from them to pursue the work to a conclusion. I have made a cursory estimate, and it is not that at which you will grumble, as not exceeding the charge proposed."

Affairs being now arranged for a considerable absence from England, Wren took leave of his beloved pursuits and companions

in the summer* of this year. The first object of his inquiry was Paris, where art and literature flourished in an unexampled degree, under the splendid munificence of Louis XIV., and the enlightened patronage of Mazarine and Colbert. Paris was then the resort of all the distinguished artists and learned men of the continent; who formed a sort of congress, in which a man of Wren's distinguished abilities and reputation could not be unacceptable. The architecture of the French metropolis became an object of his peculiar solicitude, and he made himself acquainted with all that was remarkable in mechanics and philosophy. The ablest professors sought his acquaintance, and exhibited the newest discoveries to their English visiter; but architecture and its relative arts was his principal object, as the letter to his friend Dr. Bateman just quoted abundantly proves.

He was introduced by letter from a friend in England to the Earl of St. Alban's, then a distinguished virtuoso in Paris; which, it appears, gave him much satisfaction, as he represents† the earl to have used him with distinguished kindness, and to be, what his friend had described him, one of the best men in the world. He describes himself‡ spending his time in surveying the most distinguished fabrics of Paris, and the country round. The Louvre was for a while his daily object, where no less than a thousand hands were constantly employed upon the works; "some in laying," he says, "mighty foundations, some in raising the stories,

* Boyle's works, Vol. V. p. 333 and 351.—Birch's Hist. Roy. Soc. Vol. II. p. 74.

† Parentalia, p. 261.

‡ Ibid.

columns, entablatures, &c. with vast stones, by great and useful engines; others in carving, inlaying of marbles, plastering, painting, gilding, &c., which altogether made, in his opinion, a school of architecture, the best probably at that day in Europe. The college of the four nations is usually admired; but the artist, he thought, had purposely set it ill-favouredly, that he might show his wit in struggling with an inconvenient situation." In his journal* he says, that " an academy of painters, sculptors, and architects, with the chief artificers of the Louvre, meet every first and last Saturday of the month†. Mons. Colbert, superintendant, comes to the Louvre every Wednesday, and, if business prevents not, Thursday. The workmen are paid every Sunday duly."

The Abbé Charles introduced him to the acquaintance of *Bernini*, who showed him his designs for the palace of the Louvre, and of the statue of Louis XIV.‡, which he was then executing. Among other rarities, he was shown the curious collection of the Duke of Orleans, which was kept by the Abbé Bruno, and was well filled with excellent intaglios, medals, books of plants, and birds, in miniature. " The Abbé Burdelo," he informed his friend, " keeps an academy at his house for philosophy every Monday afternoon. But I must not," he says, " attempt to describe Paris, and the numerous observables there, in the compass of a short letter. The king's houses I could not miss; Fontainbleau has a stately wild-

* Seward's Anecdotes, vol. ii. p. 76. Ed. 3. Lond. 1796.

† Paren. p. 261.

‡ Bernini's design for the Louvre was not adopted; it is engraved in one of Perelle's books of Views. " Bernini made a bust, but not statue of Louis, *I believe*."—*Seward's Anecdotes,* Vol. II. p. 76.

ness and vastness suitable to the desert it stands in. The antique mass of the castle of St. Germain's, and the hanging gardens, are delightfully surprising (I mean to any man of judgment), for the pleasures below vanish away in the breath that is spent in ascending. The palace, or if you please the cabinet, of Versailles called me twice to see it; the mixtures of brick and stone, blue tile and gold, made it look like a rich livery; not an inch within but is crowded with little curiosities of ornament. The women, as they make here the language and the fashions, and meddle with politics and philosophy, so they sway also in architecture. Works of filgrand and little trinkets are in great vogue, but building ought certainly to have the attribute of eternal*, and therefore the only thing incapable of new fashions.

" The masculine furniture of the Palais Mazarine pleased me much better; there is a great and noble collection of antique

* " Many of the buildings which have remained to us from the ancients are universally allowed to be perfect models of the art of architecture. In spite of the rewards offered by sovereigns, and of that innate desire of man to do something more and better than his predecessors have done, every attempt to add another order of architecture to the five long since transmitted to us from the Greeks has been vain and fruitless, and has in general effected nothing but a variation on the Corinthian order. The art of building being an art of which the constituent parts are utility and beauty, must have soon arrived at its point of perfection. We have but little left to do but to arrange and compare. What has the rage of inventing in architecture produced in our times? May-poles instead of columns, capitals of no order, and adjuncts and decorations so whimsical, so minute, so split into small parts tortured into grotesque forms, that, as Lord Bacon observes of plots in gardens, 'you may see as good sights often in tarts.'" —*Seward's Anecdotes*, Vol. II.

statues and bustos, many of porphyry, good basso relievos, excellent pictures of the great masters, fine arras, true mosaics, besides *pieces de* rapport* in compartments and pavements, vases of porcelain painted by Raphael, and infinite other rarities; the best of which now furnish the glorious apartment of the queen mother at the Louvre, which I saw many times.

" After the incomparable villas of Vaux and Maisons, I shall name but Ruel, Courances, Chilly, St. Maur, St. Maude, Issy, Meudon, Rincy, Chautilly, Verneul, and Lincour; all which, and I might add many others, I have surveyed: and, that I might not lose the impressions of them, I shall bring you almost all France in paper, which I have found by some or other ready designed to my hand, in which I have spent both labour and some money. Bernini's design of the Louvre I would have given my skin† for; but the old reserved Italian gave me but a few minutes'

* Inlaid work.

† This exquisite design, for which Wren would have given his skin, was rejected by Louis XIV. for the novelty of Perrault's coupled columns. Bernini, whose reserve in the court of Louis Wren, calls surliness, was one of the greatest artists that ever did honour to the Italian name. His knowledge, taste, and practice in three illustrious branches of the higher arts procured him the title of the modern Michelangiolo. When a child, and studying under his father, a skilful artist at Naples, he executed a head in marble at the age of eight years, which was considered, even in those regions of art, a perfect prodigy. To improve this natural talent his father took him to Rome, where, after astonishing all the artists, the pope expressed a desire to see him, and at the first interview asked this extraordinary child if he knew how to sketch a head. " Whose head?" said Bernini. " You know then how to draw any; let it be that of St. Paul," replied the pope. The boy performed the task in about half an hour, so much to his

view; it was five little designs on paper, for which he hath received as many thousand pistoles. I had only time to copy it in my fancy and memory, and shall be able, by discourse and a crayon, to give you a tolerable account of it. I have purchased a great deal of taille-douce, that I might give our countrymen examples of ornaments and grotesques, in which the Italians themselves confess the French to excel. I hope I shall give you a very good account of all the best artists of France; my business now is to pry into trades and arts. I put myself into all shapes, to humour

holiness's satisfaction, that he recommended him strongly to the notice of Cardinal Barbarini, bidding him to "direct his studies, and he will become the Michelangiolo of his age."

Bernini's works in architecture, particularly his grand circular colonnade to St. Peter's at Rome, are well known. One of his first performances in sculpture was a bust in marble of the Bishop Montajo, which was so excellent a portrait, that it received the name of "Montajo petrified:" and among the principal of the others, are busts of the pope, some of the cardinals, and some large figures after nature; a St. Laurence, a group of Æneas and Anchises, and David about to sling the stone at Goliath, of which Sir Joshua Reynolds conceives that Bernini has given but a mean expression to David, in representing him as biting his under lip. An Apollo and Daphne, executed in his eighteenth year, "from which," says Reynolds, "the world justly expected he would rival the best productions of ancient Greece." It is said that when he surveyed this group near the close of his life, he admitted that he had made but little progress in his art since that time.

Bernini, like Wren, was celebrated for the precocity of his intellect, and, like Wren too, preserved his talents to the latest age. At the age of eighty, he executed a beautiful half-figure of Christ, for Christina, Queen of Sweden, and died in 1680, in the eighty-second year of his age.—*Moreri, Reynolds*'s works, Vol. I. p. 87. Vol. II. p. 27. *Biog. Universelle, Chalmers,* &c. &c.

them; it is a comedy to me, and, though sometimes expenseful, I am yet loth to leave it.

"Of the most noted artisans within my knowledge or acquaintance, I send you only this general detail, and shall enlarge on their respective characters and works at another time.

"ARCHITECTS.—Sig. Cavaliere Bernini, Mons. Mansard, Mons. Vaux, Mons. Gobert, Mons. Le Pautre. Messieurs Anguiere and Sarazin; sculptors and statuaries. Mons. Perrot, famous for basso relievos; Van Ostal, and Mons. Arnoldin, plasterers, who perform the admirable works at the Louvre. Mons. Orphelin, and Mons. de Tour; engravers of medals and coins.

"PAINTERS IN HISTORY.—Messrs. Le Brun, Bourdon, Poussin, Ruvine, Champeigne, Vilcein, Loyre, Coypel, Picard. Mignard, in history and portraits; Mons. Beaubrun, in portraits of women. Messrs. Baptiste and Robert for flowers. Mr. Matthews, an English painter, at the Rue Gobelins, works for the arras weavers; where Mons. Bruno is the designer, and an excellent artist. There I saw goldsmiths working in plate admirably well. Abbé Burdele works in enamel. Mons. de la Quintinye has most excellent skill in agriculture, planting, and gardening.

"My Lord Berkeley returns to England at Christmas, when I propose to take the opportunity of his company, and by that time to perfect what I have on the anvil — observations on the present state of architecture, arts, and manufactures in France.

"N. B. 'Painting and sculpture,' said the judicious Sieur de Cambray, 'are the politest and noblest of ancient arts, true,

ingenuous, and claiming the resemblance of life, the emulation of all beauties, the fairest records of all appearances, whether celestial or sublunary, whether angelical, divine, or human. And what art can be more helpful, or more pleasing to a philosophical traveller, an architect, and every ingenious mechanician? All which must be lame without it.

"CHR. WREN."

The regular meetings of the Royal Society were suspended during the autumn of this year, owing to the contagious distemper then ravaging the metropolis. The members met in council at Gresham College on Feb. 21, 1666*, after a long interruption, and continued their weekly meetings as formerly.

It has been asserted that Wren was arrested in his progress to the classic soils of Italy and Greece by the fire of London. As a proof of the fallacy of this assertion, his resolution expressed in the preceding letter, wherein he proposed to return with Lord Berkeley before Christmas, would be almost sufficient: but the register book of the Royal Society proves his return early in the spring of this year†, many months before the period of that dreadful calamity. This is also corroborated by the Hon. Robert

* Birch's Hist. Roy. Soc. Vol. II. p. 63.

† At an extraordinary meeting of the society on Wednesday, March 28, 1666, 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 description of those which they had in France.—*Birch's Hist. Roy. Soc.* Vol. II. p. 74.

Boyle, who asserts that Wren returned to England about the end of February or the beginning of March, 1666*.

The society was most laudably and earnestly employed in the investigation of the late plague. The physicians of the society employed themselves in the work, and Drs. Glisson and Wharton, with others who had remained in London during the late mortality, were † desired to communicate the particulars which they had observed themselves or had collected from others of good authority. Dr. Hodges‡, one of the city physicians during the plague, informed Dr. Merret, a member of the society, 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, though 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, though not discoloured, yet mortified as well as the discoloured ones.

Mr. Boyle presented his philosophical treatise on the origin of forms and qualities, according to the corpuscular philosophy, illustrated by considerations and experiments, which that investigating man had formerly written by way of notes to an essay on nitre §.

* Boyle's Works, Vol. V. pp. 333 and 351.

† Birch's Hist. Roy. Soc. Vol. II. p. 76.

‡ Nathaniel Hodges, M. D. Author of λοιμοδοτια, sive pestis nuperæ populum Londinensem grassantis narratio historica.—*London*, 1672, 8vo.

§ Printed at Oxford, 1666, in 4to. and reprinted the year following in 8vo.

In such works were Wren and his associates engaged in this interesting period of our national history. Plague and pestilence had devastated the metropolis, yet this band of philosophic heroes, turning evil to good, sought future remedies from present calamities, and persevered in their usual occupations, even to the printing of their transactions*, ere the moment of infection was past.

At a meeting of the Royal Society on Aug. 8, WREN† was appointed on a committee with the President, Sir Paul Neile, Dr. Wallis, Dr. Goddard, Dr. Pope, and Mr. Hooke, to investigate Hevelius's treatises on the two late comets, and his *Mantissa* to his *Prodromus Cometicus*, which were laid before the society by their secretary Oldenburg, who had received them from the author for the purpose of obtaining the judgment of the society. He was also engaged in several other important inquiries for the society during the spring and summer session of this year, which continued its meetings although the contagion had not ceased‡.

One of the principal objects which occupied the mind of Charles II. after his restoration, was the reparation of the cathedral church of St. Paul, London; which had fallen, by neglect and wilful dilapidation, into a most ruinous state. During the commonwealth its revenues had been seized, its clergy expelled, its ancient monuments profaned; saw-pits were dug in various parts of its inclosure, and its venerable choir converted into horse barracks for the Oliverian troopers.

* Birch's Hist. Roy. Soc. Vol. II. p. 77.

† Ibid. Vol. II. p. 107.

‡ "Aug. 26, 1666.—The contagion still continuing, we had the church service at home."—*Evelyn's Diary*, Vol. I. p. 390.—*Birch's Hist.* &c.

In this deplorable condition did the ancient and beautiful metropolitan cathedral remain till the year 1660, when Charles, who had imbibed a love of art and magnificence from his munificent and unfortunate father, expelled the soldiers, restored the clergy, and ordered a commission to be issued for its complete restoration, in which the name of Chr. Wren appears as a commissioner*. On this important work was Wren engaged, and his friend Evelyn records that on August 27 of this year he went to St. Paul's church, where, with Dr. Wren, Mr. Pratt, Mr. Thomas Chicheley, Mr. Slingsby, the Bishop of London, the dean of St. Paul's†, and several expert workmen, they proceeded to survey the general decays of that ancient and venerable church, and to take down in writing the particulars of what was fit and necessary to be done, with the charges of the same, upon which they were ordered to give their written opinion, article by article. At this survey they found the main building to recede outwards, and Messrs. Chicheley and Pratt gave their opinion that it had been built so originally, for an effect in the perspective, in regard of

* Evelyn's dedication of his account of architects and architecture.—*London*, 1697.

† Dr. Sancroft, afterwards Archbishop of Canterbury. This eminent prelate, immediately on receiving his appointment as dean of St. Paul's, on the death of Dr. John Barwick, set about repairing this cathedral with the same sincere and pious earnestness which he had previously used to his former cathedral of York, where he expended 200*l.* in repairs more than he received. He found St. Paul's in the state I have before described, and began with the same liberality and munificence that always distinguished him, till he was stayed by the great fire, which consumed the greater part of the metropolis.

the apparent height. Wren was however quite of another opinion, in which he was backed by Evelyn, and they entered it accordingly in the minutes. They plumbed the perpendiculars in many places, and when they came to the steeple, it was deliberated whether it were not in a sufficiently good condition to be repaired on its old foundation, with reservation to the four pillars. This Mr. Chicheley and Mr. Pratt were also in favour of, but it was rejected by Wren and Evelyn, who persisted that it required a new foundation, not only in regard to the necessity of such a proceeding, which was in their judgments indisputable, but also as a matter of taste, for the shape and proportions were mean and inadequate, as they proposed to rebuild it with a noble cupola, a form of church building which, Evelyn* observes, "was not then known in England, but was of wonderful grace." For this purpose they proposed to offer a plan and estimate, which, after much contest, was at last assented to, and that they should nominate a committee of able workmen to examine the present foundation. This concluded, they drew up all their observations into a report in writing, and then went with the bishop to the dean's†.

Thus did the monarch, the commissioners, and the architect propose the restoration of the metropolitan cathedral to its wonted glories; but a few short hours disposed it otherwise: for on the night of Sunday, the 2nd of September following, at about ten o'clock‡,

* Diary, Vol. I. p. 391. † Ibid.

‡ The London Gazette of Monday, Sept. 10, 1666, says one o'clock in the morning; but in every other important respect it agrees with that of Evelyn, who probably assisted in drawing up the official article published.

the *great fire*, as it is emphatically called, began near Fish-street, in the city. Evelyn describes it in his diary with the animated fidelity of an eye-witness, who deeply felt the catastrophe of a burning metropolis.

On the following morning, with that manly piety which characterises this worthy man, he records* that he had public prayers at home, and the fire continuing, he took coach with his wife after dinner, and went to the Bankside in Southwark, where they beheld the dismal spectacle of the whole city in dreadful flames near the water side: all the houses from London (then the only) bridge, all Thames-street, and upwards towards Cheapside, down to the three† cranes, were then consumed. They returned, he says, exceedingly astonished, and wondering what would become of the rest. "The fire," he adds‡, "continued all this night (if I may call that night which was as light as day for ten miles round about, after a dreadful manner), when conspiring with a fierce eastern wind in a very dry season. I went on foot to the same place, and saw the whole south side of the city burning from Cheapside to the Thames, and all along Cornhill, for it likewise kindled back against the wind, as well as forward, Tower-street, Fenchurch-street, Gracechurch-street, and so along to Baynard's-castle, and was now taking hold of St. Paul's church, to which the scaffolds contributed exceedingly." The conflagration was so universal, and the people so astonished, that from the beginning, this faithful eye-witness reports, he knows not by

* Diary, Vol. I. p. 391.
† The site of the present Southwark cast iron bridge.
‡ Diary, Vol. I. p. 391.

what despondency or fate, they hardly stirred to quench it, so that " there was nothing heard or seen, but crying out and lamentation, running about like distracted creatures, without at all attempting to save even their goods; such a strange consternation there was upon them, so as it burned both in breadth and length, the churches, public halls, exchange, hospitals, monuments, and ornaments, *leaping* after a prodigious manner from house to house and street to street, at great distances one from the other; for the heat, with a long set of fair and warm weather, had even ignited the air, and prepared the materials to conceive the fire, which devoured, after an incredible manner, houses, furniture, and every thing*."

The spectacle of a metropolis in flames is awfully grand, and can be fully described only by a spectator. It requires the imagination of a poet aptly to portray its wild and ravaging effects. To conceive such a city as London, blazing for days and nights in succession, the devouring flames leaping, as Evelyn describes it, from house to house, and from street to street; to see the majestic Thames changed from its silver freshness to an inky flood, flickering with lurid flames, covered with burning goods floating in the vast flood; all the boats and barges laden with promiscuous articles snatched from the burning gulf, must have been as awfully grand as it was appalling. Carts and other vehicles, with hurrying steps, were employed in removing to the suburbs and fields, which for many miles round were strewed with moveables and furniture of every description, and tents were erected

* Diary, Vol. I. p. 392.

to shelter the miserable inhabitants, and the wreck of such property as they were enabled to save.

"Oh the miserable and calamitous spectacle!" exclaims the feeling* writer just quoted, "such as haply the world had not seen the like since the foundation of it, nor to be outdone till the universal conflagration of it. All the sky was of a fiery aspect, like the top of a burning oven, and the light seen above forty miles about for many nights. God grant mine eyes may never behold the like, who now saw above ten thousand houses all in one flame! the noise and cracking and thunder of the impetuous flames, the shrieking of women and children, the hurry of people, the fall of towers, houses, and churches, was like an hideous storm, and the air all about so hot and inflamed, that at the last one was not able to approach it, so that *they were forced to stand still and let the flames burn on, which they did for near two miles in length and one in breadth.* The clouds also of smoke were dismal, and reached upon computation near fifty miles in length. Thus I left it this afternoon burning, a resemblance of Sodom, or the last day. It forcibly called to my mind that passage, *non enim hic habemus stabilem civitatem:* the ruins resembling the picture of Troy. LONDON WAS, BUT IS NO MORE! Thus I returned."

The fire of London was an epoch in the life of Wren, as well as in the history of the country. The rebuilding of such a metropolis was more desirable to an architect than the founding of a new city. The Royal Society record this conflagration in their

* Evelyn.

journals, in the following emphatic entry: "Sept. 5. The society could not meet, by reason of the late dreadful fire of London*."

On Sept. 6, the third day of the burning, the fire still raged, and it had reached as far as the Inner Temple. All Fleet-street, the Old Bailey, Ludgate-hill, Warwick-lane, Newgate, Paul's-chain, Watling-street, were blazing, and most of them reduced to heaps of flaming ashes. The stones of St. Paul's cathedral, says Evelyn, flew out like grenadoes, the melting lead ran down the streets in streams, and the very pavements glowed with fiery redness, so that no horse nor man was able to tread on them, and the demolition had stopped all the passages, so that no help could be applied. On the 5th, the flames crossed over towards Whitehall. The king, whose coolness and presence of mind in this dreadful visitation has been justly commended, ordered Evelyn†, with other trusty persons, to attend to quenching the fire at the end of Fetter-lane, to preserve if possible that part of Holborn, while the rest of the gentlemen took their several posts, some at one part and some at another; for now, says Evelyn, they began to bestir themselves, and not till now, who had hitherto stood as men intoxicated, with their hands across, and began to consider that nothing was likely to put a stop to the flames, but the blowing up of so many houses as might make a wider gap than any that had then been made by the ordinary mode of pulling them down with engines. This plan was proposed by some seamen‡ early enough in the calamity to have saved nearly

* Birch's Hist. Roy. Soc. Vol. II. p. 113. † Diary, Vol. I. p. 393.
‡ Ibid.

the whole city; but this some short-sighted, obstinate, and avaricious men, aldermen, &c. would not suffer, because their houses would have been among the first. This method was therefore commanded to be put into immediate practice. Evelyn's peculiar concern was for St. Bartholomew's hospital, where, as public commissioner, he had many sick and wounded, as well as at the Savoy.

By the abatement of the wind, and by the industry of the people, which, when almost all was lost, seemed to increase with their difficulties, the fury of the conflagration began to subside about noon, so that it came no farther westward than Temple-bar, nor than to the north corner of Smithfield; but it continued to rage all this day and night with such impetuosity towards Cripplegate and the Tower, as made them all despair. It also broke out again in the Temple, by the falling of ignited matter upon a pile of wooden houses; but by the courage and perseverance of the people, and by the breaches made under the personal direction of the Duke of York, by the blowing up of the houses, the mass of fire did not rage with such vehemence as at first; yet the multitude could not approach nearer than a furlong to the intensely glowing ruins.

The wooden buildings of which the city was composed, the wood and coal wharfs on the banks of the Thames, the various stores and magazines of pitch, tar, oil, resin, &c. furnished the flames with the choicest materials, so that the invective which Evelyn had just before published and dedicated to his majesty in his *Fumifugium*, almost was looked upon as prophetic of the result of suffering such combustibles to be in the city.

The poor sufferers were dispersed about St. George's fields, and Moorfields, as far as Highgate, and for a circle of several miles: some under tents, some under miserable huts and hovels; many were left in rags and misery, who before this dreadful calamity were in a state of affluence, and possessed of every delicacy that riches and easy circumstances, in stately and well-furnished houses, could afford.

On the 6th, Evelyn represented to his majesty, who devoted his whole time and attention to his suffering subjects, the situation of the French prisoners of war who were in his custody, beseeching him that there might be still the same care of watching at all places contiguous to untouched houses. It is not indeed imaginable, he informs us of his own knowledge, how extraordinary were the vigilance and activity of the king and the Duke of York, labouring even in person, and being present to command order, reward, or encourage the workmen.

The situation of the dilapidated and ruined metropolis on the morning of the 7th, is minutely described by Evelyn in his interesting and accurate diary. On this day he went early on foot from Whitehall as far as London bridge, through the late Fleet-street, Ludgate-hill, by St. Paul's, Cheapside, the Exchange, Bishopsgate-street, Aldersgate, and out to Moorfields, thence through Cornhill, &c. with extraordinary difficulty, clambering over heaps of smoking rubbish, and frequently mistaking where he was. The ground, he says, was so hot, that it burnt the soles of his shoes*. In the mean time the king and his party, among which was the Duke of York and a great number of the

* Evelyn, p. 394.

nobility and gentry, who were unwearied in their exertions, got to the Tower by water, to demolish the houses in its vicinity; for had they taken fire, it would have reached the White Tower, which contained the magazine of powder, and its explosion would have destroyed the bridge with all its houses, numerous vessels lying in the river, and have carried destruction for several miles round the country.

Wren and Evelyn, as is before shown, were among the commissioners for repairing and beautifying St. Paul's; and their opinions coincided in every particular. On the return of the latter from his perambulation on the 7th, among the burning and smoking ruins of the metropolis, to the cathedral, he was infinitely concerned* to find that ill-fated structure a sad ruin, and Inigo Jones's beautiful Corinthian portico, which, with the cathedral, had been completely repaired and beautified by Charles I., rent in pieces; flakes of vast stone split asunder, and nothing remaining entire but the inscription on the frieze †, which announced by whom it was built, and had not one letter of it defaced. It was astonishing, says Evelyn, to see what immense stones the heat had in a manner calcined, so that all the ornaments, columns, friezes, capitals, and other ornamental projections of massy Portland-stone flew off even to the very roof, where sheets of lead, covering a space of six acres by admeasurement, were totally melted. The ruins of the vaulted roof in falling

* Diary, p. 395.

† CAROLVS · D · G · MAG · BRIT · FRAN · ET · HIB · REX · F · D · TEMPLVM · SANCTI · PAULI · VETVSTATE · CONSVMPTVM · RESTITVIT · ET · PORTICVM · FECIT ·

broke through into the church of St. Faith, which was filled with parcels of books and papers belonging to the stationers of St. Paul's churchyard and Paternoster-row, which were conveyed there for safety. They were all consumed, and were burning for a week following. A scarce book, entitled "Observations both historical and moral, upon the burning of London, Sept. 2, 1666, by *Rege Sincera**," describes the value of the books burned in the vaults of St. Paul's alone at upwards of one hundred and fifty thousand pounds.

Evelyn remarks, that it was observable that the lead over the altar at the east end was untouched, and, among the various monuments, the body of one bishop remained entire. "Thus," says he, "lay in ashes that most venerable church, one of the most ancient pieces of early piety in the christian world, besides nearly one hundred more. The lead, iron-work, bells, plate, &c. melted. The exquisitely wrought Mercer's chapel, the sumptuous Exchange, the august fabric of Christ-church, all the rest of the companies' halls, splendid buildings, arches, entries, all in dust; the fountains dried up and ruined, whilst the very waters remained boiling. The voragos of subterraneous cellars, wells and dungeons, formerly warehouses, still burning in stench and dark clouds of smoke, so that in five or six miles traversing about, I did not see one load of timber unconsumed, nor many stones but what were calcined white as snow. The people who now walked about the ruins appeared like men in some dismal desert, or rather in some great

* Published London, 1667, and reprinted in the Harleian Miscellany.

† For an estimate of the damage sustained by the fire of London, see Appendix, No. XIII.

city laid waste by a cruel enemy; to which was added the stench that came from some poor creatures' bodies, beds, and other combustible goods. Sir Thomas Gresham's statue, though fallen from its niche in the Royal Exchange, remained entire, when all those of the kings since the Conquest were broken to pieces; also the standard in Cornhill, and Queen Elizabeth's effigies, with some arms on Ludgate, continued with but little detriment, whilst the vast iron chains of the city streets, hinges, bars, and gates of prisons, were many of them melted and reduced to cinders by the vehement heat. Nor was I yet able to pass through any of the narrower streets, but kept the widest; the ground and air, smoke and fiery vapour, continued so intense, that my hair was almost singed, and my feet insufferably surbated*."

These extracts present a lively picture of the misery of this dreadful conflagration, to which we of the present day are so much indebted for the improved state of our metropolis. For the narrow streets and by-lanes of the old metropolis, we have wide and splendid streets; for the timber houses, structures of brick and stone; and the horrors of a plague have never since visited us. The condition of the streets of the city after the fire was terrible in the extreme; the by-lanes and narrower streets were quite choked with rubbish and heated ruins, nor could any one have told where he stood but by the ruins of some church or hall, that had some remarkable tower or pinnacle remaining. The prospect of the desolated city from the suburbs was perfectly agonizing. Evelyn went towards Islington and Highgate, where

* Diary, p. 396.

he saw nearly two hundred thousand persons of all ranks and degrees, dispersed and lying along by their heaps of what property they had saved from the fire. Their misery was so intense, and their feelings so harrowed by their sufferings, that this eye-witness of one of the greatest national calamities that ever befell a nation declares that although they were deploring their losses, and almost perishing with hunger and desolation, they did not ask one penny for relief.

The king and privy council took all imaginable care for the relief of these unhappy sufferers, and issued a proclamation for the country people to come in and refresh them with provisions. In the midst of the confusion incident to this great calamity, there was a report that the French and Dutch, with whom the nation was then at war, had not only invaded the kingdom, but had even entered the ruined city. Among other rumours that agitated the public mind, it was reported that these two nations, which had formed an alliance against Great Britain, had been the occasion of setting fire to the city.

The opinion that foreigners, or papists, had fired the city was very prevalent; and Wren joined in the current opinion by inscribing it on his noble column called the Monument. On the contrary, Pope, a professed catholic, says in the well-known lines,

> "Where London's column, pointing at the skies,
> Like a tall bully, lifts the head and lies."

Notwithstanding there were many who wondered that the plague was not imputed to the papists as peremptorily as the fire, several depositions were made soon afterwards of its breaking

out in many different places at the same time, and that one man confessed his setting fire to the house where it began, who was executed for the same; and it appears to have been too general to have been purely accidental. Bishop Kennett, in his History of England, gives the following account of this transaction, and of the man who was thus executed: "Various were the conjectures how this fire began. Most people did then look upon it to be the hand of God, in a terrible judgment upon a wicked city; some said it was contrived and carried on by the papists, which was offered to be made appear in the popish plot. Others did suspect it an insidious way of the Dutch and French making war, their two fleets being nearest to joining at that time. There was but one man tried at the Old Bailey for being the incendiary, who was convicted by his own confession, and executed for it. His name was Robert Hubert, a French Huguenot, of Rouen in Normandy. Some people shammed away this confession, and said he was *non compos mentis*, and had a mind, it seems, to assume the glory of being hanged for the greatest villain. Others say he was sober and penitent; and being, after conviction, carried through the ruins, to shew where he put the fire, he himself directed through the ashes and rubbish, and pointed out the spot whereon the first burning house stood. It was soon after complained of, that Hubert was not sufficiently examined as to who set him to work, or who joined with him. And Mr. Hawles, in his remarks upon Fitzharris's trial, says, 'that the Commons resolving to examine Hubert upon that matter next day, Hubert was hanged before the house sat, so could tell no farther tales.'"

This report, according to Evelyn, who from his public situa-

tions and activity was enabled to judge, did so terrify the people, and there was such a sudden uproar and tumult, that they ran from their goods, and taking what weapons they could come at, they could not be stopped from falling on some of the foreigners, whom they casually met, without sense or reason. The clamour and peril grew so excessive, that it made the whole court amazed, and they had great difficulty to reduce the tumult and appease the people. The poor sufferers who were among the most active, stimulated by their losses and afflictions, were driven back to their temporary encampments in the fields and suburbs by the soldiers, who kept guard over them all night. In this enterprise Evelyn was employed, and it could not have been placed in more proper hands. He "left them at night tolerably quiet, and returned home weary and broken*." Their spirits being calmed by his assurances, and their fright abated, they began to return to the suburbs about the smoking city, where such as had friends or opportunity obtained present shelter, and otherwise availed themselves of the king's proclamation.

To add to the distress of this suffering and afflicted nation, the plague still continued, Evelyn† says, to a degree that he could not without danger adventure to his parish-church.

In however lamentable a situation this ravaging devastation may have been viewed by some contemporaries, and by the unhappy sufferers, posterity is undoubtedly benefited; and others viewed it in a more general and philosophical point of view. Dr. Wood-

* Diary, p. 396. † Ibid. p. 397.

ward*, the learned and celebrated professor of physic at Gresham College, in a private letter to Sir Christopher Wren, some years after the event, says, " that the fire of London, however disastrous it might be to the then inhabitants, proved infinitely beneficial to their posterity, and to the increase and vast improvement, as well of the riches and opulence as of the buildings. And how, by the means of the common-sewers, and other like contrivances, such provision was made for sweetness, for cleanness, and for salubrity, that it is not only the finest and pleasantest, but the most healthy city in the world; insomuch, that for the plague, and other in-

* John Woodward, M. D. native of Derbyshire, whose mother was descended from the ancient family of the Burdetts, was born on May 1, 1665, and succeeded Dr. Stillingfleet in the professorship of physic at Gresham College, Jan. 13, 1692, was a fellow of the Royal Society, and an active member of its council. The doctor was author of many highly esteemed works, and was possessor of the celebrated shield which excited so much controversy in his day, and ridicule from Pope, Swift, and Arbuthnot. He was also author of " An Account of some Roman Urns, and other Antiquities, lately digged up near Bishopsgate: with brief Reflections upon the ancient and present State of London: in a Letter to Sir Christopher Wren, Surveyor General of his Majesty's Works," which went through three editions, the first in 1707, printed at London, the second at Oxford, in 1712, and the third in London, 1723. It was printed first at the desire of Sir Christopher Wren, whose observations on it are to be found under the date of the year. Wren could not be persuaded that the temple of Diana stood on the site of St. Paul's, though Woodward had prepared a dissertation on her image, on a sacrificial vessel dug up near that cathedral. This dissertation, which is in the possession of Mr. Alexander Chalmers, the learned and laborious editor of the New Biographical Dictionary, has never yet been printed.

fectious distempers, with which it was formerly so frequently annoyed, and by which so great numbers of the inhabitants were taken off but the very year before the fire (viz. Anno 1665), an experience of above forty years since hath shown it so wholly freed from, that it is probable it will be no longer obnoxious to, or ever again likely to be infested by, those so fatal and malicious maladies." This conjecture of the learned and experienced physician has been happily proved correct, for up to this hour no such terrible infection has ever visited our beautiful metropolis.

Dr. Sprat, another illustrious eye-witness with Wren and Evelyn of this terrific calamity, describes it with such glowing fidelity, and in such philosophical language and feeling, that I cannot resist transcribing, from his History of the Royal Society, his feelings on the occasion. In the midst of his labours in writing the history of that society of which he was so justly proud, and of that philosophy which they so successfully cultivated that their friend and associate Cowley says,

" Come, enter, all that will,
Behold the ripen'd fruit, come gather now your fill,"

he thus describes his melancholy interruption from his much-loved task:

" Thus far I was come in my intended work *, when my hand was stopped, and my mind disturbed from writing, by the

* History of the Royal Society of London, by Thomas Sprat, 4to. London, 1667, p. 120.

two greatest disasters that ever befell our nation—the *fatal infection* which overspread the city of London in sixty-five, and *the dreadful firing of the city itself*, in the year ensuing. These two calamities may well be sufficient to excuse the delay of publishing this book: when one of them devoured as many men, and the other as many books, as the cruellest incursion of the Goths and Vandals had ever done.

"The plague, indeed, was an irreparable damage to the whole kingdom: but that which chiefly added to the misery, was the time wherein it happened. For what could be a more deplorable accident, than that so many brave men should be cut off by the arrow that flies in the dark, when our country was engaged in a foreign war, and when their lives might have been honourably ventured on a glorious theatre in its defence? And we had scarce recovered this first misfortune, when we received a second and a deeper wound, which cannot be equalled in all history, if either we consider the obscurity of its beginning, the irresistible violence of its progress, the horror of its appearance, or the wideness of the ruin it made in one of the most renowned cities of the world."

"Yet when, on the one side, I remember what desolation these scourges of mankind have left behind them, and, on the other, when I reflect on the magnanimity wherewith the English nation did support the mischiefs, I find that I have not more reason to bewail the one than to admire the other.

"Upon our return, after the abating of the plague, what else could we expect but to see the streets unfrequented, the river

forsaken, the fields deformed with the graves of the dead, and the terrors of death still abiding in the faces of the living? But, instead of such dismal sights, there appeared almost the same throngs in all the public places, the same noise of business, the same freedom of converse, and, with the return of the king, the same cheerfulness returning on the minds of the people.

" Nor was their courage less, in sustaining the *second calamity, which destroyed their houses and estates.* This the greatest losers endured with such undaunted firmness of mind, that their example may incline us to believe that not only the best natural, but the best moral philosophy too, may be learned from the shops of mechanics. It was indeed an admirable thing to behold with what constancy the meanest artificers saw all the labours of their lives, and the support of their families, devoured in an instant. The affliction, it is true, was widely spread over the whole nation; every place was filled with signs of pity and commiseration: but those who had suffered most seemed the least affected with the loss: no unmanly bewailings were heard in the few streets that were preserved: *they beheld the ashes of their houses, and gates, and temples, without the least expression of pusillanimity.* If philosophers had done this, it had well become their profession of wisdom; if gentlemen, the nobleness of their breeding and blood would have required it. *But that such greatness of heart should be found amongst the poor artizans, and the obscure multitude, is no doubt one of the most honourable events that ever happened.* Yet still there is one circumstance behind, which may raise our wonder higher; and that is, that, amidst such horrible ruins, they still prosecuted the war with the same vigour and courage against

three of the most powerful states of all Europe. What records of time, or memory of past ages, can show us a greater testimony of an invincible and heroic genius than this, of which I now speak?—that the sound of the heralds, proclaiming new wars, should be pleasant to the people, when the sad voice of the bellman was scarce yet gone out of their ears?—that the increase of their adversaries' confederates, and of their own calamities, should be so far from affrighting them, that they rather seemed to receive from thence a new vigour and resolution?—and that they should still be eager upon victories and triumphs, when they were thought almost quite exhausted by so great destructions?

"From this observation my mind begins to take comfort, and to presage, that as this *terrible disease and conflagration* were not able to darken the honour of our prince's arms; so they will not hinder the many noble arts, which the English have begun under his reign. On the strength of these hopes and encouragements, I will now return to my former thoughts, and to the finishing of my interrupted design. And I come with the more earnestness to perfect it, because it seems to me, that, from the sad effects of these disasters, there may a new and a powerful argument be raised, to move us to double our labours about the secrets of nature.

"*A new city is to be built*, on the most advantageous seat of all Europe for trade and command. This therefore is the fittest season for men to apply their thoughts to the improving of the*

* This was written while the ruins of the metropolis were smoking around him.

materials of building, and to the inventing of better models for houses, roofs, chimnies, conduits, wharfs, and streets; all which have been already under the consideration of the Royal Society; and that, too, before they had such a sad occasion of bringing their observations into practice. The mortality of this pestilence exceeded all others of later ages. But the remembrance of it should rather enliven than damp our industry. When mankind is overrun with such horrible invasions of death, they should from thence be universally alarmed to use more diligence about preventing them for the future."

This wonderful temperament which distinguishes the English people, from the highest to the lowest, when in adversity, so beautifully depicted and praised by Dr. Sprat, and Mr. Evelyn, who were eye-witnesses of their sufferings and spirit, has been elicited in hundreds of instances since that period, and particularly in the last long war against France, which was even sometimes against all Europe. A similar elasticity of spirit occasioned Alderman Beckford, he, whose statue is in our Guildhall, inscribed with his animated and unprecedented instance of reply to his frowning sovereign, to take out his tables and calculate what money he could spare to rebuild his princely mansion at Font-hill, the moment he was acquainted with its total destruction (uninsured) by fire; and similar feelings led our energetic ancestors to begin rebuilding their metropolis before its ashes were hardly cooled.

The fire commenced on September 2, kept burning till the 8th, and on the 10th was still a heap of blazing ruins. On the 12th, Evelyn presented the king with a survey of the ruins, and a plan for a new city, with a dissertation upon it. Whereupon,

after dinner, his majesty* sent for him into the queen's bedchamber, her majesty and the Duke of York being the only other persons present: they examined each particular, and conversed on them for nearly an hour, and were extremely pleased with what he had conceived and delineated so promptly†.

* Evelyn's Diary, p. 379.

† In a letter to Mr. Oldenburg, the secretary to the Royal Society, dated Dec. 22, 1666, he says, after mentioning the above-named circumstance of presenting his observations to the king on rebuilding the city, that the want of a more exact plate, wherein he might have marked what the fire had spared, and have accommodated his design to the remaining parts, made him take it as a *tabula rasa*, and form his ideas thereof accordingly. He afterwards met with Hollar's plan of the late city, which considering as the most accurate then extant, caused him somewhat to alter what he admits he had so crudely performed; though for the most part he still persisted in his former opinions, and which he transmitted to Oldenburg as complete as his own imperfect draught would admit. This same excellent man, a very few days after the fire, writes as follows to his friend, Sir Samuel Tuke, Bart. at Paris.

"Say's Court, Sept. 27, 1666.

"SIR,

"It was some four days before the most fatal conflagration of the quondam city of London, that I addressed a few lines to you, little thinking I should so soon have had two such dissolutions to deplore—the burning of the best town in the world, and the decease of the best friend in the world, your excellent lady. You know, sir, they are but small afflictions that are loquacious—great ones are silent: and if ever great ones they were, mine eyes have beheld, and mine ears heard them, with an heart so possessed with sorrow, that it is not easily expressed; because the instances have been altogether stupendous and unparalleled. But it were in vain to entertain you with those formal topics, which are wont to be applied to persons of less fortitude and christian resignation, though I cannot but exhort you to

On the 12th the society resumed their sittings: the council met amidst the smoking ruins, and continued their occupations

what, I know, you do—look upon all things in this world as transitory and perishing; sent us upon condition of quitting them cheerfully, when God pleases to take them from us. This consideration alone (with the rest of those graces which God has furnished you withal) will be able to alleviate your passion, and to preserve you from succumbing under your pressures, which I confess are weighty, but not insupportable. Live therefore, I conjure you, and help to restore your dear country, and to consolate your friends. There is none alive wishes you more sincere happiness than my poor family.

" I suppose I should have heard ere this from you of all your concernments; but impute your silence to some possible miscarriage of your letters; since the usual place of address is with the rest reduced to ashes, and made an heap of ruins. I would give you a more particular relation of this calamitous accident; but I should oppress you with sad stories, and I question not but they are come too soon amongst you at Paris with all minuteness, and (were it possible) hyperboles. There is this yet of less deplorable in it: that, as it pleased God to order it, little effects of any great consequence have been lost, besides the houses:—that our merchants, at the same instant in which it was permitted that the tidings should fly over seas, had so settled all their affairs, as they complying with their foreign correspondence as punctually as if no disaster at all had happened; nor do we hear so much as one that has failed. The exchange is now at Gresham College. The rest of the city (which may consist of near a seventh part) and suburbs peopled with new shops, the same noise, business, and commerce, not to say vanity. Only the poor booksellers have been indeed ill-treated by Vulcan; so many noble impressions consumed, by their trusting them to the churches, as the loss is estimated near two hundred thousand pounds; which will be an extraordinary detriment to the whole republic of learning. In the mean time, the king and parliament are infinitely zealous for the rebuilding of our ruins; and I believe it will universally

as usual*. The estimation in which Wren was held by this illustrious body was evinced at this meeting, by their presenting him

be the employment of the next spring. They are now busied with adjusting the claims of each proprietor, that so they may dispose things for the building after the noblest model. Every body brings in his idea: amongst the rest, I presented his majesty my own conceptions, with a discourse annexed. It was the second that was seen, within two days after the conflagration; but Dr. Wren had got the start of me*. Both of us did coincide so frequently, that his majesty was not displeased with it, and it caused divers alterations; and truly there was never a more glorious Phœnix upon earth, if it do at last emerge out of these cinders, and as the design is laid, with the present fervour of the undertakers. But these things are as yet immature; and I pray God we may enjoy peace to encourage those fair dispositions. The miracle is, I have never in my life observed a more universal resignation, less repining amongst sufferers; which makes me hope, that God has yet thoughts of mercy towards us. Judgments do not always end where they begin; and therefore let none exult over our calamities. We know not whose turn it may be next. But, sir, I forbear to entertain you longer on these sad reflections; but persist to beg of you not to suffer any transportations unbecoming a man of virtue. Resolve to preserve yourself, if it be possible, for better times, the good and restoration of your country, and the comfort of your friends and relations, and amongst them of,

" Sir,

" Yours, &c.

" JOHN EVELYN."

* This council consisted of the following champions of science, namely, Lord Brouncker, President, the Bishop of Exeter, Sir Robert Moray, Sir Paul Neile, Mr. Aerskine, Mr. Matthew Wren, Dr. Whistler, Dr. God-

* Note by Evelyn's editor.—These plans were afterwards printed by the Society of Antiquaries, and have been repeatedly engraved for the various histories of London; that by Mr. Evelyn is erroneously inscribed, Sir John Evelyn.

with one of the only four copies of Hevelius's second book concerning the late comets, which that learned philosopher had sent to the society, with a desire that they might be distributed, according to its discretion, to such persons as were conversant with the subject. The other three copies were presented to Lord Brouncker, the President, to Sir Paul Neile, and to Dr. Wallis*.

On the 19th of the same month, Mr. Hooke exhibited before the council of the society his model for rebuilding the city, who were well pleased with it. Sir John Laurence, the late lord mayor of London, addressed himself to the society, and expressed the lord mayor's (Sir Thomas Bludworth) and aldermen's approbation of the said model, and their desire that it might be shown to the king, they preferring it very much to that which was dard, Mr. Colwall, Mr. Neile, Mr. Creed, and Mr. Oldenburg. Wren was engaged about the plan for the new city. Their first resolution was 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 a committee should meet, on the Tuesday following, at Arundel House, to fix upon a proper place of meeting for the future. Mercator's new watch was again presented by himself, and examined. Mr. Hooke presented his new instrument for taking angles by reflection; but 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.—*Birch's Hist. Roy. Soc.* Vol. II. p. 114.

* Birch's Hist. Roy. Soc. Vol. II. p. 114.

drawn up by the city surveyor. 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 upon the king with them and his model*, if they (the lord mayor and aldermen) thought fit to present it: which was accepted with expressions of thanks to the society †.

Dr. Waller, in his Life of Hooke, affects to wonder why this model was not accepted. The reason was, that the superior and more digested plan of Wren, to say nothing of Evelyn's, had been before the king and council. Wren had no opportunity to communicate his design either to the Royal Society or to the city before it was sent to the king, and it is probable that neither of these bodies had then seen it.

Within a few days after the fire ‡, Wren began his plan for building the new city; of which Mr. Oldenburg, the secretary of

* Waller, in his Life of Robert Hooke, mentions this model, but evidently had not seen it, as he says, "what this model was I cannot so well determine; but I have heard, that it was designed in it to have all the chief streets, as from Leadenhall corner to Newgate, and the like, to lie in an exact straight 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. How this came not to be accepted of, I know not; but it is probable, this might contribute not a little to his being taken off by the magistrates of the city, and soon after made surveyor."—*Waller's Life of Dr. Hooke*, p. xii.

† Birch's Hist. Roy. Soc. Vol. II. p. 115.

‡ 1666. Civitatem Londinensem flammarum diluvio absorptam metitus, Ichnographium seu modulum novæ urbis excogitavit et delineavit. Ex autographo de mandato regis Car. II^di^."—*Ex autographo.*—WREN MS.

the Royal Society, gives the following account in a letter to the Hon. Robert Boyle, dated Sept. 18, 1666. "Dr. Wren has since my last drawn a model for a new city, and presented it to the king, who produced it before his council, and manifested much approbation of it. I was 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 these *three* grand main articles. But whether it has consulted with the populousness of a great city, and whether reasons of state would have that consulted with, is a quære with 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 model, contrived by him, and reviewed and approved 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 they have done?" He answered, that he had been so pressed to hasten it, 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 parliament, as the author will be named, so his relation to the society will not be omitted *."

* MS. Mr. Miles. WARD's Lives of the Gresham Professors, p. 102. BOYLE's Works, Vol. V. p. 358.

This design, or model, as it is called, was shortly afterwards laid before parliament; and Mr. Oldenburg alludes to it in another letter to the same distinguished person, dated the 2nd of October following, in which he says: "The rebuilding of the city, as to the model, is still very perplexed, there appearing three parties in the house of commons about it. Some are for a quite new model, according to Dr. Wren's draught; some for the old, yet to build with bricks; others for a middle way, by building a key, and enlarging some streets, but keeping the old foundations and vaults. I hear, this very day there is a meeting of some of his majesty's council, and others of the nobility, with the leading men of the city, to confer about this great work, and to try whether they can bring it to some issue, before the people that inhabited London do scatter into other parts. The great stress will be, how to raise money for carrying on the war, and to rebuild the city at the same time*."

Wren will now appear in another character. Instead of the enthusiastic theorist, and seeker after new discoveries, his situations and employments required now the results of all his previous studies:—and as his very superior mathematical investigations, his love for architecture, his knowledge of all its most important elements, his increased acquirements from the observations which he had recently made abroad, and the elastic vigour of his mind; which, immediately accommodating itself to his new and important avocations as surveyor-general, and principal architect for rebuilding the whole city, the cathedral church of St. Paul, all

* MS. Mr. Miles. WARD's Lives of the Gresham Professors, p. 102.

the parochial churches*, with other public structures, and the disposition of the streets, had concentrated all his powers in

* From computations made by efficient persons, there were twelve thousand houses burned and consumed within the walls of the city, and above a thousand more without the walls, but all within the liberties of London. The ruins of the fire covered a space of 436 acres. There were also destroyed the cathedral church of St. Paul, which was undergoing expensive reparations, eighty-seven parish churches, six consecrated chapels, most of the principal halls and public edifices; the Guildhall, wherein were nine several law and other courts belonging to the city; the royal exchange, the custom-house, the sessions-house, the four city prisons, four of the principal gates of the city, and fifty companies' halls, most of which were of large dimensions and splendid buildings*. From an estimate made soon after the fire, taking the houses at an average of twenty-five pounds a year, and at the low estimate of twelve years purchase, and the others at a similar rate, the following is nearly the amount of the loss—namely,

In houses burnt as aforesaid . . .	£3,900,000	0	0
In churches and other public edifices as follows: the eighty-seven parish churches, at 8000*l.* each .	£696,000	0	0
Six chapels, at 2000*l.* each . . .	12,000	0	0
The royal exchange, at	50,000	0	0
The king's custom-house, at . . .	10,000	0	0
The fifty-two halls of companies, at 1500*l.* each .	78,000	0	0
Three of the city gates, at 3000*l.* each . . .	9,000	0	0
The jail of Newgate	15,000	0	0
Four stone bridges	6,000	0	0
The sessions-house	7,000	0	0
The Guildhall, and courts and offices belonging to it .	40,000	0	0
Blackwell hall	3,000	0	0
Bridewell	5,000	0	0
Poultry compter	5,000	0	0
Wood-street compter	3,000	0	0
	£939,000	0	0

* Inscription on the pedestal of the Monument, on Fish-street Hill.

architecture; so these unexampled public appointments diverted his attention from the allurements of that beloved philosophy,

To which add

Towards the building of St. Paul's cathedral . .	£2,000,000	0	0
The wares, household stuff, monies, and other moveable goods, lost and spoiled, may probably amount to	2,000,000	0	0
In the hire of porters, carts, waggons, barges, boats, &c. for removing of wares, household stuff, and the like, during the time of the fire, and some small time after, may well be reckoned at . .	200,000	0	0
In printed books and paper in several shops and warehouses	150,000	0	0
In wine, tobacco, sugar, plums, &c. of which the city was at that time very full . . .	1,500,000	0	0
	£5,850,000	0	0

For public works enjoyed by act of parliament:

For cutting a navigable channel from the Thames to Holborn-bridge	£27,000	0	0
For a monument to be erected near to the place where the fire began	14,500	0	0
	£41,500	0	0

Melioration money paid to several proprietors, who had their ground taken away for the making of wharfs, enlarging of streets, making of new streets and market-places, &c. . . .

All which particulars, viz.

For houses burnt	£3,900,000	0	0
For public edifices burnt	939,000	0	0
For losses sustained in monies and in goods burnt, and in carriage and removing, and by St. Paul's church, being then almost new built . .	5,850,000	0	0

which had attracted all the attentions of his youth; consequently we find but comparatively few important discoveries by him after this date in the books of the Royal Society. Such however was the grasp of his mind, that, before the close of this very year, enveloped as he was with the most important and honourable employments, such as were never before or since entrusted to one man, he found time to lay before his fellows of the society (as if to do them that honour which Oldenburg regrets he had omitted about his plan for the new city), through his friend, Sir Robert Moray, a new kind of level for taking the horizon every way in a circle*. On its being called for at the next meeting, it was produced, and ordered to be described†. Its formation is so simple, and its adjustment so easy, compared with the cross spirit levels of the present theodolites, that

For public works enjoined to be done by act of parliament	£41,000 0 0
For melioration	
The sum of all	£10,730,500 0 0

Stow, edited by Stripe, Vol. I. p. 227. fo. Lon. 1720.

Of the buildings which were thus destroyed, the following were rebuilt under the direction and from the designs of Wren, namely; the cathedral of St. Paul, seventeen churches of the largest parishes, and thirty-four out of the remaining parishes on a large scale, as churches for united parishes, two of which, in most instances, were united into one.

* The Parentalia errs in date; it was produced to the society in Dec. 1666, and March 1667, instead of March 1666: see register book of the Royal Society, *Birch's History*, &c. &c.

† Birch's Hist. Roy. Soc. Vol. II. p. 133.

I wonder it is not continued in present use. Its description, from the society's books*, is 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 centre 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. Robert Hooke† describes it as "being performed by a large concave, ground and polished on a very large sphere, and the limb of it ground and polished on a flat; for by placing the same horizontally, and rectifying it by a small quantity of quicksilver, poured into the concavity thereof, it will be easy, by looking to the flat polished limb, to discover the true horizon." The only inconvenience that Hooke complained of, was that the mercury had some kind of sticking to the glass; but he hints that a small crystal bowl might remedy that inconvenience, and make it fit for use. In this same pamphlet Hooke describes *his* new level, which is precisely the spirit level of the present day, which thus owes its invention to this school of practical philosophers. The disputation between these two eminent men (Hooke and Hevelius), from which I have just quoted, led to the most important results, particularly in the in-

* Register, Vol. III. p. 184.

† In his "Animadversions on the first Part of the Machina Cœlestis, of the honourable, learned, and deservedly famous Astronomer, Johannes Hevelius, Consul of Dantzig, &c. &c."—*London*, 1674, p. 65.

vention and improvement of philosophical and mathematical instruments. Hooke affirms*, that wooden instruments may be so contrived as very nearly to equalize those of metal, the joints and plates for divisions being made only of metal, which are very easy of rectification before using, and of examination after. Such an one, he informs his illustrious adversary, was contrived by Sir Christopher Wren, being two square wooden tubes or telescopes joined together at the end next the object by a joint of brass, and the angle made by the opening, measured by a straight rule equal to half the radius, divided by diagonals into five thousand equal parts, which will, by the help of a table of natural sines or subtenses, show the parts in degrees, minutes, and seconds, which he observes, that as Hevelius is pleased wholly to reject all manner of wooden instruments as useless, he had acquainted him with this some years before, and repeated his commendations in his new communication.

Wren was now appointed deputy Surveyor General, and principal architect for rebuilding the whole city†; having been previously appointed architect, and one of the commissioners for the reparation of St. Paul's‡.

His first operation was to fit up a portion of the dilapidated cathedral, for a temporary choir, wherein the dean and prebends might have divine service, until the repair of the whole, or a new

* Animadversions, &c. p. 18.

† Parentalia, p. 263. Ecclesiarum parochialium, operumque publicorum *Londinensis* post fatale incendium, Architectus et Ædilis. Per decretum Regis, Archiep. Cant. Epi. Lond. cæteræq. commiss."—*Wren MS.*

‡ Ward's Lives of the Gresham Professors, p. 102.

cathedral should be built*. On a particular survey by the architect and the rest of the commissioners, it was determined that part of the body of it, towards the west end, should, being the least damaged, be prepared for that purpose; which operation was immediately commenced: scaffolds were erected to examine the walls, and to remove the unmelted lead from the central roof, and other parts of the church†.

As Wren had been consulted about the repairs of this cathedral previous to the dreadful fire which destroyed it, he was prepared with plans, elevations, and sections of every part, which he had but just finished, to a large scale on vellum, when that event occurred‡. In the prosecution of these necessary preliminaries, he was surprised to find how negligent the first builders had been of regularity in their various divisions of the edifice. He found the intercolumniations to differ in size essentially, nor were they true in their levels, which is a fault I have also found in many of our best cathedrals of this style of architecture. The piers and walls he found constructed mostly of old materials, which the founder, Mauritius, Bishop of London, had procured of William I., out of the ruins of the Palatine tower§, and principally consisted of small blocks of Yorkshire free-stone, Kentish rag, of the same quality as that from Maidstone, faced with Kentish ashlar.

The great and extensive charge which now devolved upon Wren, of the rebuilding the whole city, and the proposed repair

* Dugdale's Hist. of St. Paul's, 2nd ed. p. 153. † Parentalia, p. 278.
‡ Ibid. p. 294. § Ibid. p. 273.

of the cathedral, from which he was always averse, knowing its original defects, led him to take to his assistance his ingenious and able associate Robert Hooke, the learned professor of geometry at Gresham College; whose avocations, under Wren, were chiefly those of measuring, adjusting, and setting out the ground of the houses in the private streets to the several proprietors, while he reserved the higher and more important works of designing and superintending the execution of the public works to himself*.

The state of the ancient cathedral, before its final devastation by fire, was accurately noted by the architect in his before-mentioned general survey with the rest of the commissioners, with whom, as I have before mentioned, he did not entirely agree. This report, which may be found at length in the Appendix†, is an able and scientific investigation of the ancient edifice, pointing out all its defects, and suggesting the most efficient modes of remedying them. Evelyn and Dr. Sancroft, the learned and munificent dean of the cathedral, agreed with the architect, against a host of prejudiced adversaries; and the great fire and subsequent attempts at reparation confirmed the truth of his report, and of their skill in joining in its recommendations.

The clearing of the destroyed metropolis, and preparations for its rebuilding, occupied the minds of every one at this period, and Wren prepared for his gigantic task with ardour and assiduity.

* Parentalia, p. 262.

† See Appendix, No. XIII.

For the furtherance of this most desirable object with all possible splendour and public utility, a proclamation was issued immediately after the fire from the king and privy council, who devoted their time with most exemplary patience, to prohibit rebuilding in the city, until further order was made. It also provided that there should be a fair quay, or wharf, on all the river side *; that no house should be erected within so many feet of the river, as should be after declared; nor should there be in those buildings which should be erected next the river (*which* were desired to be fair structures, for the *ornament* of the city) any houses to be inhabited by *brewers*, *dyers*, or *sugar-bakers*, which trades, by their continual smoke, contributed very much to the unhealthiness of the adjacent places; but that the lord mayor and aldermen were to propose such a place or places as might be fit for those trades; and that compensation would be granted to the proprietors of such houses or lands as were taken for the public benefit†.

* On March 6, 1667, Evelyn waited upon the lord chancellor, and laid before him Sir John Kiviet's proposition to wharf the whole of the river Thames, from the Temple to the Tower, with bricks, and without piles. This gentleman was a Dutchman, who had received sentence of death for his attachment to the Prince of Orange, then not popular in Holland. Charles II. knighted him for his zeal and services.—*Evelyn's Diary*, Vol. I. p. 401, 402.

† This noble and beneficial design, which it was the intention of the legislature, on the recommendation and from the designs of Wren, to carry into effect, has been gradually rendered ineffectual, and is now nearly destroyed, by the cupidity of certain brewers, &c. whose very trades were

An act* of parliament was also passed during this session, combining many important regulations for the beauty, comfort, and utility of the new city. Among other beneficial clauses, it enacts "that no house, outhouse, or other building whatever (cranes and sheds for immediate use alone excepted), shall be built or erected within forty feet of such part of any wall, quay, or wharf, as abounds the river Thames, from Tower wharf to London-bridge, and from London-bridge to the Temple-stairs."

How far this useful and ornamental clause has been frustrated by individual cupidity, every body who has ever seen the disgraceful hovels, sheds, and wharfs, along these enumerated places, can testify.

The same act directs the lord mayor and aldermen to declare streets, lanes, &c. and to stake out land for the formation of the same.

prohibited by this proclamation to be carried on, in this situation, but who have nearly built a series of wretched store-houses over this intended quay, and would have completely robbed the public of the little now left, but for the interference of a few public-spirited neighbours, who opposed an intended bill for stopping them all up by repealing the act of 22 Charles II. cap. 2. These gentlemen have stayed the pestilence; but it is hoped that on the proposed rebuilding of London-bridge they will renew their efforts, and effect the completion not only of a grand public quay from London-bridge to the Temple, as granted to the citizens by Charles, but also as far as Westminster, and on both sides of the Thames, by inclosing from the mud nearly to low water-mark, which is public property. The majestic Thames would then be rescued from its present inferiority to even the humbler Liffey, which the public-spirited citizens of Dublin have decorated with noble quays on either side, in lieu of its former muddy banks.

* Entitled An Act for rebuilding the City of London, 19th Car. II. cap. 3.

It also enacts that judges* may hear and determine differences in a summary way, respecting the several claims of estates; determines the various heights and levels for the new streets, all determined with great labour and skill by Wren, and his coadjutor Hooke, with other necessary and well digested enactments. This act was several times amended, and its provisions enlarged, as the architect and commissioners found occasion.

Wren continued his important operations connected with the rebuilding of the ruined city with the greatest energy, aided by his zealous and active associates. On November 30 the Royal Society held their anniversary election, at which meeting the usual business was transacted. After which the society proceeded to elect the old and new council for the year ensuing. Among the list of members of the latter, the name of Dr. Christopher

* Whole-length portraits, in their scarlet robes, of these independent judges, who gave univeral satisfaction in their important offices, and determined all the suits without expense to the suitors, painted by Wright, a portrait painter of some note in his day, decorated the Guildhall of the city of London till a recent repair, when they were removed into the courts of King's Bench and Common Pleas. The names of these upright judges, as inscribed under their portraits, are Sir Heneage Finch, Sir Orlando Bridgman, Sir Matthew Hale, Sir Richard Rainsford, Sir Edward Turner, Sir Thomas Tyrril, Sir John Archer, Sir William Norton, Sir Robert Atkins, Sir John Vaughan, Sir Francis North, Sir Thomas Twisden, Sir Christopher Turner, Sir William Wyld, Sir Hugh Windham, Sir William Ellys, Sir Edward Thurland, Sir Timothy Littleton. These eighteen were successively judges of the King's Bench and Common Pleas, and Barons of the Exchequer, during the controversies; and the following four were more remotely concerned in the transactions—Sir Samuel Brown, Sir John Kelynge, Sir Edward Atkins, Sir William Windham.

Wren appears for the first time, and in association with Mr. Henry Howard, of Norfolk*, a liberal friend of the society, Sir William Petty, and other celebrated contemporaries†.

The year 1667 commenced under appearances of considerable gloom, arising from the natural and accidental calamities of the fatal year 1666. The plague which had ravaged the metropolis, and swept away more than one hundred thousand of its in-

This painter, Michael Wright, was a Scotchman, who had studied and painted at Rome. Besides these portraits of the judges, he painted some of the ceilings in the old palace at Whitehall. One of his most celebrated works is a portrait of Lacy, the comedian, in three characters,—a gallant, a presbyterian minister, and a Highlander in his plaid; the picture is now at Windsor, and is well described in Pyne's History of the Royal Residences. Wright was highly esteemed in his day, and associated with Evelyn, and other eminent characters of that class.

* This munificent person, on January 2 of this year, presented the society with the library of Arundel-house, which had been purchased by his grandfather, Thomas Earl of Arundel, during his embassy at Vienna. It had formerly been part of the collection of Matthew Corvinus, King of Hungary, made by him at Buda, in 1485. After the death of this monarch, 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. This splendid donation was presented to the society to be disposed of as their property, desiring only, that in the event of a dissolution or failure of the society it should return to Arundel-house; and that this inscription, *ex dono* HENRICI HOWARD, *Norfolciencis*, might be put upon every book so given them. He also allowed permission to exchange any books which were duplicates, or not fit 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 becoming thankfulness, and ordered that Mr. Howard should be registered as a benefactor.—*Birch's Hist. Roy. Soc.* Vol. II. p. 136.

† Birch's Hist. Roy. Soc. Vol. II. p. 131.

habitants, had scarcely been subdued, when the city was almost entirely destroyed by its unexampled conflagration. The spirit and energy of the people enabled them to surmount these dreadful calamities, which were increased by foreign wars; and London, under the management of Wren, aided by the liberality and public spirit of the nation, arose speedily and more beautiful from its ashes. Its streets and public places were reconstructed more spacious, healthful, and convenient than before; and the misfortune which appeared to be their calamity was turned, by public spirit and good management, into their advantage.

This year the Royal Society lost one of their first members, Abraham Cowley, the poet, who after his election addressed them in a beautiful ode, which is prefixed to Dr. Sprat's History of the Society, and dedicated to them his "Proposition for the Advancement of Experimental Philosophy." Pope Alexander the seventh also died this year, and his splendid tomb, in the cathedral of St. Peter at Rome, is the last work of Bernini. Public affairs began to look more favourable: the peace of Breda was made; the people were occupied in reinstating their metropolis; and the king and his court abated their usual passion of gallantry in mutual exertions for the public good.

On January 15, so anxious and indefatigable was the king to rebuild the metropolis, that an instrument was issued*, directing

* This document, the original of which is in the book of orders in the muniment room at St. Paul's, is as follows:

"January 15, 1667. At Whitehall,
In the Lord Chamberlaine's Lodgings.

Present The Lord Archbishop of Canterbury,
Lord Chamberlaine,
Lord Bishop of Winchester,
Lord Bishop of Ely,
Sir Richard Chaworth,
The Dean of St. Paul's,
Dr. Pory.

the repairs which were then proposed to be done. To forward these views, and for the prevention of nuisance and annoyances,

" Whereas the dreadful calamity of fire, which fell lately upon the city of London in general, hath in particular fallen so heavy upon the Cathedrall church of St. Paul, and so far disturbed and set back the method of its repairs, that we cannot, as the state of the affaires now is, hope suddenly to proceed in that great work as was intended. It being thought necessary in the mean time (till it shall please God to bless us with a more favourable juncture for doing something more lasting and magnificent), that some parte of that venerable pile be forthwith restored to its religious use, where it may be done with the least expense of tyme and treasure: and it being also apparent, that the whole east parte of that cathedrall is under greater desolation than the rest, not onely the tymber roof being burnt, and the stone vaults above for the greatest parte thrown down, and the outwalls there weakened more than in other places; but the very inner wall and pillars betweene the choire and north isle being fallen also (and those on the south side in great danger), and in their fall having broken open the vaults into St. Faith's church; the restoring of which substructions to their former strength, and reareing the said walls and pillars to their former height, will both take up more tyme, and cost far more money than the whole work intended to serve the present necessity will require: It was this day ordered, that a choir and auditory for present use be forthwith set out, repaired, and finished (if it may be) in the course of the next summer, in the body of the church between the west end and the second pillars above the little north and south dores (which of all the fabrick remains most entire and most easily reducible to the intended use), and that the whole management of this work bee left to the care of The Most Rev. Father in God, Gilbert, Lord Archbishop of Canterbury, The Right Hon. Edward, Earl of Manchester, Lord Chamberlain of his Majesty's Household, The Right Reverend Fathers in God, Humphry, Lord Bishop of London, George, Lord Bishop of Winchester, Benjamin, Lord Bishop of Ely, and John, Lord Bishop of Rochester, the right worshipful Sir Richard Chaworth, Vicar Generall of the Province of Canterbury, and the Dean and

the churchyard was enclosed, and the architect commenced his operations. A sub-committee, consisting of the architect and some of the most scientific of the commissioners, was appointed, March 5, to carry the orders into execution.

In the course of this year, by the desire of the king, he prepared a report on the best mode of rebuilding the city, which with the plan was laid before parliament*. Wren's ideas for the formation of a new city worthy the grandeur of the nation are fully explained in these proposals. His plan, which has been engraved and is well known, was so arranged that the chief streets crossed each other in right lines, with smaller streets between them: the churches, public buildings, and markets, were so disposed as not to interfere with the streets, and four piazzas were designed at proper distances, into which several of the streets met.

The whole of this year and part of the following were spent in clearing away the rubbish, and ascertaining the condition of

Chapter of the said cathedrall church for the tyme being, or to any six of them; to be by them pursued and finished with all convenient speed, in such method, by and with the assistance of such artists, officers, and workmen, as they shall think fitt to consult and employ therein.

"It was also this day ordered, for the suppressing and preventing of present and future annoyances and encroachments, that the churchyard be forthwith walled in, or otherwise enclosed at such distances from the church on all sides, that the publique way, without the said enclosure, be left at least as broad in all places as the late act of parliament for the rebuilding of the citty requires: and also that all sheds, shops, and other places, either of abode or trade, erected since the fire within the said enclosure, be forthwith demolished and removed."

* See Appendix, No. XIII.

the ruins of St. Paul's. The architect also proceeded in his exertions to render the new city as perfect as possible, according to the report just alluded to; but private interests and unjust caprice prevented all his desirable improvements from being executed. In the pursuit of these avocations, Wren had abundant opportunity of ascertaining the site and boundary of the ancient city, as settled by the Romans, and gave his opinions in a valuable and interesting paper*.

Notwithstanding the multiplicity and importance of Wren's avocations, he still found time to make communications to the Royal Society. He accordingly communicated to them, early in the year, several valuable communications in astronomy, optics, and mechanics. About this period he also addressed an epistle to Sir Charles Scarborough, Physician to Charles II., and continued some of his anatomical experiments†. Among other communications made this year by Wren to the Royal Society, we find him, on January 9‡, relating several ways of taking the diameters of the planets to seconds. This communication the society desired to be transmitted to the Parisian philosophers, to

* See Appendix, No. XIV.

† Epistola ad Doc^{m} Carol^{m} Scarborough De ossibus bracchii, &c. Anatomiæ Anguillæ fluviatilis, longæ plusquam 40 digitos circuitu ciria (umbilicum) 6 et amplius, cum fig. Experimentum Anatomicum, in canem, de abscidendo splene, et methodo ganandi. apud nos.—*MS.* WREN.

‡ Birch's Hist. Roy. Soc. Vol. II. p. 139. N. B. This was the first meeting of the society at Arundel-house: with which Mr. Henry Howard had accommodated them in consequence of the fire.

convince them that it was a mode of calculation not at all new among the English astronomers. On the 16th, he propounded, by their desire, his celebrated treatise on the laws of motion, upon which I shall speak hereafter; was reminded of the telescopical moon formerly promised by him*, and was again desired to communicate his method, conjointly with Mr. Hooke, of taking the diameter of planets to seconds. Thus, with the arduous undertaking of rebuilding the metropolis of a great kingdom, his great mind found amusement and relaxation in the abstruse science of astronomy.

On January 23 the society again debated on his telescopical moon; and it was ordered that the king should be requested, through Sir Robert Moray, to lend the one made by Dr. Wren, which was in his majesty's closet; and that Dr. Wren should employ a fit person to model it upon a larger globe; which being done, it might afterwards be perfected by fresh observations of the moon†.

At this time there is scarcely a meeting of the society in which the name of Dr. Wren is not recorded as present, and assisting in the discussions; the whole weight of the labour of interesting the society lying between him and his inventive coadjutor Mr. Hooke. On February 6, experiments were tried for raising weights by the force of gunpowder, preparatory to those which he afterwards used in throwing down the masses of masonry in the ruins of St. Paul's. He was assisted by Boyle, Hooke, Sir

* Birch's Hist. Roy. Soc. Vol. II. p. 140. † Ibid. p. 143.

Robert Moray, and other philosophical members of the society*. On February 14, he mentioned in the society his invention of a new kind of lamp, and the operator to the society was ordered to attend him, to receive his instructions how to make it. He suggested likewise that there being added to his said lamp 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 so as to be at the same time a clock,—which was also ordered to be tried†. These experiments were continued at the next meeting by the operator, under the direction of Dr. Wren; and his experiments on gunpowder were also continued‡. On March 9, his lamp was again produced before the society, having for a wick a small thread of lead thrust through the midst of cottons, the lead melting as the cotton burnt. The doctor atttended this meeting, and assisted in the experimental discussions on telescopes, on raising weights, and bending springs by gunpowder, and gave in the required description of his new level§.

The fame of the new society, and of the valuable additions to science made by Wren, spread rapidly all over Europe. At the meeting of March 14, the operator was ordered to bespeak a quadrant like that of Dr. Goddard, and one of the largest globes made by Mr. Moxon, for Dr. Wren's telescopical moon, to be directed by him, to be sent to Lisbon‖. At the same

* Birch's Hist. Roy. Soc. Vol. II. p. 146. † Ibid. p. 150.
‡ Ibid. p. 151. § Ibid. p. 153, 154. ‖ Ibid. p. 156.

meeting the description of his new level, for taking the horizon every way in a circle, was read and ordered to be registered *.

On the 21st of the same month Sir Paul Neile announced to the society, that Dr. Wren had obtained his telescopical moon, as was ordered, and would have another of a larger size made from it †. At a meeting of the council on the 28th, Dr. Wren produced drawings of the figures of hail, which had fallen on the preceding day 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 observed, was the angle of a pentagon, so that five of these united formed a circle ‡. At meetings on April 6, and 11, we find the philosophical architect producing to the society his new lamp, and observed that the oil would not come faster than it was consumed, and intimated that the main point was to balance it well. The society finally approved of his invention, and desired him to make a diagram of it, with a description in writing, which he promised to do §. Improvements in building, with reference to the fired metropolis, occupied the attention of this useful society. Hooke produced his method of making bricks, with less charge and more speed than had been then practised. A paper of Dr. Merrett was read, containing a description of granaries, as they

* See page 218 of this work.
† Birch's Hist. Roy. Soc. Vol. II. p. 160.
‡ Register, Vol. III. p. 184.
§ Birch's Hist. Roy. Soc. Vol. II. p. 165.

were built at London*, together with the way of managing the corn in them; and not having met with any person in London who could give him a good account of the granaries at Dantzic, in Poland, and at Amsterdam, he desired that letters might be written to those places, soliciting an account of the structure of such kind of buildings there. On this, Wren related that some of the granaries of Dantzic 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 also, that in Russia they preserved their corn under ground, digging a large hole of the shape of a sugar-loaf, broad at the bottom, and pointed towards the top; which they plastered within, and covered with a stone, after putting in the corn first well dried. It was then ordered, that in case the merchants of London could not give a good account of the granaries in the places above-mentioned, the secretary should write, as Dr. Merret wished, and desire one. Lord Brereton affirmed, upon his own experience, that corn well dried need not be malted for brewing; and Sir Robert Moray mentioning that Lieut. Col. Drummond had been long in Russia, and could doubtless give a good account of their granaries, was desired to ask that gentlemen concerning them†.

In such useful practical experiments, adapted to the necessities of the times, did this highly meritorious society and their philosophical members engage themselves.

* Philos. Trans. Vol. II. No. 25. p. 464.

† Birch's Hist. Roy. Soc. Vol. II. p. 165.

The days now increasing in length, the architect's time was more required in his architectural occupations in the new city, and dilapidated cathedral. We therefore now miss him at the meetings of the society till one on June 27 *, where there is no discovery of his worth recording; nor do we find him assisting at any of the meetings, either of the society or council, during the remainder of the year.

During this secession from the occupations of the Royal Society, Wren was pursuing his great works of rebuilding the metropolis; in which he was cordially joined, and powerfully supported, by all ranks of society. Improving and levelling the streets and highways, particularly those parallel with the river and running towards it, attracted his peculiar attention, tables and orders for which are given in the later editions of Stow, and other historians of London. In the book of orders in St. Paul's Cathedral is a copy of a letter from the king, dated August 18, of this year, desiring that such of the stone rubbish as could be spared from the use of the cathedral might be carried to the lower parts of Fleet-street above the bridge, which had been ordered by the architect to be raised.

The commencement of the new year, and its long evenings, which delayed the progress of the works, encouraged no idleness in the indefatigable architect of the new city. On February 20, 1668, Dr. Wilkins produced to the society a paper sent by Dr. Wren, giving an account of a strangely diseased boy, at Oxford, who had a consumption of the bones about his head, which bones he

* Birch's Hist. Roy. Soc. Vol. II. pp. 183, 184.

pulled out in fragments, some single ones of which weighed an ounce; although he was born of healthy parents, and had been healthy himself till of late. Some members inquired how the bones pulled out were colored; others suggested, that information should be desired what nurse the boy had. It was then ordered Dr. Pope should write to Dr. (afterwards Sir Thomas) Millington, 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*.

By this communication it appears that Wren was at this time at Oxford; where his services were required not only as an architect, but also in his duties as Savilian professor of astronomy; a situation which he subsequently resigned. In March, however, he was in London, and communicated to the society a letter written to him from Oxford, about the above-mentioned diseased boy.

At a meeting of the council last year, Hooke† presented a volunteer design for the new society's house, or college, to be built on a site of ground given them by their munificent associate, Mr. Howard, of Norfolk, which appears not to have given satisfaction to the society; for at a meeting of the council on May 4, the president (Lord Brouncker) moved that the building of the society's college might be begun forthwith, there being already

* Birch's Hist. Roy. Soc. Vol. II. p. 250.

† Amongst Hooke's designs in London, are the Haberdashers' Almshouses, Hoxton, the late Bethlem Hospital, and I believe the British Museum.

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; and Dr. Wilkins was desired to procure, at the next meeting of the council, Dr. Wren's design for the building *.

On May 14, the dedication of Dr. Wilkins's *essay towards a real character and a philosophical language* being read before the society, Dr. Wren was nominated a member of a select committee, which was appointed to examine and consider the merits of the book, and to make a report of it to the society †. At a meeting of the council on the 30th of the same month, the president gave notice that Mr. Henry Howard (who was present) had allotted the ground for building the society's college upon, namely, an hundred feet one way, and forty feet the other. It was ordered, among other things, that Mr. Oldenburg should write a letter to Dr. Wren, to desire him to attend Mr. Howard at Oxford, about the drawings of the society's buildings ‡. To which letter Dr. Wren returned the following answer from Oxford, where he was engaged, among other works, in superintending the completion of the Sheldonian theatre, and of its admirably constructed and truly original ceiling-floor and roof.

* Birch's Hist. Roy. Soc. Vol. II. p. 275.
† Ibid. p. 283. ‡ Ibid. p. 290.

" Oxford, June 7, 1668.

" SIR*,

" WHEN I waited upon his honour, Henry Howard of Norfolk, he took delight to show 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 showed you in 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 one hundred feet long, and thirty 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 housekeeper; 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 forty feet long, and two stories high, divided from the ante-chamber by a screen between

* Letter Book of the Roy. Soc. Vol. II. p. 220.

columns, so that the whole length, in case of an entertainment, may be fifty-five 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 thirty 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 require 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 height.

" As for the charge of this fabric, I confess it is my opinion, that a fair building 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 for two thousand pounds, and will contain the necessary rooms, and so you will leave yourselves an opportunity of enlarging 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 show you what part I would have at present built; together with an extempore staircase of deal boards and laths. The cupola may be left till the finishing.

" Sir,

" I am your humble servant,

" CHRISTOPHER WREN."

At a meeting of the council on June 22, Mr. Hooke, who we have before seen was appointed an assistant to Wren, was ordered to get a model made of the draught of the building which was finally approved, and to consider of buying 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 *.

On November 5, of this year, at a meeting of the council, Mr. Oldenburg read a letter from Dr. Christopher Wren †, in answer to what he had written to him, by order of the society, to request the communication of what the doctor had done on the subject of motion. This answer refers to his discoveries and experiments on the laws of motion, which will be hereafter more fully spoken of, in its proper place. The substance of this letter is, that he desired more time to try over again some of his experiments upon that subject, and that he then hoped to give an account to their satisfaction. On December 17 following, he produced his

* Birch's Hist. Roy. Soc. Vol. II. p. 300.

† The Journal gives for the date of it October 26; but the Letter Book of the Royal Society, in which it is inserted, Vol. II. p. 303, has it November 3, 1668.

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*, the author affirming, that he had this hypothesis several years before, when the society began to be formed, and that Mr. Hooke 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. Balles, 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.

The last day of the year, and the last of the society's meetings, closed with an useful communication in domestic œconomy from Wren, who produced a machine contrived by himself to cure smoky chimneys, which he affirmed had proved very effectual by various trials. It was delivered to Mr. Hooke for the repository‡.

In his public capacity, he continued clearing and examining

* Register of Roy. Soc. Vol. IV. p. 29. Phil. Trans. Vol. III. No. 43, p. 867, for January, 1669. See Appendix, No. XV. "Doctrina motus lex naturæ de collisione corporum." Philosoph. Trans. No. 43, p. 867.—WREN *MS.*

† This will not appear, to the attentive reader of the history and transactions of the society, an unnecessary proceeding; nor the complaint or affirmation, as it is termed, of the careless and inventive Wren, an angry invective. Few men had more reason to say *sic vos non vobis* than Wren. Hooke appears throughout all these transactions to follow, to thrust, and to attempt to pass by in the public arena his friend, patron, and principal, in every thought, invention, and discovery.

‡ Birch's Hist. Roy. Soc. Vol. II. p. 336.

the ruins of St. Paul's, planning and arranging the new city, and acting generally in his capacity of deputy-surveyor, under the nominal superintendance of Sir John Denham, the Surveyor-General. This eminent person, whom Dr. Johnson considered as one of the fathers of English poetry, had been appointed by Charles II. to this situation for past services, which was more suited to the poet's need, than his abilities were to the duties of the office. His Cooper's Hill confers a distinction upon him more durable than all his architectural works, of which nobody knows, although he says " on his appointment he gave over his poetical lines, and made it his business to draw such others as might be more serviceable to his majesty, and, he hoped, *more lasting*." Whatever may have been the hopes of immortality with which the old bard flattered himself from his more durable lines, it is clear that, as the author of the Sessions of the Poets says,

" His fame on the Sophy and Cooper's Hill stands."

The infirmities of the amiable poet increasing, Wren was deputed by him to execute the office of surveyor-general of the royal works, which was confirmed to him by his majesty's warrant under the privy seal, bearing date, according to the Parentalia*, March 6, 1668, but according to the manuscript in the British Museum, alluded to in the note to the first page of this part of the work, and the Register Book of the Royal Society, it must have been a year later. The Parentalia, among many other errors in dates mentioned elsewhere, also observes, that he was appointed to the office of surveyor-general on the death of Sir John Denham,

* P. 263.

which occurred in the same month. In this error most of the biographers of Denham and Wren concur. It is repeated in Ward's Lives of the Gresham Professors, in Rees's Cyclopædia, Biog. Brit., Johnson's Lives, Chalmers's Biographical Dictionary, &c. But the Lansdowne manuscript*, and the History of the Royal Society, which are both of superior authority, make the two circumstances to occur in the following year.

His mathematical discoveries increased with his architectural labours. He presented the world, through his usual channel, the Royal Society, with a paper concerning the production of a straight line equal to a cycloid. The Parentalia, with its usual carelessness of dates, most remarkable as proceeding from the family, assigns this to the year 1658, and led me into the error of so quoting it at page 58. The Lansdowne manuscript‡, and the

* March 28, 1669. Ædificorum regalium per totam Angliam præfectus; per literas patentes sub magno sigillo. *Ex literis patent.*—WREN *MS.*

† Under the date of Nov. 29, 1669, Birch says, "Between this and the preceding election," namely, between Nov. 30, 1668, and Nov. 29, 1669, "died two eminent men, who were members of this society; Sir John Denham, Knight of the Bath, and George Bate, M. D." Birch's Hist. Roy. Soc. Vol. II. p. 406. These authorities will, I trust, correct these errors in the biography of two eminent men.

‡ 1668. Primus invenit *lineam rectam æqualem* esse cycloidi ejusque *partibus:* quod testimoniis confirmatur nobilissimi ac serenissimi D^ni^ Vicecomitis Brouncker, Regalis Societatis Præsidiis, et doctissimi viri Doctoris Johannis Wallis, &c. Philos. Trans. No. 98.—WREN *MS.*

When it is considered that this manuscript catalogue of the works of Sir Christopher Wren was compiled by his son during his lifetime, and collated by the great architect himself, I trust it will be received as better authority than Ames's miserable compilation, published under the name of his grandson, Stephen Wren.

transactions of the Royal Society, both place it under the date of this year. The mode may be found in the Appendix, No. XVI.

Wren was now employed as architect by all the chief authorities in the kingdom. He brought his great work, the Sheldonian theatre at Oxford, nearly to a close*, which was opened with much pomp in the ensuing year; and commenced the chapel of Emanuel College, Cambridge†, under the auspices of his munificent friend, Archbishop Sancroft. This edifice is of the Corinthian order, two three-quarter columns *in antis*, an arcade between them on the ground floor, and the chapel, with parallelogrammatic windows between the columns. The necking of the capitals is continued on the walls, and the space between it and the architrave decorated with festoons. The pediment is broken by a clock, the frame of which forms a pedestal for the bell-tower. It is not in Wren's best style. It was begun this year under Sancroft, who with Dr. Sudbury, Dean‡ of Durham, contributed liberally toward it, and was finished in 1677, under Dr. Holbeach §.

* 1668. Theatrum *Oxoniæ Sheldoniacum* extruxit: cujus fundamenta jecit 1664.—WREN *MS.*

"Theatrum quod in toto hoc nostro Britannico (annon et terrarum orbe?) nec habet ullum sibi par, nec ullum secundum *theatrum* quod exoptet *Apollo* templum, *Musæ* Parnassum, *Plato* Academiam, *Aristoteles* Lyceium, *Cicero* Tusculanum, *Gratiæ* omnes *Veneresq:* donum. *Guil. Walker, S. T. B.* 1685."—WREN *MS.*

† Capellam Collegii Emmanuelis *Cantab.*—*Ibid.*

‡ Dyer's History of Cambridge, Vol. II. p. 350.

§ Joshua Barnes, an enthusiastic Hellenist of those days, the editor of an edition of the Greek classics, now almost fallen into disrepute, who, by a happy memory and a facility of speaking Greek, obtained the compli-

His occupations, in London, were, continuing the new buildings in the city, among which he commenced the stately new Custom-house, and endeavouring to repair St. Paul's, contrary to his own wishes. During the investigation of the state of the ancient cathedral, which took place before the fatal fire which destroyed it, Wren, it will be remembered, was in opposition to some of his brother commissioners. The fire proved the correctness of Wren's judgment, which had even been confirmed some months previously, although still repairing*, as the following letter from the then Dean of St. Paul's, Dr. Sancroft, afterwards Archbishop of Canterbury, bears ample testimony. It is addressed, "To my worthy friend, Dr. Christopher Wren, Professor of Astronomy, in Oxford.

"London, April 25, 1668.

"SIR,

"As he said of old, Prudentiam est quædam divinatio, so science, at the height you are master of, is prophetic too. What you whispered in my ear, at your last coming hither, is come to

ment from the learned Bentley of knowing about as much Greek as a Greek cobbler, in his Ευχαριστηριον places the munificent prelate Sancroft at the head of those whom he delighted to honour, and thus celebrates him:

Πρωτον Σαγκρωφθηα μεγαν Λαμβηθεα Μυσην
Ον Δομος Εμμανιηλος εη κοσμησε μαθησει,
Ευσεβιην σοφιηντε Θεος κραδιηφιν εχευε.
Καρολος υψισος μιν Επισκοπονεμμεν' εθηκεν.

Of Dr. Holbeach, under whom Wren finished the chapel, he says,

Ολβεχιον φιλοδωρον, ος Εμμανιηλα Φυλασει.

Barnes's Eucharisterion.

* Vide Parentalia, pp. 277, 278.

pass. Our work at the west end of St. Paul's is fallen about our ears. Your quick eye discerned the walls and pillars gone off from their perpendiculars, and I believe other defects too, which are now exposed to every common observer.

" About a week since, we being at work about the third pillar from the west end on the south side, which we had new cased with stone where it was most defective, almost up to the chapitre, a great weight falling from the high wall so disabled the vaulting of the side aile by it, that it threatened a sudden ruin so visibly, that the workmen presently removed, and the next night the whole pillar fell, and carried scaffolds and all to the very ground.

" The second pillar, which, you know, is bigger than the rest, stands now alone, with an enormous weight on the top of it, which we cannot hope should stand long, and yet we dare not venture to take it down.

" This breach has discovered to all that look on it two great defects in Inigo Jones's work; one, that his new case of stone in the upper walls (massy as it is) was not set upon the upright of the pillars, but upon the core of the groins of the vaulting: the other, that there were no key stones at all to tie it to the old work; and all this, being very heavy with Roman ornaments on the top of it, and being already so far gone outward, cannot possibly stand long. In fine, it is the opinion of all men, that we can proceed no farther at the west end. What we are to do next is the present deliberation, in which you are so absolutely and indispensably necessary to us, that we can do nothing, resolve nothing, without you.

" 'Tis therefore, that in my lord of Canterbury's name, and

by his order (already, I suppose, intimated to you by the Dean of Christ Church), we most earnestly desire your presence and assistance, with all possible speed.

"You will think fit, I know, to bring with you those excellent draughts and designs you formerly favoured us with: and, in the mean time, till we enjoy you here, consider what to advise, that may be for the satisfaction of his majesty and the whole nation; an obligation so great and so public, that it must be acknowledged by better hands, than those of

"Your very affectionate friend and servant,

"W. SANCROFT."

In spite of remonstrances from the able heads which were entrusted with the works, the patching and piecing still continued. Wren wrote a remonstrance from Oxford, which produced some effect; as may be seen in the following letter from the same eminent prelate to our architect.

"July 2, 1668.

"SIR,

"Yesterday my lords of Canterbury, London, and Oxford, met on purpose to hear your letter read once more, and to consider what is now to be done in order to the repairs of St. Paul's. They unanimously resolved, that it is fit immediately to attempt something; and that, without you, they can do nothing.

"I am, therefore, commanded to give you an invitation hither, in his grace's name, and the rest of the commissioners, with all

speed, that we may prepare something to be proposed to his majesty (the design of such a quire, at least, as may be a congruous part of a great and more magnificent work to follow); and then, for the procuring contributions to defray this, we are so sanguine as not to doubt of it, if we could but once resolve what we would do, and what that would cost. So that the only part of your letter we demur to, is the method you propound of declaring first what money we would bestow, and then designing something just of that expense: for quite otherwise the way their lordships resolve upon, is to frame a design, handsome and noble, and suitable to all ends of it, and to the reputation of the city and the nation; and to take it for granted that money will be had to accomplish it: or, however, to let it lie by till we have before us a prospect of so much as may reasonably encourage us to begin.

"Thus far I thought good to prepare you for what will be said to you when you come, that you may not be surprised with it: and, if my summons prevail not, my lord the Bishop of Oxford hath undertaken to give it you warmer, *ore tenus*, the next week, when he intends to be with you; if, at least, you be not come towards us before he arrives, which would be a very agreeable surprise to us all, and especially to

"Your very affectionate humble servant,

"W. SANCROFT."

The following able philosophical report appears to have been made to the commissioners in consequence of these letters. The

reader cannot fail to discover in its perusal the rich harvest of Wren's early studies, which were all brought to bear on the object before him.

* "What time and weather had left entire in the old, and art in the new repaired parts of this great pile of St. Paul's, the late calamity of the fire hath so weakened and defaced, that it now appears like some antique ruin of two thousand years continuance: and, to repair it sufficiently, will be like the mending of Argo-nairs, scarce any thing will at last be left of the old.

"The first decays of it were great, from several causes; first, from the original building itself: for it was not well shaped and designed for the firm bearing of its own vault, how massy soever the walls seemed to be, nor were the materials good; for it seemed to have been built out of the stone of some other ancient ruins, the walls being of two several sorts of free-stone, and those small; and the core within was ragstone, cast in rough, with mortar and putty; which is not a durable way of building, unless there had been that peculiar sort of banding, with some thorough courses, which is necessary in this kind of filling work, but was omitted in this fabric. This accusation belongs chiefly to the west, north, and south parts. The choir was of later and better work; not inferior to most Gothic fabrics

* From the Antiquarian Refectory, communicated by the late Thomas Astle, Esq.; and not printed in either Parentalia, or Dugdale's History of St. Paul's.

of that age. The tower, though it had the effects of a bad manner of building, and small stones and filling work, yet was it more carefully banded, and cramped with much iron.

" A second reason of the decays which appeared before the last fire was, in probability, the former fire, which consumed the whole roof in the reign of Queen Elizabeth. The fall of timber then upon the vault was certainly one main cause of the cracks which appeared in the vault, and of the spreading out of the walls above ten inches in some places from their true perpendicular, as it now appears more manifestly. This giving out of the walls was endeavoured to be corrected by the artist of the last repairs, who placed his new case of Portland stone truly perpendicular; and if he had proceeded with casing it within, the whole had been tolerably corrected. But now even this new work is gone away from its perpendicular also, by this second fall of the roof in this last fire. This is most manifest in the north-west aisle.

" The second ruins are they that have put the restoration past remedy, the effects of which I shall briefly enumerate.

" First.—The portico is nearly deprived of that excellent beauty and strength, which time alone and weather could have no more overthrown, than the natural rocks; so great and good were the materials, and so skilfully were they laid after a true Roman manner. But so impatient is the Portland stone of fire, that many tons of stone are scaled off, and the columns flawed quite through.

" Next, the south-west corner; one of the vast pillars of the body of the church, with all that supported it, is fallen.

" All along the body of the church the pillars are more given out than they were before the fire; and more flawed towards the bottom, by the burning of the goods below, and the timber fallen from above.

" This farther spreading of the pillars within hath also carried out the walls of the aisles, and reduced the circular ribs of the vaults of the aisles to be of a form, which to the eye appears distorted and compressed; especially in the north-west aisle of the body of the church.

" The tower, and the parts next about it, have suffered the least; for these, by reason that the walls lying in form of a cross, give a firm and immoveable butment each to other; and they stand still in their position, and support their vaults; which shows manifestly, that the fall of the timber alone could not break the vaults, unless where the same concussion had force enough to make the walls also give out.

" And this is the reason of the great desolation which appears in the new choir; for there the falling vaults, in spite of all the small buttresses, hath broken them short, or dislocated the stouter of them, and overthrowing the north wall and pillars, and consequently the vaults of the north-east aisle, hath broken open the vaults of St. Faith (though those were of very great strength); but irresistible is the force of so many thousand tons, augmented by the height of the fall.

" Having shown in part the deplorable condition of our patient, we are to consult of the cure, if possible art may effect it. And herein we must imitate the physician, who, when he finds a total decay of nature, bends his skill to a palliative, to

give respite for a better settlement of the estate of the patient. The question is then, where best to begin this sort of practice; that is, to make a choir for present use.

" It will, worst of all, be effected in the new choir; for there the walls and pillars being fallen, it will cost a large sum to restore them to their former height; and before this can be effected, the very substruction and repair of St. Faith's will cost so much, that I shall but frighten this age with the computation of that which is to be done in the dark, before any thing will appear for the use desired.

" The old choir seems to be a convenient place, and that which will be most easily effected; because the vault there looks firm, or easily reparable, as far as to the place where was once the old pulpit. But this design will not be without very material objections. First, the place is very short and little between the stone screen and the breach, and only capable of a very little choir, not of an auditory.

" And if the auditory be made without, yet, secondly, all the adjacent places are under the ruins of a falling tower, which every day throws off smaller scales, and in frosts will yield such showers of the outside stones (if no greater parts come down with tempests), that the new roofs (yet to be made) will be broken up, if no farther mischiefs ensue. Thirdly, you are to make such a dismal procession through ruins to come thither, that the very passage will be a penance. Fourthly, this cannot be effected without considerable expense of making partition walls to the top, to sever this part on every side from the ruins, and covering with timber and lead those four short parts of the

cross next the tower, and covering the tower also; that is, if you make room for the auditory as well as the choir, the choir itself being very little.

" These ways being found inconvenient and expensive, either of taking out a part, where the new choir was, or where the old choir is, with the parts west, north, and south, next the tower, as far as the vaults stand; it remains that we seek it in the body of the church. And this is that which I should humbly advise, as the cheapest way of making a sufficient choir and auditory, after this manner.

" I would take the lesser north and south door for the entrances, and leaving two intercolumniations eastward, and three or four westward, I would there make partition walls of the fallen stone upon the place. The east part above the doors may be contrived into a choir, the west into the auditory. I would lay a timber roof as low as the bottoms of the upper windows, with a flat fretted ceiling. The lead saved out of the burning will more than cover it. Of iron and of pavement there is enough for all uses. The roof lying low, will not appear above the walls; and since we cannot mend this great ruin, we will not disfigure it, but that it shall still have its full motives to work, if possible, upon this or the next ages: and yet within it shall have all convenience and light (by turning the second story of arches into windows), and a beauty durable to the next two centuries of years; and yet prove so cheap, that between three and four thousand pounds shall effect it all in one summer.

" And having with this ease obtained a present cathedral, there will be time to consider of a more durable and noble fabric,

to be made in the place of the lower and eastern parts of the church, when the minds of men, now contracted to many objects of necessary charge, shall, by God's blessing, be more widened, after a happy restoration, both of the buildings and wealth of the city and nation. In the mean while to derive, if not a stream, yet some little drills of charity this way, or, at least, to preserve that already obtained from being diverted, it may not prove ill advised to seem to begin something of the new fabric. But I confess this cannot well be put in execution, without taking down all that part of the ruin; which, whether it be yet seasonable to do, we must leave to our superiors."

The result of these deliberations, letters, reports, and meetings, was, that Wren's judgment and science prevailed over the narrow-mindedness and self-sufficiency of his less qualified opponents; and an order * was issued by the king in council to take down

* "CHARLES R.

"Whereas, upon strict survey and examination of the ruines of the cathedrall church of St. Paul, London, by knowing and experienced artists, it is found that the walls now standing are in all parts so decayed by the late fire, that they are judged altogether insufficient for bearing another roof, or any new work. It is, therefore, our express will and pleasure, that immediate care be had for takeing down the walls, and cleareing the ground to the foundation of the east end, the old choir, and the tower, in such manner as shall be judged sufficient to make room for a new choir, of a faire and decent fabrick, neare or upon the old foundations: and also that care be taken to preserve the cornishes, ashlers, and such parts of the former towards the west, as shall be deemed usefull for the new fabrick, least they

the walls, clear the ground, &c., precisely as recommended in Wren's report.

Another great architectural work of Wren's began this year was the Custom-house * of London, which was a large, commodious, and substantial building of brick and Portland stone; which was afterwards consumed by fire in 1718.

Salisbury cathedral, whose "high steeple and double crosses, by a venerable kind of grandeur, strike the spectator with a sacred joy †," came this year, on account of its ruinous state, under the inspection of the scientific Wren. In addition to the dilapidations occasioned by time and neglect, the elegant and lofty spire had been damaged by tempests, and struck by lightning. His first attention was drawn to this important object by his friend, Dr. Seth Ward, then bishop of the diocese, at whose solicitation he made an elaborate survey of the whole edifice.

After a minute investigation, and complete survey of this ancient monument of the piety and munificence of our ancestors,

be spoiled by the fall of more of the walls, which seeme to threaten immediate ruine. And for so doing this shall be your warrant. Given at our court, at Whitehall, the 25th day of July, 1668.

"By his Majesty's command,

"‡ WILLIAM MORICE.

"*To the Lords and others, our Commissioners for the Repairs of our Cathedrall Church of St. Paul, London.*"

* Telonium *portus Londinensis.—Wren MS.* † Camden.

‡ From the original in the book of orders, in the muniment room of the present cathedral.

Wren made the following report, which has stirred up the bile of many a paper antiquary, as little qualified to measure the calibre of Wren's expansive mind as the fly in the fable was his vast cupola, which he found rough, rugged, and of no polish or shape. Price, in his observations * on this admirable structure, thinks, and with much appearance of justice, that there was never any particular description of it given in writing till this important survey and repair, which has preserved it to our times, and for the tasteful restorations of James Wyatt.

" † The whole pile is large and magnificent, and may be justly accounted one of the best patterns of architecture in the age wherein it was built. The figure of the church is a cross, upon the intersection of which stands a tower and spire of stone, as high from the foundation as the whole length of the *navis*, or body of the church; and it is founded only upon the four pillars and arches of the intersection. Between the steeple and the east end is another crossing of the *navis*, which on the west side only wants its ailes; all other sides of the main body and the crosses are supported on pillars with ailes annexed, and buttressed without the ailes, from whence arise bows, or flying buttresses, to the walls of the *navis*, which are concealed within the timber roof of the ailes. The roof is almost as sharp as an æquilateral triangle,

* London, 4to. with plates, 1753.

† Price's Observations on the Salisbury Cathedral, p. 16. Parentalia, p. 304. The Parentalia again errs in date, and even contradicts itself; assigning 1669 in one place, and 1668 in another, for this report: 1668 is, however, the correct one.

made of small timber, after the ancient manner, without principal rafters; but the wall plates are double, and tied together with couples above forty feet long. The whole church is vaulted with chalk between arches and cross springers only, after the ancienter manner, without orbs and tracery, excepting under the tower, where the springers divide, and represent a wider sort of tracery. And this appears to me to have been a later work, and to be done by some other hand than that of the first architect, whose judgment I must justly commend for many things, beyond what I find in divers Gothic fabrics of later date; which, though more elaborated with nice and small works, yet want the natural beauty which arises from the proportion of the first dimensions: for here, the breadth to the height of the *navis*, and both to the shape of the ailes, bear a good proportion. The pillars and the intercolumniations (or spaces between pillar and pillar) are well suited to the height of the arches: the mouldings are decently mixed with large planes, without an affectation of filling every corner with ornaments (which, unless they are admirably good, glut the eye, as much as, in music, too much division cloys the ear). The windows are not made too great, nor yet the light obstructed with many mullions and transoms of tracery work, which was the ill fashion of the next following age: our artist knew better, that nothing could add beauty to light; he trusted to a stately and rich plainness, that his marble shafts gave to his work: I cannot call them pillars, because they are so small and slender, and generally bear nothing, but are only added for ornament to the outside of the great pillars, and decently fastened with brass.

" Notwithstanding this commendation of the architect, there

are some original errors which I must lay to his charge, the discovery of which will give us light to the cause of the present decays.

" First, I must accuse him, that the building in a low and marshy soil, he did not take sufficient care of the foundation, especially under the pillars: that foundation which will bear a wall, will not bear a pillar; for pillars thrust themselves into the earth, and force open the solid ground, if the foundation under them be not broad; and if it be not hard stone, it will be ground and crushed, as things are bruised in a mortar, if the weight be great.

" A second fault was the not raising the floor of the church above the fear of innundations; many sufficient foundations have failed after the earth hath been too much drenched with unusual floods; besides, it is unhandsome to descend into a place.

" The third fault is in the poise of the building; generally the substructions are too slender for the weight above.

" The pillars appear small enough, and yet they show much greater than they are; for the shafts of marble that encompass them seem to fill out the pillars to a proportionable bulk; but, indeed, they bear little or no weight; and some of those that are pressed, break and split; if those ornaments should be taken off, the pillar would then appear too little for its burthen; but this is no where so enormous as under the steeple, which, being four hundred feet high, is borne by four pillars, not much larger than the pillars of ailes, and, therefore, out of fear to overburthen them; the inside of the tower, for forty feet height above the

nave, is made with a slender hollow work of pillars and arches; nor hath it any buttresses; and the spire itself is but seven inches thick, though the height be above one hundred and fifty feet. This work of pillars and arches within the tower, makes me believe that the architect laid his first floor of timber forty feet higher than the vault beneath; which, as I said, was since added, and without doubt intended a belfry above (as appears by places left in the walls for timber, and fastening of the frames for the bells), and so would have concluded with a tower only, without a spire: and if this addition of a spire was a second thought, the artist is more excusable for having omitted buttresses to the tower, and his ingenuity commendable for supplying this defect, by bracing the walls together with many large bands of iron within and without, keyed together with much industry and exactness: and, besides these that appear, I have reason to believe that there are divers other braces concealed within the thickness of the walls: and they are so essential to the standing of the work, that if they were dissolved, the spire would spread open the walls of the tower, nor could it stand one minute. But this way of tying walls together with iron, instead of making them of that substance and form, that they shall naturally poise themselves upon their butment, is against the rules of good architecture, not only because it is corruptible by rust, but because it is fallacious, having unequal veins in the metal; some pieces in the same bar being three times stronger than other, and yet all sound to appearance. I shall not impute to our artist those errors which were generally mistakes of builders in that age; yet it

will not be amiss to insist a little upon those which seem to concern us, and to occasion some of the infirmities in our buildings.

" Almost all the cathedrals of the Gothic form are weak and defective in the poise of the vault of the ailes: as for the vaults of the nave, they are on both sides equally supported and propped up from spreading by the bows of flying buttresses, which rise from the outward walls of the ailes; but for the vaults of the ailes, they are, indeed, supported on the outside by the buttresses, but inwardly they have no other stay but the pillars themselves; which, as they are usually proportioned, if they stood alone, without the weight above, could not resist the spreading of the ailes one minute; true, indeed, the great load above, of the walls and vaults of the *navis*, should seem to confirm the pillars in their perpendicular station, that there should be no need of butment inward; but experience hath shown the contrary; and there is scarce any Gothic cathedral that I have seen, at home or abroad, wherein I have not observed the pillars to yield and bend inwards, from the weight of the vault of the aile; but this defect is most conspicuous upon the angular pillars of the cross; for there not only the vault wants butment, but also the angular arches that rest upon that pillar; and, therefore, both conspire to thrust it inward towards the center of the cross; and this is very apparent in the fabrick we treat of; for this reason, this form of churches has been rejected by modern architects abroad, who use the better, and Roman art of architecture."

In this survey it appears * that Wren directed some of the timbers in the tower and spire to be removed, and a plummet dropped down by a line from the highest part possible to the pavement; and that this trial be often repeated at various intervals of time, to see if it continue in its decline. By Wren's computation in August, 1668, he found it to decline to the south twenty-seven inches and a half, and to the west seventeen inches and a half†. After this reparation by Wren, Thomas Naish, then clerk of the works, made similar experiments in 1681; and, after that, Mr. William Naish repeated them in 1736, and found no deviation. Thus far for Wren's great science, which kept this most splendid of our ancient spires to this day; and I doubt not but its investigation pervaded his mind, when composing that towering memorial of his taste and science, Bow steeple.

Although the various and important pursuits of Wren took him necessarily much away from the Royal Society, he still occupied a prominent situation in its proceedings. The first meeting this year, January 7, is occupied by Wren, who was the alpha and omega of art and science of the day. Mr. Oldenburg produced a letter from M. Huygens‡, the eminent French philosopher, dated Paris, January 5, accompanied with some papers of his, concerning the doctrine of motion. This letter and the other papers being read and discussed were ordered to be entered, the former in the letter book, and the latter in the register§. As

* Price, p. 68. † Ibid. p. 71.

‡ Letter Book of the Roy. Soc. Vol. IV. p. 10.

§ Book IV. p. 31. They are printed in the Philos. Trans. Vol. IV. No. 46. p. 925. for April, 1669.

also that copies should be made of those papers, and given to such members of the society who were conversant with the subject. The selection made was Dr. Wren, the Bishop of Salisbury (Dr. Seth Ward), Dr. Wallis, Dr. Pell, Dr. Croune, Mr. Neile and Mr. Hooke *.

At this meeting, Sir Paul Neile moved that Dr. Wren's hypothesis of motion, which was read on December 17 last, be printed in the Philosophical Transactions of this month, which was carried, and Mr. Oldenburg, the secretary, desired to take care that it be done accordingly †. Hooke, who appears every where as the ape of Wren, attempted an experiment on the same hypothesis, but failed ‡.

At the next meeting, an experiment was ordered to be tried at the following one, to verify Dr. Wren's theory of motion §; when he attended, proposed a member ‖, and had the copy of Huygens' Theory of Motion, presented to him according to a former vote. Several experiments were tried, tending to verify the theories of motion, communicated by Dr. Wren, and Mons. 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. Wren was desired to calculate some cases from his theory, to be verified at the next meeting ¶. At a subsequent meeting, Feb. 4, O. S. not the next as pro-

* Birch's Hist. Roy. Soc. Vol. II. p. 337.
† See pp. 239, 240, of this work.
‡ Birch's Hist. Roy. Soc. Vol. II. p. 338.
§ Ibid. p. 339. ‖ George Castle, M. D.
¶ Birch's Hist. Roy. Soc. Vol. II. p. 342.

posed, Wren's friend Dr. Castle was elected and admitted, and two experiments were made with balls, to verify Dr. Wren's laws of motion *. A letter † from Mons. Huygens, dated Paris, Feb. 6, N. S. was read, acknowledging Dr. Wren's laws of motion to be altogether conformable to his, and requesting to know what kind of demonstration Wren made use of to prove them by; proposing also a way of securing his discoveries, 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 fit to explain them in a common language; making at the same time beginning of this way of communicating new discoveries, by sending them the following cypher; which was ordered to be entered into the register book ‡.

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.

Dr. Wren, *extempore* §, says the historian ‖ of the Royal

* Namely, 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 *fere*.

2. Two unequal balls, which were in weight to one another, as eight to one, after the impulse moved with a proportionate velocity. Falling both from the same height 12 and 12, the bigger returned to $2\frac{1}{2}$, and the smaller to $11\frac{1}{2}$.

Falling both from $4\frac{1}{2}$, the bigger returned to $3\frac{1}{2}$, the smaller to $12\frac{1}{2}$.—*Birch's Hist. Roy. Soc.* Vol. II. p. 344.

† Letter Book of the Roy. Soc. Vol. III. p. 22.

‡ Vol. IV. p. 49.

§ Wren's fondness for combating the French philosophers was truly English, and he always beat them.

‖ Dr. Thomas Birch.

Society, presented the society with a cypher lately invented by him, which he desired might be sent by Mr. Oldenburg to Mons. Huygens, by way of exchange; and entered also in the society's register book *. Wren's cypher is 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 for the next meeting were again appointed to be upon the important hypothesis of motion, as propounded by Wren, who, with Dr. Croune, was desired to calculate several cases, according to their several hypotheses §.

It was not till the meeting on February 18 that the experiments on Wren's laws of motion, which, I trust, I am not assuming too much in thinking that they went a long way in forming the great hypotheses of his youthful cotemporary, the great Newton, were again tried. When they were prosecuted with elastic bodies, by which, says Birch, it appeared to some of

* Vol. IV. p. 49.

† Hooke, also, must have his cypher, complaining of piracy, if he communicated intelligibly, and presented the society with his invention of the spring pendulum, which has procured him the just distinction of inventor of the pocket watch, and his discovery of the important Calenarian curve in a cypher. The importance of the latter subject in constructive architecture induces me to give both his cypher, and a translation, if it may be so called, in Latin.

‡ The Parentalia, with its usual carelessness or contempt of correctness in dates, gives this invention, and quotes its authority erroneously as delivered to the society, February 4, 1668, instead of February 4, 1669.

§ Birch's Hist. Roy. Soc. Vol. II. p. 345.

the members, that the laws of motion, *established by* Dr. Wren, were best verified by the motion of the most elastic bodies; which experiments were ordered to be continued at the next meeting.

After slight and extemporaneous propositions, such as on Hooke's ingenious invention of pocket watches and pendulums, scarcely worth transcribing; we do not find Wren much at the society till the middle of June, owing to his architectual occupations in the longer days, and fine weather calling him to the setting out the new buildings, and arranging the new streets, and public thoroughfares of the city. On the 10th of this month, the report of the committee of the Royal Society, for improving Chelsea College, was laid before the council, at which Dr. Wren attended, and explained the model of his engine for grinding hyperbolical glasses. The paper demonstrative of this invention was ordered to be registered *. After other discussions, the secretary, Mr. Oldenburg, produced and read two papers, one of which in Latin was sent to him by a member of the society, who wished not to be named, containing some animadversions upon the rules of motion communicated to the society, and made public, by Dr. Christopher Wren, and Mons. Huygens †, namely, that

* Register Book of the Roy. Soc. Vol. IV. p. 51. It is published in the Phil. Trans. Vol. IV. No. 48, p. 961, for June, 1669.

"Generatio cylindroidis hyperbolici, elaborandis lentibus hyperbolicis accommodati." Philos. Trans. No. 48. Inventio machinæ, cujus beneficio lentes elaborentur hyperbolicæ cum fig. Philos. Trans. No. 53. Vide insuper Hist. Reg. Societ. per D^m. Sprat, Sect. XL. Part II.—Wren MS.

† Birch says, these communications were sent to Mr. Oldenburg, in a

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. Wren, who was present at this anonymous attack upon his hypothesis, declared *at once*, that he had foreseen and considered that consequence, 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 considered by the society* as

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 animadversions," added he, "desires to have his name concealed; his only design being to extort some experiment 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 reasons or experiments."—*Birch's Hist. Roy. Soc.* Vol. II. p. 381.

* At this discussion were, the President (Lord Brouncker), Lord Brereton, Mr. Aerskine, Sir Robert Moray, Sir Paul Neile, Sir George Ent, Sir Theodore de Vaux, Dr. Goddard, Mr. Evelyn, Mr. Colwall, Dr. Clarke, Mr. Henshaw, Mr. Hooke, Mr. Hoskyns, and Mr. Oldenburg; so there was no deficiency of talent at the investigation.

† This gentleman, a celebrated natural historian, was the son of Sir Francis Willughby, Knt. of Eresby, in Lincolnshire, and was born in 1635. He took his degree of A. B. at Trinity College, Cambridge, in 1656, and of A. M. in 1659. In 1660, he was residing at Oxford, for the benefit of the public library, and was elected a member of the Royal Society, the November of that year. After leaving Oxford, he travelled in search of natural knowledge several times over his native country; and afterwards visited France, Spain, Italy, Germany, and the Low Countries, attended by his friend, the able naturalist, John Ray. He died in July, 1672, aged only thirty-seven, to the great loss of the republic of letters, and much lamented by the Royal Society, of which he was an eminent member and ornament.—*Birch.*

very rational, it was ordered, that Mr. Oldenburg should be desired to acquaint the author of the animadversions with this answer of Dr. Wren, and to return to him the society's thanks for imparting those ingenious reflections 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 further disquisition *. At the next meeting, June 17, the society received by the hands of Mr. Oldenburg a dozen copies from Dr. Wallis of his new work, entitled Thomæ Hobbes *quadratura circuli, cubatio, sphereæ, duplicatio cubi, confutata* †. One of these books was for the society's library, another for the president, 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 ‡.

On July 8, Mr. Oldenburg read a paper from Mr. Willughby, dated June 21, 1669, from Middleton, in Warwickshire, concerning the circulation of sap in trees, and his thoughts of the experiments making out the rules of motion, given by Dr. Wren and Mons. Huygens §.

* Birch's Hist. Roy. Soc. Vol. II. p. 281.

† Published at Oxford, 1669, in 4to.

‡ Ibid. p. 382.

§ With regard to the laws of motion, as propounded by Wren, Mr. Willughby thus expresses himself:—"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, com-

On this, 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. Lawrence Rooke, and Dr. Wren *. Two letters from Mons. Huygens, on the same important subject which now occupied the attention of all the learned in Europe, were read at the meeting of October 11, dated Paris, August 10 †, and September 4 ‡, 1669, N. S. 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. Another letter § to Mr. Oldenburg, in Latin, was also produced and read from Mons. Slusius, dated Liege, August 16, 1669, N. S. commending Dr. Wren's invention and demonstration of the hyperbolic cycloid, and enlarging upon it. At the same meeting Wren was appointed, with the

municated 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

$$\overline{\overline{Qs-x}}\,R + \overline{Q\,R+x}^{S}\,\overline{QR+x}^{R} = Q.\,s+x+\overline{Q\,R-x}^{S}.$$

From thence may be 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*."

* Birch's Hist. Roy. Soc. Vol. II. p. 392.

† Letter Book of the Roy. Soc. Vol. III. p. 164.

‡ Ibid. p. 173.

§ Ibid. p. 167.

* Letter Book of the Roy. Soc. Vol. III. p. 108.

Bishops of Salisbury* and Chester†, Sir Robert Moray, Sir Paul Neile, Dr. Wallis, Dr. Goddard, and Mr. Hooke, or any three or more of them, to be a committee to consider of a way of determining the measure of a degree upon the earth; and were ordered to meet at the president's house, in Covent Garden, on the Monday following, and to make a report to the society, when they shall have concluded any thing upon the subject. In fact, Wren's name is to be found in every really important business of the society.

At the annual election for officers, on November 30, Wren was again elected a member of the new council‡; and at the next meeting, on December 2, Mr. Hooke presented to the society a picture, painted after an expeditious manner invented by Wren, who having covered a very thin brass plate with etching varnish, and caused it to be etched very carefully, he then corroded, or bit the plate quite through with strong aquafortis; which done, the plate was turned over and laid upon another thick plate covered with printing ink, and passed after the usual manner through the printing press§. Such were among the occupations of the leisure of this great man, even when occupied in architectural engagements of the greatest importance.

WREN's public life, this year, was crowned with many and deserved honours. He pursued his great works of rebuilding the city, and his various buildings at Oxford and Cambridge, with

* Dr. Seth Ward. † Dr. Wilkins.
‡ Birch's Hist. Roy. Soc. Vol. II. p. 406. § Ibid. p. 409.

unexampled vigour and activity. In March, only a few months after completing his thirty-sixth year, he received from the king his appointment as surveyor-general, in room of Sir John Denham, who died this month*. He also completed his machine, or instrument for drawing the outlines of any object in perspective, which was deposited among the models of the Royal Society, and described with a plate in their Transactions †.

During the progress of these great works, there being a deficiency of good Portland stone in the metropolis, it was represented to the king in council, who issued a proclamation, dated Whitehall, May 4, 1669 ‡, forbidding any person to trans-

* See page 240 of this work, for corrections of erroneous dates in the Parentalia, about this event.

† Philos. Trans. No. 45, p. 898, for March, 1669. This instrument is composed of a drawing board, fixed perpendicularly on a solid stand. A rule with a pencil, moveable as a parallelogram on pulleys at the angles, and centre balanced by a weight, draws the outlines, by the artist looking through a fixed eye-hole and moving a point or style over the outline of the object viewed. It appears a clever, useful, and feasible instrument, which I purpose trying at no very distant period.

‡ "CHARLES REX.

"Whereas, we are informed, that there hath been for many years past great waste made of our stone in the Isle of Portland, and thereby our peer there is not only impaired, and decayed, but the price of stone much inhansed; in consideration of w^{ch}, and the great occasion wee have of using much of the said stone, both for the building and repairing our houses, and for the repaire of St. Paul's, our pleasure is, and wee doe by these presents will and require all persons whatsoever, that they forbeare to transport any more stone from our Isle of Portland, without the leave and warrant first obteyned from Dr. Christopher Wren, surveyor of our works, as formerly hath been accustomed in that behalf. Whereof all persons

port any more from the isle of Portland, without leave from the surveyor-general, who appeared determined to conduct his high office with the utmost zeal and ability.

The public theatre at Oxford, called the Sheldonian, began from the designs of Wren, in 1663*, was opened with great

concerned are to take notice and conforme accordingly; and in default thereof, the governor of our castle of Portland, and all justices of peace, constables, and other our officers, are to afford you their ready assistance in the execution and performance of those our commands. And for soe doeing, this shall be sufficient warrant. Given at our court, at Whitehall, the 4th day of May, in the 21st yeare of our reigne, 1669.

"By his Majesty's commands,

"ARLINGTON*."

* Vide p. 132 of this work. At this splendid opening of Wren's first architectural work, his amiable friend, John Evelyn, was present. In his diary he writes, "In the morning was celebrated the *Encenia* of the new theatre, so magnificently built by the munificence of Dr. Gilbert Sheldon, Archbishop of Canterbury, in which was spent £25,000, as Sir Christopher Wren†, the architect, as I remember told me; and yet it was never seen by its benefactor, my lord archbishop having told me that he never did nor ever would see it. It is in truth a fabric comparable to any of this kind of former ages, and doubtless exceeding any of the present, as this university does for colleges, libraries, schools, students and order, all the universities in the world. This being at the act, and the first time of opening the theatre, (acts being formerly kept in St. Mary's church, which might be thought indecent, that being a place set apart for the immediate worship of God, and was the inducement for building this noble pile) it was now resolved to

* From an original MS. in my possession. J. E.—N. B. This and many other important documents in this work are quoted from a folio manuscript book of orders, and proceedings of the privy council, which contains many valuable autographs, &c. belonging to the author of this work. When quoted, it will be distinguished as "PRIVY COUNCIL MS."

† July 9, 1669. This must have been written after 1674, as Wren was not knighted till that year, and consequently throws some doubt on this being an original entry of the date.

pomp and ceremony on July 9, and followed by a splendid act. The munificent founder, Gilbert Sheldon, Archbishop of Canter-

keep the present act in it, and celebrate its dedication with the greatest splendour and formality that might be, and therefore drew a world of strangers and other company to the university from all parts of the nation.

"The vice chancellor, heads of houses, and doctors, being seated in magisterial seats, the vice chancellor's chair and desk, proctors, &c. covered with brocatale (a sort of brocade) and cloth of gold, the university registrar read the founder's grant of it, and gift to the university for their scholastic exercises upon these solemn occasions. Then followed Dr. South*, the

* This able man and fearless orator commenced his career of independence, by praying for King Charles I. by name, on the morning of his decollation, at Westminster school, when only fifteen years of age. At his commencement of M. A. in 1657, he performed all the preparatory exercises with the highest applause, and with such wit and humour, as justly entitled him to represent the *terra filius*, in which character he spoke the usual speech at the celebration of the same year. This circumstance probably led him to cultivate his talents as a wit and satirist; of which Evelyn here complains, who is not the only one, besides Anthony Wood, who appears prejudiced against the witty and satirical preacher. Wood's dislike of South is said to have arisen from an ill-timed joke of the latter, when complained to by Wood of a disorder which much afflicted him, and occasioned his death, namely a species of stranguary; South replied, if you cannot make *water*, you must make *earth*. South's nature and temper were violent, domineering and intractable; and although, in preaching before Charles II., he demeaned himself to ask from the pulpit, "Who that beheld that bankrupt, beggarly fellow, Cromwell, first entering the parliament house, with a thread-bare torn cloak, greasy hat, perhaps neither of them paid, could have suspected that in the space of so few years he should, by murder of one king and the banishment of another, ascend the throne?" he received no considerable preferment, and did not become, as he anticipated, a bishop. The king, on hearing this, is said to have fallen into a violent fit of laughter, and turning to Laurence Hyde, Lord Rochester, South's patron, said, "Odds fish, Lorrey, your chaplain must be a bishop, therefore put me in mind of him at the next death." His conduct on another similar occasion is more creditable to his character, and more like his boldness at school. During this sermon, perceiving the king and some of his court asleep, he stopped, and changed the tone of his voice, calling three times aloud to Lord Lauderdale, whom he addressed, as soon as he had awakened him, with "My lord! I am sorry to interrupt your repose, but I must beg you will not snore quite so loud, lest you should awaken his majesty," and then calmly continued his discourse.—KENNET'S MSS. *in the Brit. Mus.*

His wit indeed, says Chalmers, was his bane, for he could never repress it on the most solemn

bury, honoured the scientific architect with the present of a golden cup; and, by his statutes, appointed him, jointly with the vice-chancellor, perpetual curator of the fabric *.

The ceremony of opening the theatre, performing the act, preaching the sermon, &c. at St. Mary's Church, lasted from the 9th to the 12th. On the second day were performed the more solemn lectures in all their faculties, and the assembly returned to the theatre, where the *terræ filius*, whom Evelyn, with much indignation, calls the University buffoon, entertained the auditory, with what he complains of as personal ribaldry, and licentious lying, rather than genuine and noble wit. Evelyn, however, was not a wit, and had no tact for humour.

university's orator, in an elegant speech, which was very long, and not without some malicious and indecent reflections on the royal society, as underminers of the university, which was very foolish and untrue, as well as unseasonable. But to let that pass from an illnatured man, the rest was in praise of the archbishop, and the ingenious architect. This ended, after the loud music from the corridor above, where an organ was placed, there followed divers panegyric speeches both in prose and verse, interchangeable, pronounced by the young students, placed in the rostrums, in Pindarics, eclogues, heroics, &c. mingled with excellent music, vocal and instrumental, to entertain the ladies and the rest of the company. A speech was then made in praise of academical learning. This lasted from eleven in the morning till seven at night, which was concluded with ringing of bells, and universal joy and feasting."—*Evelyn's Diary*, Vol. I. p. 420.

* Parentalia, p. 337.

occasions, and preaching may surely be reckoned one of those. Of this he seemed to be aware, for when Dr. Sherlock accused him of employing wit in his controversy with that divine on the doctrine of the Trinity, he replied, " had it pleased God to have made you a wit, I wish to know what you would have done."—*Chalmers' Biog. Dict.*

The Royal Exchange, designed and superintended by Wren, was opened this year, on September 28. This building, which is situate in Cornhill, was originally built in 1557, by Sir Thomas Gresham; and named by Queen Elizabeth, on a visit to it, January 23, 1570, the Royal Exchange, after dining with the worthy citizen at his house in Bishopsgate-street *. It was formerly known by the name of the Bourse, and was built after the plan of that at Antwerp, which it still much resembles: Wren appearing, in this instance, more in the light of a tasteful restorer, than in that of an original designer. This building was destroyed at the great fire; but was quickly rebuilt, and the statues of the kings and of Sir Thomas Gresham restored as before. Stow says he was informed by Thomas Blackmore, a judicious citizen and mercer, that the new structure cost the city and the company of mercers the sum of eighty thousand pounds. The plan was shown to the king, who approved it; and it was executed in the manner we now see it, except the new campanile, by my friend, Mr. George Smith, the architect to the Mercer's Company †.

On the day appointed for the opening of the new Royal

* Stow, p. 135.

† Whether the new tower be in better taste than the old one, is not the question; but it was more accordant with the rest of the building, and marked the taste of the age. Mr. Smith was, I think, wrong in seeking criticism by his new design; which becomes the ancient building, as the fur cap of a lancer would a venerable bishop, and alters the whole character of the building. Mr. Cockerell, Jun., might, with as much propriety, have designed a new ball and cross to St. Paul's Cathedral, in his judicious restoration last year.

Exchange *, a committee of merchants and citizens assembled to meet the king, who was expected to have performed the ceremony of opening it in person. His majesty, however, did not come; but the lord mayor, Sir William Turner, walked twice in procession round it, and congratulated the merchants upon having their exchange again. Its destruction and rebuilding were thus recorded:—

Hoc Greshamii peristylium,
Gentium commerciis sacrum,
Flammis extinctum 1666.
Augustius è cinere resurrexit 1669.
Will°. Turnero Milite Prætore.

Wren's communications to the Royal Society in 1670 became, from the urgent nature of his public engagements, necessarily fewer in number. Yet he did not neglect them, nor omit adding to their stock of useful practical knowledge. In January, Mons. Huygens again sent a communication to the society concerning Wren's theory of hyperbolical glasses, and Hooke made some pertinent observations thereon †. It may be observed, that the papers presented to the society by Wren had hitherto been mostly mathematical and speculative. His practical pursuits as an architect now led him to practical subjects, and the results were accordingly. On May 5, he produced, before a general meeting of the society, a new contrivance of machinery, for

* September 28, 1669. † Birch's Hist. Roy. Soc. Vol. II. p. 416.

a more convenient mode of winding up weights by ropes; serving for wells, mines, and cranes, and, as he thought, also for clocks. He had considered, that the ways till then used in all engines for winding up weights by ropes were but two; namely, 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, after repeated experiments, 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. To prevent both these inconveniences, Wren 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. The society approving the hint as to its application to clocks, desired Mr. Hooke to make trial of it*. At a subsequent meeting on May 19, the society ordered that a weather-cock should be bespoken by Mr. Hooke, of the sort designed by Dr. Wren†; for observing not only the winds and

* Birch's Hist. Roy. Soc. Vol. II. p. 435.

† See page 150 of this work.

their quarters and degrees of strength, but also the quantities of rain, and other particulars relating to the temperature of the air*. On June 9, Wren, who is specially recorded in the journals of the society, as " his Majesty's surveyor," with a note, that he had been appointed to that office in the room of their late member, Sir John Denham, who died in March, 1669, mentioned to the society, that in the survey which he had made of the old and new river of Ware, in Hertfordshire, there had been an estimate made by him of the quantity of the water which they hold, by the velocity and solidity of the rivers †. He continued his attendances upon the society and council even during the busy month of June, as we find two entries on its journals, of his moving and being asked concerning disposing of the society's property of Chelsea College.

To further the rebuilding of the city and the metropolitan cathedral, an additional act of parliament was passed this year; when two shillings per chaldron more were granted, from May 1, 1670; and the twelve-pence per chaldron granted by the former act was continued to September 29, 1687. One moiety of the three shillings thus granted was to be for the use of the city, the other moiety for rebuilding parochial churches, and the cathedral of St. Paul, in these proportions; three-fourths of the moiety, or thirteen-pence halfpenny per chaldron, for the churches; and one-fourth, or four-pence halfpenny, for St. Paul's. The act having also a borrowing clause, by which any part or parts of the sums so arising from the coal-duty were allowed to be lent

* Birch's Hist. Roy. Soc. Vol. II. p. 436. † Ibid. p. 440.

as security for any sum or sums of money, borrowed by the commissioners for the purposes directed by the act *.

These great works continued to occupy the time and attention of Wren, who paid the most unremitted attention to his important undertakings. The western entrance gate to London, known by the name of Temple Bar, was begun this year from his designs, and finished in two years †. Among Wren's other plans for the improvement of the city, was the constructing a splendid quay from London bridge to the Temple, alluded to in a former part of this work. In furtherance of this object, he made a regular survey and report to the privy council upon the subject ‡. He continued to order every possible conveniency,

* Ellis's Dugdale, p. 169.

† See the inscription on the eastern side :—" Erected in the year 1670, Sir Samuel Starling, Mayor ; continued in the year 1671, Sir Richard Ford, Lord Mayor ; and finished in the year 1672, Sir George Waterman, Lord Mayor."

‡ The following important documents are from the manuscript book in my possession, alluded to in page 270 of this work ; and will serve, together with the note in page 223, to prove the right of the public to the way so unjustly stopped up.

" At the Court at Whitehall, January 25, 1670.

Present,

The King's most excellent Majesty,

Lord Archbishop of Canterbury,	Earle of Lauderdale,
Earle of Ogle,	Lord Arlington,
Lord Chamberlaine,	Lord Ashley,
Earle of Bridgewater,	Mr. Treasurer,
Earle of Sandwich,	Mr. Secretary Trevor,
Earle of Craven,	Sir John Duncombe.

" Upon reading this day at the board the humble petition of Captain William Clerke, and divers other inhabitants near London-bridge, setting

and to remove every obstruction that presented itself to the accomplishment of his great object, that of rendering London the finest metropolis in Europe.

forth, that by act of parliament there is to be left forty feet between the Thames and the houses for a wharfe, all the way from London bridge to Bridewell dock. That the petitioners, in confidence thereof, have ordered their several buildings near London bridge, and have also ordered the pipes, and other engines of the water-house there, that if the same wharfe shall not continue, it will be of great detriment to them; that before the fire a common laystall and necessary house was there, and was by the gully hole on the west side of the bridge; which in prospect to the said wharfe, and for that it would be a great mischief to the water-house, the Commissioners of Sewers have ordered to be forborne hereafter, and have caused the petitioners to make up the street and wharfe accordingly, *which they have done.* That his Majesty's Surveighor Generall hath divers times viewed the said place, and directed that no laystall or other house of filth to be there erected. Nevertheless, divers persons *(viz. the alderman of the ward, and others), for their private conveniences, doe begin to make the same a laystall,* and will thereby poyson the water house, and very much annoy the passage on the Thames, and be otherwise infectious to the city. It was fit and necessary, and accordingly ordered by his Majesty in councill, that as well the alderman of the ward, as all other persons concerned, doe forbeare making the said laystall: and if they have laid any filth there, that they cause the same immediately to be removed; and that CHRISTOPHER WREN, Esquire, Surveighor Generall, *doe speedily surveigh the said place, and report* to his Majesty in councill how he finds the same.

" EDW. WALKER."

Wren's report was as follows, and is copied verbatim from the same manuscript.

" May it please your Majesty,

" In obedience to your Majesty's commands in council, of January 25, 1670, *I viewed the key upon the river of Thames.* The lord mayor having

The year 1671 was an active year in the life of Wren. His situation as architect in chief to the crown, as surveyor-general,

enjoyned the city surveighors to attend and assist for fuller information; and, beginning from the Temple, I proceeded all along the wharfe to London Bridge, and found the state and condition of the wharfe to be such as is here humbly represented.

" First.—The houses already built fronting the Thames, which are not as yet a third part in number of what the range will containe, are generally conformable as to distance of forty foot from the river, and some higher toward the bridge are not ungracefull; but many of them are unequally built, and far enough from that decency and uniformity which is elsewhere observed; and in the very range are irregular houses and warehouses, and some houses built of boards for habitation.

" The key, or distance of forty feet between the rowe of houses and the river, which should have been left free and open for passage, according to act of parliament, is yet every where enclosed either with pales or brick walls, and filled with piles of timber, billetts, faggotts, and heaps of coals; many boarded sheds are erected since the additional act of parliament, besides the old towers of Baynard's Castle standing upon the wharfe, and besides the many sheds first erected by permission for present use, soon after the fire.

" The cranes built west of the bridge are generally very unhandsome, being greater than necessary, and boarded down to the ground, with warehouses under them; and unlesse they be regulated as to the number, form, and situation of them, will be a great deformity, *and frustrate all intentions* of an open graceful key.

" The walls, wharfings, and landing staires, for the most part are yet unrepaired, and want much regulation.

" In some places the houses are so built that notwithstanding the fourty foot left, the passage of the key will be entirely cut off without bridges over the docks.

" To say nothing of houses of office standing over the river, five great laystalls adorne the wharfe; one at the end of the key, obstructing the in-

and to the metropolis, demanded and received all his energies. The school of philosophers, of which he was one of the founders,

tended way from the key to the bridge, along by the water house, a passage which will be extreamly necessary.

"Such is the present condition of the wharfe, which, according to the additional act for rebuilding, should have been long since cleared; and the time being elapsed, I humbly crave the liberty to represent that the best time to move off the great pyles of fewell will, I conceive, be before the beginning of May next, which time the new stores begin to come in, and repaire what the winter exhausted. A particular schedule of the most obvious enormities is hereto annexed, and is all humbly submitted to your Majesty's wisdome and consideration.

"C. W."

Then follows "A list of the most remarkable obstructions which were found upon the key, between the Temple and London Bridge, at a view taken by his Majesty's commands, January 28, 1670." In this list are many new sheds, and other new buildings; the two towers of Baynard Castle are reported as substantially repaired for habitation. They are all enumerated with great accuracy, and were subsequently ordered to be removed.—Privy Council *MS.*

The history of the attempt to remove these obstructions to the quay, as left by Sir Christopher Wren, is nearly as follows, and may be relied upon as authentic; the author of this work having attended most of the committees of the house of peers upon the business, and was mainly instrumental in calling the attention of the Earl of Blessington to the bill alluded to, who procured the additional clause, reserving public rights, and which still leaves hopes of our beautiful river being embellished with handsome commercial quays, from London-bridge to the Temple. The eminent services of Thomas Saunders, Esq., the solicitor to the ward, will not soon be obliterated from the memory of his fellow-citizens. The extensive brewery and dwelling-house of Messrs. Calvert and Co. are erected on part of the site of that once magnificent structure, Cold Harbour, and the more recent

was proceeding with energy; and one of its most illustrious members, Newton, was now a tyro, seeking knowledge wherever

building, Waterman's Hall. These new erections occasioned great complaints to be made by the neighbouring inhabitants, on account of what, in their opinion, had been a gradual encroachment on the public highway, along the wharfs by the banks of the Thames, and a trespass on their general rights, founded on the king's proclamation of September, 1666, and the act of parliament, 19 Car. II., for rebuilding the city of London, after the dreadful fire of 1666, as before quoted. By an additional act, in the same reign, 1670, it is enacted that, for the benefit and accommodation of trade, and for other great conveniences, founded on Sir Christopher's report, quoted in page 279, "*there shall be left a continued tract of ground all along, from London-bridge to the Temple*, of the breadth of forty feet of assize, from the north side of the river of Thames, to be converted to a key, or public and open wharf; and that, in order thereto, all buildings, sheds, pales, walls, enclosures, and other obstructions and impediments whatsoever then standing, or being within forty feet northward of the said river of Thames, between the places aforesaid, (cranes, stairs, and docks only, excepted), should, within eight months then next ensuing, be taken down and removed, and the said ground cleared and levelled; and that from thenceforth there should be no building or erection whatsoever, (except only cranes, stairs, and docks, as aforesaid), placed, or set within, or upon, the said forty feet of ground, or any part thereof, between the places aforesaid."

After many years' remonstrance on the part of the inhabitants of the ward of Dowgate, they set forth their complaint in a petition to the honorable the commissioners of sewers of the city of London, showing, "That a considerable part of what has heretofore been used by the public as a common highway, along the banks of the river Thames, in Dowgate ward, has recently been enclosed with a wood paling, by the owners of the adjoining property, Messrs. Calvert and Co. and others, leaving to the public a narrow enclosed foot-path; whereas, during the memory of the oldest inhabitants, and supported by the inquest presentments of a more

it was to be found, and carrying on the discoveries elicited and pointed out by the supreme trio of the society, BOYLE, WREN,

remote period, nearly the whole space now enclosed has always been used and considered as a public highway, for the purpose of perambulation and fresh air, as well as for the convenience of the neighbours in other respects; the right of the possessors of the adjacent property to land over the surface of the ground not being questioned."

This was presented and read, February 20, 1821; when the court of sewers determined, by a majority of fifteen to four, to confirm a report of their select committee, stating, that it was desirable the encroachment should be removed.

On the following day, Wednesday, February 21, 1821, Mr. Charles Calvert, one of the partners in the firm herein complained of, in the House of Commons, gave notice of a motion for Monday next, for leave to bring in a bill to repeal so much of the act of 22 Car. II. as prevents the proprietors of wharfs, between London-bridge and the Temple, from raising any wall or paling, or other erection, on the banks of the river. And on July 10, 1821, an act passed both houses, to repeal so much of an act of the twenty-second year of his majesty King Charles the Second as restrains the proprietors of wharfs, between London-bridge and the Temple, from erecting any buildings or enclosures thereon; whether for the benefit of trade and the public, or the convenience of individuals, it is left to every impartial mind to judge. The act, however, includes the following important clause, added by a committee of the inhabitants, aided by the city solicitor and remembrancer, and their own solicitor, T. Saunders, Esq., on the motion of the Earl of Blessington:

"That nothing in this Act contained shall extend, or be construed to extend in any manner, to take away, abrogate, injure, or affect, any right or claim to, or in respect of, any public way, street, wharf, or stairs, or any other right, claim, or interest, belonging to, or claimed by, the corporation of the City of London, or the proprietors of the London-bridge waterworks, or any person or persons whatsoever; other than, and except, any claim which might or may be made, or arise from, under, or by virtue of,

and Hooke, who were, perhaps, the greatest contributors to useful science which Europe ever produced.

the said recited Act," (22 Car. II. c. 11). In consequence of which clause it is apprehended, that any street, passage, or right of way, established by usage for the length of time required by law, is still protected for the benefit of the public: and it will also be observed, that Cold Harbour was declared by the requisite authority as a street, or lane of note, prior to the passing of the 3d Act of 22 Charles II. c. 11.

The brewery of Messrs. Calvert and Co. also now forms each side of the way in Champion-lane, anciently Hay-wharf-lane, (adjoining Cold Harbour), and was a common street and way to the church of Allhallows the Great, as well as Allhallows-lane, formerly called Church-lane; each of these streets or lanes, together with Red-bull-lane, on the east side of Cold harbour, were likewise declared streets, or lanes of note, and were formerly open from Thames-street to the river, and the quay of forty feet in width; which, from the steel-yard to London-bridge, was long denominated " The new Quay," and is delineated in the maps to Maitland's and other Histories of London. This " new quay" was the last remnant of any consequence of that noble design formed by Sir Christopher Wren, Mr. Evelyn, and others, (assisted by the before-mentioned enactments of the legislature), and intended to render the north bank of the river, as far as the fire of London had extended, truly useful and ornamental, and upon which Sir Christopher Wren made a special report to the king in council, January 25, 1670, before quoted; but which, from the negligence of those who ought to have preserved so great an object of public benefit, is now nearly annihilated.

The contest for this great and beneficial public right will, it is hoped, be resumed, either by the city, as a corporation, or by the great body of the livery at large. The exertions of the few inhabitants of the ward, in which these encroachments are made, at a great expense of time, talents, and money, are beyond my feeble praise, and deserve the thanks and support of their fellow-citizens, for throwing the important clause, reserving public

King and subject were alike employed in communicating and investigating philosophical discoveries. The story of Charles's propounding to the society the question of which weighed most, a fish alive, or the same fish when dead, is well known; but the monarch could sometimes, as in one of the earliest meetings this year, seriously engage with his society. Sir Robert Moray mentioned at the meeting of January 12, that the king had laid a wager of fifty pounds to five, on the compression of air by water. The worthy baronet was too loyal a subject to win of his majesty, and acknowledged that their royal patron had won the wager *. Sir Robert, however, 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

rights, between the city and the pestilence. The following section (47) of the said last-mentioned act relates to the mode in which satisfaction is to be made for the ground employed for the said public wharf; and the reader of the whole of the act will be well satisfied of the excellent and beneficial intent of its provisions, as well in regard to the said wharf, as the rebuilding of the city, and its churches and edifices generally. "King Charles the Second, by his letters patent, dated December 4, in the twenty-third year of his reign, approved of the module, form, or draught, of the intended key, and public and open wharf, (of which a plan is annexed to the letters patent), and granted to the *mayor, commonnalty, and citizens of London, and their successors, all that his ground and soyle whatsoever, which was, should, or might be taken in, from, and out of his River Thames, to the intent to make the line between London-bridge and the Temple uniform and regular, according to the said module, form, and draught.*"

* Birch's Hist. Roy. Soc. Vol. II. p. 463.

and more water, according as it should be sunk deeper and deeper into it. Mr. Hooke, as usual, was ordered to make the experiments *.

At this meeting Mr. Oldenburg mentioned, that Dr. Wren had a demonstration of a line of an arch, for supporting any weight assigned; and at the next (January 19) Wren attended, and delivered to the president his demonstration of what line it is, that an arch, fit to sustain any assigned weight, makes. The president was desired to examine it, and to give an account to the society †. On March 23, Wren was appointed, with Mr. Boyle, Dr. Wallis, and Mr. Hooke, to peruse, consider, and report to the society, their sense of a book which had been dedicated to their body, by Leibnitz; containing a short account of what *he thought* to be a *new* physical hypothesis of his, for solving the phœnomena of nature, of which he had sent a portion printed, and desired their judgment ‡.

Manifold and important as were the engagements of the surveyor-general, the society could not spare him from their councils. He was, at the meeting of April 13, appointed, with his indefatigable friend, Hooke, and the president of the society, to determine the most proper figure, or portion of the sphere or parabola, that is sufficient to make all the rays meet in a point;

* Birch's Hist. Roy. Soc. Vol. II. p. 463. † Ibid.

‡ The title of this work is—" Hypothesis physica nova, quâ phœnomenûm naturæ plerorumque causæ ab unico quodam universali motu in globo nostro supposito, neque Tychonicis neque Copernicanis aspernando, repetuntur."—Published at Mentz, 1671. It was republished in London, in 12mo. in the same year, and is there entitled—" Hypothesis physica nova, sive theoria motûs concreti, una cum theoria motûs abstracti."

for a burning concave to be formed of several pieces of glass, lined with a mixture of mercury and lead, and put together on the concave side of some hemispherical body of lead *. On May 4, a paper having been received from Mons. Mariotte, a member of the Royal Academy of Sciences, of Paris, concerning the science of levelling, and on some new methods of performing its operations, written in French, the author requesting, in a letter written by Mons. Justel, dated April 29, 1671, that it might be communicated to the Royal Society; the manuscript was delivered to Dr. Wren, as the most competent member; who was desired to examine it, and to report his opinions upon it to the society †. At a subsequent meeting, May 11, the surveyor-general was appointed one of a committee concerning the society's property in Chelsea College; and being present, had Mons. Mariotte's manuscript handed to him for his opinions ‡. At the last meeting of the society this year, Mr. Isaac Newton, professor of mathematics in the university of Cambridge, is recorded as being proposed candidate for admission into the society by the Lord Bishop of Salisbury §.

This year Wren commenced his great Doric fluted column on Fish-street-hill, called *the monument* ‖. It was erected in pursuance of an act of parliament ¶, in commemoration of the conflagration and rebuilding of the city and its public edifices.

* Birch's Hist. Roy. Soc. Vol. II. p. 477. † Ibid. p. 479.

‡ Ibid. p. 481. § Ibid. p. 501.

‖ "1671 ad 1677. Structuram columnæ colosseæ speculatoriæ Londinensis, ex ordine Dorico, inchoavit et perfecit."—WREN *MS.*

¶ Strype, p. 180.

The site on which this loftiest of commemorative columns is erected was that whereon the ancient church of St. Margaret, New Fish-street, stood before the fire; which is about one hundred and thirty feet from the spot where that calamity began. It stands on the eastern side of the street, on a Palladian pedestal, of about twenty-one feet square, the plinth being twenty-seven feet. Its entire height from the pavement is two hundred and two feet, which is nearly thirty feet higher than that of Antoninus at Rome; and is not only the highest, but also the finest isolated column in the world. Its bottom diameter on the upper part of the base is fifteen feet, and contains in its shaft a staircase of black marble, consisting of three hundred and forty-five steps. On the abacus is a balcony, encompassing a moulded cylinder, which supports a flaming vase of gilt bronze. As was usual with Wren, many improvements took place during the progress of the works; and various designs were made for its execution, but none equal to its present appearance *.

* Among the collection of Sir Christopher's designs, in the library of All Soul's College, Oxford, is one numbered 73, volume two, in the catalogue made by me, and published in the General Chronicle for October, 1812, which has sculptured flames of gilt bronze issuing from apertures in its shaft, like the rostral columns of the Romans; and on its apex, a phœnix, also of gilt bronze; for which common-places the architect has wisely substituted the more sensible flutes, and blazing urn. At one time he proposed erecting a statue of King Charles II. on its summit, for the omission of which, and the substitution of the present finial, the following letter, transcribed from the original, in the possession of Mr. Upcott, of the London Institution, gives the architect's own reasons.

"In pursuance of an order of the committee for city lands, I doe here-

This columnar monument was in hand from 1671 to 1677, a period considered too long for such a work. This delay was

with offer the several designes which some monthes since I shewed his Majestie, for his approbation; who was then pleased to thinke a large ball of metall gilt would be most agreeable, in regard it would give an ornament to the town, at a very great distance; not that his Majestie disliked a statue; and if any proposal of this sort be more acceptable to the city, I shall most readily represent the same to his Majestie.

"I cannot but comend a large statue, as carrying much dignitie with it; and that which would be more vallueable in the eyes of forreiners and strangers. It hath been proposed to cast such a one in brasse, of twelve foot high, for £1000. I hope (if it be allowed) wee may find those who will cast a figure for that money, of fifteen foot high, which will suit the greatnesse of the pillar, and is (as I take it) the largest at this day extant; and this would undoubtedly bee the noblest finishing that can be found answerable to soe goodly a worke, in all men's judgments.

"A ball of copper, nine foot diameter, cast in severall pieces, with the flames and gilt, may well be done, with the iron worke and fixing, for £350; and this will be most acceptable of any thing inferior to a statue, by reason of the good appearance at distance, and because one may goe up into it, and upon occasion use it for fireworks.

"A phœnix was at first thought of, and is the ornament in the wooden modell of the pillar, which I caused to be made before it was begun; but, upon second thoughtes, I rejected it, because it will be costly, not easily understood at that highth, and worse understood at a distance; and lastly, dangerous by reason of the sayle the spread winges will carry in the winde.

"The balcony must be made of substantiall well forged worke, there being noe need, at that distance, of filed worke; and I suppose (for I cannot exactly guesse the weight), it may be well performed and fixed, according to a good designe, for fourscore and ten poundes, including painting. All which is humbly submitted to your consideration.

(Signed) "CHRISTOPHER WREN."

"July 28, 1675."

occasioned by the scarcity of stone of good quality and sufficient dimensions for the work, which was remedied on the complaint of the surveyor-general, by the proclamation quoted in page 269.

The work was at length completed, and may be justly reckoned the finest column of its kind in the world. It was at first used by the members of the Royal Society for astronomical experiments; but was abandoned on account of its vibrations being too great for the nicety required in their observations. This occasioned a report that it was unsafe; but its scientific construction may bid defiance to the attacks of all but earthquakes, for centuries to come.

The basso rilievo, on the west side or front of the pedestal, representing the king affording protection to the desolated city, and freedom to its rebuilders and inhabitants, is sculptured in a sufficiently rude and gross style by Cibber; who in his maniacs on the portal of Bedlam soared almost to the sublime. Charles is bewigged and be-Romanized; scaffold poles support Portland stone clouds, and solid genii float bisected with joints of mortar as thick as their fingers. The scaffolding, ladders, and hodmen, have been admired for years, and record the dresses of the labourers with more fidelity than those of the monarch and his architect *.

* The following curious piece of cotemporary scandal is taken from the London Spy.

"Now, says my friend, I'll show you a towering edifice, erected through the wisdom and honesty of the city, as a very *high* memorandum of its being laid *low*, either by a judgment from heaven, for the sins of the people, or by the treachery of the papists, according to the inscription of the Monument, who, I suppose, is as ignorant of the matter as myself; for that

The other three sides of the pedestal are covered with inscriptions in the Latin language, for the information of the citizens; that

was neither built then, or I born; so I believe we are equally as able to tell the truth of the story, as a quack astrologer is, by the assistance of the signs and planets, what was the name of Moses's great grandfather, or how many quarts of water went to the world's drowning. You will be mightily pleased with the loftiness of this slender column; for its very height was the first thing that ever occasioned wry necks in England, by the people's staring at the top of it. To the glory of the city, and the everlasting reputation of the worthy projectors of this high and mighty Babel, it was more ostentatiously than honestly built, by the poor *orphans' money*, many of them since having begged their bread; and the city have here given them a stone. Look ye, now you may see it; pray view, and give me your opinion.

"What! is it of no use, but only to gaze at? Yes, yes, says my friend, astrologers go often to the top on't, when they have a mind to play the pimp, and see Mars and Venus in conjunction; though the chief use of it is for the improvement of vintners' boys and drawers, who come every week to exercise their supporters, and learn the tavern trip, by running up to the balcony and down again, which fixes them in a nimble step, and makes them rare light-heeled emissaries in a month's practice. Do you observe the carving which contains the king and his brother's pictures? They were cut by an eminent artist, and are looked upon by a great many impartial judges to be a couple of extraordinary good figures. Pray what think you? Why truly, said I, they are the only grace and ornament of the building; but 'tis a thousand pities the stones, formed into so noble order, should be so basely purchased, to the ruin of so many thousand fatherless and widows; but I suppose it was politically done, to fix the king's effigies, as a testimonial of their loyalty, upon a structure so unjustly raised, that the one might in some measure wash away the stain of the other." And much more in a similar strain, which, I doubt not, was the cry of the city scandal club. The Spy concludes it to be "a monument to the city's shame, the orphan's grief, the protestant's pride, and the papist's scandal; serving only as a high-crowned hat to the old fellow that shows it."—London Spy, p. 57.

on the north describes the conflagration of the metropolis, that on the south its restoration, and that on the east the years and persons under whom the works were commenced, continued, and brought to perfection *.

* The inscription on the north side is as follows:—

" ANNO CHRISTI CIↃDCLXVI. DIE IV. NONIS SEPTEMBRIS
HVIC IN ORIENTEM PEDVM CCII. INTERVALLO QVÆ EST
HVIVSQVE COLVMNÆ ALTITVDO ERVPIT DE MEDIA NOCTE
INCENDIVM QVOD VENTO SPIRANTE HAVSIT ETIAM LONGINQVA
ET PARTES PER OMNES POPVLABANDVM FEREBATVR
CVM IMPETV ET FRAGORE INCREDIBILI XXCIX. TEMPLA
PORTAS PRÆTORIVM ÆDES PVBLICAS PTOCHOTROPHIA
SCHOLAS BIBLIOTHECAS INSVLARVM MAGNVM NVMERVM
DOMVVM CCIↃↃOOOOOOOCC. VICOS CD. ABSVMPSIT
DE XXVI. REGIONIBVS XV. FVNDITVS DELEVIT ALIAS VIII. LACERAS
ET SEMI-VSTAS RELIQVIT . VRBIS CADAVER AD CDXXXVI. JVGERA
HINC AB ARCE PER THAMISIS RIPAM AD TEMPLARIORVM FANUM
ILLINC AB EVRO AQVILONALI PORTA SECVNDVM MVROS
AD FOSSÆ FLETANÆ CAPVT PERREXIT ADVERSVS OPES CIVIVM
ET FORTVNAS INFESTVM ERGA VITAS INNOCVVM VT PER OMNIA
REFERRET SVPREMAM ILLAM MVNDI EXVSTIONEM.

VELOX CLADES FVIT EXIGVVM TEMPVS EANDEM VIDIT
CIVITATEM FLORENTISSIMAM ET NVLLAM
TERTIO DIE CVM IAM PLANE EVICERAT HVMANA CONSILIA
ET SVBSIDIA OMNIA COELITVS VT PAR EST CREDERE
IVSSVS STETIT FATALIS IGNIS ET QVAQVAVERSVM
ELANGVIT

SED

(FVROR PAPISTICVS QVI TAM DIRA PATRAVIT NONDVM RESTINGETVR *)"

* These words in a parenthesis have been expunged and recut.

Its learned architect offered an inscription of more elegance, but consisting of less matter of fact and common-place, which

That on the south side thus:—

" CAROLVS II. C. MART. E. MAG. BRIT. FRANC. ET HIB. REX. FID. D.
PRINCEPS CLEMENTISSIMVS MISERATVS LVCTVOSAM RERVM
FACIEM PLVRIMIS FVMANTIBVS IAM TVM RVINIS IN SOLATIVM
CIVIVM ET VRBIS SVÆ ORNAMENTVM PROVIDIT TRIBVTVM
REMISIT PRECES ORDINIS ET POPVLI LONDINENSIS RETVLIT
AD REGNI SENATVM QVI CONTINVO DECREVIT VT PVBLICA
OPERA PECVNIA PVBLICA EX VECTIGALI CARBONIS FOSSILIS
ORIVNDA IN MELIOREM FORMAM RESTITVERENTVR VTIQVE ÆDES
SACRÆ ET D PAVLI TEMPLVM A FVNDIMENTIS OMNI MAGNI-
FICENTIA EXTRVERENTVR PONTES PORTÆ CARCERES NOVI
FIERENT EMVNDARENTVR ALVEI VICI AD REGVLAM RESPON-
DERENT CLIVI COMPLANARENTVR APERIRENTVR ANGIPOR-
TVS FORA ET MACELLA IN AREAS SEPOSITAS ELIMANAREN-
TVR CENSVIT ETIAM VTI SINGVLÆ DOMVS MVRIS INTER-
GERINIS CONCLVDERENTVR VNIVERSÆ IN FRONTEM PARI
ALTITVDINE CONSVRGERENT OMNES PARIETES SAXO
QVADRATO AVT COCTO LATERE SOLIDARENTVR VTIQVE
NEMINI LICERET VLTRA SEPTENNIVM ÆDIFICANDO IMMO-
RARI AD HÆC LITES DE TERMINIS ORITVRAS LEGE LATA
PRÆSCIDIT ADIECIT QVOQVE SUPPLICATIONES ANNVAS ET
AD ÆTERNAM POSTERORVM MEMORIAM H. C. P. C.
FESTINATVR VNDIQVE RESVRGIT LONDINVM MAIORE CELERITA-
TE AN SPLENDORE INCERTVM VNVM TRIENNIVM ABSOLVIT
QVOD SECVLI OPVS CREDEBATVR."

was rejected for those now inscribed *. Another inscription was also cut in English on the lower part of the pedestal, which was

The inscription on the east side is as follows:—

INCEPTA
RICHARDO FORD EQ.
PRÆTORE LOND. A. D. MDCLXXI.
PERDVCTA ALTIVS
GEORGIO WATERMAN EQ. P . V
ROBERTO HANSON EQ. P . V
GVLIELMO HOOKER EQ. P . V
ROBERTO VINER EQ. P . V
IOSEPHO SHELDON EQ. P . V
PERFECTA
THOMA DAVIES EQ. PRÆ. VRB
ANNO Dni.
MDCLXXVII.

* *Proposed Inscription for the great column, called the Monument, according to the first conception of Sir Christopher Wren. From Parentalia,* p. 323.

" Qui celsam spectas Molem, idem quoque infaustum et fatalem toti quondam civitati vides locum. Hic quippè, anno Christi MDCLXVI. 2 Sept., alterâ post mediam noctem horâ, ex casâ humili, prima se extulit flamma, quæ austro flante, adeò brevi invaluit, ut non tantum tota ferè intra muros urbs, sed et ædificia quæcunque arcem et templariorum hospitium, quæcunque denique ripas fluminis, et remotissima civitatis interjacent mænia, ferali absumpta fuerint incendio. Tridui spatio, C. templa, plateæ CCCC. et plura quam XIV. domorum millia flammis absorpta fuêre. Innumeri cives omnibus suis fortunis exuti, et sub dio agitare coacti, infinitæ et toto orbe congestæ opes in cinerem et favillam redactæ: ita ut

obliterated in the reign of James II., on account of its insinuations against the papists; but it was recut with deeper incisions, in

de urbe omnium quotquot sol aspicit amplissimâ, et fælicissimâ, præter nomen et famam, et immensos ruinarum aggeres, vix quicquam superesset.

" Carolus secundus, Dei gratia, Rex Magnæ Britanniæ, Franciæ, et Hiberniæ, Anno Regni XVIII. et plerique Angliæ proceres, consumptâ incendio urbe penè universâ, eâdemque triennio spatio in ampliorem modum instauratâ, et non ut antè ligneis aut luteis, sed partim lateritiis, partem marmoreis ædificiis et operibus ornatâ, ut è suis ruinis pulchrior multò prodiisse videatur; auctis prætereà ad immensam magnitudinem urbis pomœriis; ad æternam utriusque facti memoriam, hîc, ubi tantæ cladis prima emicuit flamma,

" Monumentum posuêre.

" Discat præsens et futura ætas, nequa similis ingruat clades, tempestivis Numen placare votis: beneficium verò Regis et procerum, quorum liberalitate, præter ornatum, major etiam urbi accessit securitas, grata mente recognoscat.

" O quantum *tibi* debet AUGUSTA,
Tot nascentia templa, tot renata,
Tot spectacula?————

MART."

There appears to have been a sort of competition for the inscription; and in addition to that which was accepted, I add another rejected inscription, from the pen of the indefatigable Adam Littleton, author of the well-known Latin Dictionary. He addresses himself—

" LECTORI BENEVOLO.

" Quoniam ex edicto *parliamentario* statutum erat ut *columna* in memoriam *conflagrationis Londinensis* exstrueretur, Ego quoque, inter alios, (quod præficere dico, ut absit invidia verbo) meam symbolam conjeci, partim *Historicam*, i narrativam; partim *poeticam*, nimirum *lapidariam*, quo animum erga INCLYTAM URBEM propensum testarer. Eam, ne residua

a panel formed by the excisions of the former letters, during the reign of William and Mary, where it still remains in its sunken obscurity, more an object of curiosity than belief*.

hæc pagella prorsus vacaret, visum est hic ponere. Ignoscent mihi Nobiles et Ingenui Cives, quod hanc qualemcunque demum *Epigraphen* in extremo opere locavi; ubi meminerint vulgati illius dicti, *Finis Coronat Opus.*

" *Quod felix faustumque sit Civitati* LONDINENSI

Quum Anno *Salutis Humanæ* MDCLXVI., *Reditus* CAROLINI VI., *Regni* autem XVIII., Die IV *Nonas Septembris,* fatale et ineluctabile *Incendium,* hoc ipso loco in *pistrina* conceptum, et in viciniam longè lateque, afflantibus sive etiam reflantibus ventis, proseminatum, continuo triduo *Domos, Templa, Basilicas,* cæteraque qua *privata* qua *publica* Ædificia (quæ jam *cum bono Deo* renasci videmus), horrendo flammarum diluvio absorbuisset, et *Nobilissimam Urbem,* cui nulla gens aut habuit, aut certe (ita vovere fas est) habitura est parem, maximam partem in cineres redegisset; donec tandem non minore cum miraculo consopitum, quam sub initiis concitatum fuerat, inter medias strages et inhabiles ad resistendum ruinas ultro deflagraret; Placuit ex *Senatus-consulto,* in perpetuam rei memoriam, decerni *Obeliscum* hunc, sive *Turrim Speculatoriam,* ex quo quoquoversum pateat prospectus Urbicus; quo Posteris innotescat Divina cum *Severitas* tum *Clementia,* cui utrique luculentum ignis *desæviens* perhibuit testimonium.

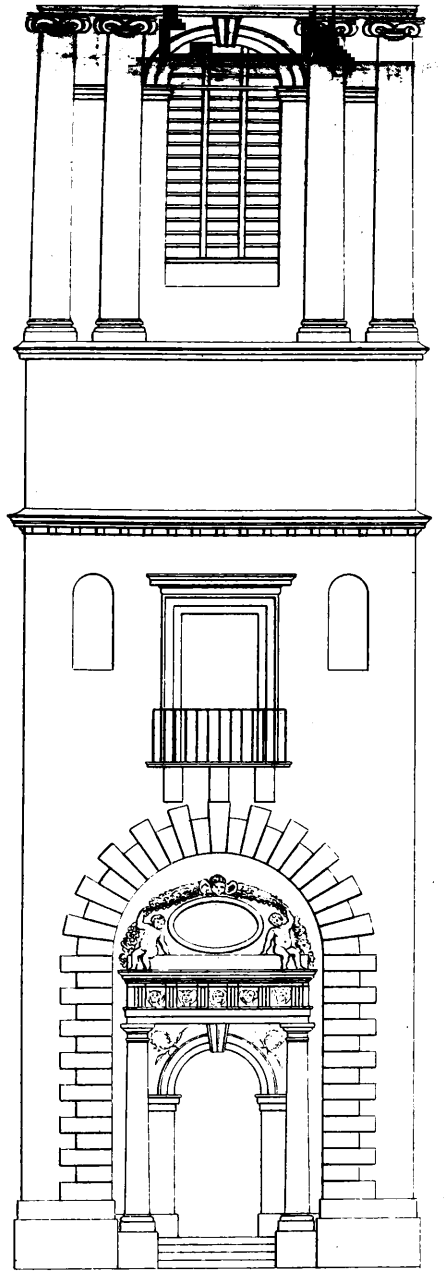
" Perennet *Columna* hæc Votiva, SETHIANÆ æmula, ad extremum usque diem, quo Universa conflagrabunt; Locumque et *Lares* Subjectos undique *Collustret* pariter atque Illustret, longè visura sed et visenda longè; eadem Urbis Extinctæ *Monumentum* et Resurgentis Ornamentum.

* This double cut inscription is as follows:—" This pillar was set up in perpetual remembrance of the most dreadful burning of this protestant city, begun and carried on by the treachery and malice of the popish faction, in the beginning of September, in the year of our Lord, 1666; in order to the effecting their horrid plot, for the extirpating the protestant religion and English liberties, and to introduce popery and slavery."

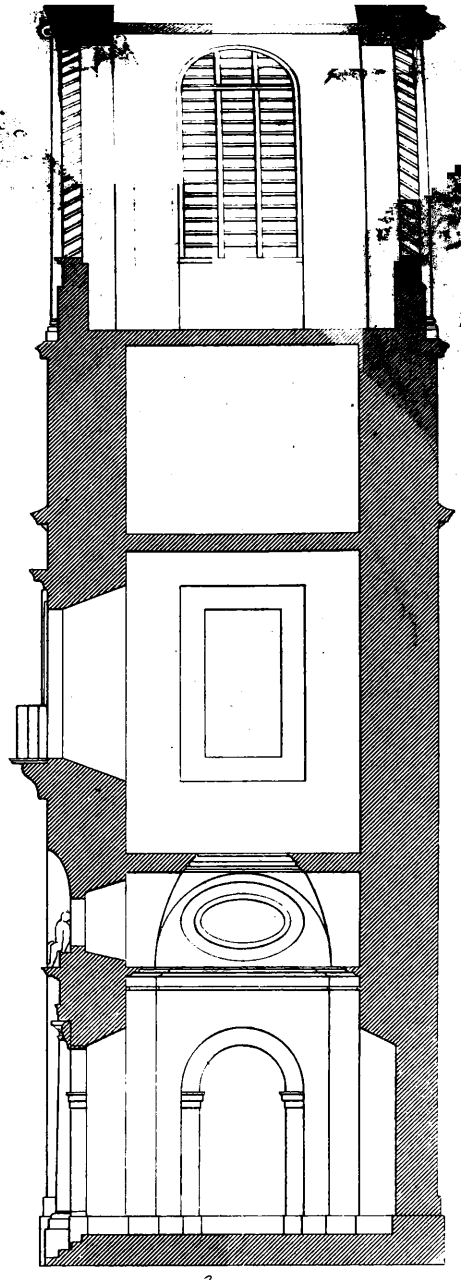
In the spring of this year Wren commenced his incomparable work, the spire of St. Mary-le-Bow, in Cheapside; which is not

Opus hoc	Inchoatum		Richardo Ford, Milite Prætore, 1671.
	Continuatum	Georgio Waterman, Milite Prætore, 1672.	
		Roberto Hanson, Milite Prætore, 1673.	
		Gulielmo Hooker, Milite Prætore, 1674.	
		Roberto Viner, Equ. Bar. Præt., 1675.	
		Josepho Sheldon, Milite Prætore, 1676.	
	Absolutum		Thoma Davis, Milite Prætore, 1677.

Non erit jam, *Lector Popularis,* quod peregre, quæras,
Aut, *Peregrine,* quod jactes Domi.
Rhodium Colossum, Obeliscos *Ægyptios,*
Et siquid aliud curiosæ *Antiquitatis* amantibus
Est in deliciis, relinque gnaviter otiosis;
Qui hunc unum *Itineratrinum* fructum cogitant,
Multa cum pompa, nulla cum fide, splendide mentiri.
En aliquid majus coram!
Præsens quod sensit *Ætas,* vix credet *Postera.*
In *Nova Troja* Veteris Historiam legis.
Illa abiit olim, *Hæc* olim abibit in Fabulam.
Nimirum Utraque simili prope fato diriter Conflagravit,
Exardescente *Nemesi* divina;
Pene ultra humanam *Fidem.*
Verum *illa* inter ruinas id adepta est solatii,
Ut *Mæonio* carmine Exequiæ ejus forent celebratissimæ;
Huic contra non deerat sua quidem Ilias, sed Homerus aliquis,
Cujus *Rhapsodias* una, quam suspicis, *columna* exhibet,
Surgens cum ipsa pariter Urbe resurgente,
Collapsæ Mnemosynon, Reparatæ Decus;
Tot *Fastis Prætoriis* continenter Insignita,
Ut dubium sit, majoremne ab iis claritatem acceperit, an dederit,



Elevation.



Section.

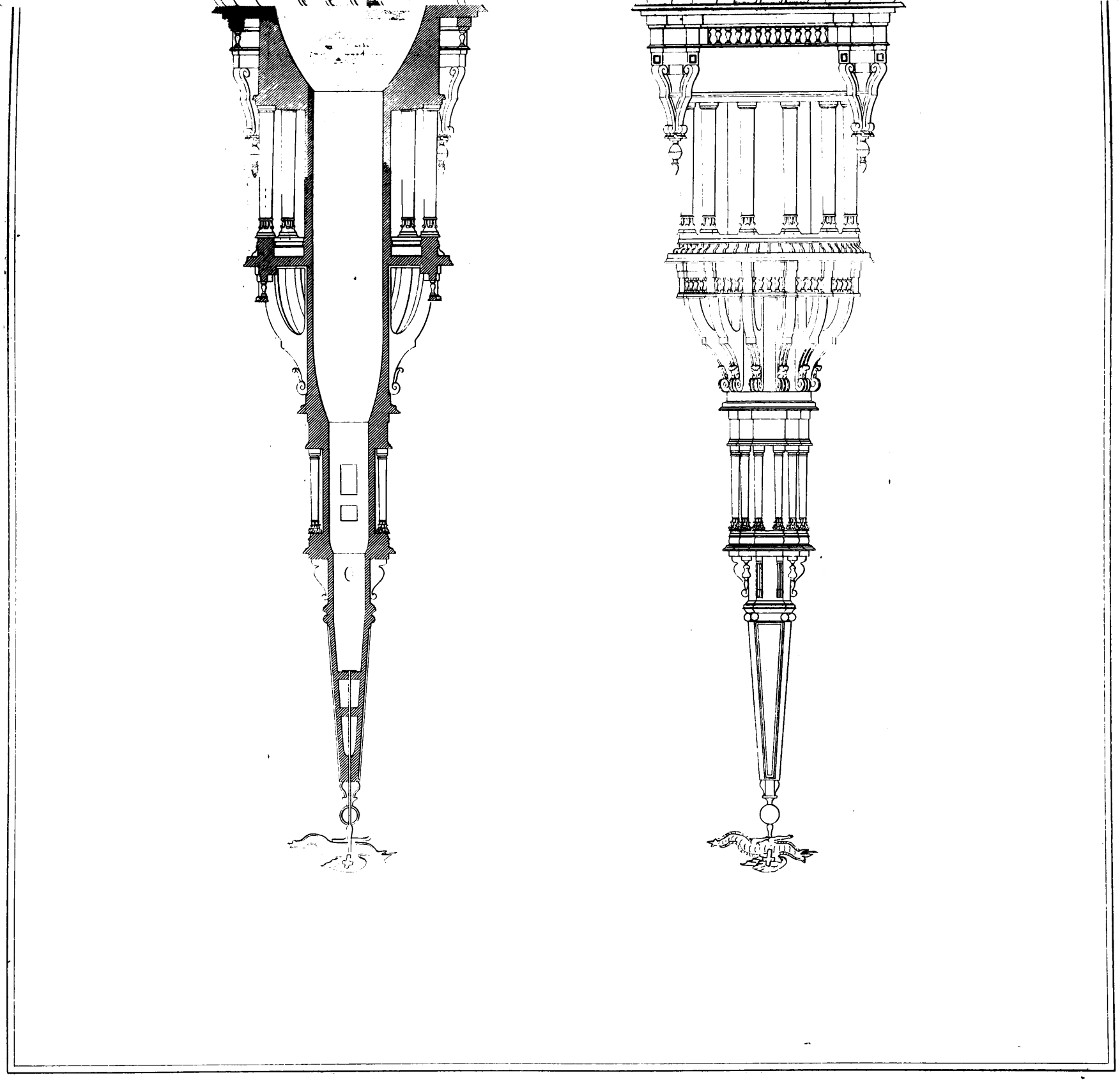
St. Bride Church. London.

from actual measurement in 1818.

Scale of 10 5 0 10 20 30 40 50 60 Feet.

Jas. Elmes M.R.I.A. del.t | Sir Chr. Wren Archt. | W. Lowry. sculp.t

Published by Priestley & Weale, Jan.y 1. 1823.



only his masterpiece in composition, but stands unrivalled in this class of art, as well for its beauty as for its ingenious and scientific construction. The church and spire were finished in 1677: the spire was repaired by the late Alderman Sir William Staines, about thirty years ago; since then by Mr. Gwilt, sen.; and in 1820 by his son, Mr. George Gwilt, after the original design, as left by its great constructor. A general idea of its design and construction may be gathered from the elevation and section given in this work, taken from actual measurement, when the scaffold was up at the last repair.

This beautiful steeple, like all of Wren's, commences from the ground; unlike many of his tasteless successors, who place them on the apex of a weak pediment. It stands at the north-west angle of the church, and rises nearly plain to a height above the houses. The doors, on the external sides, are enclosed in

Quam non una aliqua ac simplici voce, uti istam quondam *Duilianam,*
Sed, ut vero eam nomine indigites, Vocabulo constructiliter Heptastego.
FORDO-WATERMANNO-HANSONO-HOOKERO-VINERO-SHELDONO-DAVISIANAM
Appellites oportebit.
Ita decebat Monumentum Publicum extrui,
Ut esset quamplurimis Nominibus commendatum.
Respira modo, *Lector*, et mecum Recole,
Quam nihil, utut Magnificum, Tutum;
Quam parum præsidii præstent Externa omnia
Adversus Iratum DEUM:
Quem neque *Thamæsinæ* undæ, neque *Civium* lacrymæ aut manus
Restinguere potéssent Vindices Flammas.
Faxit tandem *Pater Cœlestis*,
Ut *Trinobantes*, siquidem *Phrygibus* oriundi,
Sero licet, Sapiamus tamen serio.

rusticated niches: the dressings of the doorways are of the Palladian Doric, embellished with cherubim and festoons. The clock projects into the street on the north side, and is a handsome as well as a highly useful embellishment to the tower; which is surmounted by a block cornice and well proportioned ballustrade. Each angle is relieved by a pyramidal group of bold scrolls, supporting a vase; between which rises a lofty circular stylobate, or continued pedestal, which supports a beautiful circular temple, of the Corinthian order; the cell of which supports the upper part of the spire, while it beautifully relieves the columns of the peristyle, as an ever-varying back-ground. This temple is likewise surmounted by a balustrade, from whence spring a series of beautifully proportioned and elegantly carved flying buttresses, of a highly original shape and construction. These elevate and magically support another temple, of a simpler species of the Corinthian order, forming four porticoes of two columns each, the entablature breaking fancifully over them. The whole is surmounted by a very elegant obelisk or spire, supporting a colossal vane, in the semblance of a dragon, of copper gilt, and with a red cross under each wing, the emblem of the city. The chasing of this beautiful vane, (as seen when down *, in 1820),

* This immense vane was lowered from its place, under the direction of Mr. H. Elmes, of College-hill, on Michaelmas day, 1820: an adventurous young Irishman, of the name of Michael Burke, descended on its back from its situation, 225 feet from the ground, pushing it from the scaffolds and cornices with his feet, in the presence of thousands of spectators. When it was before lowered, by Sir William Staines, the worthy baronet, then a young stone-mason, was mounted on its back, on a low four-wheeled carriage, in Cheapside, and drawn to the city stone-yard by his men.

is admirably executed in full relief, and forms a splendid ornament to the city *.

The gate at the western boundary of the city, on the line of the Strand, called from its situation Temple Bar, a work of no great beauty or originality, was also designed and built by Wren in † this year. The incessant occupation of Wren from this time forward may be imagined by those who know the city and its edifices; but can only be truly estimated by those who, in addition to this, are aware of the services required of him at court. In a manuscript book ‡ of the transactions of the privy council, concerning the buildings in and about the metropolis, from 1669 to 1695 inclusive, the name of Wren occurs in almost

* Let not any living architect fear contemporary criticism, but reflect that Wren himself was not only obnoxious to it, but also to attacks on his moral character, in that tissue of falsehoods, called "Frauds and Abuses at St. Paul's." Ned Ward, the coarse but just painter of London manners, says, in his London Spy, "I could no more forbear looking at Bow steeple, than an astrologer could looking at a blazing star, or a young rake at a fine woman; but I wondered the projector of such a noble pyramid should form so mean a model for the church, which, compared together, are just the reverse of St. Andrew's, Holborn; the one being like a woman with a beautiful face joined to a deformed body, and the other like an old pigmy's head upon a young giant's shoulder. But pray, said I, what is the meaning of this terrible monster upon the top, instead of a fane or a weather-cock? Why that, says my friend, is a brazen dragon, exalted as an emblem of the church persecution: (this, be it remembered, was in Queen Anne's reign, about Sacheverell's time): the dissenters once looked devilishly asquint at it; but now they dread it no more than More, of More-hall, did the dragon of Wantley."—WARD's London Spy, page 93.

† 1671. Portam urbis, vulgo dictam Temple Bar.—WREN *MS.*

‡ Belonging to me, and before quoted.

every page; petitions are being perpetually referred to him; and his answers, after personal inspection, as regularly occur. His personal labour, to say nothing of the mental exertions required in his designs, studies, and decisions, must have been immense, and prove the strength of his body, the vigour of his mind, and the decision of his character.

The character of these petitions, decisions, and certificates, is curious, and throws much occasional light on the topography of the metropolis. On May 11 this year, Wren certifies that, having considered the design of Mr. Nicholas Berkehead, to build, at Knightsbridge, one house and a brewhouse, and finding it to be far out of town, he conceives it beside the intention of his Majesty's proclamation to prohibit any building of this nature; and, therefore, that he may not be molested, he thereto sets his hand. On the 18th of the same month he gives a similar certificate to Edward Sleymaker, to build on an old foundation in Brick-lane. At a court, held at Whitehall, May 24, present, the King, the Duke of York, Prince Rupert, the Archbishop of Canterbury, the Lord Keeper, the Duke of Ormond, the Marquess of Dorchester, and other members of the privy council, a petition from Sir Richard Stydolfe, Bart. was read, praying that certain buildings, erecting by him in the rear of St. Giles's church, leading from thence to Piccadilly, built contrary, but prior to the issuing of the said proclamation, might be finished; it was ordered, by his Majesty in council, that it be referred to Christopher Wren, Esq., surveyor-general of his Majesty's works, who is to inquire into every particular, and to report his opinion upon the whole matter to his Majesty in council. Wren accordingly examined it,

and reported at length, recommending his Majesty's licence to Sir Richard, "provided the said Sir Richard Stydolfe build regularly, according to direction, and according to a design to which his said licence may refer; that he be obliged to build with brick, with party walls, with sufficient scantlings, good paving in the streets, and sufficient sewers and conveyances for the water;" with other good and reasonable recommendations.

At another council, of the same illustrious persons, a petition from Colonel Thomas Panton was read, referred to Wren, and reported upon accordingly *.

* This refers to the plot of ground near the Haymarket, called Panton Square; and as it illustrates the topographical history of the place, and elucidates Sir Christopher's mode of transacting the business of his office, as well as being a curious and well authenticated document, I give both the petition and Wren's report upon it at length, as specimens.

"At the Court at Whitehall, May 24, 1671.

Present,

The King's most excellent Majesty,

His royall Highness the Duke of Yorke,	Lord Keeper,
His highness Prince Rupert,	Duke of Ormond,
Lord Archbishop of Canterbury,	Marquis of Dorchester, &c.

"Vpon reading this day at the board the humble petition of Colonel Thomas Panton, setting forth, that the petitioner having been at great charge in purchasing a parcell of ground, lying at Pickadilly, part of it being the two bowling-greens fronting the Haymarket, the other part lying on the north of Tennis-court, upon which severall old houses were standing, which the petitioner demolished to improve the same, and make the place more uniforme. In reference to which the petitioner set out the ground, laid severall foundations, and built part thereof, before his Majesty's late proclamation; and praying his Majesty's permission that he may proceed in his said intended building, according to the draught delivered to his

A similar petition, from Edward Billings, is debated in council, May 24, to be permitted to build at Mill-ditch, Westminster;

Majesty's surveighor-generall. It was thought fitt, and accordingly ordered by his Majesty in councill, that it be, and hereby it is, referred to Christopher Wren, Esq., surveighor-generall of his Majesty's workes, who is required to examine the truth of the petitioner's allegac̃ons, and whether (in case the petitioner's request should be granted), the buildings will cure the noysomness of the place, and how the ditches and sewers will be kept sweet; and to report his opinion upon the whole matter unto his Majesty in councill, whereupon such farther order will be given therein as shall be fitt.

" Ed. Walker."

" May it please your Majesty,

" In obedience to your Majesty's order of May 24, 1671, upon the petition of Thomas Panton, Esq., setting forth, that he having purchased with design to build at Piccadilly, and the two bowling-greens, fronting the Hay-markett, and on the north of the Tennis-court, upon which several old houses were standing, which the said Colonel Thomas Panton demolished to improve the same, and make the place more uniforme; in reference to which, he let out the ground, laid severall foundations, and built part thereof, before his Majesty's late proclamac̃on; and praying his Majesty's permission, under the broad seale, to proceed in the said buildings. Vpon which your Majesty ordered the surveighor-generall to examine the truth of the allegacions, and report whether the buildings will cure the noysomness of the place; accordingly, I have viewed the said place, and find the petitioner's allegations, as far as I can judge, to be true, and that the design of building shewn to me may be very usefull to the publique, especially by opening a new street from the Hay-markett into Leicester-fields, which will ease, in some measure, the great passage of the Strand, and will cure the noysomness of that part; and, I presume, may not be unfitt for your Majesty's licence, provided the said Thomas Panton build regularly, according to direc̃on, and according to a designe to which his said licence may refere; and that he be obliged to build with brick, with party-walls,

which is allowed by Wren, on public grounds, as making a new street to the Horse-ferry, and cleaning that part of Westminster of an unwholesome ditch. Many such occurrences are registered in this important and interesting manuscript; and the honour, integrity, and public spirit of Wren appear transcendant.

Many wretched structures being erected about this period in a part of the town which the foresight of Wren led him to know would be a future evil, made him present, about this time, a petition, which is without a date, but entered between June 28 and a subsequent meeting, entitled, in the margin, "Petition against new Buildings," as follows:

"To the King's most excellent Majesty.

"The humble petition of Christopher Wren,

"Sheweth,

"That there are divers buildings of late erected, and many foundations laid, and more contrived in Dog's fields, Windmill fields, and the fields adjoining to Soe Hoe, and several other places without the suburbs of London and Westminster; the builders whereof have no grant or allowance from your Majesty, and have, therefore, been prohibited and hindered by your petitioner, as much as in him lieth. Yet, notwithstanding, they proceed to erect small and mean habitations, which will prove

with sufficient scantlings, good paving in the streets, and sufficient sewers and conveighances for the water; and that the buildings expressed in his pattent be registered, before the foundac̃ons are laid. All which is most humbly submitted to your Majesty's wisdome and farther order hereupon.

"CHRISTOPHER WREN."

only receptacles for the poorer sort, and the offensive trades, to the annoyance of the better inhabitants, the damage of the parishes, already too much burthened with poor, the rendering the government of these parts more unmanageable, the great hindrance of perfecting the city buildings, and others allowed by your Majesty's broad seal; the choking up the air of your Majesty's palace and park, and the houses of the nobility; the infecting, or total loss of the waters, which, by many expenseful drains and conduits, have formerly derived from these fields to your Majesty's palace of Whitehall, and to the Mewes; a manifest decay of which waters (upon complaint of your serjeant plumber), the office of your Majesty's works, by frequent views and experiments, have found.

"May it, therefore, please your Majesty to issue a royal proclamation, to put a stop to these growing inconveniences, and to hinder the buildings which are not already, or shall not be licensed by your Majesty's grant; and effectually to empower your petitioner to restrain the same, or otherways to consider of the premises as in your Majesty's wisdom shall seem most expedient.

"And your petitioner, &c."

This petition, so replete with foresight and good sense, and to which the public are now indebted for the healthy district of Soho and the Haymarket, was duly considered by a full council of his Majesty in person, the Duke of York, Prince Rupert, the Archbishop of Canterbury, the Duke of Ormond, the Marquess of Dorchester, the Lord Keeper, &c. who authorised the surveyor-general to prohibit, restrain, and hinder all further proceedings

in any buildings erecting, or to be erected, in the suburbs of London and Westminster, and places mentioned by him. Proclamation was made to the same effect; and Wren was ordered, by a subsequent council, to take effectual care that obedience be given to the said proclamation; and that, if any workmen should presume to go on contrary to the tenor thereof, he should cause them to be imprisoned for contempt of his Majesty's orders. It was farther ordered, that the attorney-general should, at the next term, prefer an indictment against the builders of such houses, and take measures to have such buildings declared nuisances; and other effectual powers were granted to the architect to prevent them.

In consequence of these wise and prudent regulations, suggested by Wren, and backed by the authority of the king and council, who were indefatigable in their exertions to restore the ruined city, and improve the increasing metropolis, Colonel Panton, whose name has before occurred, craved their license to build and finish certain houses in the continuation of a street, named Windmill-street, from the upper end of the Haymarket to the highway, leading from Soho to Ayre-street and Paddington: on the east corner, towards the Haymarket, about one hundred feet in front; also, on the same side, about two hundred feet in front, opposite Windmill-yard; and to build on both sides a short street, leading from out of Windmill-street, opposite Windmill-yard, towards St. Giles's: on the west side of Windmill-street, in the two bowling-greens, between the Haymarket and Leicester-fields; and to build " a fair street of good

buildings" between the Haymarket and Hedge-lane, marked in the manuscript to be called Panton-street, after the proprietor, and other "fair buildings fronting the Haymarket, upon the said ground." To provide against the destructive element which had so recently ravaged the city, Wren ordered all these buildings to be built of "brick work, and uniformly; with party-walls, according to the rates and manner of building used in rebuilding the city of London," which had all been accurately calculated and promulgated for that purpose. Among other orders for this estate are, that Colonel Panton is to allow of no brew-houses, melting-houses, or other noisome trades *.

With such necessary but troublesome arrangements, and in attending the court of judicature for the determination of differences, concerning the houses and estates damaged by the fire, was Wren perpetually employed; and the book of entries, before quoted, abounds with them. They are all referred to his decision; and he appears to have acted with honour and with talent, and to have given general satisfaction in an important, but difficult and thankless office. In several of these decisions or awards, Wren's signature is accompanied by those of Robert Hooke and Edward Woodrooffe.

During his superintendance of the works then going on at St. Paul's cathedral, he found the site so encumbered with the old materials, that it was impossible to proceed with the necessary investigation of the ruins; which, contrary to his wishes, the

* Manuscript Transactions of Privy Council, p. 22.

missioners still determined on repairing. He, therefore, ined an order from them, under the signatures of the Arch- ɔp of Canterbury, the Lord Mayor of London, and the Bishops ondon, Winchester, and Oxford, to sell the spare materials ıe dilapidated cathedral; appointing Sir Llewellyn Jenkins, Sancroft, and Dr. Wren, commissioners for this purpose. stone thus sold was appropriated to the rebuilding the paro- churches, and for no other purpose; and the common tone for the use of the new paving the streets of the city. money thus raised was paid into the chamber of the city, used in rebuilding the new cathedral, which was soon after nenced *.

This order, in the manuscript book last quoted, is as follows:—

Order for selling materials at St. Paul's Cathedral, April 21, 1671; *by the commissioners for rebuilding the cathedral of St. Paul.*

Ordered, that whereas it hath been represented to us, by Mr. Surveyor ıe officers employed in the fabrick of St. Paul's, that the rag, Portland- freestone, and chalk, which have been already taken down from the ılls of the said fabrick, hath so filled the ground, notwithstanding care een taken to dispose of them to the best advantage, that it will not sible to take down any more of the old materials standing (of which ınd dangerous ruins are expected), and to find room where to dispose id materials, in or about the church or churchyard; and also that are some parcels of good oaken timber, which were provided for ; a part of the west end, before the ruins there gave occasion to ɜ resolution, which timber is already become sap-rotten by lying, and lecays. In consideration of which premises, and the raising the new *(which we hope may speedily begin)*, will not presently occasion the timber; and for that more room must of necessity be made, for dis- the residue of the old, and for bringing in of new stone, and for

The parish church of St. Christopher, in Threadneedle-street, which was not totally destroyed by the great fire, was repaired by Sir Christopher this year, and altered and beautified in 1696: it has since been taken down for the enlargement of the Bank of England, by Sir Robert Taylor.

In the course of this year Evelyn discovered that rare genius,

digging foundations; we do hereby allow, and by these presents authorize, Sir Llewellyn Jenkins, Judge of the Court of Admiralty, and of the Prerogative, Dr. William Sancroft, Dean of St. Paul's, and Dr. Christopher Wren, his Majesty's surveyor-generall, and surveyor of St. Paul's, or any two of them, to consider what is fit of said materials to be sold and disposed of for future use of the said fabrick; and, upon their order, Mr. John Tillotson, clerk of the works, is hereby required to dispose and sell such timber, rag, freestone, and chalk, as also the smallest and less serviceable Portland-stone and rubble, for, and towards, the rebuilding the parochial churches, and to no other use whatsoever, as he shall be directed to sell at merchantable rates to the masons and carpenters that build the said churches, by order of the said Lewelling Jenkins, Dr. Sancroft, and Dr. Wren, or any two of them. And it is hereby ordered, that Mr. Edward Woodroofe do keep an account of what is thus disposed of, as cheque to the clerk in this behalf; provided, nevertheless, that by reason there is great abundance of rag-stone, which most encumbereth the ground, and is of less use to the parochial churches, and will turn to more account if it be disposed of to paviors, it shall be lawful for the said John Tillotson to dispose of the said rag, to such paviors as will offer ready money, at the merchantable rates to be allowed of by the said Sir Llewellyn Jenkins, Dr. Sancroft, and Dr. Wren, or any two of them. And the money so collected shall be deposited into the chamber of London, for and towards the fabrick of the said cathedral. And for so doing this shall be their sufficient warrant.

" Gilb. Cant.
" Richard Ford, Mayor.
" Humfr. London.
" Geor. Winton.
" Walt. Oxon."

Gibbons, the carver, who was afterwards so much employed by Wren. Evelyn first introduced him to the king, and describes him, in his Diary *, as an incomparable artist, whom he had met in an obscure place by mere accident; and that he found him employed in carving the crucifixion after Tintoretto.

He next introduced him to Wren, who promised to employ him, and kept his word. Among other fine things done by Gibbons for Wren was the carving in the choir of St. Paul's cathedral.

To forward, by all possible means, the desirable object of rebuilding partly, or entirely, the devastated cathedral, the king made an exception †, in his grant to the city of London, of all the ground which should be taken out of the river Thames, for enlarging the quay from the Temple to London-bridge; so much of it about Paul's wharf as lies before the tenements belonging to the Dean and Chapter of St. Paul's, for the better convenience of setting cranes, and landing materials for the reparation of the cathedral, the want of which occasioned many difficulties, and great charge, in the former repairs. His Majesty was also, at the same time, humbly prayed, that nothing might pass in the city patent to the prejudice of those his royal intentions ‡.

This year, so important in the architectural history of London, is also celebrated for being that in which the Royal Academy of Architecture was established at Paris, by the illustrious Colbert §; who procured for the members, consisting of the most able archi-

* January 18, 1671. † MS. last quoted, p. 39. ‡ Ibid.
§ Moreri Art. Academie.

tects in France, a suite of apartments in the royal palace. The world of letters sustained this year the loss, by death, of Moliere, Gronovius, and La Mothe le Vayer.

From about this period to that of the year 1711, the life of Wren was one continued scene of important activity. In this comparatively short space of time, he built fifty-three parish churches in the metropolis alone, besides reparations and additions to others; to say nothing of the cathedrals of Salisbury, Chichester, and Westminster Abbey; besides building the new cathedral of St. Paul, many of the public halls of the city companies, the Guildhall of the city of London, and other great and public works *.

Wren commenced the next year, the fortieth of his age, in connexion with the illustrious Newton; who, on January 11, 1672, was elected a fellow of the Royal Society †. At this meeting it was mentioned that Newton had proposed certain improvements in the construction of telescopes, by contracting them; and that the one which he had sent to the society, for their examination and opinion, had been seen by the king (whose anxiety for the welfare of the society, and for the rebuilding of the devastated city, cannot be too highly commended), and also investigated by the president, Sir Robert Moray, Sir Paul Neile, Dr. Christopher Wren, and Mr. Hooke, at Whitehall. These

* "Ab annos 1670 ad annos 1711. Quinquiginta et tres ecclesias parochiales Londini, cum tholis, turribus, pyramidibus, et ornamentis erexit." —WREN *MS.*

† The entry in the society's book stands as follows:—"$167\frac{1}{2}$, January 11, Mr. Isaac Newton was elected."—*Birch's Hist. Roy. Soc.* Vol. III. p. 1.

competent judges had so good an opinion of the improved telescope of their new and promising fellow, that they desired a description and scheme of it to be sent, by the secretary, to Mons. Huygens *, at Paris, so as to secure the invention to the author; who had also written a letter † to Mr. Oldenburg, from Cambridge, altering and enlarging the description of his instrument, which had been sent him for revision, before it should be sent abroad. This revised description was read and ordered to be entered, with the scheme, into the register book ‡.

Wren's communications were now, of course, less frequent than formerly. At an examination of Newton's new telescope, on January 25, the day on which Dr. Tillotson, afterwards Archbishop of Canterbury, was elected, he seconded a motion of the president's, concerning Robert Hooke's proposed improvements on telescopes, microscopes, &c. and informed the society that Prince Rupert had discovered a way of making black lead more like a metal, in a mould, so as to serve for black lead again §.

* This letter is dated January 1, $167\frac{1}{2}$; and entered in the society's letter book, Vol. V. p. 92.

† Ibid. Vol. V. p. 95, dated January 6, $167\frac{1}{2}$.

‡ Vol. IV. p. 123. It is printed in the Philosophical Transactions, Vol. VII. No. 81. The close of this communication is so honourable to the modest feelings of Newton, that I do not think it intrusive to quote it. "I am very sensible of the honour done me by the Bishop of Sarum (see p. 286 of this work), in proposing me candidate; and which, I hope, will be farther conferred on me by my election into the society. And, if so, I shall endeavour to testify my gratitude, by communicating what my poor and solitary endeavours can effect towards the promoting philosophical design."

§ Birch's Hist. Roy. Soc. Vol. III. p. 8.

Newton's various philosophical theories and discoveries were much discussed in the early part of this session, Hooke being the principal impugner of the young philosopher; when, after several disputations, both in the society, and between Messrs. Newton and Hooke by letter, Mr. Oldenburg produced an answer from the former to the latter, on his considerations upon Newton's discourse on light and colours; which answer being read, was ordered to be copied, for the perusal of Dr. Wren and Mr. Hooke, and then to be registered *.

On June 11, of this year, Wren had the misfortune to lose a faithful friend and relation, and the society an eminent member, by the death of Matthew Wren †, eldest son of the late Bishop of Ely. Mr. Willughby, who has been before mentioned, and the

* It does not appear in the register book, but is published in the Philosophical Transactions, Vol. VII. No. 88, p. 5084, for November, 1672.

† See a letter from this gentleman to his cousin, in page 61 of this work. He was born August 20, 1629, at Peter-house, Cambridge. In his father's diary, transcribed into the Parentalia, from the blank pages of Pond's almanack, for the year 1652, in the bishop's handwriting, the fact is thus commemorated:—"Aug. 20, Mathæus F. nascitur paulò ante 4^{tinam} Matut. S. Petri Cantabrig. 1629." His first education was at that university, in his father's house; whence he was removed to Oxford, and became a student, according to Wood (Fasti Oxon. Vol. II. col. 143), in a private house. At the restoration of Charles II. he was elected burgess of St. Michael, in Cornwall, in the parliament which began at Westminster, May 8, 1661; and was appointed secretary to the Earl of Clarendon, Lord High Chancellor of England; who, visiting the University of Oxford, of which he was chancellor, in September, 1661, Mr. Wren was created Master of Arts. He was one of the first members of the society, when they commenced their weekly meetings at London, in 1660 *. After the dismissal of his patron,

* See p. 69 of this work.

celebrated Bishop Wilkins, also died this year, and are honourably mentioned in the records of the society.

The last transaction of the surveyor-general with the society this year arose out of Sir Paul Neile representing to the council, on December 18, the strange neglect of Chelsea College, and

Lord Clarendon, he became secretary to James, Duke of York, in which situation he continued till his death. He was buried in the same vault with his father, at Pembroke-hall, Cambridge; who gave money and books to this college, and four thousand pounds for the erecting of the new chapel, of which his nephew, Christopher, was the architect.

The principal writings of Matthew Wren, who was a zealous supporter of those principles for which his intrepid father suffered so much, are,—1. *Considerations on* Mr. HARRINGTON's *Commonwealth of Oceana, restrained to the first part of the Preliminaries*, 8vo. London, 1657. To which he prefixed a long letter to Dr. John Wilkins, of Wadham College, Oxford, who had desired him to give his opinions concerning the Oceana. Harrington answered this treatise, in the first book of his Prerogative of Popular Government. London, 1658, 4to.* To this Wren replied in,—2. MONARCHY ASSERTED; *or, the State of Monarchical and Popular Government, in vindication of the Considerations on Mr. Harrington's Oceana.* London, 1659, 8vo. Harrington's rejoinder, says Birch, in his History of the Royal Society†, was an indecent piece of buffoonery, unworthy of his character, entitled POLITICASTER; *or, a Comical Discourse, in answer to* Mr. WREN's *Book*, entitled MONARCHY ASSERTED. London, 4to. 1659. Sir Edward Hyde, afterwards Lord Clarendon, was very anxious that he should also answer Hobbes's Leviathan, as appears by a letter from that celebrated man to Dr. John Barwick, dated from Brussels, July 25, 1659, which may be found among the letters of Sir Edward Hyde, in the Appendix to the Life of Dr. Barwick. Wren is also the author of an historical essay, "*On the Origin and Progress of the Revolutions in England*," printed in the first volume of Mr. Gutch's Collectanea Curiosa, 1781, from a transcript in the handwriting of his friend, Archbishop Sancroft.

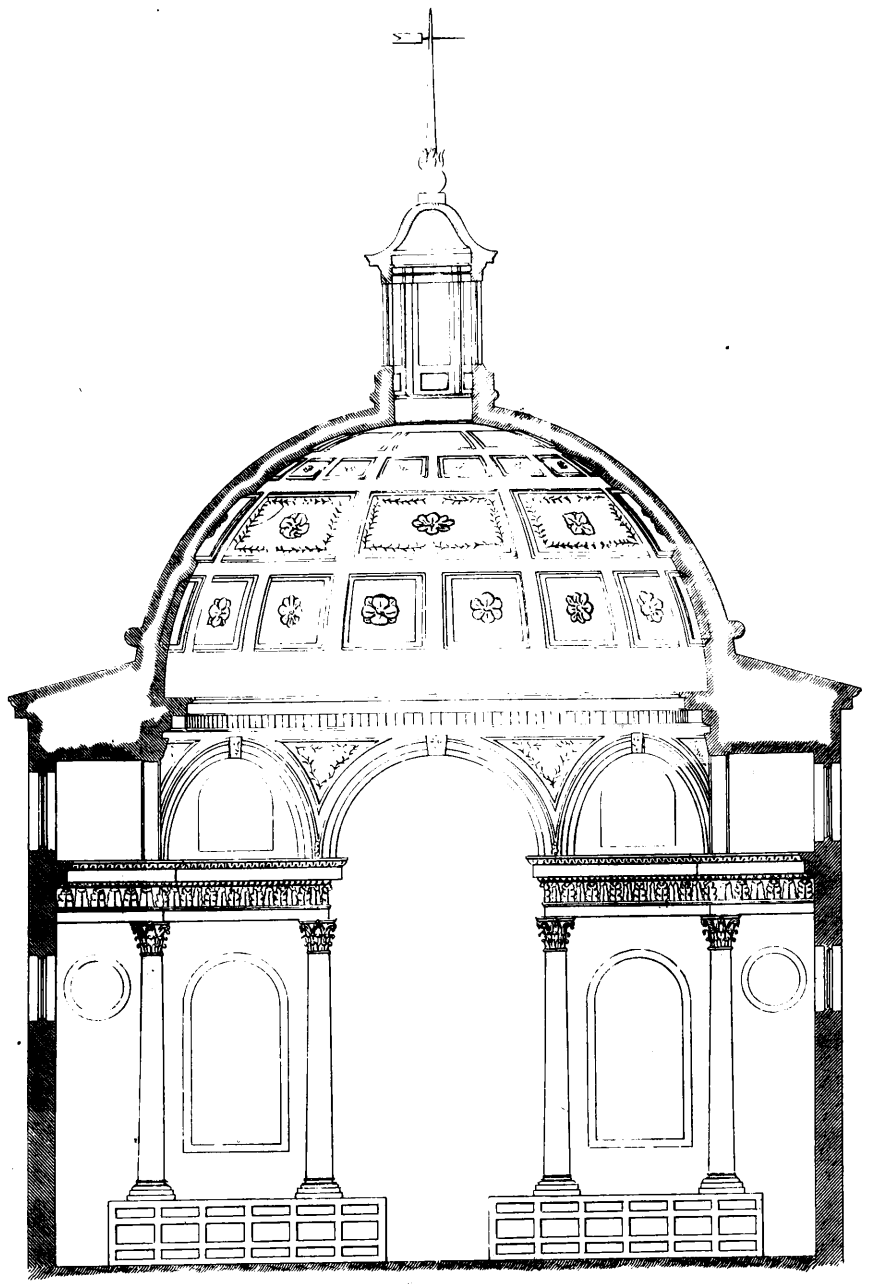
* See p. 31 of this work.

† Vol. III. p. 65.

the reproaches thence falling on the society: it was referred to Sir Robert Moray, Sir Paul Neile, Dr. Croune, and any others of the council, who had opportunity, to discourse with Dr. WREN, the surveyor-general, and others, about letting out the said college, to be built for a certain number of years *.

Wren's professional engagements continually increased. He laid down a new line of road to Stepney, for Lady Wentworth †, finished Temple Bar, continued his parochial churches, his works at St. Paul's, &c. On October 16, the first stone of his much celebrated work, St. Stephen's, in Walbrook, was laid, in the presence of the lord mayor (Sir George Waterman), several members of the Grocers' Company, the surveyor-general, and other persons of distinction ‡. This church was rebuilt at the public expense; except the wainscoting, which was given by the Grocers' Company, the patrons of the living. This church is reckoned by many to be Wren's masterpiece; but, however ingenious it may be in its plan, and excellent in construction, the panelling and decorations of the cupola are in a wild irregular taste; parts of the vaulting too complicated for real beauty, and much inferior, both in design and execution, to some of the exquisite examples in St. Paul's. The plan, as may be seen in the accompanying plate, is simple; yet not calculated for so numerous a congregation as its dimensions, 75 feet by 56, would warrant: and the superstructure may be partially understood, from the section on the same plate. The walls and tower are of stone,

* Birch's Hist. Roy. Soc. Vol. III. p. 70. † Lysons, Vol. III. p. 44.
‡ Ward's Lives of the Gresham Professors, p. 104.



Section

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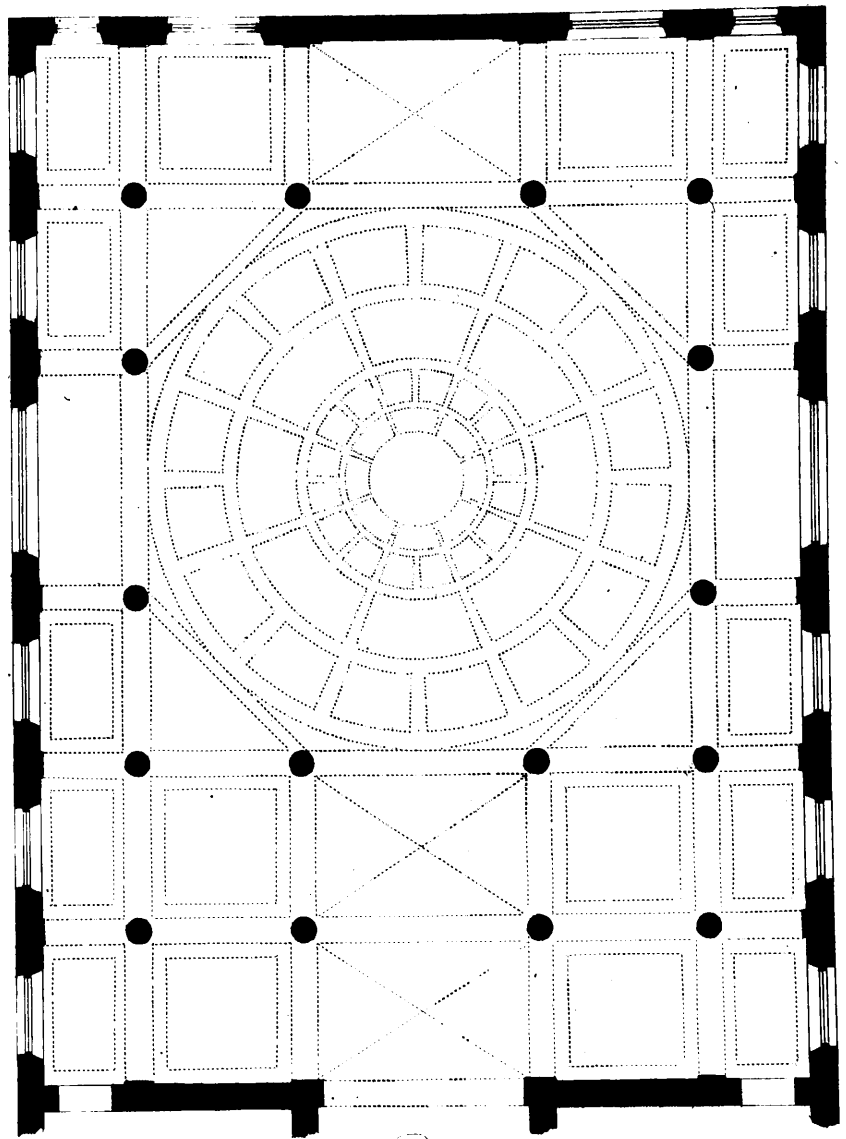


Plan

St Stephens, Walbrook.

James Elmes, M.R.I.A. del

Sir Chr. Wren, Arch.t

W.m Lowry sculp

Published by Priestley & Weale June 1 1823

the vaulting and cupola of stucco. The beauty of the interior of this church arises from its lightness and elegance. On entering from the street, by about a dozen or more of steps, through a vestibule of dubious obscurity, on opening the handsome folding wainscot doors, a halo of dazzling light flashes at once upon the eye; and a lovely band of Corinthian columns, of beauteous proportions, appear in magic mazes before you. The expansive cupola, and supporting arches, expand their airy shapes like gossamer; and the sweetly proportioned embellished architrave-cornice, of original lightness and application, completes the charm. On a second look, the columns slide into complete order, like a band of young and elegant dancers, at the close of a quadrille. Then the pedestals, concealed by the elaborate pewings, which are sculptured into the form of a solid stylobate, opening up the nave, under the cupola, to the great recess which contains the altar, and West's fine historical picture of the stoning of St. Stephen, lift up the entire column to the level of the eye: their brown and brawny solids supporting the delicate white forms of the entire order. The composition of the order, the arrangement of the parts, the effect of the whole, exhibit the originality of Wren's mind in a captivating point of view; and its excellencies, like Aaron's rod, swallow up the trivial faults of the detail. He who doubts the excellencies of Wren, as an architect of the first order, should deeply study this jewel of the art,—find fault, if he can; but first qualify himself, by trying to surpass it.

The subordinate part of builder of this church was faithfully and well performed by Thomas Stone, son of Valentine Stone, a rich and eminent master mason of Hertfordshire; of whom,

and of his family, the Rev. Mr. Clutterbuck, in his history of that county*, has given an interesting account. There were five other brothers of the same trade; but, in this business, *Thomas* took Mr. Christopher Kempster as his assistant. This church has been once repaired in my remembrance, under the direction of my late venerable friend, Mr. Peacock, of the city surveyor's office; who, with a care and anxiety for the fame of the original architect, wisely *restored* and *preserved*, but did not attempt to *improve*.

The church of St. Mary-at-hill, called in ancient records St. Mariæ ad Montem, united to the parish of St. Andrew Hubbard, is situate on the west side of St. Mary-hill, near the Custom-house. It was partly destroyed by the fire, and restored by Wren, in a neat, plain style, keeping up part of the old walls and tower, between this year and 1677.

St. Michael's, Cornhill, on the south side of the street so named, was destroyed, all but the ancient tower, and was began to be rebuilt in 1672. Its tower, an imitation of that of Magdalen College, Oxford, was rebuilt, from Wren's designs, in 1722. It has a light, commodious interior, eighty-seven feet long, sixty feet broad, and thirty-five high. The lofty tower, which is one of the most striking ornaments of the city, is one hundred and thirty feet high to the top of the pinnacles.

The Royal Society, which, by association, perpetually connects itself with the name of Wren, commenced the year 1673 with transactions and experiments, communicated by Newton, Boyle,

* Vol. I. p. 167.

Hooke, Leibnitz*, who dedicated his *Hypothesis Physica Nova* to them, and exhibited his new arithmetical instrument; Dr. Grew, and other illustrious philosophers†. But the name of Wren does not appear till October 22, and then only in a list of fifty-seven‡, who were looked upon as good paymasters, when examining into their accounts and deficiencies, arising from many of the members who failed in paying their weekly contributions§. At the anniversary meeting, this year, he was re-elected a member of the new council of the society; and at a meeting on the 22d, Lord Brouncker, the president, in the chair, the council, taking again into serious consideration the necessity of collecting the arrears due to the society, resolved, that an imperative order should be sent to each defaulter; and a committee was appointed, in which the surveyor-general, for the first time, under his new title, Sir Christopher Wren, is named as one. This honourable and well-deserved title was conferred on this great man by Charles II., at Whitehall, on November 20; although the careless editor of Parentalia assigns a twelvemonth later to this honouring of his illustrious relative‖.

* Leibnitz was this year made a fellow of the society.

† Birch's Hist. Roy. Soc. Vol. III. p. 74, *et seq.*

‡ There were seventy-nine who did not pay well, and fourteen absent in the country.—Ibid. p. 119.

§ Ibid. p. 95.

‖ This is not, by many, the only or the greatest falsification of dates by Ames; which Ward, in his Lives of the Gresham Professors, Martin, in his Biographia Philosophia, Chalmers, in his General Biographical Dictionary, and other authors have followed, on the pretended authority that Parentalia was wholly written by Stephen Wren, and, of course, well acquainted with all

It was also ordered, at the same meeting, that Mr. Boyle, Sir William Petty, Sir Christopher Wren, Dr. Goddard, Dr. Grew, and Mr. Hooke, be desired to draw up a list of considerable experiments, to be tried before the society; and to prepare an apparatus, necessary for the exhibition of them upon all occasions *.

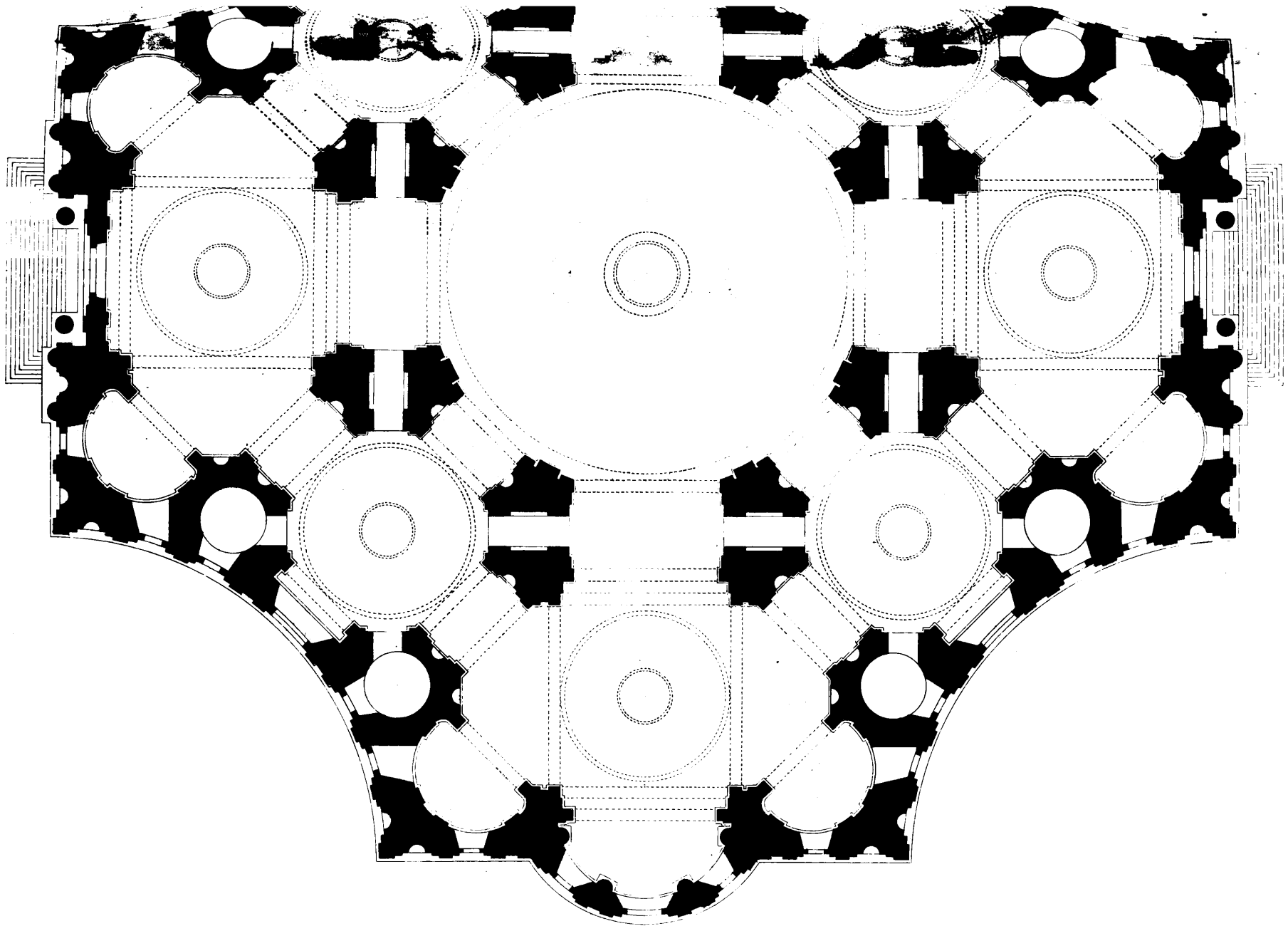
It has been seen that the surveyor-general made no communication to the Royal Society this year; and only attended once (in December), after being elected on the council. His increased occupations demanded all his leisure; and speculative philosophy was obliged to give way to executive operations. In addition to this necessary, and, no doubt, painful secession from the friends of his youth and mature manhood, he resigned, on April 9 †, his Savillian professor's chair, in the university of Oxford, which he had held with honour to himself, and with satisfaction to the great officers of the university, and his numerous pupils.

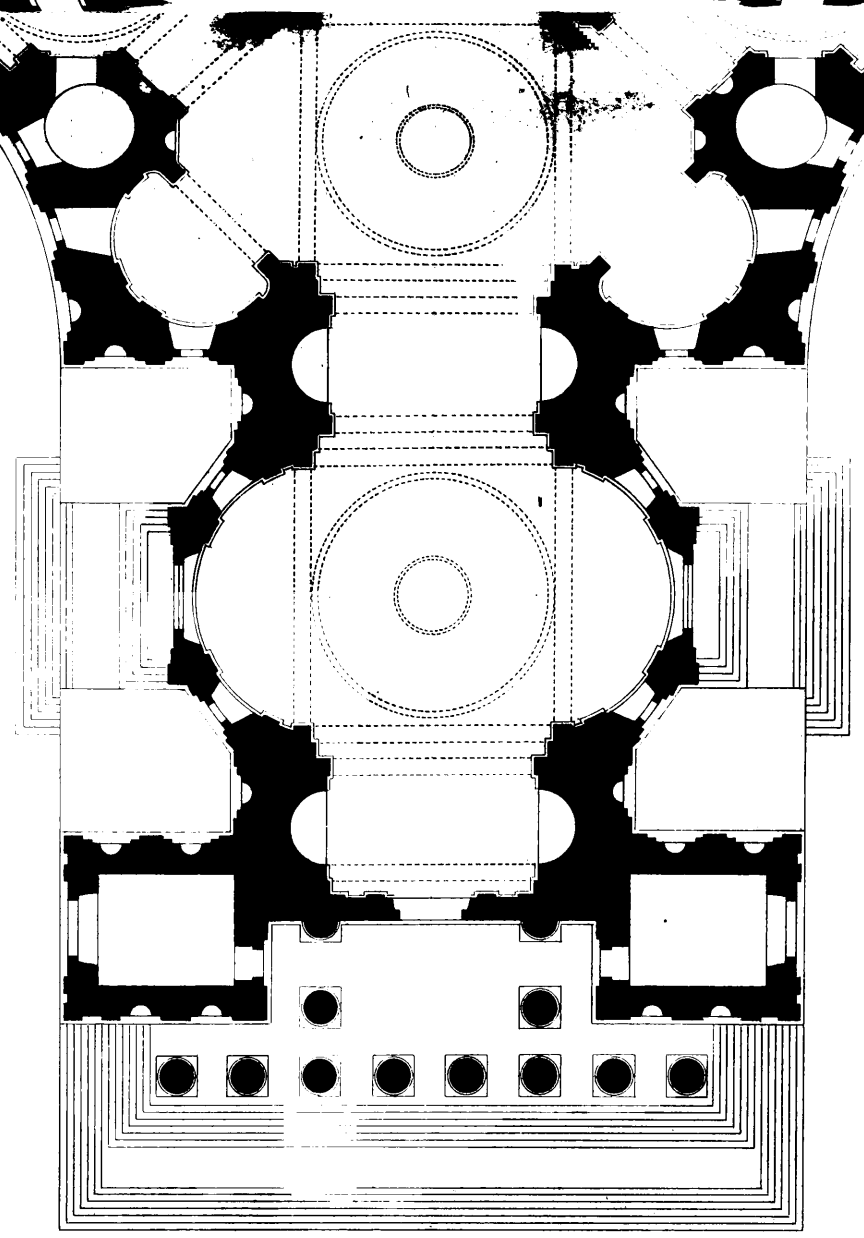
St. Paul's was now the great object of attention to the whole

these circumstances. My reasons for altering and amending this date are, first, the manuscript pedigrees of knights of the time of Charles II. to Anne, in the British Museum, Vol. I. p. 114, says, " Wren, Mid^{x}. Sir Christopher Wren, surveyor of his Majesty's works, knighted at Whitehall, Nov. 20, 1673." See also Wood's Athen. Oxon.—Wren, of Binchester, Com. Dur. &c. Had this honour not been conferred till the year following (namely, 1674), as the Parentalia, and its followers, have it, Wren would not have been so called in the Royal Society's records, nor would so careful an historian as Birch have so recorded him twice in the month of December, 1673. The fact is, however, as I have stated it, on the authority of these authentic documents.

* Birch's Hist. Roy. Soc. Vol. III. p. 119.

† Ward's Lives of the Gresham Professors, p. 103.





Plan of the Model in St Paul Cathedral
from actual measurement in 1822.

James Elmes M.R.I.A. delt.

Sir Chr. Wren. Archt.

W. Lowry sculp.

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nation, from the king downwards. The intention of repairing the old edifice was abandoned; and the architect was desired to make designs for an entire new edifice, worthy the honour of the country, and calculated to rival every edifice of its kind in Europe.

Wren, therefore, prepared various designs, for the inspection of the king, and the commissioners for the rebuilding. One being selected *, his Majesty ordered a model, in wood, on a large scale, to be made, which is now in a neglected and dilapidated state, in an apartment over the Morning-Prayer Chapel, at St. Paul's. To give an idea of this plan, which is said, and with great probability, to have been a favourite with its architect, I have given a plate, taken from actual measurement last summer. It is said to have been rejected, on account of its differing so much from the generally received notions of cathedral churches; having no aisles, with naves, which were required in the ceremonies of the church of Rome, by whose adherents they were built. Spence, in his Anecdotes †, says, on the authority of Mr. Harding, that the side oratories were added by the influence of the Duke of York and his party, who wished to have them ready for his intended revival of the popish service. He adds, that "it narrowed the building, and broke in very much upon the beauty of the design". Sir Christopher insisted so strongly on the prejudice they would be of, that he actually shed tears in speaking of it; but it was all in vain. The duke absolutely in-

* The original of this, and many others for the same edifice, are in All Souls' library, Oxford. See the catalogue published by me in the General Chronicle, for October, 1812.

† Edited by Singer, 1820, p. 265.

sisted on their being inserted, and he was obliged to comply." Both plans are, however, beautiful. That of the model possesses an originality peculiarly striking; copied from no other building, it exhibits judgment and invention in every turn. Its series of cupolettas, round the grand central dome, is beautiful, and would have proved eminently effective in execution: and the variety of views, from the different parts of the building, seen in various lights, as the spectator approaches, recedes, or perambulates its varied scenes, afford a more numerous assemblage of various, beautiful, and picturesque combinations than almost any other plan in existence. But that which is executed possesses powerful claims on our attention, and is highly entitled to our admiration. Its form is that of the Italian cathedral; cross-like, and, to a superficial observer, after the manner of that of St. Peter, at Rome, which it neither adopts nor copies, but freely *imitates*, almost even to originality, and certainly to superiority, over its Roman prototype.

Wren, in this most splendid of modern buildings, has powerfully exemplified that just and effective *imitation*, which is essential to the character of a pure style in architecture; and, at the same time, leaves room for all the exercise of legitimate invention. St. Paul's is such a free imitation of St. Peter's as the Æneid is of the Iliad; and elevates its illustrious architect, whom the Quarterly Review * calls "the pride and honour of English art," to the rank of an equally bold and original imitator, as Milton is of Homer and of Virgil; exhibiting, in all its parts, the most

* No LIV. for October 1822, p. 317.

indubitable marks of real genius; "that quality, without which," says Dr. Johnson, "judgment is cold, and knowledge is inert; that energy, which collects, combines, amplifies, and animates."

There are two modes of imitating the architecture of other countries; one true and legitimate, the other false and heterodox. The true mode is less an imitation than it is an adoption; being the reception, in the manner of an alphabet, of the system, rules, and taste of a foreign style, and adapting them to native habits and customs. Thus it was that the Romans adopted the architecture of Greece, converting the orders of Attica to the uses, habits, and the clime of Italy. Thus it was, also, with the nations of modern Europe, who, abandoning the incongruities of the middle ages, appropriated the styles of Greece and Rome to their own proper uses, by legitimate adoption: thus it was, and after this true manner, that Palladio, and the great artists of his school, by their imitations and inventive restorations, founded a legitimate and splendid school, to whose doctrines we must revert, ere we can properly apply the beautiful and exquisite details of the Grecian school. It was thus that Michael Angelo honestly imitated the Pantheon of Agrippa, in his tremendous cupola of the Vatican: and it is thus that our neglected countryman, Wren, rivalled and surpassed, in purity of taste, and scientific construction, the basilica of St. Peter, at Rome, the work of more than twenty * architects, supported by the treasure of the Christian

* Namely, Bramante, Giulio di San Gallo, Raffaello da Urbino, Baldazar Peruzzi, Antonio di San Gallo, Giocondo, Michel Angiolo, Giulio Romano, Domenico and Giovanni Fontana, Giacomo della Porta, Carlo Maderno,

world, and by the protection, and under the reigns, of twenty * successive popes, in his unrivalled work of St. Paul's, London; that glorious, but unfinished, monument of the piety of our ancestors.

Such imitations are by no means plagiarisms; but skilful adoptions, or adaptations, bearing abundant proofs of legitimate and inventive talents. "Genius," says Reynolds, "at least what is generally so called, is the child of imitation; it is in vain to endeavour to invent without materials on which the mind may work, and from which invention must originate. Nothing can come of nothing †."

The other, or false mode of imitation, is plagiarism and downright theft, with not even enough of that ingenuity to conceal it, which, among the Lacedemonians, procured a pardon for the thief. It consists in importing, as it were, by wholesale, such portions of a foreign, or ancient style, as appears suited to the purposes of its importers, and perverting them to their own use; not as their authors would have done in their time, but forcibly torturing ancient art to modern uses. Such as these are mean copiers, trading importers, common borrowers. Such, as I have

Luigi Cigoli, Borromini, C. Rainaldi, Bernini, Carlo Fontana, Vignola, Pirrho Ligorio, Filippo Ivara, and Antonio Cannevari.

* Julius II., Leo X., Adrian VI., Clement VII., Paul III., Julius III., Marcellus II., Paul IV., Pius IV., Pius V., Gregory XIII., Sextus V., Urban VII., Gregory XIV., Innocent IX., Clement VIII., Leo XI., Paul V., Gregory XV., and Urban VIII.

† Discourse VI.

before quoted, are liberal and free adopters of the greatest works of the greatest masters of our art, from whom "the modern arts were revived, and by whose means they must be restored a second time *. However it may mortify our vanity," says Reynolds, in his admirable Discourses, "we must be forced to allow them (to be) our masters; and we may venture to prophesy, that when they cease to be studied, arts will no longer flourish, and we shall again relapse into barbarism †."

It was not in this latter way that the Greeks borrowed the idea of the Corinthian capital from the Egyptians. On the contrary, they boldly adopted and naturalized it, concealing the circumstance with Spartan skill, and gratifying their national vanity, in giving currency to the ingenious hypothesis of Callimachus and the votive vase. The primitive types of the two capitals are the same; namely, a vase surrounded with foliage, and crowned with an abacus; and a verbal description of the one would serve for the other. Yet, in the essentials of a national style, they widely differ. The Egyptians used the flowers and plants of Egypt, and the Greeks those of Greece. The Quarterly reviewer has well observed, in the article before ‡ quoted, that

* Discourse VI. † Ibid.

‡ Vol. XXVII. p. 316. The same writer, in his excellent article on "The application and intent of the various styles of Architecture *," calls Wren "the Ariosto of architecture." Is not the learned critic somewhat inapt in his epithet? The thanks of every lover of English art must be gratefully offered to the powerful hand, so timefully extended to the uplifting of the smothered fame of our greatest architect; and by none more

* Quarterly Review, No. LIV. October 1822, p. 316.

" in the public buildings of all nations, the architect feels, or ought to feel, the necessity of introducing the distinguishing symbols of the people in whose land the pile was raised."

St. Olave Jewry, on the west side of the street called the Old Jewry, near Cheapside, a plain neat church of brick, with stone decorations to the apertures, and a handsome square stone tower, with pinnacles, was began this year, and finished about 1676.

sincerely than by the author of the present inefficient biography, who had the satisfaction of pointing out the paper * in question to the amiable and accomplished great grand-daughter of Sir Christopher, immediately on its publication. Few living persons, perhaps, have studied the works of Wren more closely than the present biographer, who passed nearly three years of the most active and enthusiastic part of his life in the investigation, measurement †, and delineation, of that great and splendid machine, the metropolitan cathedral of St. Paul, and has seen almost every work, private as well as public, designed by this great man. Yet he ventures to think that Borromini, or Bernini, whose works bear more resemblance to the wild irregularity, and sudden transitions from serious to burlesque, of the Orlando Furioso, have greater claims to the title of the Ariosto of architecture than Wren, with all his sober regularity of style. Wren holds a higher rank in art than Ariosto does in poetry; and approaches more to Tasso (if one who ranks with Virgil must be compared with a modern poet), in dignity of style, in harmony of composition, in liberal obedience to just laws, in strong imagination, and in well supported character: his works more resemble the "Gerusalemme Liberata" than the "Orlando," and perhaps the "Æneid" more than either.

* At Ardbraccan, the palace of the venerable Bishop of Meath, in whose family this lady has resided for many years.

† Engraved most faithfully and beautifully by Mr. John Le Keux, in "The Fine Arts of the English School;" a few copies of which were published separately, as a memoir on St. Paul's, by Mr. Britton.

After Dr. Wren's before-mentioned resignation of his chair, as Savilian professor of astronomy in the university of Oxford, he received the honourable appointment, under the great seal, of the date of November 12, 1673, of architect, and one of the commissioners for rebuilding the cathedral church of St. Paul *. The letters patent were issued unto several lords, spiritual and temporal, and other persons of high rank and quality, and to CHRISTOPHER WREN, Doctor of Laws, surveyor-general of the royal works, authorising them, or a quorum, to proceed in that great undertaking †.

* 1673, Nov. 12. Architectus et commissionarius ad ædificandum novam basilicam D^vi^. Pauli Lond. per mandatum regis sub magno sigillo, *ex mandato R.*—WREN *MS.*

† Parentalia, p. 280. The preamble of this commission, which is to be found in the Appendix, No. 17, is as follows:—"Whereas, since the issuing out of our commission (A. D. 1663, 15 Car. II.), the late dreadful fire of London hath destroyed and consumed the cathedral church of St. Paul to such a degree, that no part of the ancient walls or structures can, with any safety, be relied upon, or left standing; insomuch, that it is now become absolutely necessary totally to demolish and raze to the ground all the relics of the former building, and, in the same place, but upon new foundations, to erect a new church (which, that it may be done to the glory of God, and for the promoting of his divine worship and service therein to be celebrated; and to the end the same may equal, if not exceed, the splendour and magnificence of the former cathedral church, when it was in its best estate, and so become, much more than formerly, the principal ornament of our royal city, to the honour of our government, and of this our realm); we have caused several designs, to that purpose, to be prepared by DR. CHRISTOPHER WREN, surveyor-general of all our works and buildings, which we have seen, and one of which we do more especially approve, and have

During this year Sir Christopher built the commodious little elliptical church of St. Benedict, in Broad-street, commonly called St. Bennet Fink, from its being originally founded by Robert Finke, who gave his name also to the neighbouring street, Finke's (or Finch) lane. The church is crammed into a nook; and, although a fine specimen of its author's genius, is scarcely so well known as the celebrated baker of fancy bread, who vends his unequalled commodities next door *.

The great work of rebuilding, instead of repairing, the cathedral of St. Paul, being now finally determined upon, Sir Christopher commenced, by making all the necessary arrangement for the due accomplishment of this design. He, therefore, appointed his officers and chief workmen, with their proper offices, subal-

commanded a model thereof to be made, after so large and exact a manner, that it may remain as a perpetual unchangeable rule and direction for the conduct of the whole work. And whereas our former commission, in which the *upholding* and *repairing* the ancient cathedral church is only designed and mentioned, doth not sufficiently authorise and empower our said commissioners therein named to begin and complete a new fabric, upon new foundations."—*Ibid.*

* This church is well built of stone, in the form of an elipsis, sixty-three feet long, and forty-eight wide. It is covered by an eliptical cupola, surmounted with a glazed lantern light, and supported by six columns of the composite order; between each of which, in a spacious arch, is a large light window. It is wainscoted with fine Dutch wainscot, seven feet high; is well pewed, after the manner of English churches; and has a handsome carved pulpit and desks of the same description of wood. The altar-piece is in a handsome, bold style, and well carved. The tower is square, built of Portland-stone, and covered with a cupola and spire.

terns, and departments, all subject, and rendering accounts to him *.

* In the Harleian MS. No. 4941, at the British Museum, is the following enumeration of the "Officers employed at this time in rebuilding the cathedral church of St. Paul, their employments and salaries.

"1. Sir Christopher Wren, surveyor-generall; who draws all the designes of the building, hath the universall care thereof, gives all directions to workmen and other officers, examines all accounts, agrees for the prices of workmanship and materials, &c. His salary is £200 per annum.

"2. Mr. John Oliver, assistant surveyor and purveyor; who is constantly attending the work, giving directions to the workmen, according to Mr. Surveyor's direction given to him; he measures all the masons' work, buyes in all materialls that are to be had without traveling into the country, keeps an account of what stores are delivered to the store-keeper, and also an account of what stones are brought into the church; assists Mr. Surveyor in making of contracts, and examines all accounts, &c. His salary is £100 per annum.

"3. Lawrence Spencer, clerk of the works, and paymaster; who constantly attends the service of the work, to take care that carpenters, labourers, &c. who work by the day, be employed in such business as the surveyor hath directed to be done; takes an account, together with the assistant surveyor, what stones are brought into the work; he receives and pays all the money for workmanship and materialls, according to a list of debts directed by Mr. Surveyor; he keeps and makes up all accounts, is chargeable with all the stores, and inspects the delivery thereof to the workmen: he is also clerk to the commissioners, and enters all orders and contracts, &c. His salary is £100 per annum.

"4. Thomas Russell, clerk of the cheque; he calls over all the labourers, carpenters, bricklayers, &c. who work day-work, three times a day; viz. at six in the morning, at one in the afternoon, and at six at night. He is constantly going from place to place in the work, to keep those men to their business; he keeps, likewise, an account of materialls brought into the work, so that both the purveyor and he are cheques upon the clerk of the works in his accounts. His salary is £50 per annum."

Early in the ensuing year the workmen began clearing the ruins of the ancient cathedral, preparatory to laying the new foundation; and Sir Christopher proceeded with his designs, having to combat daily with the prejudices of his busy brother commissioners, who annoyed him with their prepossessions in favour of, what they conceived, a true cathedral form *.

It cannot be supposed, that with these important occupations and incessant calls upon all his time and energies, Sir Christopher could pay much attention to his beloved studies, and friendly associates of the Royal Society; yet, at a meeting of the council, on February 12, Lord Brouncker, the president, being in the chair, he, with his illustrious friend, Sir William Petty, was sworn vice president of the society, by taking the oaths of allegiance and supremacy, according to the prescript of the additional charter †; and assisted in some philosophical experiments at several subsequent meetings ‡. He was also selected, at a meeting of the council, on December 3, on a committee, with the Bishop of Salisbury, Sir William Petty, and Sir Jonas Moore, to examine, and report to the society, on the construction and uses of Robert Hooke's new quadrant, for making remote observations with great exactness §.

At a meeting of the council, on December 10, Sir Christopher Wren, Mr. Evelyn, Dr. Holder, Dr. Croune, Dr. Walter Needham, Dr. Brown, Dr. Pope, Dr. Smith, Dr. Vossius, Mr. Wylde, Mr. Bernard, Dr. King, and Mr. Collins, were selected by the

* Parentalia, p. 282. † Birch's Hist. Roy. Soc. Vol. III. p. 123.

‡ February 26, ibid. p. 127; June 18, ibid. p. 135; and August 27, ibid. p. 136. § Ibid. p. 159.

council as fit and proper persons to be written to, soliciting a communication from each, and for them to name any day after January 14 next *.

In pursuance with this resolution, the president addressed the following letter to Sir Christopher, and to the other fellows of the society so selected:

" SIR,

" The council of the Royal Society, considering with themselves the great importance of having the public meetings of the said society constantly provided with entertainments suitable to the design of their institution, have thought fit to undertake to contribute each of them one, not doubting but that many of the fellows of the society will join with them in carrying on such an undertaking. And well persuaded of your approbation of this their purpose, so much tending to the reputation and support of the society, they desire that you would be pleased to undertake for one, and to name any Thursday, after January 14 next, such as shall be most convenient for you, when you will present the society, at one of the said public meetings, by yourself, or by some other of the fellows for you, with such a discourse, grounded upon, or leading to, philosophical experiments, on a subject of your own choice. In doing of which you will benefit the society, and oblige,

" Sir, your humble servant,

" † BROUNCKER, P. R. S."

" *To Sir Christopher Wren, Knt.*"

* Birch's Hist. Roy. Soc. Vol. III. p. 160. † Ibid. p. 162.

Few men ever led such an active, or, perhaps, such an useful life, both public and private, as Sir Christopher Wren. His public occupations prove the one, and there are abundant documents in existence to prove the other. In addition to his duties as surveyor-general, the privy council were perpetually referring disputes and arbitrations to him. In this year, 1674 *, he warns the king, that a Mr. Ball, notwithstanding all due warning and frequent prohibition, continues to build stables, and other mean buildings, on new foundations, contrary to the proclamation against such nuisances. On another occasion, the council refer to him and the Lord Mayor of London, a petition of Edward Nicholas and George Cooke, trustees to the seven daughters of William Wheeler and Jane his wife, printer to his Majesty, for leave to finish certain buildings, and to erect others near Spitalfields. He also complains to the council, about obstructions of the water, from the seven conduits serving his Majesty's palace; and has an important cause, "inter guard. et assistentes portus de Dover," concerning timber, &c. referred to him, R. German, Robert Hooke, and R. Rider. On July 22 he informs the king, that in obedience to his Majesty's most gracious reference, upon the petition of John Grove, master plasterer to the king, he had searched into the accounts of the office, and received a certificate from the paymaster of the works, that there was remaining, due and unpaid to the petitioner, over and above what he had received, the sum of £369. 4*s*. 4*d*. upon the books of the ordinary repairs of his Majesty's houses; and the sum of £487. 17*s*. 4*d*. for divers new

* The Privy Council MS. belonging to me.—J. E.

works, for his Majesty's service, for the queen, for his Royal Highness (the Duke of York), for the Prince (Rupert), and others, by the king's orders; and also £100. 3*s*. 2*d*. upon account of repairing Sir John Denham's houses, by his Majesty's order; which houses were ordered to be pulled down in the time of the fire, for the security of Whitehall *.

At a court, held at Whitehall, October 23, 1674, present, the king's most excellent Majesty, in council, a petition from Ralph Buchnall, Esq. and Ralph Wayne was read, which set forth, that his Majesty, by letters patent, dated May 6, in the seventeenth year of his reign, was pleased to empower Francis Williamson, Esq., deceased, and Ralph Wayne, Gent., to convey certain springs of water to, and for the use of, the inhabitants of St. James's Fields, Piccadilly, Charing-cross, and parts adjacent; therein also declaring that, upon their petition, his Majesty would grant such further power and licence as should be necessary for the better supply of the inhabitants. And, therefore, praying licence for the raising of Thames water, and conveying the same from York House Garden, London, to the aforesaid places, and elsewhere to such persons as should desire it. It was then ordered, by his Majesty in council, that Sir Christopher Wren, &c. &c. surveyor-general of his Majesty's works, do examine this business, and view the place where the petitioners would raise the water, and thereupon to report to the board what annoyance or inconveniency may happen to the inhabitants thereabouts, by granting the petitioners' request. This entry is signed Robert Southwel'

* Manuscript Transactions of Privy Council, p. 48.

and is followed by Sir Christopher's report, that, in obedience to the said commands, he accordingly viewed the place, and saw the design of the engine, which he did not conceive would be any annoyance, the work moving easily, and without any noise. He also informs the king, that he had seen a paper, expressing the desire of the inhabitants that this work should be effected; to which he adds, that the names of many persons of quality were affixed *.

The great desire of Sir Christopher and of his royal patron for the improvement of the metropolis was constantly exerted in every shape that could be devised; and we, of the present day, are under heavy obligations to their care, although private interests often prevailed over their patriotic endeavours. One of our great architect's wishes was the removal of all burying-places and grave-yards from the metropolis. At a meeting of the king and privy council, at Whitehall, November 25, 1674, the parishioners of St. Clement Danes petitioned the king, by their church-wardens and ancients †, praying that his Majesty would be graciously pleased to grant them licence to build houses, for the benefit of the poor of the said parish, on the north side of a piece of ground, heretofore purchased by the said parish, and belonging thereto, called the New Church-yard, by Lincoln's Inn Fields; and also to erect columns where the new rails stood, to enclose the foot passage which they intended to lay with free-stone, for the conveniency of passengers in foul and rainy weather. This is, as usual, referred to Sir Christopher Wren, who is ordered to view the place forthwith, and also their design and model for

* Manuscript Transactions of Privy Council, p. 49. † Sic in orig.

their proposed building *. On this the surveyor-general reports, that he had viewed the place, and considered the design for building the same, partly over the church-yard, and partly over seven foot of the street, upon columns †, leaving the footway covered with the upper stories of the houses, in manner of a portico. He conceived that the houses, thus built, would be more graceful than the dead wall then standing; and that the street and foot-passage would be rendered more commodious, lying near the "mercate ‡;" and the place he reports as being only fit for fruiterers, poulterers, and such trades as are not likely to be prejudicial to the city trade. He also informs the council that, although he found, on inquiry, that the poor of the said parish being, in comparison, less numerous than in the outward parishes, were not likely to be destitute of reasonable maintenance; yet, that the parish being in debt for the repairs of their church §, and new building their steeple, he recommended his Majesty's gracious allowance to

* MS. last quoted, p. 50.

† These houses must be in the remembrance of most passers from Portugal-street to Lincoln's-Inn-fields.

‡ In this MS. Sir Christopher regularly spells market thus, from *mercatus*.

§ By this entry it appears that the church of St. Clement Danes was repaired after the fire, and the steeple only built anew, as in the instance of St. Dunstan's in the East; the body of which has been recently rebuilt by Mr. Laing, the architect of the new Custom-house. It was afterwards taken down in 1680, rebuilt and finished in 1682; Sir Christopher, as appears by an inscription, on a stone of white marble, on the north side of the chancel, freely and generously bestowing his great care and skill in designing and building it. Generosity and liberality are among the most prominent features of this great artist's character.

relieve them in this manner. Notwithstanding this recommendation, he suggested two inconveniences as likely to result to the public from its being granted. First, that of building churchyards in the metropolis; which, he says, if it be brought into precedent in other places, will be of ill consequences; many parishes being very ill provided of burying-places in sickly times, which the metropolis had so recently, and with such terrific consequences, escaped; and great indecencies being used to the dead for want of room. Secondly, he could not but represent to the king, in council, that great numbers of the rebuilt houses of London were still uninhabited*. These are but a few of the incessant applications to the time and talents of this highly gifted man.

St. Dionis, Back-church, in Fenchurch-street and Lime-street, was commenced this year; and the tower and steeple added in 1684. It was so named, as standing back behind some houses, to distinguish it from St. Gabriel's, which, before the fire of London, stood in the middle of the street. This edifice is chiefly of stone; but part of the walls are of brick, stuccoed. It is of the Ionic order, in a masculine, bold style; with a nave, sixty-six feet long, and thirty-four high, separated from two ailes by Ionic columns. The entire width within is thirty-four feet; and its plain substantial bell tower and steeple ninety feet high.

St. George, Botolph, situate on the west side of Botolph-lane, near Billingsgate, to which parish it is united, a substantial, plain, well built stone church, was also began this year, and finished

* Manuscript Transactions of Privy Council, p. 51.

about three years afterwards. The exterior is in a handsome, bold style, and decorated with appropriate sculpture. The interior is composed of a nave and two ailes, separated by columns of the composite order, which support a handsome vaulted roof. Its length is fifty-four feet, breadth thirty-six, and height thirty-six.

St. Sepulchre, on the north side of Snow-hill, opposite to the Old Bailey, which was almost demolished by the fire, was began to be rebuilt in 1670, and finished about this year. This church has nothing remarkable, either in design or execution, being only a restoration and partial rebuilding upon its former plan.

This year is memorable in English history for the death of two of the greatest men that ever graced its annals, Milton and Lord Clarendon.

The beginning of the next year, 1675, was occupied in preparing for the great work of rebuilding St. Paul's, and by other public works under the direction of Sir Christopher. Early in the spring he had so arranged with his skilful and scientific master mason, Thomas Strong, who was then also engaged by him in building the church of St. Stephen's, Walbrook, as before mentioned, that he made the first contract with the commissioners and the architect for rebuilding the cathedral *.

The Royal Society, which had hitherto done little without the assistance of Wren, and whose members had but a few months before solicited the continuance of his contributions, through

* Clutterbuck's History of Herts, Vol. I. p. 167.

their president, appear, at the commencement of this year, to have felt his loss. Their transactions are little more than arrangements for the payment of arrears from deficient members; and one of their entries on this subject is a curious incident of "the mutability of human affairs." At a meeting of the council, on January 28, Mr. Oldenburg having mentioned that Mr. (afterwards Sir Isaac) Newton had intimated his being in such circumstances, that he desired to be excused from the weekly payments, it was agreed to by the council that he should be dispensed with *. Sir Christopher does not appear, from the records of the society, to have attended a single meeting during the whole year; nor does his name appear in their transactions, except in the solitary instance of a letter, in French †, being read before a very thin attendance of the council, on November 11, from Mons. Joly, of Dijon, dated there September 28, 1675, in which he offered to communicate his meditations upon the nature of motion, if the society did not think that subject altogether exhausted by Sir Christopher Wren, Dr. Wallis, and Mons. Huygens. To this communication the society answered, that although those eminent persons had written satisfactorily upon that subject, yet the meditations and labours of others would still find place; and that, therefore, Mons. Joly should be desired to prosecute and finish his thoughts upon so important a subject ‡.

Wren's office, as may be collected from some of the preceding pages, was by no means a sinecure. The records of the privy

* Birch's Hist. Roy. Soc. Vol. III. p. 178.
† Letter Book of the Roy. Soc. Vol. VII. p. 157.
‡ Birch's Hist. Roy. Soc. Vol. III. p. 230.

council abound with his reports and awards. During this year he had an important reference from them, concerning an application of Philip Doughty, Esq., about his new buildings in the Mews, by order of the Duke of Buckingham *. These reports are proofs of the judgment of their author, and are close and efficient in style. Shortly after, one Martha Hammond prays further recompense for her remainder in the lease of the cellars under Bow church. Sir Christopher examined her petition, and, after some excellent remarks on cemeteries, recommends, that, out of charity to the widow, her trifling interest be liberally purchased to be a burial-place for ever †. He next has to define the boundaries of the Custom-house, which he does with great accuracy. Then John Grove petitions his Majesty that John Grove, his son, may have his situation of plasterer to his Majesty, in reversion; and the knight certifies, that of late years his Majesty's works and many public buildings have passed through the hands of John Grove, the son, and that he found him sober, diligent, and as skilful in his art as any of that profession. Sir Christopher Wheeler also petitions his Majesty's royal pardon for his building in Spitalfields, and licence to build the rest; which is referred, as usual, to the surveyor-general; who, on viewing the ground and building, containing a few streets, the situation and bounds of which he represented in an accompanying map, considers them as tending to public utility, and recommends the prayer of the petition accordingly ‡.

* The Privy Council MS. belonging to me, p. 52.—J. E.

† Ibid. p. 53. ‡ Ibid. p. 50.

Shortly after, the court directed (during the mayoralty o Robert Vyner), Sir William Turner, Sir Joseph Sheldon, an Thomas Dewis, Knts. and aldermen, or any two of them confer with Sir Christopher Wren, Knt., his Majesty's veyor-general, the surveyor of new buildings, Mr. Whiting, the churchwardens of the united parishes of St. Mary-le-I St. Pancras, Soper-lane, and Allhallows, Honey-lane, or suc them as they shall think convenient, touching an accommod to be made in Bow church, for receipt of the Lord Mayor, a men, and officers of this city, and also of the livery of the tv companies, upon Sunday mornings and other solemn occasi and to consider what additions or alterations will be nece to be made in the said church, for that purpose *.

Charles Atherton, plumber, states, in a petition to the in council, that, as he served his apprenticeship to his Maje serjeant plumber, and hath continued ever since an assistant agent under him, being well experienced in the said employn he humbly craves his Majesty graciously to grant him reversion of the place of his Majesty's serjeant plumber. Christopher's certificate runs thus: "These are to certify Charles Atherton, plumber, hath been constantly employed i Majesty's work, as assistant to his brother-in-law, Peter B serjeant plumber to his Majesty; and I have always found an able and honest artizan.—Christopher Wren †."

Next follows an important report of the dimensions boundaries of a piece of ground in St. James's-street, adjo

* MS. last quoted, p. 51.

† Ibid. p. 57.

the park, belonging to Mr. Callop and others, dated May 17, 1675: and, immediately following, Lord Arlington prays and requires the surveyor-general to repair a little room in the green cloth yard, at Whitehall, near to Sir George Carteret's, his Majesty's vice-chamberlain, for the use of her Majesty; but so that it doth not offend Mr. Vice-chamberlain *. He is next ordered by his Majesty, in council, to examine the allegations in a petition of Nathaniel Tilly and John Tilly, which sets forth, that upon a report of the Lord Mayor of London, and Mr. Surveyor-general of his Majesty's works, his Majesty was pleased to give free liberty and licence to Edward Nicholas and George Cooke, trustees for the seven daughters of William Wheeler and Jane his wife, deceased, their heirs and assigns, to frame, erect, and build, such and so many houses as to them should seem meet, upon certain lands in Spitalfields, in the county of Middlesex. That, in pursuance of the said licence, they have built, to the great wrong, prejudice, and annoyance of the petitioners and others. It was, therefore, ordered by his Majesty, in council, that a copy of the said petition be delivered unto Sir Christopher Wren, Knt., surveyor-general of his Majesty's works, who is to examine the whole matter of the petitioners' complaint, and thereupon to make report to this board how he considers the same, and then his Majesty will give further order therein †.

The surveyor made his report on June 18, giving his reasons, founded on public justice. It did not please the parties complained of; and they appealed, on November 6, to the king, who held

* Manuscript Transactions of Privy Council, p. 59. † Ibid.

a council to investigate the subject, which concluded by ordering that a copy of the said objection be forthwith delivered to the said Sir Christopher Wren, who was required to give in his reply thereunto, with all convenient speed. This Sir Christopher replied to at length, on January 26 following.

These abstracts, from a crowded mass of manuscript documents of the same nature, prove the active zeal of the king, and the confidence of both him and his council in their able architect; and every person concerned performed their public duty with alacrity and disinterestedness.

A discovery of some human exuviæ, during a repair which was executing at the Tower this year, under the direction of Sir Christopher, led many persons to believe they were the remains of the two young princes who were said to have been murdered, by smothering, in that fortress, by their uncle, Richard the Third. They were discovered about ten feet under the surface of the ground, in a wooden chest, as the workmen were taking away the stairs which led from the royal apartments into the chapel of the White Tower. Wren, through whom this discovery was communicated to the king, and without whom nothing in this way appears to have been done, was, as usual, desired to attend to it, in the following order from the Lord Chamberlain of his Majesty's household:

"These are to signify his Majesty's pleasure, that you provide a white marble coffin, for the supposed bodies of the two princes lately found in the Tower of London; and that you cause the same to be interred in Henry the Seventh's Chapel, in such con-

venient place as the Dean of Westminster shall appoint: and this shall be your warrant. Given under my hand, this 18th day of February, 1674-5.

"ARLINGTON."

"*To Sir Christopher Wren, Knt., Surveyor-General of his Majesty's Works**."

In pursuance of this warrant, Sir Christopher designed an elegant urn, of white marble, on a pedestal, with an inscription; which, being approved by his Majesty, were erected in the east wall of the north aisle of King Henry the Seventh's Chapel, Westminster.

H S S
Reliquiæ
Edwardi Vti, Regis Angliæ, et Richardi Ducis Eborac.
Hos fratres germanos in Arce Londinensi conclusos,
Injectisque culcitris suffocatos,
Abditè et inhonestè tumulari jussit
Patruus Richardus perfidus regni
Prædo.
Ossa desideratorum diù et multùm quæsita
Post annos CXCI.
Scalarum in ruderibus (scalæ nuper istæ ad sacellum
Turris albæ ducebant)
Altè defossa indiciis certissimis sunt reperta,
XVII. Die Julii, Anno Domini MDCLXXIIII.

* Ex autograph.—*Parentalia*, p. 333.

Carolus Secundus, Rex clementissimus, acerbam
Sortem miseratus,
Inter avita monumenta, principibus infelicissimus
Justa persolvit.
Anno Domini 1678, Annoque Regni sui, 30.

These form but a slight sketch of the indefatigable and laborious employment of the surveyor-general. Envy, which follows merit like its shadow, could not be expected to suffer Wren to go untouched: and he was assailed in various ways. The higher classes aimed at his talents, and endeavoured to thwart him in his favourite project of making St. Paul's the first protestant cathedral in the world; and persons in lower classes attempted to injure his credit. John Groves, the man whom we have just found served by him, and another, petitioned the Bishop of London for their arrears; and Wren, to whom it was referred, draws up, in reply, a proposal for their payment, which did not rest with him *.

* Their petition is as follows:

" To the Right Reverend Father in God, Humphrey, Lord Bishop of London.

" The humble petition of John Groves and Matthew Banks,

" Humbly sheweth,

" That your petitioners having been employed for some years by Sir Christopher Wren, whom your lordship hath entrusted with the building of churches in London; and having considerable sums remaining due to them for work finished, for the most part, two years since, upon the certain and speedy payment whereof their future credit in a great measure depends.

" Your petitioners most humbly pray your lordship to consider their

Other petitions, of a similar nature, were occasionally pre-

condition, and accordingly give order for the securing the payment of their several sums so due to them, as aforesaid, upon the first moneys arising by coals, or payable out of the chamber of London; or otherwise, as your lordship shall think expedient.

" And your petitioners shall ever pray."

Mr. Groves' Account of the Churches, stated May* 4, 1675.

	Bills.	Paid.	Debtor.
Bow church,	298 02 08	145 00 00	153 02 08
Bennet Finke,	131 11 02	060 00 00	071 11 02
Olave's Jewry,	153 17 06	025 00 00	128 17 06
D. Backchurch,	157 00 04	030 00 00	127 00 04
Aldermanbury,	174 15 05	060 00 00	114 15 05
Mildred's, Poultry,	120 02 05	030 00 00	090 02 05
	1035 09 06	350 00 00	685 09 06
Bread-street lab.	028 13 04	020 00 00	008 13 04
			694 02 10

Exam. p. me, J. G. Phillips, dies superscript.

The following, in Sir Christopher Wren's handwriting, immediately follows, and is headed

PROPOSALS†.

1. That there may be warrants, granted under the Lords Commissioners' hands and seals, according to the intent of the act of parliament for re-building of churches, for the security of the workmen's debts; which war-

* Harleian MSS. Brit. Mus. Codex 4941, Art. 13. † Ibid. Art. 14.

sented; but they all met with a similar fate, and their object rose the higher from their attacks *.

Among the smaller works executed by Wren this year is the Observatory at Greenwich, more generally known by the name of Flamsteed House †, after the celebrated astronomer, who first

rants the workmen will take for the payment from the Lords Commissioners, and discharge the several books.

2. That these warrants be placed payable out of the coal money that comes in, in order, between the several warrants already granted to the parishioners.

3. That the several churches be placed in order to be paid for, as the Lords Commissioners have, from time to time, ordered the several churches to go in hand.

4. That every workman have a particular warrant for his debt, that is stated by Sir Christopher Wren, upon every particular church, placed payable, one after the other, till the work already done be paid for; and so one church after the other, as they are placed in order.

5. That none of these workmen's debts be postponed, or the payment hindered by any warrant to be granted for the paying for any work not yet done. C. W.

* See Harleian MSS. Codex 4941, Art. 21, &c. &c. One to the same effect, to the Archbishop of Canterbury, is signed by John Tompson, Charles Kempster, Samuel Hulkes, Richard Hewes, Samuel Challener, Thomas Horn, Henry Doogood; and another, Art 53, Codex 4941, by John Tompson, Charles Kempster, Samuel Hulkes, Edward Strong, Matthew Roberts.

† The establishment of this observatory owed its origin to the following circumstances. Mons. de St. Pierre, a Frenchman, who came to London in 1675, having demanded a reward from Charles II., for his discovery of a method of finding the longitude by the moon's distance from a star, a commission was appointed to examine into his pretensions. Flamsteed,

cupied and used it. Sir Jonas More, surveyor-general of the dnance, an able astronomer and mathematician, was the first o suggested this useful national establishment to Charles the cond; who, with that alacrity which always distinguished him the advance of science, assented to it, and approved of Green-ch as a fit site. Sir Christopher Wren, from his acknowledged ents as an astronomer, was appointed one of the commissioners carrying it into execution, as well as its architect. The ndation was laid on August 10 of this year; and when the ucture was finished, it was properly fitted and furnished with e best instruments for making astronomical observations, and e celebrated Flamsteed appointed his Majesty's first professor ere *.

o was appointed one of the commissioners, furnished St. Pierre with tain *data* of observation, by which to calculate the longitude of a given ace. This he was unable to do; but excused himself by asserting that e data were false. Flamsteed contended that they were true; but allowed at nothing certain could be deduced from them, for want of more exact bles of the moon, and more correct places of the fixed stars, than Tycho's servations, made with plain sight, afforded. This being made known to e king, he declared that his pilots and sailors should not want such an istance. He resolved, therefore, to found an observatory, for the pur-se of ascertaining the motions of the moon, and the places of the fixed rs, as a means of discovering that great desideratum, the longitude at ; and Flamsteed, who was recommended to his Majesty by Sir Jonas oore, was appointed astronomer royal; and the observatory, from him, s been denominated Flamsteed House.—Lyson's *Environs of London*, l. IV.

* Ward's Lives of the Gresham Professors, p. 337; Parentalia, p. 333; ef. ad Hist. Cœlest. Johann. Flamsteedii, p. 11, edit. 1712; fo. &c. &c.

Notwithstanding all these public and private engagements, and having the ruined metropolis and all its churches to reinstate, Wren proceeded with St. Paul's with as much expedition as if that stupendous work was his only engagement.

The original plan, as before stated, and which the architect preferred, namely, that of the wooden model in the cathedral, engraved for this work, did not please his clerical brethren who were on the commission with him, being, in their opinion, not sufficiently of a cathedral form: he was compelled to alter his plan to that which we see executed, and which the author of Parentalia calls "the Gothic rectified to a better manner of architecture *. In the portfolios of his drawings, belonging to All Souls College, Oxford, are many of his variations, from the original sketches, as the work proceeded, and as they arose in his fertile mind; each increasing in beauty, till it arose to the present admirable plan.

At last, the king and council approved the designs; and, that there might be no farther interruption, a warrant † was issued,

* Page 282.

† "CHARLES R.

"Whereas we have been informed that a portion of the imposition laid on coals, which, by act of parliament, is appointed and set apart for the rebuilding of the cathedral church of St. Paul, in our capital city of London, doth at present amount to a considerable sum, which, though not proportionable to the greatness of the work, is, notwithstanding, sufficient to begin the same; and, with all the materials, and other assistances which may, probably, be expected, will put a new quire in great forwardness; and whereas, among divers designs which have been presented to us, we have particularly pitched upon one, as well because we found it very artificial, proper, and useful, as because it was so ordered that it might be built and

under the privy seal, for beginning the works. From this time, armed with the authority of his royal patron, Sir Christopher resolved to make no more models, or exhibit any more of his designs; which not only delayed time, but subjected his works to the frivolous opinions of incompetent judges. By these means, at last, the entire plan of the present mighty structure was concluded upon and sanctioned by the king, whose decision of character, in this business, procured for his country its greatest architectural ornament. The king, says the author of Parentalia*, allowed him to make variations † in his design as he pleased; and, most properly, left the whole to his own management.

finished by parts:—we do, therefore, by these presents, signify our royal approbation of the said design, hereunto annexed; and do will and require you forthwith to proceed according to the said design, beginning with the east end, or quire, and accomplishing the same with the present stock of money, and such supplies as may probably accrue, according to the tenor of the commission * to you directed; and, for so doing, this shall be your warrant. Given at our court, at Whitehall, the 14th day of May, 1675, in the 27th year of our reign.

" By his Majesty's command,
" † HENRY COVENTRY."

" *To our Commissioners for rebuilding the Cathedral of St. Paul, London.*"

* Page 283.

† Some of these variations, as I have before mentioned, show the operations of this great man's mind in a curious manner. In the second ‡ volume

* See Appendix, No. 17.

† From Parentalia, p. 281. Collated with the original, No. ix. Vol. II. of Sir Christopher Wren's designs, &c. in the library of All Souls College, Oxford.

‡ See the entire catalogue of them, published by me in the General Chronicle and Literary Magazine, for October, 1812.

The work of pulling down the ruins of the old cathedral now proceeded with rapidity and caution; yet disobedience to the

of his drawings, at All Souls, is a ground plan of the old cathedral, before the addition of Inigo Jones's portico, most delicately drawn on vellum. The Rev. Mr. Gutch, librarian to the college, and registrar of the university, informed me, when I was transcribing many of the documents for this work, that Mr. Buckler had copied it for Sir Henry Englefield. No. 2 is a sketch for a cupola for the old cathedral, before the fire of 1666; when it was intended, as Evelyn relates, to metamorphose it, after the mode of Inigo Jones, to an Italian cathedral: it is in pencil, and much resembles that of St. Maria del Fiore, at Florence. 3 is a ground plan of one of the Gothic pillars in old St. Paul's, with the autograph, *Christopher Wren.* 4 is a plan of the intersection of the cross of the old cathedral, and the proposed cupola in the middle. The pendentives, or four principal piers which support it, are drawn solid, with large niches, and only open at the nave, choir, and transepts; also signed *Christopher Wren.* 5 is a plan of the said cupola. 6. Orthography of the cupola and part of the old cathedral, arranged according to the preceding design. The cupola has luthern windows and a gallery. 7 is a section of the same, most elaborately drawn and finished in Indian ink. The choir, which is on an ascent of eighteen steps, remains Gothic; the other parts are of the Corinthian order. The upper windows somewhat resemble those of the present choir. This drawing has the autograph, *Christopher Wren*, 1666, among the timbers of the roof. 9 is the original warrant, under the sign manual of Charles II. before quoted, and is also printed in Parentalia. 10 is an ichnographical plan of the new church, made after the great fire: it somewhat resembles the present plan in general feeling; but the north and south entrances are flat, and have inverted porticoes, or columns, in antis; and the west portico projects three columns from the wall. 11 is an elevation of the west end, with a cupola and spire, and only one story of columns: it has heavy piers instead of pilasters, and the cupola is surmounted with a lofty spire. The west portico resembles that of Inigo Jones. 12. Elevation of the west end, with a section of the same. 13. South front, resembling the last, with a

orders of this scientific master more than once caused the loss of limbs and lives. The pulling down the old walls, which were, in many places, eighty feet in height, and five feet in thickness, was a great and arduous undertaking. At first, the men stood

lofty spire, surrounded by seven galleries, on the cupola. 14. Section from east to west of the whole church, cupola, and spire. In this design Sir Christopher has not omitted the architrave over the columns that support the arcade in the choir and nave. 15. A sketch for a portico to the last. 16. Plan for the new cathedral, drawn and hatched with a pen; somewhat, though little different, from the approved plan (No. 10). The pendentives in this drawing are open to the aisles of the nave, choir, and transepts, as at present, and as in the approved design, No. 10; which proves this novel and beautiful idea to have arisen early in the mind of its great architect. 17. An unfinished pencil drawing, with some variations upon No. 14. 18. A pencil sketch for the screen and organ. 19. A pencil drawing, in outline, of the interior, beautifully correct, and spiritedly touched. I fancied I could trace ornaments in the spandrels of the arches; but, being so much foreshortened, I am not positive. 20. A perspective of the interior, taken from opposite the recess under the cupola, now occupied by Dr. Johnson's monument, showing the whole expanse of the cupola. The vanishing is correctly managed, and the curved lines appear struck with an instrument. 21 is called, in the volume, Sir Christopher's favourite design. It does not much differ from that of the model engraved in this work. 22. West front of the same, resembling the model. 23. Section of ditto, from north to south. 24 is called, in the manuscript index, "Design for the centering of the present cupola;" but, to my serious disappointment, it was only a plan of the octagon below the whispering gallery, and of the lantern above, and very slight. 25. Elevation and centering of the cupola of the model design. 26. Ditto. 27. Named the same as 24, but is only a plan of the model cupola. 28. Design for a cupola after the Italian taste, with double cupolas, in an excellent manner of construction, drawn and shaded in hatching with a pen: it has steps on the top of the outer cupola, surmounted by

above, working them down with pickaxes, while labourers below moved away the materials that fell, and dispersed them in heaps, which accumulated to a complete hinderance of forming the founda-

a statue, like that of his pupil, Hawksmoor's, at St. George's, Bloomsbury, concerning which a wag wrote,—

> " When Harry the Eighth left the Pope in the lurch,
> The people of England made him head of the church;
> But, wiser than those, the good Bloomsbury people,
> 'Stead of head of the church, made him head of the steeple."

29 is a drawing of the south elevation of St. Paul's, nearly as at present, with variations in the cupola and western towers. The cupola is like that of the model, with windows in it; and the bell tower is finished like the present cupola. There are statues over every pilaster, well drawn, and shaded in ink. 30. The choir of St. Paul's, with the stalls, and a sketch for the plan, in red chalk. 33. Plan of St. Paul's, with the arrangement for the churchyard, as at present. 35. Plan of St. Paul's, nearly as at present; well drawn and hatched with a pen. The north front in this drawing has steps like the south. 36. Elevation of the east end of St. Paul's, remarkably well shaded. 37. Elevation of the west end, on a large scale, and highly finished: it has luthern windows in the cupola, and a small variation from the present bell towers. 38. Section of the north transept of St. Paul's, shaded with great force and effect. 39. Elevation of the west end, with luthern windows in the cupola, and variations from the present bell towers, highly finished. There is a clock in both towers without minute hands. The walls are not rusticated, nor the columns fluted. 40. An unfinished sketch in pencil, partly washed with Indian ink, of ornaments for the choir. 41. Sketch of part of the inside, and elevation of the front. 42. An early idea for St. Paul's. 43. Plans, sections, &c. of various parts of St. Peter's at Rome, and Il Duomo at Florence, compared in two sections and six plans, on one large sheet. 64. Another idea of a plan for St. Paul's, differing from the other.

tions. Many of the streets of the city required new paving, and others raising. The corporation, therefore, bought much of the stone and stone rubbish for this purpose; and other parts were disposed for building the parochial churches, as permitted by the order of April 21, 1671 *.

In order that the rubbish and old materials might not hinder the setting out of the foundations, for the purpose of proceeding with the works, Sir Christopher constructed scaffolds high enough to extend his lines over the heaps that were in the way; and thereby caused perpendiculars to be fixed upon the points below, for his various walls and piers, from lines drawn carefully upon the level plan of the scaffold. Thus he proceeded, gaining every day more room, till he came to the middle tower that formerly carried the lofty spire. The ruins of this tower being nearly two hundred feet high, the labourers were afraid to work above, which induced him to facilitate the labour by the use of gunpowder. To perform this work, he caused a hole to be dug, of about four feet wide, by the side of the north-west pier of the tower, in which was perforated a hole two feet square, reaching to the centre of the pier. In this he placed a small deal box containing eighteen pounds of gunpowder. To this box he affixed a hollow cane which contained a quick match, reaching to the surface of the ground above; and along the ground a train of powder was laid with a match. The mine was then closed up, and exploded, while the philosophical architect waited with confidence the result of his experiment.

* See page 307 of this work for the order of the commissioners.

This small quantity of powder not only lifted up the whole angle of the tower, with two great arches that rested upon it, but also two adjoining arches of the aisles, and the masonry above them. This it appeared to do in a slow but efficient manner, cracking the walls to the top, lifting visibly the whole weight about nine inches, which suddenly dropping, made a great heap of ruins in the place, without scattering or accident. It was half a minute before the heap already fallen opened in two or three places, and emitted smoke. By this successful experiment the force of gunpowder may be ascertained; eighteen pounds only of which lifted up a weight of more than three thousand tons, and saved the work of a thousand labourers. The fall of so great a weight from an height of two hundred feet gave such a concussion to the ground, that the inhabitants round about took it for the shock of an earthquake *.

Encouraged by this successful operation, Sir Christopher proposed to continue this method; but, having engagements in the country for the king, he left the management of another mine to the care of his next officer; who, too wise in his own opinion to obey the orders of his superior, inserted a larger quantity of powder, and neither went low enough, nor sufficiently fortified the mouth of the mine. The result, though successful, unfortunately caused a fragment of stone to be shot from its mouth into a room of a private house, where some women were sitting at work. This accident, although no injury was sustained, alarmed the neighbours to that degree, that they prevailed on the commissioners to

* Parentalia, p. 284.

order that no more powder should be used; though with the original caution of the architect, it might have been continued without danger, and with a saving of much time and money. This compelled him to turn his thoughts to other methods of saving time, preventing expense, and the preservation of men's limbs and lives. His first, and successful expedient, was with that ancient engine of war, the battering-ram: to accomplish this object, he provided a strong mast of timber, about forty feet in length, which he armed at the bigger end with a great spike of iron, fortified with iron bars along the mast, secured by ferrules. This machine he suspended from two places to one ring with strong tackle, on a triangle, such as were used to weigh heavy ordnance. Thirty men, fifteen on a side, vibrated this machine to and fro, beating for a whole day against one place of the wall. This the workmen fancied was little to the purpose, not discerning any immediate effect. Wren, however, who dived into causes and effects more philosophically than most men, and knew that the intestine motion thus communicated must be successful, bid them not despair, but proceed another day. On the second day the wall began to tremble at the top, and after a few more hours perseverance it fell. He made ample use of this machine in beating down all the lofty ruins, and speedily cleared away enough to commence his building.

The first stone of the new cathedral was laid on June 21 *

* Bateman's MS. account of the rebuilding of St. Paul's, at Lambeth Palace. "1675. Novæ basilicæ D^vi^ Paulæ Lon. primum posuit lapidem."—WREN *MS.*

of this year, by the architect, assisted by Thomas Strong *, the master mason, and the second by Mr. Longland †, and the works were carried on with energy and perseverance towards their close; the most important features of which will be mentioned chronologically, as we proceed.

The church of St. Michæl, on the west side of Wood-street, Cheapside, was rebuilt this year of stone. The ceiling is flat, and decorated with fret work, and the walls with arches and imposts. Its greatest beauty is the exterior of the east end, which is a bold and simple composition of four Ionic pilasters, on a stylobate, supporting a well proportioned pediment; under which, and between the pilasters are three semicircular headed windows. Its length, within, is sixty-three feet, breadth forty-two, and height thirty-one.

Among the less public acts of the surveyor-general, was his first marriage, which Ward, in his Lives of the Gresham Professors, and other biographers, relate to have taken place about this time ‡; but neither Parentalia nor any other writer mention the date §,

* Clutterbuck's Hist. of Hertfordshire, Vol. I. p. 168.

† Strype, Vol. I. p. 155.

‡ Ward's Lives of the Gresham Professors, p. 103.

§ I have not been able to discover the date of this marriage, nor where it took place. Miss Wren, the daughter of Stephen Wren, the publisher of Parentalia, who has resided for many years with the amiable family of the venerable Bishop of Meath, and to whom I paid a visit, to Ardbraccan-house, county of Meath, this autumn, for the purpose of perusing her documents, has many very valuable mementos of her illustrious great grandfather, but no date of this event, neither in a manuscript biography of Sir Christopher by her father, nor in the Genealogical Tree, nor is it in the Lansdown Manuscript. They all mention it, but give no date.

although it was into no obscure family. It must have been early in 1674 that he married Faith, the daughter of Sir John Coghill, of Blechington, in Oxfordshire, by whom he had one son, Christopher * Wren, who was born on Feb. 16, 1675, while preparations were making for laying the first stone of St. Paul's. His other children and marriage will be mentioned.

The year 1676 commenced with Sir Christopher much the same as the last; St. Paul's, the parochial churches, the court of

* This gentleman, the only surviving child of Sir Christopher, was born on February 16, 1675, and was educated at Eton school, and Pembroke-hall, Cambridge. In 1694, his father procured him the office of deputy-clerk engrosser; but this preferment did not prevent him from making a tour through Holland, France, and Italy. On his return from the continent, he was elected member of parliament for Windsor, in 1712, and 1714. He died August 24, 1747, aged seventy-two, and was buried in the church of Wroxhall, adjoining to his seat, Wroxhall Abbey, Warwickshire, now the residence of his worthy descendant, Christopher Wren, Esq. late high sheriff of the county. He was a man much esteemed, and was equally pious, learned, and amiable. He had made antiquity, which he well understood, his particular study, and was extremely communicative. He wrote and published, in 1708, in quarto, a work entitled "Numismatum antiquo cum sylloge, populis Græcis, municipiis et coloniis Romanis cusorum, ex chimeliretio editoris." This work, which he dedicated to his brethren of the Royal Society, contains representations of many curious Greek medallions in four plates, and two others of ancient inscriptions; these are followed by the legends of imperial coins in the large and middle size, from Julius Cæsar to Aurelian, with their interpretations: and subjoined is an appendix of Syrian and Egyptian kings and coins, all collected by himself. He also wrote the manuscript life of his father in Latin, now among the Lansdown Manuscripts at the British Museum, often quoted in this work, and compiled the documents for Parentalia, which were afterwards published by his son Stephen, assisted by Mr. Ames: the manuscripts of which are in the library of the Royal Society.

claims after the fire, the duties of his office as surveyor-general, &c. make a dull monotony of narration for twenty or more of the most important years of his life. The duties of so active a mind, in such an active but monotonous station, do not afford much variety of narrative; therefore, for some years, the acts of his life are but little more than catalogues and dates.

Sir Christopher's attendances at the Royal Society were this year consequently few; he is not once spoken of in their transactions or occurrences till April 27, when, after the first successful experiment of the prism by Newton, and other important philosophical experiments, Mr. Oldenburg, the secretary, presented the society with a manuscript of Mons. Joly of Dijon, containing a body of mechanics, in which he pretended to have found and demonstrated an universal principle to explain the effects of the moving powers in engines, upon which he desired the society's judgment. Upon which the president (Lord Viscount Brouncker) Sir Christopher Wren, Sir Jonas Moore, Dr. Wallis, Dr. Pell, Dr. Croune, and Mr. Hooke, were desired to read it over, consider it, and make a report thereon to the society *.

At the anniversary election of the society, on November 30, Sir Christopher Wren was elected member of the new council, and, being present, took the usual oaths †. On December 14, Sir Christopher is recorded to have been present at a meeting of the council, but propounded (contrary to his former custom) nothing new ‡.

Among the parochial churches, which were designed by Sir

* Birch's Hist. Roy. Soc. Vol. III. p. 314.
† Ibid. p. 326. ‡ Ibid. p. 327.

Christopher, that of St. Magnus, London-bridge, was commenced this year, as well as that of St. Mildred, in the Poultry. The former is an elegant and substantial church, built of stone, and oak timber, covered with lead; and a handsome lofty steeple, consisting of a tower, a lantern or bell tower, containing a fine ring of ten bells, covered with a cupola, which is surmounted by a well proportioned spire. The view of this church from Fish-street-hill, with the monument in the foreground, terminated by the bridge, is peculiarly fine and picturesque. The new opening made shortly after the fire of 1759, though the recesses and groined arches originally formed in the main building by Sir Christopher, as if he had foreseen its necessity on widening the street, is light and elegant, exhibiting an essential proof of the great abilities of the rebuilder of London. The interior is ninety feet in length, fifty-nine in breadth, and forty-one high; divided into a nave and two aisles, by columns, and an entablature of the Ionic order. The roof over the nave is camerated and enriched with arches of fret work, well executed in stucco, and is an interior of excellent proportions and of a good style of Italian design. St. Mildred's, on the north side of the Poultry, is a small but well proportioned church, with a handsome façade of Portland stone next the street and court by its side, with a plain tower rising from its own base, and surmounted by a cupola. Its interior consists of a small nave and two aisles, covered with a flat quadrangular roof supported by Ionic columns, and is very handsome.

St. Stephen's, Coleman-street, was rebuilt this year, chiefly of stone, with a nave and two aisles; but has nothing particular to

recommend it except its simple usefulness, and an antique carving of the Last Judgment, in high relief, over the door going into the church-yard.

Sir Christopher continued his great employments with zeal and perseverance, and gained daily in the confidence of his superiors. As I have before shown, every thing connected with his art was referred to him. On March 28, this year, Sir Philip Howard, petitions * for a free-passage to his house, in Scotland-yard, which his majesty grants by a warrant addressed to " Our

* This grant or warrant in my manuscript book, concerning the privy council, so often quoted, runs as follows, and exhibits Charles's public decrees to his queen, whom he thoroughly disliked, in a favourable though not unusual point of view.

" CHARLES REX.

" Whereas our trusty and well beloved Sir Philip Howard, knight, captain of the troop of guards of our dearest the queen, having a house adjoining unto Scotland-yard, hath, for his better and easier attendance upon our service, humbly desired the use of a free-passage through Scotland-yard to his said house, and also liberty to erect a pale in Scotland-yard before his said house, the full length of the wall thereof, to keep persons and coaches from doing hurt to his said house, such pale to stand at the same distance from his wall as another pale doth, that is near thereunto on the same side of Scotland-yard. We are graciously pleased to condescend unto that his request. And it is our will and pleasure, that you give effectual order, and see the same done accordingly in all and every particular above-mentioned. And for so doing this shall be your warrant. Given at our court at Whitehall, this 28th day of March, 1676, in the 28th year of our raigne.

" By his majesty's command,

" H. COVENTRY."

" *To our trusty and well beloved Sir Christopher Wren, knight, Surveigher-General of all our works and buildings.*"

trusty and well-beloved Sir Christopher Wren, Knt., surveigher-general of all our works and buildings." Thomas Elliott, Esq., one of the grooms of his Majesty's bed-chamber, petitions for leave to build on a yard whereon the old house stood at Newmarket, on a lease for ninety-nine years. The king, in council, refers it to Sir Christopher; who reports, on June 3, 1676, that, not finding it of any particular use or employment, he recommends it to be granted *.

Next, John Blythman petitions the Right Honourable Thomas, Earl of Danby, Lord High Treasurer of England, showing, that one of his Majesty's lodges, called Chappel-Henalt Lodge, within the forest of Waltham-stoe, in the county of Essex, is very much decayed and out of repair; and he, the petitioner, being keeper of the said walke, humbly conceives it would be much for his Majesty's service in preventing further charge, that the said lodge may be speedily repaired. This is also referred to Sir Christopher; who reports that, in obedience to his lordship's reference, he had caused the lodge, called Chappel-Henalt Lodge, in Waltham forest, to be surveyed by a faithful and able carpenter, employed by the office of his Majesty's works; and he accordingly certified, that the said lodge was a timber house, of about fourteen squares, not habitable, and so ruinous as not to be worth repairing †. The council giving further orders, he informs them, under date of June 26, 1676, that he conceives a lodge, built according to the design and measure which he annexed, may cost about the sum of five hundred and fifty pounds, in materials and

* Manuscript Transactions of Privy Council, p. 67. † Ibid. p. 68.

workmanship; being built with brick, floored with deal, and finished within with white walls only. A barn and stable, with a kitchen and an outhouse, for breaking up deer, and other necessary outbuildings, all which are demolished, may amount, at the lowest rates, to one hundred and seventy pounds more: so, he adds, the whole expense will be seven hundred and twenty pounds, out of which may be discounted, for old materials, eighty pounds. Another entry, in the surveyor-general's writing, is an order for Esquire Paston's * buildings, in the Privy-garden, by order of his Majesty.

* "To Sir Christopher Wren, Knt., &c.

"Sir,

"His Majesty having directed your setting out of fifty-four squares of ground, next my Lord of Oxford's building, in the bowling-green, Whitehall, for building of lodgings, for William Paston, Esq., my Lord Treasurer desires you will view the said ground, and make a skeame, or map, thereof, which his lordship desires you to transmit unto him, in order to the making of a lease thereof unto the said Mr. Paston, according to his Majesty's commands in that behalf.

"I am, Sir,

"Your most humble servant,

"CHARLES BERTIE."

"*Wallingford-house, June* 28, 1676."

Sir Christopher's report thereupon is as follows:

"In pursuance of directions from my Lord High Treasurer of England, I humbly certify this map to represent the situation of a parcel of ground in his Majesty's bowling-green, in Whitehall, bounded southward with the old enclosure wall of the same; eastward, with the Earl of Oxford's new

In the following year Sir Christopher finished his great Doric column on Fish-street-hill, of which there is a full account in the year of its commencement *; and continued his various and important avocations, with a perseverance commensurate with their multiplicity and importance.

The church of St. Lawrence Jewry, on the north side of Cateaton-street, and on the west side of Guildhall-yard, was rebuilt by Sir Christopher in this year. It is a handsome building of the Corinthian order; and the east end, next Guildhall-yard, a composition of four Corinthian columns, on a continued plinth, with niches and festoons of fruit, is in good taste, and exquisitely sculptured. The vane is a gridiron, from the legend of St. Lawrence's martyrdom. The interior is rich and beautifully decorated with elaborate ornaments in plaster work. It is eighty-one feet long, sixty-eight broad, and forty feet high. This church is occasionally used for corporation sermons, with Bow and Wallbrook, and has several monuments within. One of the most remarkable is that of Archbishop Tillotson, one of the greatest ornaments of the protestant episcopacy of England. It is placed on the north wall, in the chancel, and inscribed as follows:

building; westward, with a line, about seven feet distant, from the timber building belonging to the under housekeeper of Whitehall; northward, with a line, ranging with the front of the said building of the Earl of Oxon. On testimony whereof I have hereunto set my hand, this 10th day of July, 1676.

"Christopher Wren, Surveyor-general."

* See page 286 of this work.

P. M.
Reverendissimi et sanctissimi Præsulis JOHANNIS TILLOTSON,
Archiepiscopi Cantuariensis, Concionatoris olim in hac Ecclesia per Annos XXX celeberrimi,
Qui obiit X° Kal. Decembr.
M.DC,LXXXXIV. Ætatis suæ LXIV.
Hoc posuit Elizabetha conjux ejus mœstissima.

The parish church of ST. MARY Aldermanbury, a spacious and handsome edifice of stone, with a plain, square tower, was also rebuilt this year. It has a nave and two aisles, separated by columns of the composite order, well sculptured. Its length inside is seventy-two feet, breadth forty-five feet, and height thirty-eight.

The church of ST. NICHOLAS Cole Abbey, on the south side of Fish-street, near Doctors' Commons, was also rebuilt this year. This handsome and well-proportioned church is built partly of brick and stone, with rusticated angles, and handsome stone architraves and entablatures round the semicircular-headed windows. Its tower is a specimen of Wren's symmetry; but the spire, aiming at originality, has scarcely escaped absurdity, if not ugliness.

Wren also repaired, this year, the church of ST. MARY Woolnoth, Lombard-street, which had been damaged by the great fire; and which was afterwards rebuilt, in 1719, in a style of great solidity and originality, by his pupil, Nicholas * Hawks-

* This highly original architect was born in 1666, the year of the great fire of London; and was placed, in his seventeenth year, as a domestic

moor; and rebuilt the church of St. Michael Queenhithe, a handsome structure on the north side of Thames-street, near the

clerk, or pupil, with Wren. His genius is unquestionable, but his taste not of the most refined order; nearer approaching the bold flights of Vanbrugh than the chastened correctness of his master. His knowledge of every science connected with his art is allowed, and his character has been spoken of, from authority, with commendation. He was deputy surveyor, under Wren, at the building of Chelsea College; clerk of the works at Greenwich Hospital; in which offices he remained during the reigns of William, Anne, and George I., at Kensington, Whitehall, and St. James's. He was appointed superintending surveyor to all the new churches, and of Westminster Abbey, after the death of Sir Christopher; and designed many that were erected in pursuance of the statute of Queen Anne, for building fifty new churches. Among others, besides the church above mentioned, are Christ church Spitalfields, St. George Middlesex, St. Anne Limehouse, and St. George Bloomsbury, which has been condemned by hasty critics, from not falling within their narrow rules of art. This church is a bold, original, and striking composition, built in a masterly and scientific manner, and designed in a masculine style. The interior is commodious, appropriate, and picturesque; worthy of its author, his master, and his school. The portico is remarkably handsome, and the tower is placed in a judicious and proper situation. The steeple is novel, ingenious, and picturesque; and the statue of George I., in spite of the epigram, looks like the father of his people surveying his good city with complacency, and holding forth his protecting hand over it.

Hawksmoor also rebuilt part of All Souls College, Oxford, but, I believe, from Wren's designs; as also the mansion of Easton Neston, in Northamptonshire; restored a defect in Beverley Minster with great skill; and repaired the west end of Westminster Abbey in a judicious manner: and, at Blenheim and Castle Howard, was associated with Vanbrugh, where he died in March, 1736, in nearly his seventieth year.

From information communicated by his family to Alexander Chalmers, Esq., for his General Biographical Dictionary.

little haven, called Queenhithe. It is well built of stone, has a nave and two aisles, with a well proportioned front next Thames-street.

Wren's attendances on the Royal Society this year were but few; he is not noticed as being present till September 13*, and nothing is recorded of his propositions; nor on the 27th, at which he was also at a meeting of the council†. At a general meeting of the society, he affirmed, during a discussion on Leewenhoeck's papers on minute insects in water, vinegar, &c. that he had often seen and taken out of standing water a certain small insect, consisting of about twelve rings, with horns before and behind, after the manner of earwigs. He remarked also, that, as to the generation of eels, he had, nearly twenty years before, upon the dissecting of eels, found them to be viviparous, having several times taken the young ones out alive‡.

At a subsequent meeting, (Leewenhoeck's observations on the generation of eels and insects being mentioned) Sir Christopher related, that the young eels which he had formerly taken out of the old ones were about the length and bigness of pins; that he had taken out of lobsters' eggs a lobster perfectly shaped, with claws, &c.; and that water newts, dissected at the proper season of the year, have young ones perfectly formed within them§.

Upon a discourse which arose concerning the waterpoise, Sir Christopher Wren desired that there might be drawn up a cata-

* Birch's Hist. Roy. Soc. Vol. III. p. 342. † Ibid. p. 343.
‡ Ibid. p. 347. § Ibid. p. 350.

logue of experiments, which might be tried with that instrument; and conceived that it might be very useful also for examining of metals *.

At the anniversary election of the society, on November 30, Sir Christopher Wren was elected of the old council for the year ensuing †: and at a discussion which arose at the general meeting on December 13, on the barometer and its various phænomena, he proposed Bermuda as a very convenient place to have trials made of the mutations of that philosophical instrument, the discovery of which he has such a share in; the seasons, he adding, there being very temperate, and the island lying encompassed on every side with the sea, and very far from any land ‡. On the 19th he also attended a meeting of the council, which was employed in legislating for the society §.

The king, wishing to commemorate the memory of his unhappy father, desired his surveyor-general, early in the ensuing year (1678), to design a mausoleum, which he performed with

* Birch's Hist. Roy. Soc. Vol. III. p. 351.

† Ibid. p. 353. At this same meeting Sir Joseph Williamson, principal Secretary of State, was chosen president, after Lord Brouncker had possessed the chair for sixteen years in succession, and ever since its establishment. Evelyn says the resignation was made, that prescription might not prejudice. A few days before this, Evelyn reports, that he dined at the Lord Treasurer's with Prince Rupert, Viscount Falconberg, the Earl of Bath, Lord O'Brien, Sir John Lowther, Sir Christopher Wren, Dr. Grew, and other learned men. The new president of the society gave them a magnificent supper on his election.—*Evelyn's Diary*, Vol. I. p. 495.

‡ Birch's Hist. Roy. Soc. Vol. III. p. 362. § Ibid. p. 366.

alacrity and talent *. The original designs, neatly sewn up in a book for the king's use, are among Sir Christopher's drawings in the library of All Souls College, Oxford. The House of Commons, although by no means the most accommodating to the king, voted, upon the motion of Lord O'Brien, on January 29, 1678, " the sum of seventy thousand pounds, for a solemn funeral of his late Majesty, KING CHARLES THE FIRST, and to erect a monument for the said prince, of glorious memory; the said sum to be raised by a two months' tax, to begin at the expiration of the present tax for building ships †.

The following day, being the anniversary of the martyrdom of that unhappy monarch, Sir Christopher's friend, Dr. Sprat, being appointed to preach the anniversary sermon before the House of Commons, at St. Margaret's Westminster, made the following allusion to the circumstance:—" I confess I might, and, give me leave to say it, I intended to have complained that the present age had not made that use of him (King Charles), which it ought; his enemies for their repentance and amendment, nor even his friends for his praise and honour. But, blessed be God, I am happily prevented in one part of the complaint: I have nothing now to wish, but that his enemies would as well perform their duty to him, as, it must be acknowledged, you (the House of Commons), his friends, have done yours, by that much desired,

* " 1678. Mausoleum divi Caroli Regii Martyris (de mandato Regis, et suffragiis inferioris domûs parliamenti) excogitavit et delineavit; at, eheu conditionem temporum! nondum perfecit."—WREN, *MS.*

† Echard's History of England, Vol. III. p. 441.

long expected, yesterday's vote, in which you have given a resurrection to his memory, by designing magnificent rites to his sacred ashes: so that now, for the future, an Englishman abroad will be able to mention the name of King Charles the First without blushing; and his heroic worth will be delivered down to posterity, as it always deserved to be, not only freed from calumny or obscurity, but in all things most illustrious, in all things to be commended, in all things to be imitated,—in some things scarce imitable, and only to be admired *."

After divine service, the house sat, as appears from the date, " Mercurii 30 die Jan., 1677-8," and ordered " that the thanks of this house be returned to Dr. Sprat, for his sermon this day preached before the house, at St. Margaret's Westminster, and that he be desired to print the same."

The original designs, consisting of several drawings and estimates in the architect's own handwriting, are inscribed by him as follows:—

MAUSOLEUM DIVI CAROLI, REGII MARTYRIS,
Excogitatum, Anno Salutis 1678,
de Mandato Serenissimi Regis Caroli secundi,
Consentaneo cum votivis Inferioris Domûs Parliamenti Suffragiis;
at (eheu conditionem temporum!)
nondum exstructum.

The Tomb of King Charles the Martyr,
Designed in the year 1678,
By the commands of his Excellent Majesty King Charles II.

* Dr. Sprat's Sermon on January 30, 1678, printed for Henry Brome, at the Gun, in St. Paul's church-yard, 1678, page 4.

This monument, approved by his Majesty, was proposed to have been erected at Windsor Castle, at the east end of St. George's chapel, on the place where stands the little chapel (commonly called the Tomb-house); in the middle of which was begun, by Cardinal Wolsey, a magnificent tomb of copper-gilt, for King Henry the Eighth, but never finished *.

The designs for the monuments inside the mausoleum are two:—one sketched with a pen, and tinted yellow, as if for gilt copper; the other also with a pen, but tinted with Indian ink; in one of which King Charles is represented in armour, crowned and robed, looking upwards with an air of devotion, and standing on a shield, supported by allegorical figures of Hercules, Minerva, and two females, standing on a long cube; under which, and above a larger base, are being crushed by them four horrid figures; one of which is Hypocrisy, with a mask in his hand; Murder, with a dagger, aiming a fruitless blow upwards; and two Furies: two infant angels are holding a laurel crown over

* The above is in Sir Christopher's hand, and numbered 89 in Vol. II. of MSS. at All Souls library. The designs accompany it, and bear a great general resemblance to the Radcliffe library, deprived of the basement story; but the columns are not coupled. There is subjoined an estimate of the expense in MS., of which these are extracts:

First story without	£11,669	0	0
Second story without	5092	2	0
Brick work within	1225	0	0
Ornaments of the first story within .	11,032	0	0
Ornaments within the cupola . .	6445	0	0
The monument itself	8200	0	0
Total charge	43,663	2	0

the monarch's head; and five others above them, with palms in their hands, welcoming the monarch to the realms of immortality; the other is nearly similar, but the king is uncrowned: his crown is supported by Cherubim who have the axe, his arms, a symbol of immortality, a cross, &c.: they are both intended to stand in a large niche, but the last has a curtain extended behind the whole of it. The composition and grouping of both are good, and sketched with much spirit, partaking too much perhaps of the then prevailing taste. The Parentalia says * they were to have been executed by the celebrated carver, Grinlin Gibbons †.

* Parentalia, p. 332.

† As a specimen of the manner in which Sir Christopher made his estimates, and as a criterion of the expense of building in his time, I have transcribed the following curious details of that for the above described mausoleum. It is not inserted with the fair copies of the rest, but is a rough private copy, much scratched, interlined, and doubled. It is a very interesting document, in his own handwriting, and developes the process of his mind, divested of the formality of a document intended for public inspection.

For 70 rod of foundation, with digging, at £5 . . .	£350	00	00
For 2300 feet superficial of stone in y^e^ base, with y^e^ rubble 6 feet thick, at 7*d.*	805	00	00
For 224 feet running of chaptering moulding of the pedestal under the bases of the half columnes, being 18 inches deepe and 4 feet broad, at 20*s.* y^e^ foot running	224	00	00
For 300 foot running of the bases of y^e^ columns and intercolumnes, at 14*s.* y^e^ foot running	210	00	00
For the shafts of 20 halfe columnes, each shaft being 27 feet high, and containing about 300 feet solid with the beads, w^ch^ at 4*s.* 6*d.* stone and works is 67 ft. 10 in. a shaft, in all . . .	1350	00	00
For 20 intercolumnes from the y^e^ base to the astragall, each containing 190 feet of large rustick ashler, at 4*s.* £38. In all . .	760	00	00
	£3699	00	00

The architect made the drawings and estimates, the parliament voted the money, the eloquent and pious preacher com-

Brought forward	£3699	00	00
For 20 half capitals, at £35 each irone and work . . .	700	00	00
For 20 festoones with the stone of the intercolumnes between the capitells, at £16 each	320	00	00
For the door-case compartment, and armes of white marble . .	200	00	00
For 220 feet running of architrave, at 30*s.* y^e^ foot, stone work and ornament of the moldings and soffite . . .	330	00	00
For 220 feet running of freese, at 10*s.*	110	00	00
For 240 feet running of cornice, 3 foot projecting with modillions and ornaments, £3. 10*s.* the foot running . . .	840	00	00
For 220 foot running of plinth, at 10*s.* . . .	110	00	00
For 220 foot running of the parapet, 4 foot ½ high, with all its mouldings enriched, at £3 y^e^ foot running including the breaks of y^e^ pedestalls	660	00	00
For 20 figures of the great life	2000	00	00
For 1600 foot square of paving with hard stone in terrace upon brick in terrace for the covering behind the parapet, with the conveighances for water	400	00	00
For 24000 foot solid of black stone in the butments, and inside courses of y^e^ out wall, at 2*s.* the work being well wrought in courses and cornerstones for bond	2400	00	00
	£11669	00	00

For 2550 foot of great ashler in the pedestall, at 3*s.* . .	382	10	00
For 160 foot running of the pedistall moulding, with the paving belonging	160	00	00
For 6656 superficial feet in the walls of y^e^ cupolo, at 7*d.* y^e^ foot superficial, including stone worke, mouldings, capitalls and carving .	2429	12	00
For 1900 superficial feet in the cupolo, at 10*s.* y^e^ foot, including terrace ribs and ornaments, and centring . . .	950	00	00
For the base moulding under the lanthorne with y^e^ paving . .	50	00	00
For the lanthorne	120	00	00
For a large figure of brasse, gilt, on the top, being 10 foot high .	1000	00	00
	£5092	02	00

plimented the act, and was thanked for it; but, as Wren feelingly exclaims, " at (eheu conditionem temporum !) nondum extructum !"

For 72 rod of brick work in y^e^ inside walls of the first story, and 60 rods in the groines of the cupolo, and 33 rods in the inside of the cupolo, and 10 rods in the inside shell of the cupolo, with the groyning, in all 175 rods of Kentish bricks, the beds being rubbed to close joynts at £7 y^e^ rod	£1225	00	00
For 8 bases of black marble for y^e^ great pillars, at £30 each	240	00	00
For 8 shafts of rich marble in whole stones, 28 feet long 3 foot ½ diameter, brought from the Levant, valued at £400 each	3200	00	00
For 8 capitalls of brasse gilt for y^e^ same pillars, at £250 each capitall	2000	00	00
For 3520 of incrustation with various marbles, at 10*s.* per foot, in the lower orders of pilasters within the neeches	1760	00	00
For 160 foot runing of architrave, freese and cornice of white marble 7 foot in heigth, enriched with all the proper ornaments, at £10 the foot	1600	00	00
For 680 foot incrustation in figure or marbles, inlayed in the square drills over the neeches, at 30*s.* y^e^ foot	1020	00	00
For 1606 foot superficial in the heads of the neeches, to be done with mosaick, or glasse work, 40*s.* y^e^ foot	3212	00	00
	£11032	00	00
For the compartments of 4 windowes in white marble	120	00	00
For 200 ft. of the arches with great suffites in marble carved at 6*l.* 10*s.* y^e^ foot running	1300	00	00
For 105 foot running of marble cornice under the upper windows, at 30*s.* y^e^ foot	157	10	00
For 16 small capitalls with festoones between, at 10*l.*	160	00	00
For 105 foot running of small architrave freese, and cornice of marble, at 3*l.* the foot	315	00	00
For 4620 foot superficial of stucco, and the best painting in fresco, in the spandrills between windowes and in y^e^ cupolo, at 10*s.* y^e^ foot	2310	00	00
For 2025 foot of paving with various marbles with designe, at 10*s.* the foot	1012	10	00
For paving and stucco in the vaultes	1000	00	00
For a brasse dore	50	00	00
For a marble dore in the vaultes	20	00	00
	£6445	00	00

Although this commemoration of King Charles was not executed, yet the beautiful equestrian statue by Le Sœur, originally erected at Charing Cross, was this year replaced in its present situation, under the direction of Wren. The Rump parliament had previously ordered it to be sold and broken to pieces, but honest John Rivers, the brazier, who purchased it, concealed it till the Restoration, and exhibited various fragments of bronze metal as proofs of his obedience. Two designs for the pedestal are in the collection at Oxford; one resembles that now standing, which is finely executed by Grinlin Gibbons, and the other somewhat differing, but with Tritons at the angles. They are both beautifully drawn.

The parochial churches, many of the company's halls, and private houses, proceeded with rapidity under the decisive and active mind of Wren. St. Paul's proceeded with care and propriety, and every measure was adopted to render it, what it certainly is, the finest cathedral ever built by protestants in the world.

To forward the views of the king, as expressed in his letters patent, in favour of this important and expensive work, the Bishop of London caused an address to be printed, exhorting all persons throughout the kingdom to extend their liberality towards

For 10 figures of the great life, cut in brasse and gilt, at £500 a figure	£5000	00	00
For 7 children of brass gilt, each £200, with ornaments belonging .	1400	00	00
For the pedestal tutch, and the steps of rich marble and other appertenances :	300	00	00
A gratuity for an excellent statuary, for his skill in moulding and founding, over and above the value of the worke . .	1500	00	00
	£8290	00	00

the building; and endeavoured to remove certain objections which had been raised against it: then showing how far they had proceeded, and what receipts and disbursements had been made on its account *. The success of this may be perceived in perusing the accounts of the receipts of each year.

* The following is a copy of the address of this zealous bishop †, who witnessed the laying of the first stone of his cathedral, and lived as Bishop of London to the completion of the colossal work.

" You perceive by his Majesty's letters patent for rebuilding the cathedral church of St. Paul's, how zealously his Majesty is concerned to have this so pious and charitable work effectually carried on; and to that end, how earnestly, both by his royal grant and example, he recommends it to all cities, towns, and parishes, throughout his kingdom of England, and dominion of Wales.

" In pursuance of this, his Majesty's pious intention, and that it may have its desired effect, it will be requisite not only to vindicate the piety of this design, but also the necessity and reasonableness of so general a contribution towards the accomplishing of it; for besides the objections against so good a work, proceeding from disaffection to religion in some, and from a covetous and sordid disposition of mind in others, there are likewise these two great prejudices against it, which have too far possessed the minds even of better disposed persons.

† This eminent prelate, Henry Compton, was the youngest son of Spencer Compton, the second Earl of Northampton, who was killed at the battle of Hopton Heath, fighting in defence of King Charles I. Though Henry was but ten years of age when his father was killed, he received an education suitable to his rank; and was entered a nobleman of Queen's College, Oxford, in 1649, where he continued till 1652, when he travelled on the continent. Upon the restoration of Charles II. he returned to England, and became a cornet in a regiment of horse, which he soon left, dedicated himself to the church, and went to Cambridge, where he took his degree of M. A. When about thirty years of age, he entered orders, and became a canon of Christ Church, Oxford. In 1667, he was made master of the hospital of St. Cross, near Winchester; and was preferred to the bishopric of Oxford, in December, 1674. About twelve months after this, he was made dean of the Chapel Royal, and was translated to the see of London, where he remained the active, zealous, and pious diocesan, till the day of his death in February, 1713, aged 81.

Notwithstanding these constant demands upon the time of Wren, he did not neglect his duties at the Royal Society. He

" 1. That the sumptuousness and magnificence of churches is not at all suitable to the times of the gospel, nor according to the simplicity of the primitive Christian worship.

" 2. That the church of St. Paul's, belonging only to the city and diocess of London, ought to be rebuilt solely at their charge, without having recourse to so extraordinary a way of supply and contribution, from others who are no way concerned in it. First, It is objected against the work itself, that the sumptuousness and magnificence of temples, and so much splendour in the outward circumstances of God's worship, is Jewish and ceremonial, and not so suitable to the spiritual nature and design of the gospel, and the worship thereby required; which consist in the inward purity of our hearts, and the devotion of our minds and spirits, nor so agreeable to the simplicity of the primitive Christianity, which in things of this nature contained itself within the bounds of necessity and convenience; and therefore whatever is beyond these may justly be deemed superfluous, and might much better be employed in alms and works of charity. For the removal of this prejudice, we may please to consider;

" 1. That the publick worship of God is a moral duty, founded in the light of nature, and the common reason of mankind.

" 2. That the publick worship of God, though it doth suppose and require inward and spiritual devotion, yet as publick is necessarily external, and as such ought to express, in best manner we are able, that inward honour and reverence which we pay to the Divine Majesty, and therefore, that the circumstances of it should not only be decent, but very solemn and magnificent, the light of nature seems plainly to require, and the gospel doth nowhere gainsay; and the resolution of David, that he would not offer to the Lord his God of that which cost him nothing, and the declaration which he afterwards made concerning the building of the temple, that the house which is to be built to the Lord must be exceeding magnifical, was not a piece of ceremonial piety, but grounded upon a moral and eternal reason, of equal force in all ages and times; namely, that which Solomon

attended a meeting of the society, and took the chair, as vice-president, on January 10*, and took part in a discussion on the

his son gave to King Hiram, why he designed so magnificent a temple, that it might be in some measure suitable to the greatness and majesty of that God who was to be worshipped in it. The house (says he) which I build is great, for great is our God above all Gods. Christians indeed are not tied to one place of worship, as the Jews were; but they are obliged to honour God as much as they; and to declare their high regard and esteem of so glorious a Majesty, by all outward fitting testimonies of respect and reverence.

"3. That the mean estate and circumstances of God's publick worship in the beginnings of Christianity was not the effect of choice, but of necessity; and enforced upon Christians by their poverty and persecution, by reason whereof their worship was not only without splendour and magnificence, but without ordinary decency, and the common conveniences of time and place; being usually performed in the night, in chambers, and grots, and secret places; not because they thought this best, but because they could then do no better, as they sufficiently testified so soon as they were from persecution; when every where, with great zeal, they raised stately structures for the publick worship of God, and spared no cost to that purpose; believing it to be highly for the honour of Christ and his religion, that men should declare their regard to Almighty God, and the solemnity of his worship, in this way. And surely they who, from the obscurity and meanness of the public worship in the primitive times, would draw a pattern for churches in succeeding ages, may do well to consider whether they would be willing that the poverty of the first Christians should be made the measure and standard of men's estates in all ages; because the force of the argument from bare primitive example is the very same in both cases; God is pleased to accept of that in case of necessity, which he will disdain, where men have the ability and opportunity to serve him after a better manner. While the people of Israel were in a persecuted and unsettled condition, God was content that the Ark should

* Birch's Hist. Roy. Soc. Vol. III. p. 378.

nature and properties of the atmosphere: and again, on the 31st, when he related the singular circumstance, that a relation of

be placed in a tabernacle; but when he had given them rest on every side, then David, from the natural reason and congruity of the thing, concluded it fit to build a house of rest for the Ark of the Covenant of the Lord, and that exceedingly magnificent. And God approved of his intention, telling him by that he did well, that it was in his heart to build such an house to the name of the Lord.

"4. To warn us for ever against grudging at any extraordinary expense for the honour of religion, as needless and superfluous, and especially from cloaking our covetousness with a pretence of charity to the poor; we may do well to consider how severely our Saviour reprehends his own disciples for murmuring at that cost which the devout woman bestowed upon the temple of his body, in pouring upon it an ointment of so great price. To what purpose (said they) is this waste? This ointment might have been sold for much, and given to the poor. But our Saviour sharply reproves this sordid disposition of theirs; and what they called waste, he calls a good work, such as in its proper season is no less pleasing to God than charity to the poor; and to testify his high esteem and acceptance of it, he took particular care to have it recorded in the history of his own life, that together with his doctrine and miracles, the memorial of it might be celebrated in all ages to the end of the world, hereby teaching us that we ought under the gospel to honour God with our substance, as well as to relieve the poor; and that magnificent acts of piety have their place no less in the Christian religion than the most liberal deeds of charity.

"Secondly, It is objected against the general extent of this contribution, that the church of St. Paul's, belonging only to the city and diocess of London, ought to be rebuilt solely at their charge, without having recourse to so extraordinary a way of supply from others, who are no ways concerned in it.

"In answer to this objection be pleased to consider,—1. That the inhabitants of London were not only exceeding great sufferers by the late dreadful fire, but have since been at a vast and incredible charge in rebuilding their own houses and parish churches, their hospitals, halls, and

Lord Wenman's, upon swallowing a bullet into his lungs, had been freed from the same, by a person who turned him with his

Royal Exchange, and in several other publick works, to the great honour and advantage of the city, and to the wonder and astonishment of the world, that in so short a space so great a city should rise so beautiful, and out of such vast and dismal ruins.

" 2. That the city of London and counties adjoining have done, for several years, and still do, towards this work, pay a particular tax upon all the coals brought into the port of London; besides which, it is not doubted but they will be very exemplary in their voluntary contributions thereto.

" 3. That the city of London hath ever been found very charitable and bountiful upon all occasions, towards the rebuilding of churches in town and the country, and the repairing of the fortunes of particular persons, that have been ruined by the like calamity of fire. For which cause they hope it will not be thought unreasonable in them, for once, to crave and expect the assistance of the country upon so pressing and extraordinary an occasion, when they are utterly unable, alone, to support the burden, and to defray the mighty charge of so great a work.

" 4. That the rebuilding of this church is of very public concernment, and the whole nation, in some sort, interested in it: our kings have used, upon extraordinary occasions, to resort to it, there to pay their solemn acknowledgments to Almighty God, for publick blessings and deliverance granted to this nation; and the preachers there have always been particularly appointed and chosen from both the universities of this realm, and from all parts of the kingdom; and the glory of the work will also redound to the whole nation, to which it will not only be a singular ornament, but likewise a standing monument of the publick affection and zeal of this protestant kingdom to piety and good works. Which last consideration ought to have the greater force with us, because, at this time as much as ever, the protestant religion stands upon its reputation, and stands in need of it too. And, therefore, every one ought, with more than ordinary zeal, to be concerned for the carrying on of this work, not only for the honour of

heels upwards, and shook him, thereby causing him to cough, which occasioned the bullet to fall back into his epiglottis, and from thence, by the violence of the cough, to be thrown out with great violence, and produced no farther injurious effects *. At the meeting on February 7, on discoursing of the height of the mercurial standard, Sir Christopher Wren propounded that the measure thereof might be reduced to the universal standard, namely, the length of a pendulum, moving a second of time, which was between thirty-nine and forty inches long, and which was the same all over the world, and would even be so for all ages †. On March 28, Sir Christopher, as vice-president, being in the chair, upon reading the minutes of the preceding meeting, a discussion was raised, concerning the ways there spoken of, for sounding the depth of the sea by the help of a long pipe of glass; the lower end of which was to be sealed hermetically, and the upper end so managed, as, upon its descending, to admit of the water to enter in, according as the pressure of the water was greater and stronger upon the enclosed air; and, upon pulling

our nation, and the credit of our common Christianity, but also of our reformed religion.

"That there may be no pretence to upbraid us, that error and superstition could make men more zealous of good works than the doctrine of the true religion; and that our adversaries of Rome may be convinced that our piety is as generous and charitable as theirs, but would not be so arrogant and presumptuous; and that, whilst we disclaim the merit, yet we do most steadfastly believe the obligation and necessity of good works."

* Birch's Hist. Roy. Soc. Vol. III. p. 381. † Ibid. p. 384.

up again of the said pipe, as the pressure of the water decreased, the air expanded, and found its way out, without forcing out the water which had been admitted in its descent. To this Sir Christopher objected, that the compressure of the air might be occasioned by the cold as well as the pressure of the water; and, therefore, it could not be ascertained which part of the admitted air was to be ascribed to the cold, and which to the pressure. Mr. Hooke answered to this, that it was necessary that there should be other instruments let down with the said pipe, in order to find the degree of coldness in the water, at several depths below the surface, and that the said experiment was not less instructive than the other; for the performing of which, he alleged that he had a contrivance by which it might certainly be examined. Sir Christopher then seconded Dr. Croune's * desire of having an universal index made to the Register Books; and alleged that he had not heard any real objection against the wooden balls for sounding the depths of the sea. To which it was replied, that if these balls were ordered, as directed in the Philosophical Transactions, they would certainly perform the effect, if care were taken to observe exactly when the balls appeared again above the water; which was easy to be noticed in small depths, and where the water was without motion; but where the water or the ship were in motion, so that the ball did not ascend again into the same place where it descended, and where the depth was very great, there, the observing of the moment and the place where it appeared again, after it had been

* The founder of the Crounian lectures.

sunk to the bottom, was very difficult, and hardly practicable. But as to the way of managing the ball and weight, which was presented by RICCIOLUS, it was very fallacious; the ball frequently letting go the weight before it came to the bottom, and at other times being detained at the bottom without separating from the weight, as had been found on trial, and of which an account was entered in the Register Book *.

Mr. Pitt, a bookseller, made, at the same meeting, a proposal to the society, of his design of printing an atlas, or description of the parts of the earth, sea, and heavens, contained in about six hundred copper-plates, or maps, and about nine hundred printed sheets; and desiring the assistance and encouragement of the society. For the more exact performance and the better carrying on of this work, it was referred to Sir Christopher Wren, Sir John Lowther, Mr. Hill, Mr. Haak, Mr. Hooke, Dr. Grew, and Mr. Collins, to consider of the proposal, and to report thereon at the next meeting †.

On April 25, Vice-President Wren again took the chair, when a discussion took place concerning the resistance of the air to bodies moved through them; and particularly concerning the figure in which a granado is moved, how near it approaches to a parabola, and in what it varies from it; that in the motion of lesser bodies, in lesser spaces, the figure is so near a true parabola, that it is not possible, by any instrument yet known, certainly to describe one nearer to the truth. Sir Christopher alleged, that he had, by many trials, found that he was able, by binding and

* Birch's Hist. Roy. Soc. Vol. III. p. 396. † Ibid. p. 397.

fixing his barrel fast, to shoot three shots out of five into the same holes. After this, a conversation arose upon the causes of the motion of the muscles, and how far the air taken in by the lungs might contribute towards muscular motion. Mr. Henshaw observed, that the divers for sponges and corals at Samos could hold their breath for three quarters of an hour; and mentioned his design of dissecting an otter, in order to inquire into Mons. Des Cartes' assertion concerning the *foramen ovale*, by which the blood of otters was supposed to pass from one ventricle of the heart to the other, without passing through the lungs; and thence it was supposed that there was less need of the motion of the lungs or breathing, since it was thought that the great use of the motion of the lungs was for the making the blood pass through them. But against this, he alleged, that, in his opinion, the other had no *foramen ovale;* which Sir Christopher Wren positively asserted, having dissected and examined an otter for that purpose. Dr. King affirmed, that an otter could not continue under water, without breathing, above four minutes, and then must, of necessity, come up and breathe; and, for so long, any man, in cold weather, was able to abstain from breathing. Sir Christopher, however, related, that the seal which was in St. James's park had muscles, by which it could contract and dilate its nostrils, and by such means sink itself, and lie at the bottom of the pool made for him, for a great while together; and that it could eat its food at the bottom of the river*.

On May 4, a council of the society was held at the house of

* Birch's Hist. Roy. Soc. Vol. III. p. 403.

Sir Christopher Wren, who, as vice-president, took the chair; when it was ordered, that the iron chest in the gallery of Gresham College be opened, on the Thursday following, in the presence of a vice-president and any two of the council, and that an inventory be taken of its contents *. He also took the chair at a meeting of the council on the 30th of the same month, when a committee was appointed to consider of the best way of disposing of Chelsea College, which belonged to the society; and Mr. Hooke related some experiments which he had made, with Mr. Hunt and Mr. Crawley, at the column on Fish-street-hill, concerning the pressure of the atmosphere at different heights; when he affirmed, that he had found the quicksilver in the tube to stand higher at the bottom of the column than at the top of it, by nearly a third part of an inch; and that he had observed the same to ascend by degrees, as near as he could observe, proportional to the spaces descended in going down from the top of the column to the bottom †. Sir Christopher again presided, both

* Birch's Hist. Roy. Soc. Vol. III. p. 404. In the manuscript collection of original letters to Sir Thomas Brown, M. D., at the British Museum, is one from Wren, of this date, which exhibits his peculiarity of character, decision, and terseness, in a forcible manner:—

"Sir,

"There is here, at present, a very thin council, just a quorum; and it is their opinion that you should suspend the putting out these transactions till we have farther conference with you.

"Sir, your humble servant,

"CHRISTOPHER WREN."

"*May* 4, 1678.—*To Sir Thomas Brown, M. D.*"

† Birch's Hist. Roy. Soc. Vol. III. p. 409.

at the council and at the general meeting of the society on June 6, at which many philosophical subjects were discussed, the chairman taking a distinguished part; but did not attend any more till August 1, when the new president, Sir Joseph Williamson, presided: the discussions were principally medical, and Sir Christopher again appears a prominent character. On the 22d of the same month, Mr. Henshaw, V. P. being in the chair, Mr. Hooke delivered to the society an ancient urn, of glass, discovered in Spitalfields, upon digging cellars there; and presented to the society, for their repository, by Sir Christopher Wren *.

At the anniversary meeting this year, for the election of officers, Sir Christopher was continued in his former situations of vice-president, and a member of the old council, for the year ensuing †, (1679).

The life of Wren at this period, and for some years afterwards, presents little more than a catalogue of dates of his public works in architecture.

The parish church of St. Michael Bassishaw, or Basinghall, so named from an opulent family of merchants, which formerly resided here, was rebuilt this year. It is a plain useful structure of brick and stone, of no very striking character. The spire has an air of originality, and is skilfully contrived.

St. Swithin's church, on the north side of Cannon-street, was also rebuilt this year. It is of small dimensions, and is

* Birch's Hist. Roy. Soc. Vol. III. p. 430. † Ibid. p. 442.

worthy of inspection by the architectural student *, from the many excellencies of construction which it exhibits, and from the antiquary, as being the protector of that ancient milliary London-stone.

The church of St. Bartholomew, at the corner of Bartholomew-lane, and Threadneedle-street, was also rebuilt, except its ancient tower, by St. Christopher this year. It is a strong plain building. The inside, of the Tuscan order in a bold style; and the outside is rusticated, and has sculptured stone ornaments, and dressings.

The cathedral of St. Paul continued with undeviating progress; the eastern part, or choir, being the principal care of its architect. Some time during the early parts of its works, when Sir Christopher was arranging and setting out the dimensions of the great cupola, an incident occurred which some superstitious observers regarded as a lucky omen. The architect had ordered a workman to bring him a flat stone, to use as a station; which, when brought, was found to be the fragment of a tombstone, containing the only remaining word of an inscription in capital letters, "Resurgam." This has been asserted (but I do not remember the authority) to have been the origin of the emblem—a phœnix on its fiery nest—sculptured by Cibber, over the south portico, and inscribed with the same word: but the rising again of the

* This church was repaired by my brother, Mr. Henry Elmes, of College-hill, about three years ago; and while its construction was thus laid open, Mr. George Allen, then one of my pupils, made some elaborate and demonstrative drawings from its scientific and ingenious composition.

new city and cathedral from the conflagration were quite sufficient hints for the artist.

I have previously noticed in these pages the singular obscurity of the dates and places where Sir Christopher was married. His first lady, the daughter of Sir John Coghill, and the mother of his son Christopher, died shortly after his birth. Sir Christopher could not have been long a widower; for his daughter, Jane *, who lies buried near her father, died in 1703, aged 26, and therefore must have been born in 1677. Evelyn relates †, that he stood godfather to a son ‡ on June 17 this year, with Sir William Fermor (afterwards Lord Pomfret), and the Lady Newport, wife to Lord Viscount Newport, treasurer of the

* The following is the inscription on a small mural monument, opposite that of Sir Christopher's, in St. Paul's Cathedral. Upon the upper part, she is represented playing upon an organ, with a Cupid bringing her some music books, in alto relievo of white marble.

M.S.
DESIDERATISSIMÆ VIRGINIS, JANÆ WREN, CLARISS. D^NI
CHRISTOPHERI WREN FILIÆ UNICÆ, PATERNÆ INDOLIS LITERIS
DEDITÆ, PIÆ, BENEVOLÆ, DOMISEDÆ, ARTE MUSICA PERITISSIMÆ.

HERE LYES THE BODY OF MRS. JANE WREN, ONLY DAUGHTER OF S^R
CHR. WREN, KNIGHT, BY DAME JANE HIS WIFE, DAUGHTER OF WILLIAM
LORD FITZ-WILLIAMS, BARON OF LIFFORD, IN THE
KINGDOM OF IRELAND. OB. XXIX DEC.
AN°. MDCCIII. ÆT. XXVI.

† Vol. I. p. 507.

‡ This son William died unmarried on March 15, 1738.—*Ward's Lives of the Gresham Professors*, p. 110.

king's household. This second marriage was to Jane, daughter of Lord Viscount Fitzwilliams, Baron of Lifford, in the kingdom of Ireland.

This year (1679) is celebrated for the election of the second parliament in the reign of Charles II., after the dissolution of the long parliament on December 30 preceding; which Hume calls a desperate remedy, as it had been elected during the popular joy at the restoration, and contained many personal friends of the king. The popish plots manufactured by Oates and Bedloe gave alarm, real or pretended, to the king and his friends. The dead body of Sir Edmondsbury Godfrey had been recently discovered lying in a ditch, at Primrose Hill; and the new plot, called the *meal-tub plot*, from the place where some papers relative to it were found, added to the ferment. The whole nation was in a consternation, and the popular fury was directed against the papists in a violent manner. All the catholic ambassadors were objects of suspicion; and, in consequence of Bedloe's narrative, that an army, consisting of twenty or thirty thousand religious men and pilgrims, were to land at Milford Haven from St. Jago in Spain, to join forty thousand more ready in London, a peculiar odium was excited against the court of Spain *. The commons actually accused the queen of participation in the plot, but the lords would not join in this nefarious accusation. Some circumstances of moment, however, induced them to meet on April 12; and on receiving information at their bar, they referred them to Sir Christopher Wren and Mr. Warcup, who were to secure the communication between the

* Hume, Vol. VIII. octavo, p. 77.

houses of the Spanish ambassador and Mr. Weld, and deliver the keys to the clerk of the parliament, till further orders *.

* " Die Sabbati, 12° Aprilis, 1679.

" Ordered from the L^ds^ Comittees appointed to receive information tending to the discovery of the late horrid conspiracy, that SIR CHR. WREN, and EDW. WARCUP, Esq. doe forthwith cause padlocks to be hung upon all such doors as open out of Mr. Weld's house into the Spanish embassador's house, and that they deliver the keyes of the s^d^ padlocks to the clerke of the parliament, to be kept by him till further order.

" JOHN BROWNE, cler.
" Parliamentor.

" To the R^t^ Hon^ble^ the Lords Comittee, to receive information tending to the discovery of the late horrid conspiracy.

" In obedience to yo^r^ lordpps order, Apr. 12, 1679, wherein we were ordered to cause padlocks to be hung upon all such doors as open out of Mr. Weld's house into the Spanish embassad^s^ house, and to deliver the keys to the clerke of y^e^ parliament; we repaired to Wild-house, and having viewed the dores, we acquainted his ex^cie^ Count Egmont, who with great civility gave permission for all things necessary to be done on his side. And on Mr. Weld's side, we affixed padlocks to three dores, one upon the 2nd floor, upon the great staires, one in the 3rd floor, upon the back stairs, leading downe to the oratory, and one in the garrets, w^ch^ gave opportunity to pass into the roofe on the embassador's side. One of the garden doores we secured with irons, and another of the 2nd floor, w^ch^ we found before nayled up, and the keyes of the 3 padlocks, we have rt^d^ to the clerke of the parliam^ts^. And further, having viewed the wall appointed to be built for shutting out the neighbours from the chappell, we found it neer finished, but w^th^ a doreway left through it, by w^ch^ meanes it seemes not to answer the intentions of former orders. All w^ch^ we humbly submit.

" CHR. WREN.
" EDW. WARCUP†."

† From the manuscript book of court orders to Sir Christopher Wren, belonging to the author of this work.

Among Sir Christopher's principal works in architecture, the parish church of St. Stephen, Walbrook, mentioned in page 314, was finished this year: and as his services to all these buildings were given for a salary of only one hundred pounds a year *, the parish voted to his lady a present of twenty guineas †. Among the names of subscribers to the rebuilding of St. Paul's, this year, is that of Sir Christopher Wren, for fifty pounds; which, considering that his salary, for all his services to the cathedral, was but two hundred pounds ‡ a year, was a considerable donation. He also finished about the same time his beautiful work, the library of Trinity College, Cambridge §; which is one of the finest specimens of Palladian architecture in the country.

Wren's zeal for the success of the Royal Society, notwithstanding his incessant labours in his public avocations, continued unabated. He took the chair, as vice-president, the first meeting this year (January 2); and participated in their discussions, communicating observations on the nature and properties of sand gold ¶.

* Parentalia, p. 344.

† "August 24, 1679.—Ordered that a present of twenty guineas be made to the lady of Sir Christopher Wren, as a testimony of the regard the parish has for the great care and skill that Sir Christopher Wren showed in the rebuilding of our church." Extracted from an old parish vestry book, and communicated to Mr. Ward from the Rev. Dr. Wilson, then rector of the parish.—*Ward's Lives of the Gresham Professors*, p. 104.

‡ Parentalia, p. 344.

§ "1677—16 . .—Bibliothecam magnificam collegii incepit SS. Trinitatis Cantabrigiæ, et erexit."—Wren MS.

¶ Birch's Hist. Roy. Soc. Vol. III. p. 452.

At a meeting of the society on February 20, the theory of the barometer was discussed, in which Sir Jonas Moore, Mr. Hooke, and other scientific members joined. It was then desired that the experiments formerly propounded by Mr. Hooke, to be tried at the column on Fish-street-hill, might be prepared anew with proper instruments, and all possible care and exactness. Hereupon it was questioned how this experiment of the different pressure of the atmosphere came first to be thought of, and Wren's right to the title of discoverer of the barometer fully acknowledged *.

On June 26, Sir Christopher Wren, vice-president, in the chair, the minutes of June 5 and 12 were read; whereupon occasion was given to discourse farther about the China-ink, which some supposed to be an inspissated juice; but Sir Christopher affirmed it to be only lamp-black, very finely ground, and made up in cakes. There was also a discussion concerning the manner of softening bones, by Mons. PAPIN, in his machine, called the digester; when Sir Christopher asked whether the mode of softening them did not suggest, that a contrary process would harden either the same or other bones, not softened first: to which the French chemist gave no answer †. On Sep-

* "It was related, that it was *first propounded by* Sir CHRISTOPHER WREN, in order to examine Mons. DES CARTES' hypothesis, whether the passing by of the body of the moon presses upon the air, and consequently also upon the body of the water; and that the first trial thereof was made at Mr. BOYLE's chamber, in Oxford."—*Birch*, Vol. III. p. 464; see also page 41, *et seq.* of this work.

† Birch's Hist. Roy. Soc. Vol. III. p. 490.

tember 22, he took the chair at a meeting of the council; and was appointed, with Sir John Hoskyns, Messrs. Colwall, Hill, and Hooke, to go, as soon as possible, to Mr. Cheney, and view and take possession of such lands as belong to the society, now lying about Chelsea: also, that Sir Christopher and Mr. Hooke be desired to go to Greenwich, to procure from Mr. Flamsteed all the instruments belonging to the society, to be removed to Gresham College. At another meeting of the council, on September 29, at Sir Christopher's house, himself in the chair, he was desired to make proposals to Mons. Foubert, concerning Chelsea College; and he again took the chair at another meeting of the council at Gresham College, concerning the books left by the late George Ent, Esq. to the society*. He also is to be found, as chairman, at the four successive meetings; namely, on October 10, and November 11, 20, and 27. The society, at the first, sold their property in Chelsea College to Mons. Foubert; and, at the others, appointed various committees and other routine business†. At the latter meeting, it was debated whence the alteration of the gravity of the air proceeds; whether from the greater height of the air, by a new influx of air from some other part of the world, whereby the perpendicular altitude was increased or diminished, and consequently the pressure; or from the new accession of steams, fumes, or saline substances, dissolved and taken up by the air, in the manner of aqua fortis taking up into itself silver, copper, iron, &c. and so is made heavier in specie than it was before it was so impregnated: and thus, though

* Birch's Hist. Roy. Soc. Vol. III. p. 505. † Ibid. p. 507.

it were not increased in bulk or height, yet it might be increased in gravitation or pressure. Mr. Hooke was of opinion, that both these causes concurred to produce this effect; and that, in order to the examination thereof, he had contrived two kinds of barometers, which were first mentioned to the society, as he conceived, about the year 1662, and also last year. The first of these instruments was to show the variations of the pressure of the air, caused by the alteration of the pressure of the air from either or both causes; but the second would only show the alteration of the pressure of the air from the alteration of the specific gravity. Sir Christopher Wren was of opinion, that it proceeded most of all from the impregnation of the air by nitrous salts, which were continually raised up into it *.

At the anniversary election of officers, on St. Andrew's day, Sir Christopher Wren took the chair, the president being absent on account of ill health. Sir Joseph Williamson was again elected president; Sir Christopher on the old council, and the Earl of Berkeley, Mr. Evelyn, Dr. Holder, Dr. King, Mr. Parker, and Sir Robert Southwell, were sworn of the new council, before the vice-president, Sir Christopher Wren, according to the direction of the charter †.

At a meeting of the society on December 4, an important letter, from Mr. (afterwards Sir Isaac) Newton was produced by Mr. Hooke, dated November 28, 1679, containing his sentiments of Mons. Mallemont's new hypothesis of the heavens; and

* Birch's Hist. Roy. Soc. Vol. III. p. 509. † Ibid. p. 511.

also suggesting an experiment, whereby to try whether the earth moves in a diurnal motion or not; namely, by the falling of a body from a considerable height, which, he alleged, must fall to the eastward of the perpendicular, if the earth moved. Sir Christopher Wren supposed, that there might be something of this kind tried, by shooting a bullet upwards, at a certain angle from the perpendicular, round every way, whereby to see whether the bullets so shot would all fall in a perfect circle round the place where the barrel was placed. This barrel he desired might be fixed in a frame upon a plane foot, and that foot placed upon a true plane every way; and the mouth of the gun be almost in the same point over the plane, which way so ever shot. Mr. Flamsteed hereupon alleged, that it was an observation of the gunners, that, to make a ball fall into the mouth of a piece, it must be shot at eighty-seven degrees, and that he knew the reason thereof, which agreed perfectly with his theory,—that a ball shot perpendicularly would never fall perpendicularly; and he mentioned the recoiling of a perpendicular jet of waters. But this was conceived to arise from some mistake of the gunners, in not well taking notice of all circumstances; since a body shot perpendicularly would also descend perpendicularly, and a body shot at eighty-seven degrees would fall considerably from the place where it was shot *.

Among the illustrious men who died in the course of this year, were Hobbes, the philosopher; Sir Jonas Moore, the mathe-

* Birch's Hist. Roy. Soc. Vol. III. p. 513.

matician, founder of the Observatory at Greenwich, and the mathematical school at Christ Hospital, London; the celebrated Cardinal de Retz, and Mezaray the historian.

The employment of our great national architect the next year was nearly the same as the last; continuing his architectural works, presiding and assisting at the Royal Society, adjudging disputed claims under the board, and other similar occupations.

The cathedral of St. Paul was continued with its usual celerity; and the funds for its completion, arising from the coal duties and voluntary contributions, were faithfully applied.

The various parish churches were also going on towards completion; and the companies' halls, merchants' houses, streets, &c. fast assuming a metropolitan appearance.

The parish church of St. Bridget, or St. Bride, on the south side of Fleet-street, was finished this year, and further embellished in 1699. This church is a fabric of great strength and beauty, and is one of the most striking features of the metropolis. Its interior is at once spacious, commodious, and elegant; is one hundred and eleven feet in length, fifty-seven feet in breadth, and forty-one in height; composed of a lofty nave, covered with an arched ceiling, and two aisles, separated below by solid pedestals, supporting coupled Doric columns, which support the arches of the nave and galleries. The altar is handsomely carved in oak, of the Corinthian order; the pulpit, reading-desk, and pewing of the church, are in a grand and handsome style. The peculiar ornament of this church is its beautiful tower and well proportioned spire: it is only second to that of

Bow in beauty, and fully its equal in scientific construction. On a lofty tower, which forms a base higher than the neighbouring houses, crowned with a well proportioned cornice, rises a stylobate, or continued plinth, which supports a cubical tower of the Corinthian order, covered with circular headed pediments, and finished with a blocking course, a balustrade, and a well proportioned vase on each angle. Between these commences the spire, which is octagonal, each face containing an aperture, covered with a semicircular headed arch; a series of these, setting off in just proportion, reduces the upper one to a size sufficient to commence the lofty and well proportioned spire, which is terminated by a golden ball and weathercock. The entire height of this fine piece of architecture, before it was lowered a few feet by the late Sir William Staines, was two hundred and thirty-four feet, which is thirty-two feet higher than the Doric column on Fish-street-hill.

The church and steeple of St. Mary-le-Bow was finished this year, an account of which may be found in page 296; and that of St. Clement Danes, in the Strand, was commenced *. He also built the little square church of St. Anne and St. Agnes, on the north side of St. Anne's-lane, in Aldersgate-street. The interior, fifty-three feet square, and thirty-five feet high, is divided into a large square in the centre by four handsome Corinthian columns and an ornamented ceiling. At the four angles the ceiling is lower, and divided into quadrangles, within each of which is a circle, enriched in its circumference with fretwork.

* See page 333 of this work.

The first meeting of the Royal Society this year, January 8, was honoured by their vice-president, Sir Christopher Wren, taking the chair; when farther discussions arose on Newton's theories of circular motion and attraction, from which several observations and deductions were made; as—1. That pendulum clocks must vary their velocity in several climates: 2. That this variation must also happen at different heights in the same climate; which last remark Hooke confirmed by an observation of Halley's, made at St. Helena: and 3. As a consequence of these, that the pendulum was unfit for an universal standard of measure *. Various motions were made at subsequent meetings concerning the society's property at Chelsea, in each of which the surveyor-general is commissioned by the society on their behalf. Sir Christopher attended several other meetings, and took the chair at some; but nothing occurred at them of much consequence.

At the meeting of May 27, Dr. Tyson presented his printed treatise, containing the description of the parts of a porpoise dissected by him in Gresham College, together with a discourse on the utility of such anatomical inquiries: he received the thanks of the society, and was desired to prosecute his designed method. Upon this occasion, the intention of procuring the bodies of such exotic animals as should die in St. James's park, for the purpose of being dissected and described, was again mentioned; and Sir Christopher Wren and Mr. Henshaw were desired to use their interest to procure them for the society's

* Birch's Hist. Roy. Soc. Vol. IV. p. 1.

use *. Sir Christopher again took the chair at the meeting of June 3, when Boyle's experiments, related in his "Experimentorum Novorum Physico-mathematicorum continuatio," were discussed, as well as some curious accounts of monstrous births; when the chairman was of opinion that most monstrous births proceeded from twins. This led to a conversation about monstrous productions of several kinds, and from the mixtures of different species, as of mules, &c. Sir Christopher and Mr. Aubrey mentioned a production which they had seen, from a male cat and a female rabbit †. Sir Christopher's attendances on the society this year were very frequent.

On the anniversary, November 30, at the annual election of officers, Sir Christopher Wren was re-elected on the old council, and the Hon. Robert Boyle was elected president ‡; but declining, by a letter to Mr. Hooke, the secretary, dated Pall-mall, December 18, 1680, to accept of that office, and desiring the society to proceed to a new election of a president, Sir Christopher Wren was elected to that honourable office, and was sworn in, before the council, January 12 following §. Mr. Hill was rechosen treasurer, and Dr. Gale and Mr. Hooke secretaries.

Among the deaths of illustrious contemporaries, recorded this

* Birch's Hist. Roy. Soc. Vol. IV. p. 30. † Ibid. p. 41.

‡ Life of the Hon. Robert Boyle, pp. 250, 251.

§ Birch's Hist. Roy. Soc. Vol. IV. p. 58. Ward's Lives of the Gresham Professors, p. 103, &c. &c.

"1680.—Illustrissimæ *societatis regalis* ad philosophiam promovendam Præses. Vid. Archiv. Soc. Reg."—Wren *MS.*

year, we find those of Sir Peter Lely, the portrait painter; Bernini, the architect, in his 82d year *; Butler, the author of Hudibras; Bartholine, the celebrated Danish anatomist; and Kircher, the inventor of the micrometer.

At the before-mentioned meeting of the council, on January 12, 1681, were present

Sir Christopher Wren, President.

Sir John Lowther,	Mr. Colwall,
Sir John Lawrence,	Mr. Aston,
Sir John Hoskyns,	Mr. Perry,
Mr. Hill,	Mr. Hooke.

Sir John Lowther was sworn of the council. Sir Christopher Wren was sworn president, who deputing Sir John Hoskyns vice-president for the year ensuing, he was also immediately sworn †.

After the council broke up, a general meeting of the society was held, the new president in the chair. The business commenced by reading a letter from the Hon. Robert Boyle, signed William Bythasia, containing an account of a strange hurricane, which happened at Hanau, in November, 1680; and another from Mr. Pascall, dated from Chedsey, in Somersetshire, January 4, 1681, relating an account of an earthquake, which

* A medal struck of this eminent artist, who, like Michelangiolo, was at once painter, sculptor, and architect, characterises him as "singularis in singulis, in omnibus unicus."

† Birch's Hist. Roy. Soc. Vol. IV. p. 63.

had happened the day before at Chedsey, and other contiguous places; and of the comet then appearing.

These communications led the president (Sir Christopher) to discourse on the cause of earthquakes, who conceived that many of those, which only shook, and did not fracture the earth, were occasioned by some vast subterraneous caverns, into which some great impending portions of the upper parts might fall, and thereby occasion that great noise and trembling, which is sensible in the surface of the earth contiguous thereto: and that hence, the reason might be assigned, why, after some earthquakes, there have been found divers parts of the ground sunk, which are sometimes also filled with water, and so make a lake or stagnum. And he was of opinion, that there might be some general constitution of the æther, that might be the cause as well of the earthquake, as of the storm and the comet *.

On the 19th the council met, when Sir Christopher presided, and moved that committees of anatomy, of georgics, and of cosmography be appointed; the business of the latter being to register all things that should be remarkable. It was resolved, that these three committees be appointed; and that the president should consider of fit persons to be of the said committees, and to draw up some directions for their proceedings and consideration.

The council breaking up, a general meeting of the society was held on the same day, the president in the chair; who proposed Dr. Robert Wood, LL.D. as a candidate for the honour of

* Birch's Hist. Roy. Soc. Vol. IV. p. 64.

fellow. On occasion of Leibnitz's letter * being mentioned, which had been read at the last meeting, containing several ingenious conjectures about the use of an universal language and character, as also of an universal algebra, and the great benefit thereof, by which he had been able to perform many important operations, which the commonly known algebra would in no way enable him to do; the president, and Sir John Hoskyns, discoursed about the universal algebra therein mentioned, supposed that it might be somewhat like the *ars Lulliana;* but did not conceive that it could be of so great use as Leibnitz seemed to imagine. The president next acquainted the society with a proposition of Mr. JOHN ADAMS, to survey all England, by measuring, taking angles, and also the latitudes of places; and, in order to do this, running three several meridians through England: that Mr. NEWTON †, of Cambridge, had promised to assist him; and that he intended the next week to attend the society, in order to desire their directions and assistance ‡.

Some discourse arising about the comet, Mr. Hill observed that Calphurnius the poet, who lived in the time of Carinus, had mentioned a comet not noticed by writers on astronomy; and the president mentioned that the fire-ball which had formerly been observed in England might possibly be a sublunary comet, and observed, on reading a letter from Sir Theodore de Vaux, recounting some appearances in the heavens resembling the fighting of armies, and noises like the discharges of guns, that he had

* Letter Book of the Roy. Soc. Vol. VIII. p. 147.
† Afterwards Sir Isaac Newton.
‡ Birch's Hist. Roy. Soc. Vol. IV. p. 65.

formerly witnessed a similar beautiful scene, when the clouds opened, and flashes of lightning ran to and fro between them *.

At a subsequent meeting on February 2, Sir Christopher again presided, and on discussing the subject of the comet, observed, that there were two comets, and that the last was different from the first; that he had tried its course from Mr. FLAMSTEED's observations, and found it to agree with his hypothesis, that comets move in straight lines, equal spaces, and in equal times, contrary to the hypothesis of Kepler †. On March 2, the indefatigable president again took the chair, and gave the society an interesting account of the Italian book, entitled *Prattica Minerale trattato del Marco Antonio della Fratta*, the substance of which he promised to put into writing against the next meeting; and acquainted the members with an observation that he had formerly made about the motion of the superficies of undulating water, which he had taken notice of by the motion of a cork floating in it; and said that the cork did not keep exactly rising in a perpendicular line, but had also a lateral motion, the composition of which two motions together made the cork move in an ellipsis. He also took occasion to remark that Eschinardus had demonstrated, that the best figure for a specular burning glass was a spherical concave, which was much better than a parabolical concave. At the same time he gave them an account of this philosopher's way of graduating and adjusting thermometers, by a standard ‡.

* Birch's Hist. Roy. Soc. Vol. IV. p. 66.
† Ibid. p. 67. ‡ Ibid. p. 72.

On March 16, the president being chairman, after other business had been debated, Mr. Houghton proposed that a trial be made, whether there could not be discovered in England the way of making jessamine scented gloves, by the help of white narcissus flowers, or daffodils; for that he had been informed that such a thing had been done. Sir Christopher replied that he had known oil of jessamine made in England, with flowers of that plant, by packing up the gloves, prepared with oil of ben or of almonds, and mixing with them layers of jessamine flowers. He afterwards acquainted the society that Mr. MERCATOR had lately shown the king a new method or projection of maps, very useful for seamen, but did not describe particulars *.

At a meeting of the council on March 23, SIR CHRISTOPHER WREN, president of the society, in the chair, various subjects connected with their estate at Chelsea were discussed, and orders made relative thereto: and at a general meeting of the society on the same day, after much debate concerning the jessamine perfume before-mentioned, he observed that the Chinese were so skilful in perfuming, that he had found a Chinese cabinet to have a distinct perfume in every drawer, which he conceived to have been mingled or incorporated with the hard varnish, as it was varnished within and without. The president then somewhat explained Mercator's new projection for maps for the use of seamen; namely, that it was a certain projection of the surface of the globe upon a plane parallel to the plane of the equator; that the pole was the centre, and the parallels concentric circles,

* Birch's Hist. Roy. Soc. Vol. IV. p. 74.

the meridian straight lines passing through the pole or centre; all which were common with several other polar projections already known and used. But the singularity, Sir Christopher observed, of this was, that the distances of the parallel lines were proportioned according to the proper spreading of the meridians, somewhat of the nature of the chart of Mr. Wright, commonly but falsely called Mercator's chart, to which he had a certain scale appropriated so, as that he could easily measure distances *. The president attended his duties at most of the subsequent meetings, both of the council and the society, but either took but small part in the discussions, or they were either affairs of accounts, or proceedings about their estate at Chelsea.

At a meeting of the society, after one of the council, at both of which Sir Christopher presided, mention being made of the great stag's horns recently found in a quarry in Ireland, and presented to the king, the president remarked, that he had seen them, and, from their size and shape, conceived them to be the tire of a moose-deer, and the largest that he had seen. He related, that this animal would in a short time fall into a scouring, and die, for want of eating grass, and that it was necessary to provide moss for its food; that its neck was so short, that it could not reach its food without kneeling. He also informed the society, that the people near Hudson's Bay live to a great age, as one hundred and thirty, or one hundred and forty years, without the use of spectacles; that they generally go well clad in furs, and have a mantle of furs over their shoulders; which being very

* Birch's Hist. Roy. Soc. Vol. IV. p. 77.

curiously tanned, so as to be like a piece of cotton, they lie upon it in the night; with many other particulars of this singular people *.

Sir Christopher then gave a description of, and conjecture about the way of raising water in China for watering ground; which it was desired might be farther elucidated. Among other observations, the president remarked, that it was of late years discovered that the blacks who live only upon potatoes were apt to die of dropsy; and that therefore the planters had found it necessary to allow them bread and milk, which prevented it. He thence drew the conclusion that it was necessary that all wholesome food should have oils; that most roots wanting oil are not of themselves a good nourishment; and that in Ireland, where the people feed much on potatoes, they assist themselves by drinking sour milk, to make the potatoes digest the better. On a discourse concerning peat moss, he observed, that peat was made by a certain subterranean plant, which grew, and filled, and matted up all the place; which might easily be discovered by washing the peat in water, and so clearing away all the sand and earth, which would leave the vegetable matted and felted together †.

On July 27 the president again assumed the chair, at a meeting of the council, when he was appointed on a committee with Mr. Henshaw, Mr. Colwall, Dr. Gale, Dr. Croune, and Mr. Hooke, to go to Chelsea, on the business of enclosing the

* Birch's Hist. Roy. Soc. Vol. IV. p. 91. † Ibid. p. 93.

society's ground, and to meet at the Swan tavern there, at the hour of nine in the morning. At another meeting of the council, on October 5, the president being in the chair, he acquainted the council with a treaty which he had lately entered into with Sir Stephen Fox, concerning their estate of Chelsea College; when it was ordered, that Sir Christopher and Mr. Evelyn be desired to treat with Sir Stephen Fox, about selling the house and the whole concerns of the college, and that they were empowered to fix a price for the house and land *.

In the course of this year a philosophical dispute occurred between Mr. Hooke and Mr. Flamsteed. The former brought it before the society on November 2, and exhibited a mechanical way of finding the focus of all parallel rays falling upon the spherical superficies of a more dense refracting medium, by the motion of a certain circle upon a point in its diameter eccentrically taken, according to a proportion assigned; and by which means would be avoided the tediousness of calculating several triangles for the finding the focus of every single ray. He also showed the geometrical ground and demonstration of the same; which, though it was denied, as he said, by Mr. Flamsteed, as false and impossible, yet he persisted in his proposition, and referred it to be judged by Sir Christopher Wren, who, he doubted not, would easily satisfy the society of the truth and evidence thereof †. At the next meeting Flamsteed acknowledged himself in error about this proposition; and that, upon con-

* Birch's Hist. Roy. Soc. Vol. IV. p. 97. † Ibid. p. 100.

sidering it more seriously, he had found out the demonstration, but not before the way of demonstrating it had been shown to him by Mr. Hooke *.

At a meeting of the council on November 10, Sir Christopher being in the chair, it was agreed and ordered, that the president, Sir John Laurence, Mr. Colwall, Mr. Aston, and Mr. Hooke, be a committee for auditing the treasurer's accounts. Sir Christopher, in discoursing upon the library of the society, promised to give the society five pounds, to be expended in books of geometry; and Mr. Hooke was desired to find out such books as he should think proper, and were not already in the library. And the council, taking into consideration the improvement of the library, ordered that there should be annually expended the sum of ten pounds in purchasing philosophical books. At a general meeting of the society on the same day, Sir Christopher also presiding, after a discussion concerning instruments useful for the sea service, in which Mr. Hooke bore a principal share, the president expressed himself desirous that a good and easy contrivance should be thought of and made for an azimuth compass, in order that observations of that kind might be made more often and more certain by seamen; the difficulty of making such observations, he said, with the instruments now known, being the greatest reason why there were so few good observations of that kind. He farther observed, that no good observations could be made at sea by the help of a perpendicular, which was the

* Birch's Hist. Roy. Soc. Vol. IV. p. 101.

reason of discontinuing the use of the astrolabe, and making use of the sea quadrant and back staff *.

In spite of his numerous professional engagements, we find Wren, at the next and subsequent meetings, both of the council and of the society at large. At that of November 30 the members of the society had the usual summons from the president to meet this day, in order to the election of the council and officers of the society for the year ensuing: when being about thirty present, the president, Sir CHRISTOPHER WREN, took the chair. After which the secretary read the statutes concerning the election, and the society proceeded to the election of some new members. While the lists were gathering, Mons. Lyenbergh, ambassador from the King of Sweden, presented the society with a letter † and two books ‡, from Dr. Olaus Rudbeck, professor

* Birch's Hist. Roy. Soc. Vol. IV. p. 102.

† Letter Book of the Roy. Soc. Vol. VIII. p. 186.

‡ At the next meeting, on December 7, these books and letters were produced and read; whereupon it was ordered, that Mr. Cluverus should be desired to peruse Dr. Rudbeck's work, make an abstract concerning the principal matters contained in it, and give the society his judgment upon it: also, that the thanks of the society be returned to their learned author. At the following meeting, Sir Christopher presiding at both, the doctor was proposed candidate by Dr. Gale. Mr. Aston mentioned, that, having perused some parts of the said Dr. Rudbeck's work, presented by him to the society, he had found him to be laborious as well as learned. Sir John Hoskyns remarked, that he had been informed that the doctor, besides his knowledge in anatomy and ancient history, was well skilled in botany, and now writing a history of plants, for which purpose he had already drawn and cut in wood above two thousand plants.—*Birch's Hist. Roy. Soc.* Vol. IV. p. 112.

of anatomy, at Upsal, in Sweden; for which the president returned the society's thanks to the ambassador, and ordered the said letter and books to be produced at the next meeting, that a more full account might be taken of them *.

The society then proceeded to the election, and chose Sir Christopher Wren, and ten other of the most eminent members, to be continued of the council for the year ensuing, and ten members for the new council. Sir Christopher was then † re-elected president, and the new members of the council sworn ‡. Sir Christopher attended his duties, and presided at every council and general meeting held during the remainder of this year.

Among the principal of Wren's works in architecture this year, the parish church of St. Stephen's, Walbrook, was finished; St. Paul's, and other public works, were continued; part of the Temple, destroyed by the fire, rebuilt; and the parish church of St. Peter, in Cornhill, commenced. It is a commodious edifice, eighty feet long by forty-seven feet wide, and forty high, divided into a lofty nave, with a camerated ceiling and two aisles, by a double row of Corinthian columns. It has a lofty tower, surmounted by a well-proportioned spire; and a large key, the emblem of St. Peter, for a vane.

This year Wren lost by death his able coadjutor and master mason, Thomas Strong, who has been alluded to in page 353. Peter the Great, Emperor of Russia, also died this year; who, during

* Birch's Hist. Roy. Soc. Vol. IV. p. 105.

† "Nov. 30, 1681.—Sir Christopher Wren chosen president. There was a most illustrious appearance."—*Evelyn's Diary*, Vol. I. p. 537.

‡ Birch's Hist. Roy. Soc. Vol. IV. p. 106.

his residence in England, disconcerted John Evelyn so much, by destroying his house and garden, at Deptford. Among other improvements, consequent on the improving state of society, it may not be improper to mention, that it was in this year that the penny post was first established in the metropolis.

In the following year, 1682, the military hospital at Chelsea was founded, and the building commenced by Sir Christopher Wren. This monument of national gratitude owes its origin to the benevolent Sir Stephen Fox *, who proposed to Evelyn †, on

* This gentleman, whose name and biography is most unaccountably omitted in Chalmers' last edition of his Biographical Dictionary, Rees's Cyclopædia, and other similar works, was, at this time, in great favour with the king, and also one of the Lords of the Treasury. He came originally to London a poor boy from the choir of Salisbury, when he was taken notice of by Bishop Duppa; and afterwards waited on Lord Percy, who procured him an inferior situation among the clerks of the kitchen and board of green cloth: where he was found so humble, diligent, industrious, and prudent in his behaviour, that the king, who was then in exile, and Mr. Fox waiting, both the king and the lords about him frequently employed him in their affairs, trusting him with receiving and paying the little money they had. Returning with Charles II. to England, at the Restoration, after great privations and suffering, his Majesty found him so honest and industrious, and at the same time so capable and ready, that, being advanced from clerk of the kitchen to that of the green cloth, he obtained the office of paymaster to the whole army; and, by his dexterity and punctual dealings, he obtained such credit among the bankers, that he was in a short time able to borrow vast sums of them upon any exigency. From this continual turning of money, and from the soldiers' moderate and voluntary allowance to him, for punctuality with them, he so enriched himself, that Evelyn, who knew him well, says, he believed him "to be

† Evelyn's Diary, Vol. I. p. 535.

September 6, 1681, the purchasing of Chelsea College, which the king had previously given to the Royal Society, and was willing to repurchase for this purpose. Sir Stephen, with whom Evelyn dined on that day, desired his assistance as one of the council of the society. The measure was proposed by Wren *, who, with Evelyn, was appointed to conduct the sale †.

On January 27 of this year, Sir Stephen Fox again acquainted Mr. Evelyn with the king's intention of founding a royal hospital for wounded, disabled, and superannuated soldiers, on the piece of ground at Chelsea which the Royal Society had sold to his Majesty; who would settle five thousand pounds a year upon it, and erect a building to the value of twenty thousand pounds. Sir Stephen not only was very active, but also very benevolent himself to this national charity; to which the fortune he had gained by the army, and the intercourse he had with it, enabling him to witness its distresses, probably urged him ‡. On May 25, Sir Stephen Fox, Sir Christopher Wren, and Mr. Evelyn, waited upon the Archbishop of Canterbury, at Lambeth, with the archi-

worth at least two hundred thousand pounds, honestly gotten, and unenvied, which is next to a miracle." With all this, says the same authority, he continued as humble and as ready to do a courtesy as ever he was. He was generous, and lived honourably; was of an excellent temper, well spoken, and was so highly in his Majesty's confidence, and so useful, that he had given him "the reversion of the cofferer's place, after Harry Brouncker." His eldest daughter was married to Lord Cornwallis, and had twelve thousand pounds to her fortune; besides her father restoring that noble family from its embarrassments.—*Evelyn's Diary*, Vol. I. p. 525.

* See page 401 of this work. † Ibid. p. 404.

‡ Evelyn's Diary, Vol. I. p. 540.

tect's design for the new hospital, which met the archbishop's approbation *. Early in August the business commenced; for Sir Stephen and Evelyn went there to survey the foundations which were then laying out †. Wren not only designed and superintended the building as architect, but also prescribed the statutes and whole economy of the hospital; which, for cleanliness, health, and convenience, is one of the best designed and best regulated in Europe ‡.

Among the architectural works of Wren this year, besides those which were proceeding and beginning, he finished the parish churches of St. Clement Danes, which has been spoken of before; and that of St. Antholin, Watling-street, a church of small pretensions to taste, although of scientific construction and good building. Its spire, which would have been elegant on a loftier tower, has a Corinthian capital for a finial, which accommodates itself to the various angles of its octagonal supporter; but is too formal, and carries the spectator too much to consider the order whence it is stolen, to think it either beautiful in itself, or well applied to its situation.

The Royal Society continued to flourish under his guidance. The first meeting of the year, January 4, 1682, had the benefit of his presence in the chair, and of his advice and direction in the pursuit of those philosophical discoveries and improvements which he could now only point out to his coadjutors, without giving his valuable talents to their investigation. On a discussion

* Evelyn's Diary, Vol. I. p. 543. † Ibid. p. 545.
‡ Parentalia, p. 327.

concerning the properties of phosphorus, he moved, that a quantity of that substance be procured, in order to make several other experiments with it, to ascertain more exactly the true nature of its flame, and what affinity it hath with other flame; what effects the presence or absence of the air produces; what part or qualification of it is the cause thereof; how its effects may be increased or diminished; and the like. He also moved, as a desirable object to be procured by the society, on account of the curious effects which it would produce, that a very large burning or specular concave, of metal, be forthwith made, in order to make several experiments therewith. This was agreed to by several other members, as an affair that would be of great use in the farther investigation of the nature and effects of heat *.

On the 11th of the same month the council met, when Sir Christopher, who, as president, took the chair, having been empowered by former orders of the council to dispose, by sale, of Chelsea College, with its appurtenances, reported, that he had sold it, with the lands belonging to it, to Sir Stephen Fox, for his Majesty's use, in case the council should ratify the said sale, for thirteen hundred pounds, ready money, to be paid by Sir Stephen Fox at one payment, on the sealing of the conveyances. The council thereupon approving the said sale, voted that the president had done a service to the society, and returned him thanks accordingly †.

At the next meeting of the council, January 18, Mr. Flam-

* Birch's Hist. Roy. Soc. Vol. IV. p. 115.

† Ibid. p. 117; also Evelyn's Diary, Vol. I. p. 540.

steed, the celebrated astronomer, was sworn a member by the president, who rendered an account to the society of his proceedings in the disposal of Chelsea College; for which the council returned him their thanks, with their earnest request that he would complete the said undertaking. He also presided at a general meeting on the same day; when, speaking of the practice of the Chinese physicians, he observed, that they were extremely curious about feeling the pulse of the patient, examining the beating thereof, not only in the wrist, but in various other parts of the body, by which they pretended to make discoveries of the disease; and he was of opinion, that the ancients might know and make more use of the information of the pulse than our modern physicians of Europe; and that there might be more in Galen's curiosity about the pulse than was generally understood. He also conceived, that there might be somewhat even in the motion of the parts of the artery itself; for it is very visible in living subjects, that the artery hath a peculiar muscular motion of its own, distinct from the pulse of the heart; and that, by dissecting, it appeared plainly made up of three sorts of muscular coats; the innermost of them having long fibres, the outermost round fibres, and the middlemost diagonal or tubical fibres *.

At a meeting of the council on the 25th of the same month, Sir Christopher, being in the chair as president, reported his proceedings relating to Chelsea College, with Sir Stephen Fox, Mr. Bailey, the society's counsel, and the attorney-general. He also desired the council to consider what expedient might be

* Birch's Hist. Roy. Soc. Vol. IV. p. 120.

adopted, to prevent improper persons being admitted fellows of the society; which was ordered to be debated at the next meeting of the council *.

The sale of the college at Chelsea was perfected at a meeting of the council on February 8, Sir Christopher presiding. Mr. Counsellor Bailey attended for the society, and Mr. Nicholas Johnson for the attorney-general, in order to witness its conveyance, with all its appurtenances, from the society to the king. The deed of sale was read over, the whole council assented to its conditions, the common seal was affixed, and the bargain completed †.

On February 15 Sir Christopher presided both at the council and a general meeting, at which much business was transacted. At the latter, Mr. Flamsteed having cavilled against the method shown by Mr. Hooke, of describing a parabola, as he had done before, on November 2, 1681, about his method of finding the focus of parallel rays ‡, and affirming it to be false, the society desired Mr. Hooke to show again the way which he had demonstrated at the last meeting; who repeated it, and demonstrated the ground thereof. Flamsteed was again defeated; and the president declared to the society that it was true and certain, and the best way yet known of describing that curve, and never published before §.

Sir Christopher presided at the council, March 8, and took no part in the discussions, which were principally on defaulting mem-

* Birch's Hist. Roy. Soc. Vol. IV. p. 121.
† Ibid. p. 124.
‡ See page 404 of this work.
§ Birch's Hist. Roy. Soc. Vol. IV. p. 129.

bers; but, at a general meeting on April 5, being in the chair, he gave an account of the writings of Dr. Wiberd, which the society had desired him to peruse. He remarked, that the doctor had been very diligent and curious in observing the figure, quality, refraction, &c. of the parts of the eye, and had made many very good observations and conclusions thereon: but that in relating he was somewhat too prolix and particular; owning that he set them down merely as helps for memory; and therefore it was very desirable that the said writings might be recommended to some judicious person, learned in the studies of anatomy, geometry, and optics, to peruse the same, and make an abstract of whatever was necessary and pertinent, and to leave out such things as should be judged otherwise; and that being done, to procure them to be printed and published in the doctor's name. The president also gave an account of Signor Borelli's book *De Motu Musculorum*, perused by him, stating, that the author had been very elaborate and ingenious in his inquiries into that subject, but seemed to be much mistaken in several things that he had asserted; particularly as to the motion of a horse, and in the strength of the motion of a muscle; for that, according to his calculation of the strength, it was impossible that the tendons of several muscles could sustain such a force, though they should be as strong as a piece of iron of the same dimensions *.

On the 12th of the same month, we again find the indefatigable president at his post; and upon occasion of reading some of the minutes of the preceding meeting, which referred to the

* Birch's Hist. Roy. Soc. Vol. IV. p. 140.

transformation of creatures by means of the qualifications of the place wherein they are fostered; he related that he had observed in a garden made out of the ruins of an old building, that the leaves of all the plants became speckled and striped; and that the same plants, being transplanted thence to another place, continued for some time striped and speckled; and at the close of the meeting, he moved, that some experiments be made about the strength of timber and of iron *. He again attended, and presided at a council on April 27; but the business was principally concerning arrears of certain members; and again on May 10, when having given deputations to Dr. Wood and Mr. Packer to be vice-presidents, he swore them into office accordingly. At a general meeting on the same day, the experiments ordered by the president at the last meeting were made, Mr. vice-president Henshaw in the chair; but the entry of it in the society's books being left in blanks for the scantling of the timbers so tried, they are useless to the inquirer †. On the 31st, Sir Christopher again presided at a general meeting; and some further experiments on the strength of various sorts of timber were tried, but not enumerated.

On June 7, the president being in the chair, a discourse arose about the motions of pendulum clocks, in which Mr. Hooke took a distinguished part. Sir Christopher thereupon informed the society, that Captain Sheeres was to go again in a short time to Tangiers, and desired them to furnish him with instructions for continuing his experiments with pendulum

* Birch's Hist. Roy. Soc. Vol. IV. p. 142. ‡ Ibid. p. 147.

clocks, which he found, when adjusted in England, went too fast in Tangiers, and obliged him to make his pendulums considerably longer:—also that the captain had engaged to receive such instructions, and to do his utmost to observe them, and to give an account thereof to the society. The debate now went on the comparative measures of weight, length, and capacity of various countries. Sir Christopher supposed Mr. John Greaves to be the most accurate among those who had written on the subject. Mr. Hooke mentioned that Mons. Picart had taken much pains in comparing the length of other countries with the Paris foot, in his book concerning the measure of a degree upon the earth; which occasioned the president to inquire of Mr. Hooke the reason why the measure of a degree upon the earth was not taken here in England, as had been formerly desired: to which he answered, that if the society would defray the expense thereof, he was willing to take charge of it, and see that it be accurately done: that it would be necessary for this and any other accurate trials, that the society should have in their custody an accurate measure of the standard foot of London. The president was of opinion, that the best standard for this occasion would be a certain part of the length of a degree upon the earth, if at least, upon several accurate trials of the measure of a degree in several latitudes, it should be found the same, and not different; as it would be, if the body of the earth were oval, and not perfectly globular *.

Sir Christopher again presided at the council on August 2,

* Birch's Hist. Roy. Soc. Vol. IV. p. 151.

and brought in the draught of a statute which was read, debated, and carried; and also at a council on the 5th and 9th; but they were principally occupied about fellows in arrear and matters of account. He presided also at every other meeting till November, but communicated nothing of material consequence. On the 29th same month, he took the chair at a general meeting, when Prince Borghese making a visit to the society, was entertained with seeing the curiosities of the repository and library, and afterwards in the meeting room, with various mathematical and mechanical experiments, particularly with the instruments and ways of describing various sorts of regular and geometrical curve lines, and the use of them. His highness subscribed his name in the charter books, as one of the members of the society, and the president proposed his excellency Don Joseppe de Faria, Knight of the order of Christ, and envoy extraordinary from the King of Portugal to the British court, and Sir John Chardin*, the great tra-

* This learned and ingenious French traveller, who about the period above quoted settled in England, had been before in London, and was well known to Wren, Evelyn, Hoskyns, and other leading members of the Royal Society. When he was in London in 1680, Sir Christopher Wren, Sir John Hoskyns, and Mr. Evelyn, waited upon him on August 30, 1680, in the name of the Royal Society, to congratulate him, and to invite him to honour them with his company. "We found him," says Evelyn, "at his lodgings in his Eastern habit, a very handsome person, extremely affable, a modest, well-bred man, not inclined to talk wonders. He spake Latin, and understood Greek, Arabic, and Persian, from eleven years' travels in those parts, whither he went in search of jewels, and was become very rich. He seemed about thirty-six years of age. After the usual civilities, we asked some account of the extraordinary things he must have seen in

veller, as candidates for the honour of becoming fellows of the society *.

travelling over-land to those places where few, if any, northern Europeans used to go, as the Black and the Caspian sea, Mingrelia, Bagdat, Nineveh, Persepolis, &c. He told us that the things most worthy of our sight would be the draughts he had caused to be made of some noble ruins, &c.; for that, besides his own little talent that way, he had carried two good painters with him, to draw landscapes, measure and design the remains of the palace which Alexander burnt in his frolic at Persepolis, with divers temples, columns, relievos and statues, yet extant, which he affirmed to be sculpture far exceding any thing he had observed either at Rome, in Greece, or in any other part of the world where magnificence was in estimation. He was sorry he could not gratify the curiosity of the society at present, his things not being out of the ship; but would wait on them on his return from Paris, whither he was going the next day, but with intention to return suddenly, and stay longer here, the persecution in France not suffering protestants, and he was one, to be quiet."—*Evelyn's Diary*, Vol. I. p. 522.

This eminent traveller, the son of an opulent protestant jeweller, was born at Paris, in 1643. In 1664, he went to the East Indies, where he remained for six years, passing much of his time in Persia. On his return to Paris he stayed there only fifteen months, the King of Persia having made him his agent. He accordingly left Paris in 1671, again visited Persia, and did not return to Europe till 1677. He, determining to settle in England, came to London in April, 1681, and was knighted by Charles II. on the 24th of that month, and married on the same day a young lady of Rouen, the daughter of a protestant refugee in London. Next year, as above, he was chosen a fellow of the Royal Society, on the nomination of its president, Sir Christopher Wren. After this, Charles II. sent him to Holland, and in 1683 he was there as agent to the English East India Company. In 1686 he published the first part of his voyage, the sequel of which was published

* Birch's Hist. Roy. Soc. Vol. IV. p. 167.

November 30.—The anniversary of the Royal Society was celebrated as usual. Before proceeding to their usual business, the Portuguese ambassador and Sir John Chardin, proposed at the last meeting by Sir Christopher, were elected fellows, and when they had sealed their bonds, and inscribed their names, were admitted as such by the president: who after holding the office with zeal, ability, and attention for two years, resigned. As soon as the election was declared by the scrutators, Messrs. Flamsteed and Cluverus, Sir Christopher was among the number continued of the old council, Sir John Hoskyns was elected president, Mr. Hill treasurer, Dr. Plot and Mr. Aston secretaries. At the next meeting of the society, the new president appointed Sir Christopher Wren, Mr. Henshaw, Sir Cyril Wyche, and Mr. Colwall, to execute each of them the office of vice-president *.

The next year, 1683, of Wren's life, passed much the same as the last, superintending and designing for St. Paul's Cathedral, the royal and episcopal palaces at Winchester, the parochial churches, companies' halls, and other public and private edifices in the metropolis, and the two universities, besides his attendance on the privy council, the court of claims, the Royal Society, and unrecorded public and private engagements.

some years afterwards. He died on December 25, 1735, and was buried at Chiswick. His monument or cenotaph is in Westminster Abbey, inscribed—

"Sir John Chardin.
"Nomen sibi fecit eundo."

Chalmers, &c.

* Birch's Hist. Roy. Soc. Vol. IV. p. 171.

About this time he built the chapel * at Queen's College, Oxford, the entrance to which was afterwards finished by his pupil Hawksmoor.

Charles II. had a distinguished love for art, and architecture met in him a splendid and sincere patron. About this time Winchester, which had been almost totally destroyed by Cromwell after the battle of Nazeby in 1645, attracted the notice of the king, who chose it for his usual residence, when not required by business in the metropolis. In imitation of his example, many of the nobility and gentry commenced mansions in the city. Among others, the Bishop, Morley † who had been in exile with

* In the manuscript notices of the principal events in the life of Wren, at the British Museum, described in my first page, is the following entry without date, but standing just before an entry dated 1683, namely, ... "Capellam collegii Regin: apud Oxon^{s}. extruxit."—WREN *MS.*

† DR. GEORGE MORLEY.—This learned English prelate was the son of Francis Morley, Esq. by a sister of Sir John Denham, and was born in Cheapside, London, February 27, 1597. He lost his parents and all his patrimony when very young; yet he was successful enough to procure his election as a king's scholar at Westminster school, and became a student of Christ Church, Oxford, in 1615, took his degree of B. A. in 1618, and proceeded to that of M. A. in 1621. After a residence of seven years in this college, he was invited to be chaplain to Robert Earl of Carnarvon and his lady, with whom he lived till 1640, without seeking any preferment in the church. At the end of that time, being in his forty-third year, he was presented to the rectory of Hartfield, in Sussex, which, being a sinecure, he exchanged for that of Mildenhall, in Wiltshire. Before this exchange, Charles I., to whom he was chaplain in ordinary, had given him a canonry in Christ Church, the only preferment he ever desired; and of which he gave the first year's profit to his majesty, towards the charge of the war then begun. In 1642, he took his degree of D. D. and preached one of the

Charles II., began a new palace under the superintendence and from the designs of Wren, after the destruction and on the site

first solemn sermons before the house of commons; but so little to their liking, that he was not commanded to print it, as had been usual. Yet he was nominated one of the assembly of divines, but never appeared among them, preferring to remain with his royal master, whose interest he promoted to the utmost. Among other services, he persuaded the university of Oxford not to submit to the parliamentary visitation, and the convocation to pass an act to that effect with only one dissenting voice, although they were then in their power. The university afterwards appointed him to negotiate the surrender of their garrison to the parliamentary forces, which he managed with great address. These actions procured him his dismissal from his canonry, but with an offer of being allowed to hold it and his other preferment if he would only pass his word not to appear openly against them; but he preferred suffering with his celebrated colleagues, Fell, Sanderson, Hammond, &c. He attended the king at Newmarket, and was one of his chaplains at the treaty of Newport, in the Isle of Wight. In March, 1649, he prepared the brave Lord Capel for death, and accompanied him to the scaffold on Tower Hill. In the same year, he attended Charles II. at the Hague, and remained in exile till the Restoration, having been sent over by Chancellor Hyde two months before to assist in paving the way for that great event. In July, 1660, he was elected to the bishopric of Worcester, and in 1662, upon the death of Dr. Duppa, was translated to that of Winchester, the king observing that he would be none the richer for it. In 1661, he was a principal manager at the conference between the episcopal and presbyterian divines, commissioned under the great seal to review the liturgy, and, according to Baxter, was the chief and most fluent speaker of all the bishops. He was, as Charles predicted, a great benefactor to this see; for besides the repairs to his palace at Winchester, he spent above eight thousand pounds in repairing Farnham Castle, and above four thousand pounds in purchasing Winchester House, Chelsea, to annex to it. He also gave a hundred pounds a year to Christ Christ, Oxford, for the public use of that college; founded five scholarships of ten pounds a year each in Pembroke College; gave upwards of eighteen hundred

of the ancient structure, formerly called Wolvesley Castle. On the death of this prelate the works were discontinued, although he had completed one wing, and had left money for the rest. Bishop Mew, his successor, seeing no probability of a court at Winchester, neglected it; but Sir John Trelawney, who succeeded Mew in Queen Anne's reign, called for the money left by Bishop Morley, and completed it *.

The king, as before stated, having taken a liking to the situation of Winchester, desired Sir Christopher Wren to design a plan for a royal palace to be erected there; which was begun by his Majesty's commands, March 23, 1683 †, and prosecuted with that expedition, that the greatest part was covered in and finished, as far as the shell, before the king's death in 1685. Its extent, to the west, was three hundred and twenty-six feet; to the south two hundred and sixteen feet ‡. There was also to have been a large cupola raised thirty feet high above the roof, which would have been seen a great way towards the sea; and a regular street of handsome houses, leading in a direct line

pounds to the Cathedral of St. Paul, London, and bequeathed one thousand pounds to purchase lands for the augmenting of some small vicarages. This distinguished ornament of our church died at Farnham Castle, on October 29, 1684, in the eighty-eighth year of his age, and was buried in his cathedral at Winchester.—*Wood. Ath. Ox.* Vol. II.; *Barwick's Life, Milner, Chalmers*, &c.

* Parentalia, p. 326.

† " 1683.—Fabricam novi palatii Regalis de Winchester incepit, et tantum non 1685, perfecit. [Perficiat Georgius R. *]."—Wren *MS.*

‡ Parentalia, p. 325.

* The words in crotchets in the original are in pencil.—J. E.

down the hill on which it was situate, from the front of the palace to the west gate of the cathedral; for which, and for the parks, the necessary ground was procured *, and preparations

* In the bound books of the architect's drawings, &c. at All Souls College, Oxford, No. 96, in Volume II., is an abstract of lands, &c. purchased at Winchester for building the palace, in Sir Christopher's handwriting, and is as follows:—

A brief Account of all the Lands and Tenements purchased for the Accommodation of the King's intended Pallace at Winton.

A. The scite of the castle and part of the ditches, in lease from the city to Mr. Robert Mitchell, for 37 years to come.

B. Other part of the castle ditches, lett by the city to Andrew Stone for 34 years to come.

The remaining part of the said ditches were held by Alexander Oram from the city, for the same term of 34 years to come.

A small tenement by the west gate, held by Edward Littlefield from the city for 54 years to come.

Three small tenements by Mr. Barefoot and Matthew Embers, by lease from the city for 80 years to come.

A hopp ground to cherry orchard, held by lease from the city to William Complyn for 40 years to come; with a small piece of ground, held from the city for 1000 years.

A hopp ground, held by Richard Taylour by lease from the city for 20 years to come, with a small part of it.

Bishop's land, held by copyhold; the other part held by Susan Lime for 14 years to come.

A house, Bowlinggreene, and two little gardens, held from the city by Robert Mitchell for 34 years to come.

Part of the city south ditch, held by lease from the city to Richard Lane for 22 years to come; and a piece of free land next it.

Two pieces of arable land adjoining the castle ditch, held by John Badger for 3 lives, from the dean and chapter.

made for proper plantations *; a very necessary ornament for such an open situation. The architect had projected also to have brought, from the downs, a river through the park, which would have made a noble cascade of thirty feet fall. The whole disposition of this palace was such, as made it esteemed, by the best judges of the day, as an excellent model of a royal hunting seat †.

A ten acre close field, held by Alexander William Taylour, free of the Bishop of Winton.

A brick house, and orchard, without west gate, held by William Mitchell for 1000 years.

Two brick tenements next adjoining, held by Alexander Oram, by lease for 1000 years.

Another house, held by the said Alexander Oram, by lease from the city for 55 years to come.

A little close of freehold land, held by Thomas Fox.

A hop ground, held by Richard Taylour for a term of years to Jona Page.

An acre of land by the graves, held by the copy of the deane and chapter.

CHRISTOPHER WREN.

* Camden's Britannia, 2d Ed. p. 141.

† Parentalia, p. 325. The following description of the palace, being No. 97, Vol. II., of the collection before mentioned, and entitled Explanation of the Plan of Winchester Castle, is in the architect's handwriting, and may serve to explain the accommodations he intended. It is as follows:

Explanation of the Plan of Winchester Castle.

I. Entrance for the king's coach.

II. Garde-chamber below staires.

III. Principal staires.

From " A Journey through England," quoted in * Parentalia, the author says, " it will be the finest palace in England when

[The rest represents the plan of the 2d story].

IV. Lobby.

King's side.

V. Presence.
VI. Passage and anti-chappell, and closet above the scrieene.
VII. Chappell.
VIII. Staires to the closett.
IX. Privy chamber.
X. Drawing-room.
XI. Lobby, or dining-room, on the king's side.
XII. Antiroom to the Councill-chamber and y^e^ clerkes seates.
XIII. Staires to the councell.
XIV. Councell-chamber.
XV. Closett to the Councell-chamber.
XVI. Privey-gallery.
XVII. Ante-room.
XVIII. Bed-chamber.
XIX. Lobby, Store-roome, and private staires.
XX. Cabinett.
XXI. Inner bed-chamber.
XXII. Dressing-room closett, and staires to the inner bed-chamber.
XXIII. Inner room of the back staires.
XXIV. Waiting-room of the back staires.
XXV. Back staires.
XXVI. Passage with light from above.

Queen's side.

XXVII. Presence.
XXVIII. Drawing-roome.
XXIX. Bed-chamber.

* P. 325.

finished, and inferior to few abroad. It fronts the city to the east, by a noble area between two wings. The marble columns

XXX. Closett and Store-room.
XXXI. Dressing-roome, robes, and private staires.
XXXII. Waiting-roomes and back staires.
XXXIII. Chappell.

Duke's side.

XXXIV. Staires out of the Garde-chamber.
XXXV. Presence.
XXXVI. Privy-chamber.
XXXVII. Bed-chamber.
XXXVIII. Garderobe, cabinett, Stoole-roome.

Dutchesse side.

XXXIX. Presence.
XL. Bed-chamber.
XLI. Dressing-room, Stoole-roome, back staires.
XLII. Garde-room and cabinet.
XLIII. Passage and trunk roome.

Another apartment.

XLIV. Great staires and Anteroom.
XLV. Dining-roome.
XLVI. Drawing-roome.
XLVII. Bed-chamber.
XLVIII. Dressing-roome, cabinet, Garde-roome, back staires.
XLIX. Belcony.
L. Belcony.

Over the Garde-chamber II., is the king's dining-room on the queen's side.

Over the passage I., is a gallery joining the king and queen's side with the duke and dutchesse.

The ground story.

Under XLVIII., XLIX., L., VII., IV., XXXI., and XXXII., is a

sent by the Duke of Tuscany, for supporting the portico of the great staircase, lie half buried in the ground. The staircase carries you up to the great guard-hall, from which you enter into sixteen spacious rooms on each wing, nine of which make a suite

cloister or passage, running quite through, and leading to 3 chambers and closetts under the great roomes next the terrace.

Under the council roomes are the secretaries'.

Under the queen's side the ladies.

Under the duke and dutchesse their servants.

Under the side next the Privy Garden as his Majesty shall direct.

Third story.

The third story may containe 60 roomes for accommodation of the family.

Offices and Outbuildings.

LI. Portico.

LII. Descent into the passage leading into the kitchens.

LIII. Porters' roomes one story high.

LIV. 8 Kitchens on both sides.

LV. Other offices.

LVI. Fewell houses.

LVII. Necessary houses.

LVIII. The gate next the town gate, the passage being under the terrace.

LIX. The descent of 30 steps within the great court not covered.

LX. The fore gate.

LXI. A bulwarke lower than the terrace, wth y^{e} drawbridge.

LXII. The rest of the steps to the bottom of the precipice.

The Saracen figures shewe the diclivity of the ground from the middle of the great court. The whole plan is divided into squares by white lines, each of w^{ch} squares are 24 feet; by w^{ch} the dimensions of the roomes and ground may be collected by view.

CHRISTOPHER WREN.

3 1 2

to the end of each wing. There are also two entries under the middle of each wing, to the south and north, above which are to be two cupolas; and the front, to the west, extends three hundred and twenty-six feet; in the middle of which is another gate, with a cupola to be also over it. Under the great apartment, on each side from the ground, is a chapel on the left for the king, and another on the right for the queen; and behind the chapels are two courts, finely piazzaed, to give light to the inward rooms. There was to be a terrace round it, as at Windsor; and the ground laid out for a garden, very spacious, with a park, marked out of eight miles in circumference, which was to open into a forest of twenty miles circumference, without either hedge or ditch *."

This palace has been, for some years past, used as barracks for soldiery.

Another of Sir Christopher Wren's public works this year was that useful structure, the Ashmolean Museum, at Oxford; which owes its foundation to Elias Ashmole, the well-known herald, and author of " The Institution, Laws, and Ceremonies of the most noble Order of the Garter;" who offered to bestow on the university all the extensive collections in natural history, which had been bequeathed to him by John and William Tradescant, the celebrated naturalists and physic gardeners at South Lambeth, with the additions which he had made to it, if the university

* Queen Anne came once to visit Winchester, where she staid seventeen days; and designed to have finished the palace, as a jointure house for her consort, Prince George of Denmark; but an expensive war, and the prince's death before her, prevented it.—*Parentalia*, p. 326.

would erect a proper building for their reception. This liberal offer was immediately accepted, and the present edifice raised; and he afterwards added to it his books and manuscripts. Thus commenced the "Museum Ashmoleanum," now subsisting at Oxford. The other contributors to this museum have been numerous; but the principal of them are its architect's friend, Dr. Plot, the author of the Natural History of Oxfordshire; Mr. Llwyd, Mr. Borlase, and Mr. Reinhold Foster, who contributed many curious articles from the South Sea islands. This museum also contains the books of Dr. Lister, and the valuable manuscripts of Dugdale, Aubrey, and Wood*.

This year also brought to a conclusion the church of St. Allhallows, on the south side of Upper Thames-street, a substantial plain structure of brick and stone: the interior is of the Tuscan order; eighty-seven feet in length, sixty feet in breadth, and thirty-three feet high. The neat little church of St. Augustin and St. Faith, in Watling-street, near to St. Paul's, was also finished this year, and the steeple in 1695: the interior is of the Ionic order, fifty-one feet long, forty-five broad, and thirty feet high. He also began that of St. Clement East Cheap, and finished that of St. Bennet Paul's Wharf, on the north side of Upper Thames-street; a plain, handsome church, of brick and stone, ornamented on the outside with festoons, carved in stone: the interior is nearly quadrilateral; fifty-four feet by fifty, and thirty-six feet high.

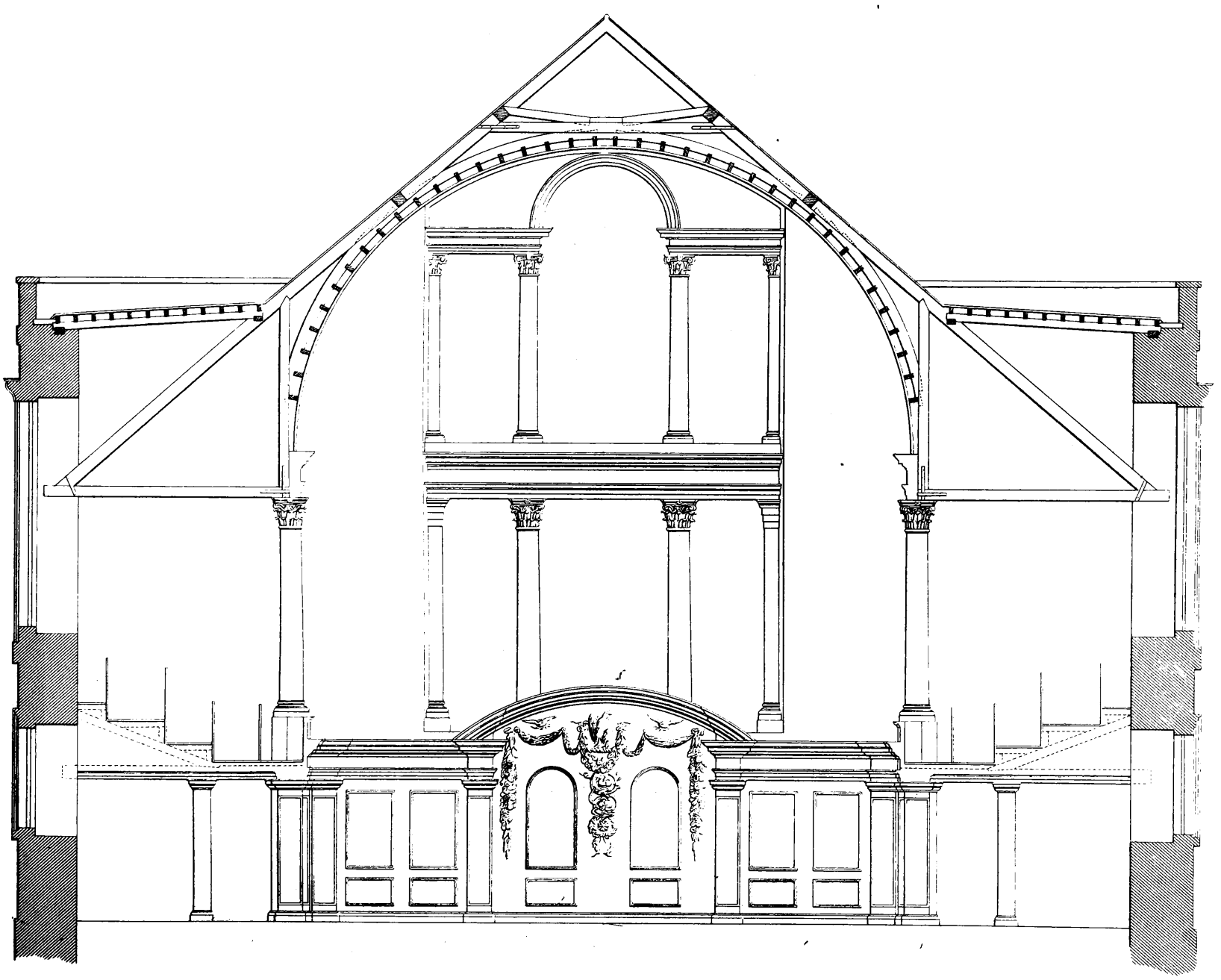
Sir Christopher also finished this year the church of St.

* Rees's Cyclopedia, Chalmers, Evelyn, &c.

James Westminster, situate between Piccadilly and Jermyn-street, one of the most perfect of his designs, whether it be considered for its commodiousness, beauty, or ingenuity in construction. It was built at the expense of Henry Jermyn, afterwards Earl of St. Alban's, and of the principal inhabitants of this district, formerly a precinct of St. Martin's parish, but made parochial by an act of parliament of the 3rd James II. The walls are of brick, with rustic coins, facias, architraves to doors, windows, &c. of Portland stone. The ceiling is arched, and beautifully panelled, supported by columns of the Corinthian order, which also divide the interior into a nave and two aisles. The construction of the roof, which is shown in the annexed plate *, is singularly ingenious and economical † both of room and of ma-

* The drawing and dimensions from which Mr. Lowry made the engraving were taken during its recent repairs by Mr. Cockerell, jun. who most kindly lent them to me, when it was impossible for me to take them myself.

† Sir Christopher himself thought this one of the best contrived of his churches, and speaks of it in his letter to a friend, in 1708, printed in Parentalia, in the following terms. "The churches therefore must be large: but still, in our reformed religion, it should seem vain to make a parish church larger, than that all who are present can both *hear and see*. The Romanists, indeed, may build larger churches: it is enough if they hear the murmurs of the mass, and see the elevation of the host; but ours are to be fitted for auditories. I can hardly think it practicable to make a single room so capacious, with pews and galleries, as to hold above two thousand persons, and all to hear the service, and both to hear distinctly and see the preacher. I endeavoured to effect this, in building the parish church of St. James Westminster, which, I presume, is the most capacious, with these qualifications, that hath yet been built; and yet at a solemn time, when the church was much crowded, I could not discern from a gallery



Section of St James' Church Piccadilly.

after a drawing from actual

measurement by C. R. Cockerell Esq.r

Scale of 10 9 8 7 6 5 4 3 2 1 0 10 20 30 40 50 Feet

James Elmes. M.I.R.A del.t | Sir Ch.r Wren Arch.t | W.m Lowry sculp.

Published by Priestley & Weale. Jun.y 1.st 1823.

terials. It is not too much praise to say that it is the most novel, scientific, and satisfactory as to results, of any roof in existence. The section represents a principal truss, which the scientific critic will perceive is executed without a tie beam: the whole area of the roof is occupied by the noble vault of the nave; the principals are braced to purlines a few feet below the ridge, the ties and struts of which serve for the cradling of the waggon-headed framing for the ceiling. The architraves from the columns contain lateral ties over the aisles, which, forming a right-angled triangle with the principal rafter, present a tie of consummate skill and strength, which is most skilfully assisted by the flat roofing over the aisles for the lead covering. The springing (if it may be so termed) of the roof so low down in the walls, level with the top of the Corinthian columns, contributes much to its strength; and the simplicity, strength, and beauty of this admirable roof is a perfect study of construction and architectural economy; containing the principles of action and counteraction, so necessary for durability in the greatest perfection. The exterior of the building is ornamented by a handsome door of the Ionic order, with bold and masculine trusses and entablature next Jermyn-

that two thousand were present. In this church I mention, though very broad, and the nave arched up, yet as there are no walls of a second order, nor lantherns, nor buttresses, but the whole roof rests upon the pillars, as do also the galleries; I think it may be found beautiful and convenient, and as such the cheapest of any form I could invent."

Sir Christopher Wren to a friend on being appointed a Commissioner for Queen Anne's fifty new churches in 1708.—
Parentalia, p. 320.

street; and the east window is remarkably handsome, of two stories of columns and pilasters; the lower of the Corinthian, and the upper of the composite order. It appears designed purposely for Raffaelle's celebrated Transfiguration, which has been long spoken of to be copied on glass for it. The interior, which is eighty-four feet in length, sixty-eight feet in breadth, and forty high, is divided into a nave and two aisles (as shown in the engraved section), by a row of Corinthian columns on square moulded piers, the aisles having galleries. It will contain about two thousand persons. The carvings of the altar-piece and baptismal font are by Grinlin Gibbons. The latter represents the fall of man, the saving of Noah and his family, and other scriptural subjects; and the former, a pelican feeding its young, on each side of which are two doves, and some beautiful festoons and swags of fruit leaves, &c. in lime-tree wood, and are fine specimens of this ingenious artist's carvings.

The parish church of St. Mildred Bread-street, Cheapside, is another work of Wren's, finished this year. The front, towards Bread-street, is built of Portland stone in a picturesque Italian style, with a large window flanked with panelling, and a circular compound pediment at the end of the roof. The four sides of the interior are uniform, each having one window under a spacious arch, from which springs the ceiling. It is divided into a nave and aisles; sixty-two feet in length, thirty-six feet in breadth, and forty in height.

Among the more public occurrences of the year, which connect the history of the country with that of our architect, are the executions of Lord Russell and Algernon Sidney, the discovery of

the Rye-house plot, and the death of the great statesman Colbert, to whom France is indebted for what England so much wants, a royal academy of architecture.

In the following year, 1684, Sir Christopher Wren was constituted by letters patent, under the great seal, comptroller and principal officer of the works in the castle of Windsor *, and of all

* In a manuscript of Sir Christopher belonging to me is the following account:

The revenue belonging to their † majesties' honour and castle of Windsor doth amount yearly to the sum of viij^{c} lxx^{li}.

Out of which paid.

PERPETUAL PENSIONS.

Viccar of Old Windsor	£1	0	0
Viccar of New Windsor	2	0	0
Viccar of Upton	1	6	8
Viccar of Burneham	2	0	0
Resolute rent to Clewer	0	19	0

CASTLE OFFICERS.

Constable, the Duke of Norfolk	20	0	0
Lieute^{t} Richard Nevil, Esq.	10	0	0
Clarke of the Castle, Thomas Staples, Esq.	9	2	6
Janitor, William Angell, Esq.	11	1	8
Steward of Cookham and Bray, Con. Phips, Esq.	4	0	0
Keeper of the upper ward, Theo. Randine, Esq.	12	3	4
Keeper of the garden, Lord Godolphin	4	0	0
Auditor, John Shales, Esq.	7	6	8
Receiver, William Roberts	18	7	7
Comptroller‡ of the works, Sir Christopher Wren	9	2	6
	£112	9	11

† By this it must have been drawn up in the reign of William and Mary.

‡ Wren's new office of Comptroller was therefore not very lucrative; but Wren in every instance through life sought fame more than profit. Had he been remunerated as architects now are, he would have been perhaps the richest commoner in England.

manors, lodges, &c. in the forest thereof, in room of Hugh May *, Esq. deceased †. Having vacated his chair at the Royal Society,

FFOREST OFFICERS.

Brought forward	£112	9	11
Rideing fforester, Mr. Branch	5	6	5
Woodward, William Clarke, Esq.	25	0	0
Keeper of Cran House, Lord Godolphin	12	3	4
Keeper of New Lodge House and walk, Earl of M——	26	1	8
Keeper of Great Parke and Knock pins, B. May, Esq.	13	13	9
Keeper of Little Parke, Sir Thomas Duppa	6	1	8
Keeper of Pagsholt Walk, R. Hannington	20	0	0
Keeper of Easthinstead Walk, A. Hannington	20	0	0
Keeper of Sandhurst Walk, A. Hannington	20	0	0
Game Keeper	18	5	0
Vermine killer, R. Cotterlel	9	2	6
For making hay in Little Parke, Sir Thomas Duppa	6	13	4

EXPENSES.

Riding surveyor, Mr. Ball	14	12	6
Expenses in the audite	14	6	10
For Swainmote court ffees	27	0	0
	£350	16	11
Remaines in money	520	16	11
Brought over remaines	250	16	11
To Mr. Gibbons	100	0	0
To Sir Thomas Duppa	50	0	0
To Mr. Taylor	40	0	0
To Windsor Corporation	30	0	0
To Windsor poore	50	0	0
	£270	0	0
Remains	250	16	11

* This gentleman, who was one of the commissioners for the repair of old St. Paul's, was an architect of some repute, and of much fashion in his

† Parentalia, p. 264.

and his professional occupations increasing daily, he could not attend their meetings so frequently as before; yet his name is often found among the prominent speakers in their debates, and he occasionally, as vice-president, took the chair, in the absence of the president. At the annual election, he was again re-elected a member of the old council.

This illustrious society lost, by death, within a few months of each other, their first royal patron and founder, King Charles II., (a monarch whose character has never had even-handed justice rendered to it; but has been misrepresented by the partiality and malignity of party feeling, rather than depicted by that candour, which his real worth, balanced against his more pro-

Of this the taxes in ninety-three (which now are much greater) . .	£60	0	0
To the clarke of the works	40	0	0
Auditors of the imprests	35	0	0
For the works	95	16	11
	£250	16	11

And besides the expenses yearly accruing for the payment of their majesties' works, done in and about their castle and honours of Windsor, there is a debt already contracted, due to severall persons for materials delivered and worke done in the said castle for divers years, ended at Michaelmas, 1692 . . . . . £4993 0 0

day. He imitated Palladio, but in a coarse and clumsy manner. He was a friend of Evelyn, and a patron of Gibbons, whom he employed in some chimney-pieces and other works in Lord Essex's house, in St. James's square, with Verrio, who painted some of the ceilings. He built Lady Fox's house, at Chiswick, which Evelyn, a good judge, complains of as clumsy; and a large house for the Earl of Berkeley, which was burnt down: it stood near the present mansion.

minent faults, deserved); their first president, Lord Viscount Brouncker *, of Castle Lyons, in the kingdom of Ireland; and their able and learned coadjutor, Dr. Croune †, the founder of the Crounian lectures. The Dublin society, founded on the

* This nobleman, the grandson of Sir Henry Brouncker, Lord President of the province of Munster, was born about the year 1620; and, having received an excellent education, discovered an early genius for mathematics, in which, afterwards, he became so eminent. He was created M. D. of Oxford, June 23 *, 1646. In 1657 and 1658 he was engaged in a correspondence, on mathematical studies, with Dr. John Wallis, who published them in his *Commercium Apostolicum;* Oxford, 1658, 4to. His own and his father's loyalty to Charles I. and his exiled son were constant; and he accordingly signed the remarkable declaration, with others of the nobility and gentry, published in April †, 1660. After the Restoration, he was made chancellor to the queen consort, and one of the Commissioners of the Navy. He was one of the founders of the Royal Society, and was appointed the first president, by the charters of July 15, 1662, and April 22, 1663; which office he held till November, 1667, as recorded in these pages. He died at his house in St. James's-street, April 5, 1684, aged 64; and, on the 14th of the same month, he was buried in the middle of the choir of the church of St. Catharine, near the Tower, of which church and hospital he was for some years the master.—*Birch's Hist. Roy. Soc.* Vol. IV. p. 338.

† William Croune, or Croone, as he sometimes wrote it, was a native of London, and educated at Cambridge. He entered Emanuel College, May 13, 1647; took his degree of B. D. 1650; chosen fellow of that college 1651; and commenced M. A. 1654. On June 8, 1659, he was chosen professor of rhetoric in Gresham College ‡, where he became a zealous and able promoter of the Royal Society; at the first meeting of which, in November, 1660, he became their secretary. In 1662 he was created M. D. by the university of Cambridge §. On May 20, 1663, he was chosen one

* Wood, Fasti Oxon. Vol. II. col. 56. † Kennet's Register and Chronicle, pp. 120, 121.
‡ Ward's Lives of the Gresham Professors, p. 320. § Kennet's Register, p. 791.

model of the Royal Society, was this year established by Sir William Petty; and corresponded regularly, for some years, with that of London.

St. Paul's continued with undeviating progress towards completion; and the other works of the new city in a similar manner. Among his other works, was the frontispiece to the Middle Temple, begun this year, and completed in 1688*. The parish church of St. Allhallows Bread-street, rebuilt after the great fire, was finished this year: it is a handsome, substantial church, with

of the fellows of the Royal Society, and was frequently an active member of their council. The same year he was admitted into the College of Physicians. In 1665 he travelled into France; the same year with Wren, and probably with him. In 1670 he was chosen lecturer upon anatomy at Surgeons'-hall, which he held to his death; but resigned his professorship at Gresham College on October 21, 1670. He died on July 29, 1684, and was interred in the church of St. Mildred, in the Poultry. He is represented to have been not only a friend, but an ornament to the whole race of mankind; a general scholar, an accurate linguist, an acute mathematician, a well-read historian, and a profound philosopher. He died rich; and, besides many benevolent legacies, left his medical books to the College of Physicians, and his mathematical collection to Emanuel College. A list of his works may be found in Ward's Lives of the Gresham Professors†; and many of them are printed in the Philosophical Transactions. His memory will always be dear to science, both in London and at Cambridge, for the lectures he founded, and which are still known by the name of the Croonian Lectures. His amiable and benevolent widow, afterwards the wife and widow of Sir Edwin Sadleir, liberally endowed and completed his intentions from regard and respect to his memory.—*Birch's Hist. Roy. Soc.* Vol. IV. p. 341; *Ward's Lives*, p. 323, &c.

* "1684.—Portam Medii Templi proxime plateam."—WREN *MS.* "Surrexit impensis Societ. Med. Templi. 1688." Inscription over the gateway.

† P. 323.

a well-proportioned stone tower: its interior dimensions are seventy-two feet long, thirty-five feet broad, and thirty high: it serves for the united parishes of St. Allhallows and St. John the Evangelist. He added the steeple to St. Dionys Backchurch, mentioned in page 334; and built the well-proportioned and ornamental little church of St. Martin, on Ludgate-hill: its façade is only visible next the street, in the centre of which is the tower and spire, one hundred and sixty-eight feet high, with a balcony round the base of the spire, crowning a sort of compound cupola: the walls, and four columns of the composite order, which support a handsome panelled ceiling, are of stone; its interior dimensions are sixty-six feet by fifty-seven, and fifty-nine feet high.

Early in the following year, 1685, King James the Second, who succeeded his brother, Charles II., on February 6 preceding, issued a new * commission for continuing the works at St. Paul's, in which the name of Sir Christopher Wren was continued (that given by Charles II. in 1673 having become void by his decease); empowering the commissioners, or any six or more of them, (the Bishop of London or the Dean of St. Paul's being one) to demolish and take down what was yet remaining of the old fabric, and carry on the new works as heretofore.

This national work proceeded with such celerity, that by the beginning of April in this year the walls of the choir, with its aisles, being one hundred and seventy feet long, and one hundred

* Ellis's Dugdale, p. 170.—My quondam school-fellow has given for date "January 22d," but this must be an error; for Charles II. did not die till February 6, 1685.

and twenty-one feet broad, with the stupendous arched vaults below the pavement, were finished; as also the new Chapter-house and vestries. The two beautiful circular porticoes of the north and south entrances, and the massy piers which support the cupola, a circle of one hundred and eight feet diameter within the walls, were also brought to the same height, being all wrought of large blocks of Portland stone *.

The parish church of St. Alban Wood-street, an indifferent attempt at the pointed style, was also finished this year; as well as that of St. Benedict, or St. Bennet Gracechurch, a handsome and conspicuous church at the corner of Fenchurch and Gracechurch-streets: its interior is richly ornamented after the fashion of the day, and is nearly a double cube of sixty feet by thirty. Dr. Tennison's library, near St. Martin's, a joint production of Wren and his friend Evelyn, was built this year; and also the parish church of St. Mary Magdalen, united with St. Gregory, Old Fish-street, near St. Paul's; a well-proportioned structure, with highly ornamented circular-headed windows, and a handsome balustrade: its interior, composed of a nave and two aisles, sixty feet by forty-eight, is well arranged and handsomely pewed. The church of St. Matthew, Friday-street, Cheapside, was also finished this year; a substantial, plain church, in an obscure street, of no great pretensions, except to economy and good construction—a never-failing quality in all Wren's productions.

Wren had now received almost every honour that could be

* Ellis's Dugdale, p. 141.

conferred upon him: knighthood from his sovereign, when that distinction was more selectly conferred than of late years; the presidency of the most illustrious philosophical society in Europe; the surveyor-generalship of all the royal works, the cathedral of St. Paul, and the public buildings of the capital; and the associate and correspondent of the first men for rank and talent in Europe. In this year, his services were required in a parliament, which Hume * acknowledges was placed in a more critical situation than was almost any one preceding it: he was accordingly elected, and returned a member for Plympton, in Devonshire; and served in that parliament which began at Westminster, May 19, 1685 †.

Sir Christopher's attendances at the Royal Society this year were necessarily few, yet he communicated some philosophical observations on the nature of ice; on the polarity of sapphires, the stone of which he supposed to be the rock, and the gem the fluor‡; and mentioning the different natures of iron, it being stated that the iron of the present day would not cut porphyry, he affirmed that porphyry was to be cut now as well as formerly, but that it would wear out a great many tools, and that the workmen must take but little strokes §. He was also appointed on some committees to examine new inventions and discoveries, and

* Hume, A. D. 1685.

† The Parentalia again errs in date, ascribing this circumstance to May 29, while Hume and other authentic historians give it on the 19th.

" 1685. Electus in publica regni comitia, parliamentum nempê, Burgensis Burgi de Plympton in agro Devoniæ." *Rot. Parl.*—WREN, *MS.*

‡ Birch's Hist. Roy. Soc. Vol. IV. p. 357. § Ibid. p. 358.

took part in a few discussions on philosophical subjects. At the anniversary of the society, November 30, Sir Christopher was again elected a member of the old council *.

The ruins of Inigo Jones's fine portico, and the more ancient parts of the west end of the old cathedral of St. Paul, were not taken down till the year 1686, when this part of the new cathedral was begun to be laid out, and the rest of the works of this magnificent edifice to be carried on. The parish churches of St. Clement Eastcheap, and of St. Mary Abchurch, near Cannon-street, edifices of no great pretensions to notice, except as substantial useful structures, were completed this year.

This year is eminent in our history, as being that wherein the Newtonian philosophy was first promulgated †. Wren's transactions with the king and council this year were many and important. Lawrence Earl of Rochester, then Lord High Treasurer of England, being petitioned by Catherine Barton, widow, who had sold her lease of a farm near Winchester, to add to the new park; his majesty ‡ being dead, and Mr. Harbord, who should have paid

* Birch's Hist. Roy. Soc. Vol. IV. p. 443.

† This important fact is thus announced in the records of the Royal Society, May 19, 1686, Sir Joseph Williamson in the chair. Ordered that MR. NEWTON'S *Philosophiæ naturalis principia mathematica* be printed forthwith in quarto, in a fair letter; and that a letter be written to him to signify the society's resolution, and to desire his opinion as to the print, volume, cuts, &c. Mr. Halley, the clerk to the society, wrote accordingly on May 2.—See the Supplement to the Society's Letter Book, Vol. IV. p. 340.—*Birch's Hist. Roy. Soc.* Vol. IV. p. 484.

‡ Charles II.

her, being beyond seas—she praying relief, he refers it to Sir Christopher, who is to certify a true statement of the case *. Sir Christopher goes fully into it; compels Mr. Harbord's agent to state the whole case, and procures justice for the widow. Mr. H. Tichborn, son of Sir Richard Tichborn, complains by petition of like neglect, which occasions Sir Christopher similar trouble, who reports upon it accordingly †. He next has to provide lodgings at St. James's for Mr. Ronchi ‡, and to investigate the Duke of Buckingham's title to Wallingford House §. He then writes to the Earl of Dunmore, Master of the Horse to her Majesty, in consequence of instructions given him to consider the designs of Mr. William Bankes, and his estimates for repairs and new buildings of the stables at St. James's ‖: his reports and estimates on this are full, explicit, and must have occupied much of his time and attention. Mr. Francis Jenkes petitions the Lord High Treasurer, stating that the Duke of Buckingham, owing him a considerable sum of money, had granted him a piece of ground adjoining to the Spring Garden, and which he the petitioner had let to be built upon; and that, by his lordship's command, a stop had been put to that part of the building which adjoins the Spring Garden. This was also referred to the surveyor-general, who reported that Mr. Jenkes ought in justice to be allowed to proceed in his buildings ¶. Many other things of less public importance, but of equal trouble to Sir Christopher, are recorded in this book,

* Privy Council, M. p. 79. † Ibid. p. 84. ‡ Ibid. p. 85.
§ Ibid. p. 87. ‖ Ibid. p. 88. ¶ Ibid. p. 89.

under the date of this year*: among them are surveys and estimates of repairs necessary to be done in St. James's Park, Mr. Webb's charge, Mr. Storye's charge in Greenwich Park, in Hampton Court Park, and of the new river leading from Longford to Hampton Court Canal: the charge of the salaries, the seasons proper for planting, &c. all reported at length and with great knowledge and judgment†. The Rev. Stanfield Wallace, rector of St. Thomas's parish, Winchester, petitions for tithes in the palace there, and no one but Sir Christopher can be ordered to assess

* One answer is so characteristic of Wren's decisive and cautious method of framing his reports, that I cannot but transcribe it. It is an answer to Lord Rochester, about the repairs of the royal stables.

"To the Earl of Rochester, Lord High Treasurer of England.

"Hounslow Heath.

"May it please your lordship,

"I have diligently examined these six papers amounting to £3015, 3, 10; I have viewed the works; I have compared the several bills with the works; and I find the particular prices very reasonable, one thing with another, and the works sufficient for such present service, and in general managed with good husbandry: but in pursuance of what orders, or what contracts with his majesty, all things therein mentioned have been done, I have not enquired; and whether all utensils, as carts, bushells, and other moveables of that sort, are to be brought to this account, I am not to judge, although nothing appears to me but what I take to be necessary and proper: all which is humbly submitted to your lordship's wisdom.

"CHRISTOPHER WREN."

"December 1, 1686."

† Privy Council, MS. p. 97, and 98.

them, which he does with great ability*. He also had the accounts of Verrio, the painter, to examine and report upon†.

* Privy Council, MS. p. 101.

† Ibid. p. 100.—One of these may suffice as a specimen of an architect's examination of an historical painter's bill.

" May it please your lordship,

" In obedience to your lordship's commands, I have considered Signor Verrio's memorial, with Mr. Roberts' report annexed, and I take the state of his account to be as followeth.

Demanded for the chappell at Whitehall . . .	£1250	00	00
I suppose when the rest of the ceilings and the walls are finished, as they ought to be, it may fully deserve it.			
What is done I value at	800	00	00
The contract for the queen's bed-chamber was . . .	150	00	00
And for the closet	50	00	00
And for the little chappell	100	00	00
For the work of the queen's round closet at Windsor I made no contract, her majesty having changed the first design for this, which is fuller of figures. Though £300 is demanded, yet I hope I do not undervalue it at	250	00	00
For Henry VIIIth's chappell at Windsor the contract was £1000. It is not fully finished. For what is done there is entered in Windsor books	700	00	00
Total for work already done	£2050	00	00

Received.

By Mr. Roberts, in part of the said £700, for Henry VIIIth's chappell	400	00	00
Out of the Exchequer, and for the queen's closet at Windsor, as appears in his memorial, and may be further enquired . .	1050	00	00
	£1450	00	00
So remains at this present	£600	00	00

On June 30 following, it appears that the Principia of Newton, referred to in page 441, was ready for publication, as it was ordered by the council that the president be desired to license it *. The incessant duties of Wren in his numerous avocations, in addition to those in parliament, took him entirely from the Royal Society this year; yet he was again elected one of the eleven members of the old council, at the anniversary of its institution †.

The year 1687 passed as the preceding. St. Paul's was continued with unabating activity, and the rest of his public and private works with similar zeal and abilities.

The handsome and capacious parish church of St. Andrew Holborn, one of the finest and most appropriate protestant churches in Europe, was completed this year. This exterior is plain, simple, and unpretending; consisting of a basement with low windows, which light the aisles under the gallery, and an upper story of semi-circular-headed windows, for the galleries and nave, crowned with a well-proportioned cornice, blocking course, and balustrade. The tower, which is the old one repaired, was new faced with stone ashlering in 1704: it is square, and has no great pretensions to either beauty or taste: the interior is

Besides what will be further due when both the said chappells shall be finished, viz. £750.

And besides what at this present may appear due to him upon his salary, of which I cannot give the account.

" All which is humbly submitted.

" CHRISTOPHER WREN ‡."

" December 30, 1686."

* Birch's Hist. Roy. Soc. Vol. IV. p. 491. † Ibid. p. 505.

‡ From the Privy Council MS. in my possession, p. 100.

spacious, rich, and beautiful, and consists of a nave and two aisles, divided into a basement and galleries; one hundred and five feet long, sixty-three feet broad, and forty-three feet high.

Christ church, on the north side of Newgate-street, near to Christ's Hospital, was also rebuilt this year. The interior is nearly on the same plan as the preceding, and is one hundred and fourteen feet long, eighty-one in breadth, and thirty-one in height. The lofty columnated steeple, on its solid square tower, forms one of the most striking features in the architecture of the metropolis; yet does not vie with those of Bow, St. Bride, or even St. Vedast Foster, in Foster-lane, which will be spoken of under its proper date.

The parish church of St. Margaret Pattens, a plain, well proportioned edifice, was constructed during this year: the tower and spire are well proportioned in themselves, scientifically composed, and well executed; but present a tasteless jumble between the pinnacles of the pointed style and the Italian Doric. In these innovations, Wren, as an artist, was singularly unhappy. The interior, sixty-six feet in length, fifty-four in breadth, and thirty-six in height, is plain, appropriate, and well calculated for its specific purpose. In this department our architect is equalled by few, and surpassed by none.

At the anniversary of the Royal Society, the council again elected Sir Christopher as a member of their old council for the year ensuing *.

Among the references from the king and the privy council,

* Birch's Hist. Roy. Soc. Vol. IV. p. *555*.

in the manuscript book of orders before mentioned, one of the date of November 6, 1687, is concerning a doorway which had been made from a house in Scotland-yard, by Simon Basil, surveyor of the works to Queen Elizabeth; which, being continued by Sir Philip Howard, for his own convenience only, Sir Christopher conceived not to be a right, and reported accordingly *. Other petitions were presented from persons aggrieved by the unfinished palace at Winchester, and also referred to him, which he settled with as much discrimination as good sense and justice.

Rubens's fine ceiling at the Banqueting-house, Whitehall, being considered in a state which required examination and some repairs, Sir Christopher was desired by the king † to examine and report upon them, which he did; and they underwent a reparation, under his direction, by Mr. Parry Walton, an efficient person, who performed his task in a manner satisfactory to Sir Christopher ‡; who, at the close of the works, on the bill being referred to him, certified accordingly. The bill appears to be for ex-

* Privy Council, MS. p. 76. † James II.

‡ His report is as follows:—

"May it please your lordships,

"His Majesty having directed the ceiling of the banqueting-house to be refreshed by Mr. Walton, which, as it cannot be done without scaffolding the whole room, I must acquaint your lordships with the expense of this and other things that it will necessarily draw along with it.

For making the scaffold	£50	00	00
For taking down the frames, setting them up again, and making good the joiners' work of the ceiling again	40	00	00
	90	00	00

penses incurred; but how Mr. Walton was repaid for his skill as an artist does not appear. It is possible they were touched by Verrio *.

Brought over	£90	00	00
For repairing one gallery, the timbers being decayed in the wall; the other gallery having by me been repaired before the retrenchment of the office	35	00	00
For repairing the timber frames of several windows decayed . .	25	00	00
For painting anew all the inside walls plain stone colour, in oil, as they were at first	120	00	00
For mending broken places in the walls and under the gallery with plaister of Paris	10	00	00
For cleaning the gilding and piching in the grounds . .	80	00	00
	£360	00	00

Besides Mr. Walton's work of repairing the pictures."

* The bill, the court order, and Sir Christopher's report, are as follows:

A Bill of extraordinary charges for repairing all the pictures in the ceiling of the Banqueting-house at Whitehall, by his Majestie's order and the Lord Chamberlain's; beginning July 26, 1687.—*By Parry Walton.*

For clothe to line the pictures	£65	00	00
For priming	30	00	00
For paste	5	00	00
For nailes	1	00	00
For colours	20	00	00
For oyle, varnish, and glass	10	00	00
For six workmen to help me 5 months	77	00	00
For porters to help me	4	00	00
	£212	00	00

" Whitehall Treasury-chamber, July 7, 1688.

" The Lords Commissioners of His Majesty's Treasury are pleased to refer this bill to Sir Christopher Wren, Surveyor-generall of his Majesty's

The year following, 1688, is celebrated in our history for the wise, prudent, and bloodless revolution, which removed an imbecile and obstinate, but unfortunate monarch, from a throne which he ungratefully abused; and settled a constitutional king over a people qualified to enjoy the blessings of liberty, and of a just and equitable commonweal, as the triune government of King, Lords, and Commons, may be justly denominated.

In the month of June of this year, the building of the new metropolitan cathedral had advanced so far, that the commissioners announced in their proceedings, that they had contracted for timber toward roofing the aisles of the choir, which was now in a state to receive it*. The other public works under the direction of Wren were proceeding in an equally rapid manner; and the substantial edifice, the parish church of St. Michael Crooked-lane, was rebuilt this year: the interior, seventy-eight feet long by forty-six broad, and thirty-two high, is a fine spe-

workes; who is to examine the particulars thereof, and report his opinion thereof to their lordships.

"Hen. Guy."

To which Sir Christopher answered:—

"May it please your lordships,

"I have considered this bill of Mr. Walton, to me referred; and having been eye-witness of the pains and skill he hath used in the work, I consider his demands very modest and reasonable; which is humbly submitted.

"Christopher Wren†."

"July 10, 1688."

* Ellis's Dugdale, p. 170.

† From the Manuscript Transactions of the Privy Council before mentioned, pp. 86, 106.

cimen of a metropolitan parish church, well lighted by wide and lofty semicircular-headed windows, and distributed into pews, well calculated for seeing and hearing the clergyman. The tower is of Portland stone, about one hundred feet high, crowned with a balustrade and vases at the angles; from the centre of which rises a lofty and well-proportioned steeple, with a clock, a vane, and a cross.

The parliament, or, as Hume calls it, the English convention, which assembled at Westminster on January 22, 1689, after passing a vote of thanks unanimously to the Prince of Orange, declared the throne of England vacant by the abdication of James II. Wren was elected and returned a burgess for the borough of New Windsor, on the election of all the inhabitants paying scot and lot; from which he was, during the session *, removed by petition, the house resolving that the right of election was in the mayor, bailiffs, and a select number of burgesses only †; but he was immediately ‡ re-elected.

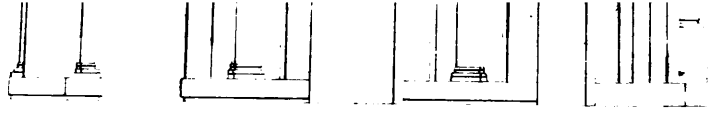
In this year the illustrious Christina, Queen of Sweden, died at Rome, and a splendid monument was erected to her memory in St. Peter's, by Carlo Fontana. Pope Innocent XI. (who wisely gave our obstinate monarch, James II., the prudent advice not to attempt a solemn re-admission of England into the bosom of the catholic church, as being a rash attempt, and what repeated experience might convince him was impracticable) §, also died this

* August. † Parentalia, p. 344.

‡ 1689.—Bis electus in Parliamentum pro Burgo de Windsor. *Rot. Parl.* —WREN, *MS.*

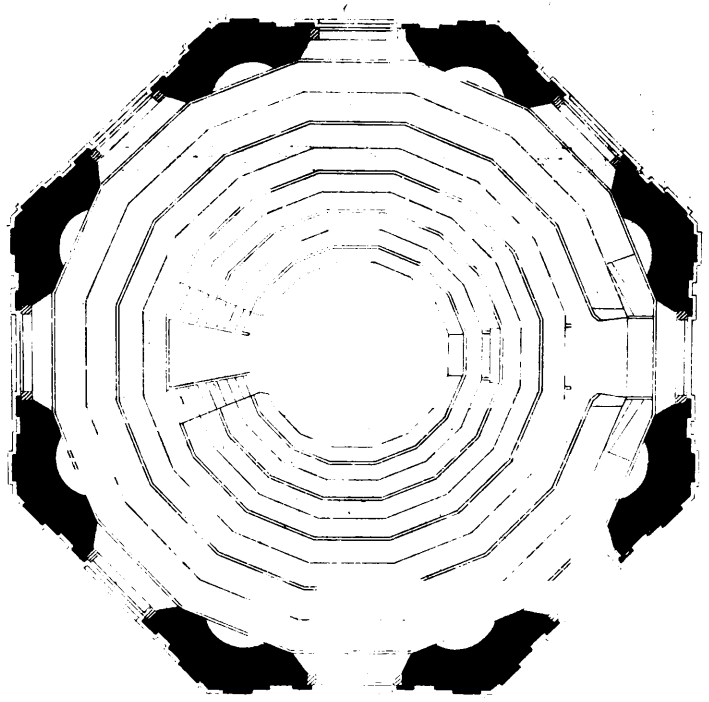
§ Hume.

Section

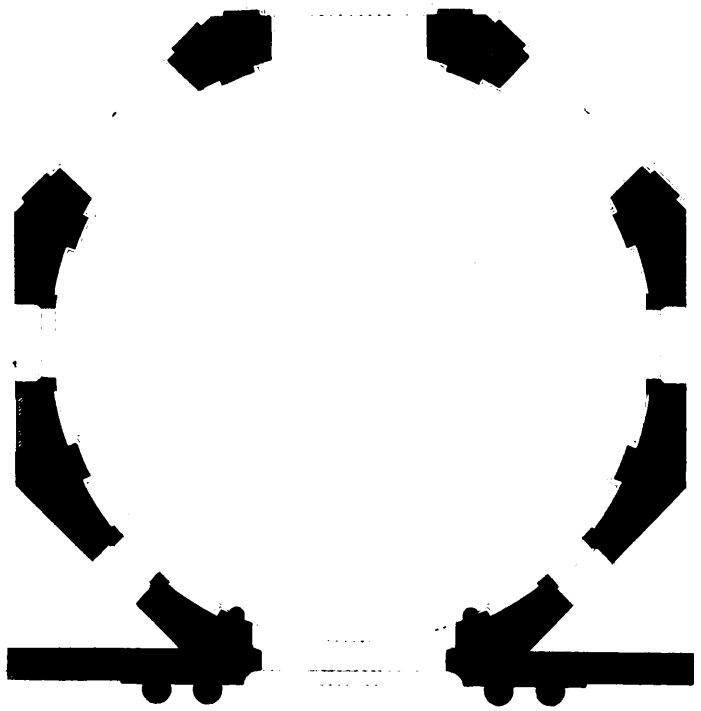


Elevation 2.

Plan of the Ground Story



Plan of the Upper Story



The Theatre of the College of Physicians London

after a drawing from actual measurement by C. R. Cockerell. Esq^r

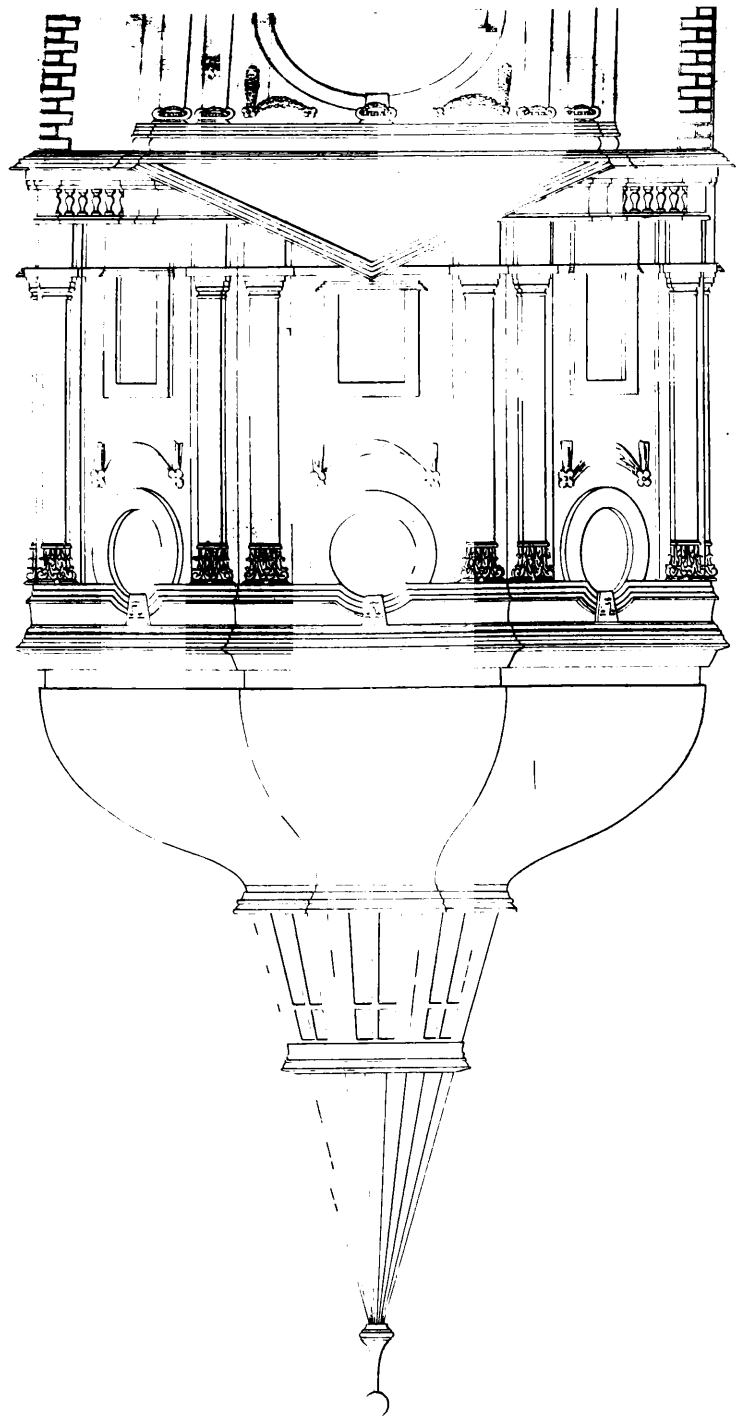
Scale of 10 5 0 10 20 30 40 50 Feet

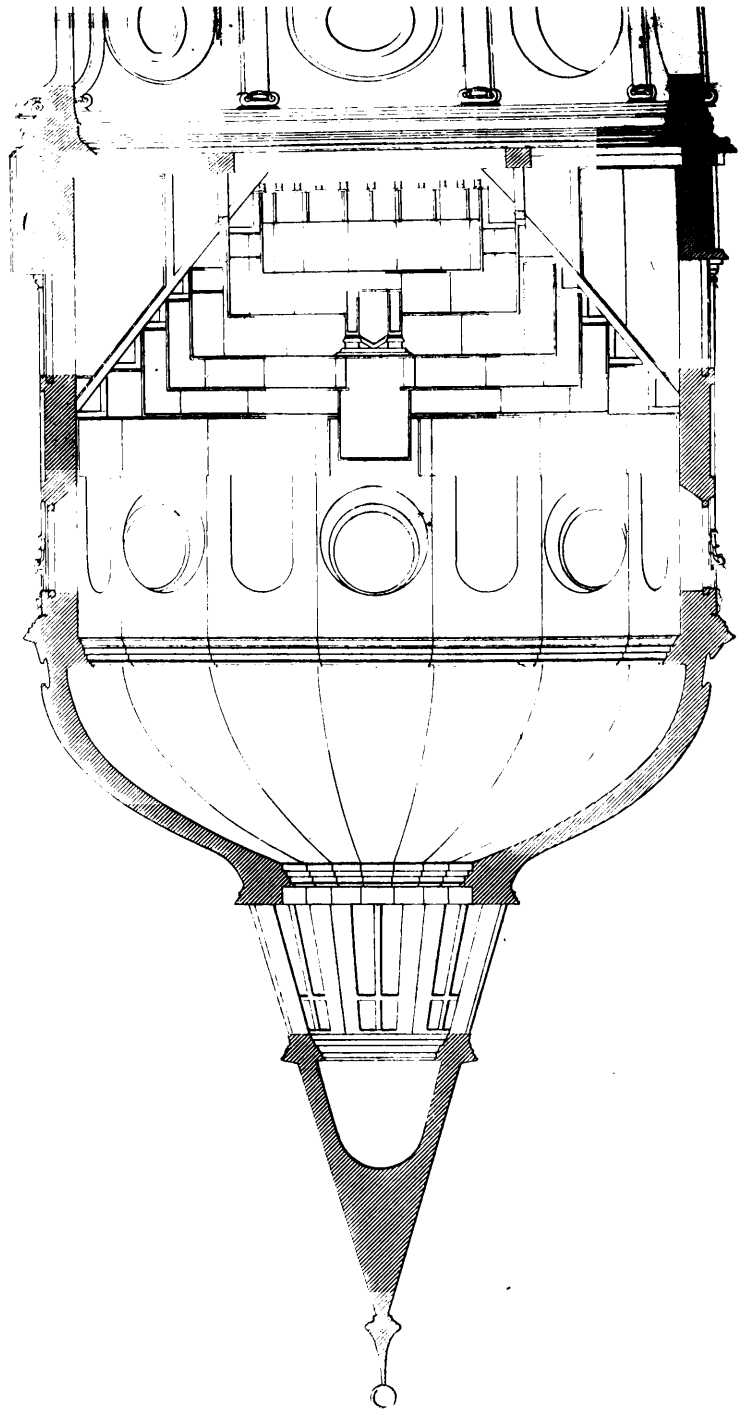
Ja^s Elmes Architect del

Sir Ch^r Wren Arch^t

W. Lowry. sculp

Published by Priestley & Weale Jan^y 1 1823





year; as did our great philosopher, SYDENHAM, who has been justly called the father of physic among the moderns.

In the course of this year, Wren finished his College of Physicians; the theatre of which is given in two plans, an elevation, and a section, on the accompanying plate*. The entrance, as shown in the ground plan, is under the theatre, and opens into a spacious quadrangle, with lodgings for the professors, curator, &c. on either side, and the hall and court-room up stairs opposite. The elevation of the theatre next the street is strictly Palladian, the lower story is of the Scammozzian Ionic, and the upper of the Corinthian order: the interior also, is one of the best imagined for seeing, hearing, and classification of the students and fellows, and for the display of anatomical demonstrations, or philosophical experiments, upon a table in the middle of the arena, of any building of its size in existence. It is a perfect study of acoustical and optical architecture: the roof and form of the section being so well adapted for the distribution of sound, and the elevation and arrangement of the seats, with the president's chair in the centre, and the separate stairs for the fellows and members, so well designed. This admirable structure being shortly to be pulled down, it is worth the inspection of the scientific architect, before it is destroyed.

The effect of the lantern on the inside is every thing that can be desired; affording light and ventilation, and excluding rain in a very efficient manner. Its external appearance however is by no

* See the engraving.

means graceful; and its golden ball, perhaps intended to denote the universality of the healing art, gave occasion to Garth, in his Dispensary, the scene of which is laid in this identical building, to say,—

> " A golden globe, placed high with artful skill,
> Seems, to the distant sight, a gilded pill*."

The former college was in Knight-Rider-street, Doctors' Commons; but after the fire of London, which destroyed it, a considerable sum was raised by the fellows in 1674, for the erection of a new college. Sir John Cutler offering to subscribe a considerable sum, a committee was appointed to wait upon him to thank him for his liberality; and, in 1688, statues in honour of the king and Sir John were ordered to be executed at the expense of the college. In 1689, the buildings being completed, the fellows borrowed a sum of money of Sir John to defray the expenses; but, upon his death, to their great surprise, his executors demanded upwards of seven thousand pounds of them; as in his books he had made them debtors, not only for the sum he had lent them, but the sum he had given them, and all the accumulated interest. The executors at length accepted two thousand pounds; and the college expunged the inscription of the old miser's liberality from under his statue, which still remains in a niche in the western front of the theatre.

In the year 1690, on May 17, Sir Christopher was again

* Garth's Dispensary, Canto I. v. 13, 14.

elected, and returned for the borough of New Windsor; and the house reversed its former vote of 1689, by negativing * the question, on the report of the merits of this election, "that the house do agree with the committee, that the right of election is in the mayor, bailiffs, and a select number of burgesses only:" thus confirming the right of election, as formerly, in the inhabitants paying scot and lot †; and Wren continued their sitting member.

The royal hospital of Chelsea was finished this year, having been little more than seven years in building ‡. It is a plain, substantial building, of brick and Portland stone, designed for utility and convenience. These two great ends in architecture Wren has here attained; and has added, without any useless expense, a play of light and shade, a bold and masculine composition, and a beauty of form, beyond many buildings of more pretence. Viewed from the north, looking westward, the whole composition appears in beautiful foreshortening; and its manly portico, of the Roman Doric, seems to invite the spectator to it, as the grand and principal entrance.

While William III. was successfully putting down the enemies of civil and religious liberty on the banks of the Boyne, his ministry were completing the dilapidated metropolis with energy and perseverance. St. Paul's was continued with great activity; and Wren was no less engaged with the privy council and the

* Nays 144, yeas 138, majority 6. † Parentalia, p. 344.

‡ See page 408 of this work.

lords of the treasury* than formerly. He also finished the parish church of St. Edmund the King, on the north side of Lombard-street, which possesses a front next the street of excellent proportion, embellished with vases, and a handsome clock projecting into the street. The church of St. Margaret Lothbury was also built this year: it faces Mr. Soane's new front of the Bank of England, and is not disgraced by its modern neighbour. A door to the tower, of the Corinthian order, is a handsome specimen of Wren's style, pure, beautiful, and conformable to the best rules of the art. The interior is also of the Corinthian order, the column and pilasters of which are of excellent proportions.

The talents of Wren were in such estimation, and his employments so general and satisfactory, that he was equally in favour with King William and Queen Mary as he was with their predecessors. The queen had taken a great liking for the situation of the old palace at Hampton Court, and Wren, in consequence, received their majesties' commands to make plans, elevations, and sections of a new design for a royal palace on the site of the old one. This edifice was accordingly commenced this year, by taking down the principal part of the old fabric, fronting the house park. Two suites of the royal apartments were finished just before the death of that excellent princess in 1694, and little else was done by Wren towards the completion of the new palace.

* See the MS. book of Court Orders.

This amiable queen, whose taste and accomplishments have been acknowledged by all who were qualified to appreciate them, and who regarded idleness as the great corrupter of human nature *—was fond of architecture and gardening, and gratified her inclinations from time to time in examining and inspecting the drawings, mechanism, and whole progress of the works, on which she often offered her own judgment, which was allowed to be exquisite; for there were few arts or sciences in which she not only had an elegant taste, but also a knowledge superior to most of her sex.

After this discerning princess had discovered the worth of her architect, she treated him with favour and esteem; and Wren bore willing testimony to her excellent qualities and superior judgment; having had repeated opportunities, during the four years he was thus engaged, of free conversation with her majesty †, not only on the subject of architecture (an art peculiarly adapted to the patronage of the great), but other branches of mathematics and useful learning, in which Wren so pre-eminently shone.

If Wren was in high and deserved favour with Queen Mary, he was not less so with the king, who was so much gratified with his designs and works at Hampton Court, as occasionally to deliver his opinion, in the highest circles of the English nobility, that these two suites of apartments, for good proportion, state, and convenience, were not paralleled by any palace in Europe ‡.

* Burnet. † Parentalia.

‡ Ibid. On the authority of Thomas, Earl of Pembroke.

The king's apartments, which face the privy garden and the river Thames, extend to a length of three hundred and twenty-eight feet; the queen's apartments, which front the home park, extend three hundred and thirty feet: the grand entrance to the principal staircase, leading to the king's side, is through a portico of the Ionic order. Whatever were King William's talents and genius in war, which are indisputable, his taste in art may be doubted, for Wren was never less happy in any of his works than here. He evidently worked under shackles for his majesty, who, when the lowness of the cloisters under his apartments was complained of, excused his architect, by acknowledging that they were so constructed by his express orders *.

The nation now began to feel secure: arts and manufactures began to flourish, and architecture added its graces to the new and rising metropolis. The year 1691, by the battle of Aughrim, and the treaty of Limerick, ended the civil war in Ireland, and the hopes of James. Commerce, trade, and associations for their encouragement, the signs of domestic security and rising opulence, were promoted, and charitable institutions patronised. The noble charity, St. Thomas's Hospital, was built this year; but its architect is uncertain. Aske's Hospital at Hoxton, more generally known by the name of the Haberdashers' Alms-Houses, was built by Robert Hooke; and the York Buildings Water Company, near the Strand, was incorporated.

Wren's occupations were the same as last year, and his credit

* Parentalia, on the authority of Thomas, Earl of Pembroke.

with his sovereign and the government gained a daily increase. The roof of the house of commons being in a dangerous state, he was desired, by an order of the house, under the speaker's warrant*,

* The following are the order, survey, and report, copied from the manuscript book of court orders belonging to me, and so often quoted and referred to in the course of this work:

"By virtue of an order of the Commons of England in parliament assembled this day made: These are to require you to view the ceiling and roofe of y^e^ house of commons, and report y^e^ condition thereof to the house on Friday morning next; and this shall be your warrant: given under my hand this 12th day of December, Anno Domini, 1691.

"J. FREURE, Speaker."

"*To the king's surveyor of the workes, and cheife officer of the worke.*"

The following is Sir Christopher Wren's answer:

"In obedience to an order of y^e^ honourable house of commons, dated December 12, 1691, requiring me to view the ceiling and roofs of y^e^ house of commons, and report the conditions thereof, I humbly report as followeth:

"That the ceiling (according to the manner used in former times) is made of plaister of Paris, and not (as the moderne way is) of lime and hair, which, yielding to y^e^ timbers when they shrink or swell with weather, doth not discover cracks, whereas all plaister ceilings having y^e^ framings of stone, doe for that reason alwayes crack, but without danger, because y^e^ lath is preserved in plaister, and is more apt to decay in lime. Yet for greater caution it is fitt there should be a new ceiling, because this way being out of use is not generally understood to be safe.

"About eight years since, upon y^e^ like order, not only y^e^ ceiling and floor above, but the roofe also was examined very carefully; the records above were moved to the walls, and many things then done rather out of caution than apparent necessity, and this very summer I caused y^e^ gutters to be uncovered, the timbers to be laid open and secured, and great part

to survey it and report upon it instanter, and with which he immediately complied.

of the roofe to be new leaded, in doing of all which no great defect could be undiscovered.

" And now again, in pursuance of this order, I have viewed y^e^ ceiling and roofe, accompanied with their majesties' master carpenter; and though no person ought to be confident in so great a concerne, yet we were of opinion that all was firme, finding all things as we lately left it.

" Notwithstanding though the roofe were not now in danger, yet it is very old, and y^e^ covering hath been much neglected in former times; neither can it be presumed to be left many years longer, and therefore it seems most reasonable, that ere long a new roome be thought of, where the important affairs of the nation may be transacted without suspicion of this sort: or otherwise, for the present, that the records be removed; that a new ceiling be layed, and some other repairs done as soon as an interval of sessions, and y^e^ season of y^e^ year, shall permit.

" C. W."

" In obedience to an order of the honourable house of commons of January 18, 1692, that y^e^ surveyor and comptroller of his majestie's workes doe attend the committee appointed in the said order, or any three of them, and that they view the building of y^e^ house of commons, pursuant to his majestie's directions; accordingly Mr. Surveyor and Mr. Comptroller of the workes did attend Major Vincent, Mr. Clarke and Dr. Barbone, three of the said committee, and did view the said building of y^e^ house, and debating upon the place the defects that appeared, were of opinion that the danger is not imminent; but notwithstanding, to remove the apprehensions for the future, doe judge it fit and necessary that y^e^ upper part of the walls be taken much lower, and that a new roofe be laid and a new ceiling made, and some other things performed of less consequence for the accommodation of the house, with humble submission to his majestie's commands therein, and they are further of opinion that this worke be done with expedition, that it may be ready before the next session of parliament."

Among other of Wren's public works this year, was the mint, or as it is called in his manuscript book of court orders, Moneyer's Hall.

This year science and Wren experienced a heavy loss, by the death of that truly great and eminent man, the Hon. Robert Boyle *, the most illustrious philosopher in modern times, and

* This benefactor to mankind was born at Lismore, in the county of Waterford, on January 25, 1627; about five years before the birth of Wren. He was the seventh son and fourteenth child of Richard, Earl of Cork. His education was of a general and excellent nature, and his bringing up of the hardiest kind. He commenced his public education under Sir Henry Wootton, the friend of his father, at Eton; and exhibited a force of understanding and of intellect, that promised all his future excellence. He remained at Eton for nearly four years, and finished his education under the direction and care of the Rev. William Douch, one of his father's chaplains. After this he travelled into France, and remained some time in Switzerland, studying mathematics. After this he visited Italy, where he read the modern history of Italy, studied its language, and made himself acquainted with the works of Galileo. After visiting Rome and other celebrated cities of that classic country, with the mind of a philosopher and a christian, he returned to his native country, where he found his father dead, and a suitable provision for himself. After other travels and deep investigations into natural causes and revelation, he fixed his residence at Oxford, and became one of that illustrious band, the first members of the Royal Society. With them he coalesced and acted till the day of his death, although his modesty and retired habits made him decline the honour of being their president, as recorded in page 396 of this work. His discoveries and writings are known wherever knowledge is propagated. "To him we owe the secrets of fire, air, water, animals, vegetables, fossils: so that from his works may be deduced the whole system of natural knowledge †."

† Boerhaave.

whose name, in conjunction with that of Wren, occurs so often in this work, and in every other connected with universal science.

In 1692, Wren finished the plain substantial church of St. Andrew, in the Wardrobe by Doctors Commons: an edifice principally of brick, with rusticated angles of Portland stone. It has a square tower, without either steeple or spire, and a plain useful interior, seventy-five feet long by fifty-nine wide, supported by Tuscan columns. He also finished the Royal Hospital * of Chelsea, which is described at page 408.

In page 171 is mentioned Sir Christopher's engagements, as architect to Trinity College, Oxford, under the presidency of his friend Dr. Bathurst. The works were not completed in 1692, as appears by the following correspondence:

"February 25, 169½.

"Worthy Sir,

"When I sent Mr. Phips † to wait on you with a scheme of our new building, he told me how kindly you was pleased to express your remembrance of me, and that you would send me your thoughts concerning our design; and particularly of the pinnacles, which, as they were superadded to our first draught, so, I must confess, I would be well content to have omitted with your approbation. The season for our falling to work again will now speedily come on; which makes me the more hasten to entreat

* "1692, Hospitium regale militum emeritum de Chelsea funditus, extruxit, et exegit."—Wren *MS.*

† The Surveyor of the building.

from you the trouble of two or three lines in relation to the promises, whereby you will farther oblige

" Sir, your old friend, and
" ever faithful servant,
" R. BATHURST *."

To which Sir Christopher returned the following answer :

" Scotland-yard, March 2, 1692.

" SIR,

" I am extremely glad to hear of your good health, and, what is more, that you are vigorous and active, and employed in building. I considered the design you sent me of your chapel, which in the main is very well, and I believe your work is too far advanced to admit of any advice : however, I have sent my thoughts, which will be of use to the mason to form his mouldings.

" He will find two sorts of cornice ; he may use either. I did not well comprehend how the tower would have good bearing upon that side where the stairs rise. I have ventured upon a change of the stairs, to leave the wall next the porch of sufficient scantling to bear that part which rises above the roofs adjoining. There is no necessity for pinnacles ; and those expressed in the printed design are much too slender. I have given another way to the rail and baluster, which will admit of a vase that will stand properly upon the pilaster †.

* From the originals at All Souls College, Oxford.
† This scheme was adopted.

" Sir, I wish you success, and health, and long life, with all the affection that is due from

" Your obliged, faithful
" friend, and humble servant,
" CHRISTOPHER WREN *."

" P. S. A little deal box, with a drawing in it, is sent by Thomas Moore, Oxford carrier."

Among other employments of the surveyor-general this year, he had the important duty of ascertaining and defining the boundaries of the buildings and other property formerly possessed by the Jesuits and Benedictines, in the precinct of the Savoy Palace, in the Strand †.

* From the original at All Souls' College, Oxford.

† Sir Christopher's report to the privy council, in the folio book of manuscript reports belonging to me, is as follows :—

" May it please your lordships,

" At the request of the petitioners, in further pursuance of your lordships' letter of March 14, 169½, I have more particularly examined the situation and boundary of the edifices and buildings lately possessed by the Jesuits and Benedictine monks in the Savoy, which are of extent and bounded as followeth :

" The building called the Jesuits' College is 212 feet in length along the river Thames, and twenty-seven feet broad, including the walls, joining to the house, now Henry Allen's to the eastward, and to the house now possessed by Widow Salisbury on the west.

" The tower at the east end of the said Jesuits' College is 36 feet one way, and 34 feet the other, including the walls ; the lower story of which is made use of, in part, for a public laystall, and public house of office, used

Government business in general was not conducted with that regularity in its various departments as at present; nor was payment made, and services rewarded, with equal consistency and propriety. The transactions between Sir Christopher and the privy council bear perpetual witness; but one is of such a curious

by all the neighbourhood; and a little stable and house of office, in possession of Henry Allen. The story above is in possession of the said H. Allen; and the uppermost story in possession of one Cooling; but whether these are of right or encroachment I cannot ascertain.

"The Jesuits' chapel is 96 ft. 6 in. long, and 27 ft. broad, including the walls; joins to the said Jesuits' college on the south, and to the hospital or barracks on the north, having a little turret for the staircase, 15½ ft. long, and 12 ft. broad; with a vestry on the east, containing in length 22 feet, and 12 feet in breadth, from outside to outside; and also a yard adjoining, 17 ft. square, and having also on the west side another small priest office, 15 ft. long, and 11 ft. 6 in. wide, together with the Jesuits' kitchen, of 44 ft. long, and 15 ft. wide, from outside to outside; and a small yard at the west end of the said kitchen, 15 ft. long, and 15 ft. 6 in. wide, including the walls. There is also on the east side of the said chapel a garden plot, 54 ft. long, and 44. ft. wide, and the passage all along the Jesuits' college of 8 feet wide.

"The two empty houses, that were lately possessed by the Benedictine monks, extending themselves along the side wall of the old hospital, the south end adjoining to the said Jesuits' college, and the north end to the hospital or barracks, containing 96 ft. in length, and 19 ft. 6 in. in breadth. To which two houses belongs a garden plot, of 90 ft. long, and 30½ ft. broad, joining to the glass house on the west, and to the barracks or hospital on the north.

"All which is more fully expressed in the plot annexed, and is humbly submitted.

"CHRISTOPHER WREN."

"August 16, 1692."

nature, that I cannot resist the temptation of recording it. On October 19, 1692, John and Joseph Roffington, and Edward and Charles Palmer, laid their case before the lords of the treasury, stating, that in their petition presented some time before to their lordships, together with their certificate from several members of parliament, setting forth their service done in augmenting that branch of their majesties' revenue on coffee, &c. in one year, upwards of twenty-three thousand pounds, they prayed reward for such service: which petition and certificate were ordered to be respited for some time. These coffee-taxers not finding it likely that they should receive any pecuniary recompense, humbly besought the lords of the treasury to give them grant of the ground set forth in a drawing, which they annexed to their new petition, being part of his majesty's Mews, which they represented as being a considerable charge for the pavement thereof, in consideration of their said service. This petition, and the value of the ground therein solicited, was as usual referred to Sir Christopher Wren; who replied to their lordships, that he and his coadjutor, Mr. Tailer, had considered the case of the petitioners, who had "been instrumental in augmenting their majesties' revenue upon tea and coffee upwards of twenty thousand pounds per annum, *as they allege*." That upon their view they conceived it might be for their majesties' service, that the front ground should be built, and the charge thereof taken off, provided that the stables lately burned did not want convenient room. The front ground desired by the petitioners was about three hundred and ten feet; which, taken at a middle depth, they valued at twelve shillings per foot,

which amounted to a ground rent of one hundred and eighty-six pounds per annum.

A petition was presented from one Arnold Thompson, of New Windsor, to his Grace Henry Duke of Norfolk, praying for the grant of a piece of ground in the castle ditch at Windsor, which he stated was nothing but a common nuisance, being abused by the laying of carrion and making dunghills, and emptying jakes upon it, which made it very noisome to their majesties' court. This led to an inquiry into various other encroachments of buildings upon the castle ditch, which were as usual referred to Wren, and his decision acted upon *.

* The petition is at length in the before quoted manuscript book of Sir Christopher's, as well as the Earl Marshal's reference, which is as follows:

"WHEREAS there are several encroachments made by the tenants and others pretending to have interest in the castle ditch at Windsor, which tends to the damage of their majesties' royal palace there; for redress and prevention thereof, these are to will and require you forthwith to view and examine the same, and make a fair draught of the ground commonly called the castle ditch, belonging to the said castle, bounding and distinguishing the same from what belongs to the town of Windsor and College of Eton; as also the particular dimensions of the ground held or claimed by the several tenants or occupiers thereof, as well from the town or college, as from the constable of the castle; and return the said draught, with an account of the premises, to me, for the better adjusting all such differences as are among any of the tenants. And whereas Arnold Thompson, of New Windsor, has, by his petition annexed, prayed that he may have a lease of a piece of void ground in the said castle ditch, to plant and build a hut or house thereupon; I desire you will view the same, and certify your opinion if leave may be granted to the petitioner, without damage to the castle. And for so doing this shall be a sufficient warrant. Given under my hand

This year he also made the new road from Hyde park corner to Kensington, and superintended the repairs of several others, Captain Stydolfe being the principal manager under him *.

and seale, the 28th day of September, 1692, in the fourth year of their majesties' reign.

"NORFOLKE & MARSHALL."

"*To Sir Christopher Wren, Knt. Comptroller of their Majesties' Works at Windsor Castle, and other the officers of their Majesties' works there.*"

Sir Christopher made his report in the following December, with the required drawings and references, copies of which are in the same manuscript volume. It is as under:—

"To the most noble Henry Duke of Norfolke, Earl Marshall of England, and Constable of the Castle of Windsor, &c.

"May it please your Grace,

"In pursuance of your Grace's warrant to us directed, that we should examine how the ground of the ditch of Windsor Castle is possessed by the several occupiers thereof, and represent the particular dimensions of the ground claimed by the several tenants, to prevent, for the future, any encroachments to the damage of their majesties' palace there; we have caused a perfect draught of the same to be taken, wherein also what belongs to the town of Windsor, or College of Eton, is distinguished.

"Also, in pursuance of your directions, upon the petition of Arnold Thompson, praying that he may have a lease of a piece of void ground in the ditch of Windsor Castle, to plant and build a little house thereon, we have considered the same, and find there is a void place in the south ditch, under the poor knights' row, adjoining eastward to a garden, now in possession of one Green, which void place we conceive may be allowed to build a house upon the edge of the ditch, with a garden running backward to the

* See the various reports and estimates in the aforesaid book of MSS.

Complaints having been made to the queen during the absence of King William, that the Earl of Ranelagh, paymaster-general of the forces, had enclosed part of the stable ground belonging to the horse guards, for his office, without a right, the queen referred it to Sir Christopher; and ordered the alterations, &c. in conformity with his report, to be obeyed *.

wall of the poor knights' row, which may contain thirty feet front toward the south, and fifty feet upon the said wall, and the ground being laid out as it is expressed in the map annexed, we humbly conceive will be no prejudice to the castle, more than many others formerly built in like manner: neither will it hinder the proposition of joining the terraces, if their majesties shall at any time think fit to prosecute the said design, provided the ground be set out as the map represents it.

" All which is humbly submitted.

" CHRISTOPHER WREN.

" JOHN BALL †."

" December 28, 1692."

* The report and court order are as follows, transcribed from the manuscript book before referred to:

" May it please your majesty,

" In humble obedience to your majesty's pleasure signified to me, I have examined,

" 1. What part of the stables belonging to the horse guards hath been lately enclosed by the said paymaster-general.

" 2. Whether the front toward the park, of the pay-office now building, is longer than the former front of the said office.

" 3. Whether the alteration of the dung-yard belonging to the said stables is convenient to the guards.

† This person, according to a manuscript of Sir Christopher's, in my possession, held the office of Riding-surveyor to Windsor Castle.

In 1694 he designed Morden College, Blackheath; which was substantially built by Edward Strong, his able and honest

" And thereupon I humbly report to your majesty,

" 1. That the paymaster hath only enclosed 18 ft. in the clear of the stables, adjoining to the dung-yard (which he has leave to do, by her majesty's warrant to me directed, dated the 7th day of September last). That the said 18 ft. enclosed would not possibly hold above four horses at most; and that the room over the said enclosure always belonged to the pay-office.

" 2. That the front of the pay-office toward the park, now building, is erected upon the old foundations; and consequently cannot, in the least, be longer than the former front.

" 3. That the dung-yard, as now allowed, is confessed by the officers to be more convenient for the guards than the former; it being wholly enclosed and kept shut, and is large enough to hold more dung than can be there at one time, the scavenger being obliged to empty it every other day.

" CHRISTOPHER WREN."

" Nov. 14, 1693."

Copy of her Majesty's Warrant to Sir Christopher Wren, referred to in the above report, and transcribed from the same manuscript book of orders.

" MARIE R.

" Whereas our right trusty and right well beloved cousin and councillor, Richard, Earl of Ranelagh, paymaster-general of our forces, hath lately humbly prayed us, that we would be pleased to give him leave to enclose twenty feet in length of the stables belonging to our horse guards, which is next adjoining to his office; and to make some additions and alterations to his said office, for the better accommodation thereof, the same being at present very ruinous and inconvenient; we being willing to gratify him therein, do hereby order and require you to give forthwith directions for the enclosing 20 ft. in length of the said stables, next adjoining to our pay-office, and for the making such additions to, and alterations in, our said

master mason *. In the same year he also finished the substantial and handsome church of ST. ALLHALLOWS Lombard-street: it is eighty-four feet long, fifty-two feet broad, and thirty high, in the interior, which is of the Tuscan order, with a handsome altar-piece of the composite order, and two door-cases of the Corinthian: the tower is a square mass of masonry, with windows, and a well-proportioned Corinthian portal of Portland stone. The spacious and well-proportioned church of ST. MICHAEL Royal, on the east side of College-hill, was also erected by Wren in this year: it is a fine piece of construction, and well-wrought masonry, executed by Edward Strong †: the interior is a large spacious room, without any column, eighty-six feet in length, forty-eight feet in breadth, and forty feet high: it is lighted by a series of lofty semicircular-headed windows, and has a beautiful altar-piece of the Corinthian order, carved in Dutch wainscot by Grinlin Gibbons, with some exquisite carvings of wheat and grapes, emblematical of the sacrament of the Eucharist; over the pediment of which is Hilton's ‡ fine picture of

pay-office, as shall be necessary for our service, taking care that none of the old foundations be removed: and this shall be your warrant.

"Given at our court at Whitehall, this 7th day of September, 1693, in the fifth year of our reign.

"By her majesty's command,

"GEORGE CLARKE."

"*To our trusty and well beloved Sir Christopher Wren, Knt. Surveyor-general of our Works.*"

* Clutterbuck's History of Herts, p. 168. † Ibid.

‡ This excellent historical picture, which was purchased from Mr. Hilton by the directors of the British Institution, after receiving the first

Mary Magdalen washing the feet of the Saviour. The tower at the south-west angle of the church is square, carried up to about ninety-feet high, and surmounted by a steeple, beautifully composed of columns of the Ionic order. This year, the choir of St. Paul's was finished as far as the stonework, and the scaffolds of this part were struck both from within as well as without. Evelyn records it as a piece of architecture without reproach *.

On the 17th July, 1694, the commissioners for sick and wounded seamen, and exchange of prisoners of war, memorialised the lords commissioners of the treasury, stating, that in obedience to an order from the right honourable the lords commissioners for executing the office of lord high admiral of England and Ireland, dated the 11th instant, they were required and directed to cause the south part of the barracks in the Savoy to be immediately fitted for receiving and securing the Irish prisoners who were then to be tried. They viewed and reported that it would cost a considerable sum of money, which they did not feel empowered to expend without an order from the privy council, and therefore prayed their lordships' order accordingly. The memorial was therefore sent to Sir Christopher, with a petition from Thomas Morris, sutler to their majesties' foot guards; and he was desired to view the same, and report to their lordships as soon as pos-

historical premium, was presented to the parish of St. Michael Royal, to ornament their spacious and well-lighted church, by that patriotic body, at the instance of the author of this work, whose family have been domiciled in that part of the metropolis for some generations; and a beloved portion of them lie buried in a vault under this fine church.

* Diary, Vol. II. page 43.

sible *. Sir Christopher reported that that part of the barracks proposed by the lords commissioners is very capable of being made into a fit prison, for the present occasion, and for accommodating the marshal and his assistants, who must, as they design, be near to prevent escapes; and considering the contingencies incident to alterations and repairs, he considered the estimate as moderate †. As the sutling-house, petitioned for by Mr. Morris, was at so great a distance from the intended prisons, he declared it to be in no wise commodious for this service.

In the following month, Sir Christopher had occasion to memorialise the lords of the treasury himself, complaining of the Duke of Dorset, lord chamberlain of their majesties' household, whose lease of the tenements adjoining to Somerset-house had been lately renewed under the broad seal, with licence to rebuild them as the surveyor-general should direct, with which grant, by his grace's directions, Sir Christopher had been made acquainted. At the same time the Earl of Feversham requested that the palace might not suffer any damage through encroachments on the ground, or otherwise, by the builders. Conceiving it to be his duty, even if he had not been so advised, Sir Christopher had several conferences with the duke's agents, who assured him that his grace did not intend doing any thing prejudicial to the palace; he therefore visited it several times, accompanied by his officers of the works, and with Justice Hancock, whom his grace had intrusted with the management of his buildings and letting the ground; when they took notes

* Privy Council MS. p. 150. † Ibid.

of such encroachments as they found absolutely necessary to be reformed, and of which he had several times given warning. These encroachments and damages he details at length in the memorial, and states, that not having legal power to correct such trespasses upon the king's houses, he prayed their lordships to take this affair into their consideration, as they shall find expedient *.

Queen Mary, the patron of Wren, the amiable consort of the peevish and warlike William of Orange, and the friend of all who sought her protection, died of the small-pox in December, 1694, and Wren was appointed to design and superintend the erection of the mausoleum that was erected in Westminster Abbey at the funeral obsequies of the lamented queen, in March, 1695 †.

On the 15th April, of this year, Sir Christopher was ordered by the council for the affairs of Ireland to inspect the state of the Tower of London, and to report its fitness to receive prisoners of state ‡. On the 17th he made his report with his usual activity.

* Privy Council MS. p. 150. † Parentalia, p. 327.

‡ The following entries are from the privy council manuscript so often quoted in the course of this work:

"At the committee for the affairs of Ireland, in the council-chamber at Whitehall, April the 15th, 1695.

"It is ordered by their lordships, that Sir Christopher Wren, Surveyor-General of his Majesty's Works, do repair to the Tower of London, to view Beauchamp's tower and Bloody tower, and report what it will cost to repair and put them in a condition to hold prisoners of state; and what number of prisoners they will hold. Sir Christopher Wren is also to survey the ground behind the chapel in the Tower; where it is proposed to erect some buildings for keeping prisoners, and to report in like manner what it will cost, and how many prisoners it can be made to hold. And he is

In the course of this year Wren built the plain substantial parish church of St. Mary Somerset, on the north side of Upper Thames-street, near Broken Wharf. It has a square well-pro-

further to consider of the annexed draught proposed for the erecting the said buildings, and give his opinion upon it, or else make such other draughts as he shall think fit, and lay the same, together with his report upon the whole matter, before the committee as soon as conveniently may be.

"WILLIAM BRIDGMAN."

Sir Christopher's answer immediately follows:—

"To the right honourable the Committee of Council for the affairs of Ireland.

"May it please your Lordships,

"In obedience to your lordships' order of the 15th instant, that I should view the several places in the Tower therein-mentioned, viz. Beauchamp's tower and the Bloody tower, and report what expense will put them in condition to hold prisoners of state, and what number they will hold; I have accordingly viewed the same, and report that both the said places were put the last summer in better repair than they have been in many years; being whited, mended, and made strong. But to make them fit for prisoners of state, if by that expression it be intended they should be wainscoted and made fit for hangings and furniture, it may cost £200 or much more; but with such walls, windows, and winding stairs, they never can be made proper with any cost without rebuilding. I have also, in pursuance of the said order, viewed the place behind the chapel, and considered, and do approve, the annexed draught, proposed to be built, which I take to be as large as the place will well bear, containing fifteen squares; and if it be well built in three stories, cellars, and garettes, it will cost £600.

"As to the number of prisoners these places may hold, I can only report what number of rooms each place contains. Beauchamp's tower hath a large kitchen, two large rooms, and two small servants' rooms.

portioned tower, surmounted by a series of pinnacles. The body of the church is finished by a handsome cornice and balustrade. The interior, which is eighty-three feet long, and thirty-six feet wide, is divided into a nave and two aisles. The altar-piece has four Corinthian pilasters, with stylobate and entablature in a good Italian style: he also added the spire to the neat little church of St. Augustine and St. Faith by St. Paul's; and the original, and, in some respects, beautiful steeple of St. Vedast Foster, near the west end of Cheapside.

During the high protestant ascendancy of the reign of William, the attendance of the bishops in the house of peers became more frequent and regular; but finding want of accommodation, the Archbishop of Canterbury, and the rest of the episcopal bench, applied for proper rooms for robing, retiring, &c., and Sir Christopher was desired accordingly to prepare apartments for that purpose *.

Bloody tower hath a kitchen, one room, and one closet. The new building may contain nine single rooms, besides cellars and garretts, and a kitchen.

" All which is humbly submitted.

" CHRISTOPHER WREN."

" April 17, 1692."

* The order and report, transcribed from Sir Christopher Wren's manuscript book in my possession, are as follows:—

" SIR,

" His grace the Archbishop of Canterbury having desired, on the behalf of himself and the rest of the bishops, that some convenient apartment might be provided and fitted up near the house of peers for their lordships to robe and unrobe themselves, and for other uses; the lords commissioners of his majesty's treasury direct you to view some place which may be

In the course of this year was published the excellent posthumous work of Robert Boyle, called "A Free Discourse against customary Swearing, and a Dissuasive from Cursing;" which Wren followed up by an order * from himself and his brother

proper for the service above mentioned, and to give their lordships an estimate what the charge of fitting up the same will amount unto. This, in the absence of Mr. Guy, is signified by,

"Sir, your most humble servant,

"WILLIAM LOWNDES."

"*Treasury Chambers, 1st April,* 1695."

"May it please your Lordships,

"In pursuance of your lordships' commands, signified by Mr. Lowndes, upon application of his grace of Canterbury, and by the rest of the bishops, to fit up a convenient room, near the house of peers, for their retirement, out of the common passage—I have viewed the place proper for their use to robe themselves and retire into; and I conceive the whole expense, to make one room with garretts over and staircase, two chimneys with wainscott, and some alterations to fit the new to the old work, will amount to £147.

"All which is humbly submitted.

"CHRISTOPHER WREN."

"April 4th, 1695."

* The following is a copy of the order which Sir Christopher directed to be affixed in various parts of St. Paul's cathedral during its building.

"Whereas, among labourers, &c. that ungodly custom of swearing is too frequently heard, to the dishonour of God, and contempt of authority; and to the end, therefore, that such impiety may be utterly banished from these works, intended for the service of God, and the honour of religion—it is ordered, that customary swearing shall be a sufficient crime to dismiss any labourer that comes to the call; and the clerk of the works, upon sufficient proof, shall dismiss them accordingly. And if any master, working

commissioners, which he caused to be issued against that abuse of language, by the workmen under his employment at St. Paul's.

Every thing in the departments of Sir Christopher's offices was conducted with that regularity and economy that public works demand. We have witnessed the small remunerations he received for his services; and, in the manuscript book so often quoted in the latter part of this work, is a document signed Stephen Fox, Charles Montague, and William Trumball, three of the lords commissioners of his majesty's treasury directed, with hearty commendations, to William Roberts, Esq. and the receivers-general and paymasters for the time being of the revenues of the honour and castle of Windsor, stating, that "whereas, for some time past there had been allowed unto the keeper of the house park at Windsor the yearly sum of fifty pounds, for doing all necessary repairs in and about the said park, furnishing new posts, rails, pales, and nails, keeping in repair the two and twenty gates, with locks and keys, cleansing the ponds and ditches, maintaining the three bridges, cutting the mole-hills, thistles, and nettles, weeding the park, repairing the colt-house and racks for the deer, and doing all other necessary things that should be wanting there,"—this sum they considered as reasonable to be continued

by task, shall not, upon admonition, reform this profanation among his apprentices, servants, and labourers, it shall be construed his fault; and he shall be liable to be censured by the commissioners."—Dated the 25th of September, 1695 *.

* Malcolm's Anecdotes of the Manners, &c. of London, from the Roman invasion to the year 1700, Vol. I. p. 392.—Lond. 3 vols. 8vo. 1811.

for such duties, and pray and require them to pay to Sir Fleetwood Shepherd, Knt. keeper of the said park, or to his assigns, the sum of fifty pounds for one year, due on the said allowance at Lady-day last, and the like sum of fifty pounds per annum for the future, by equal half yearly instalments; provided certificates be from time to time, in the first place, produced under the hand of the surveyor-general of the works, that the repairs and works beforementioned were well and sufficiently done and performed *.

In December, 1695, the Earl of Suffolk represented to Sir Christopher the dilapidated state of the mansion at Audley End, where he resided; which he immediately surveyed, and reported both its state, and the expenditure necessary to put it in a proper state of repair. This report, which will be found in the note,

* This warrant is dated the 3rd of April, 1695, and is immediately followed by a certificate of Sir Christopher, as under.

" SIR,

" The bearer, Sir Fleetwood Shepherd, black rod, keeper of Windsor house park, by virtue of a warrant dormant from the lords commissioners of his majesty's treasury, bearing date the third day of April, 1695, is to receive the sum of fifty pounds per annum for doing all necessary repairs in and about his majesty's said house park at Windsor; and there being one year's allowance due to him at Lady-day last past, you may please to pay the said Sir Fleetwood Shepherd the said sum of fifty pounds, he having performed the works in the said warrant. Given under my hand this 21st day of December, 1695.

" CHRISTOPHER WREN."

" *To William Roberts, Esq. receiver and paymaster-general of his majesty's honour and castle of Windsor.*"

gives some important historical facts relating to this celebrated and extensive ancient English mansion *.

* Letter from the Earl of Suffolk to Sir Christopher Wren, transcribed from the privy council manuscript book, in my possession.

" Audley End, December 3, 1695.

" SIR,

" I should not give you those frequent troubles, did not absolute necessity compel me to it. These last great winds have so extremely shattered the chimneys of this house, that it is dangerous to walk either in the court-yard, or in the garden. Great stones falling from them daily, and in that part I lye in, we are in danger every night. There is one great pillar in the cloisters on the right hand mouldered quite away at the foot of it, which if not speedily repaired, the rooms in probability will tumble down. The bridge that goes to the stable is so totally destroyed, that not long since a cart fell into the river, and with great difficulty the horses were saved. The stables and barn are in a very ill condition: in truth, both them and the house in a very little time will by degrees fall down. If you please, (whose office it is) to represent these things to his majesty, we have then done our duty. I shall not add more, but that I am

" Your servant,

" SUFFOLKE."

To this, Sir Christopher made the following report to the lords of the treasury:

" May it please your lordships,

" At the request of the Right Honourable Henry, Earl of Suffolke, whose letter to me I have hereunto annexed, I crave leave to lay before your lordships the state of the house at Audley End.

" When this house was purchased by King Charles, an estimate was given of the charge of repairs, amounting to about ten thousand pounds; for little had been done to it from the first foundation. The whole lead of the house was very defective, much of the timber was decayed. and the

In 1696, Wren completed the church of St. Christopher, in Threadneedle-street, which has been since taken down by act of parliament, to make room for the enlargement of the Bank of England. Its commencement is recorded in page 308.

fabric weak built, after an ill manner, rather gay than substantial. For this an allowance of £500 per annum was settled upon the wood farm. While this continued, half the house was new leaded, and the roof substantially repaired, many stacks of chimneys were new built, and divers of the necessary defects amended.

" This allowance of five hundred pounds per annum determined at Michaelmas 1688, and then for the works done, there remained a debt of	£1560 17 00
Not being able to obtain the continuance of the £500 per annum since 1688, we have expended out of the ordinary, with much difficulty, £200 per annum, in all	1400 00 00
The debt at present is much the same as when the allowance ceased, viz.	1500 00 00

" To which I must add, the estimate following of particulars absolutely necessary to prevent greater charge.

Twenty stacks of chimneys, to have the funnels taken down and new built	50 00 00
Masons' work	100 00 00
Two bridges to be repaired	200 00 00
A large stable of 100 square, to be repaired in the roof, tyling, and pitching the stalls	400 00 00
A large barn of 240 square	180 00 00
Defects within the house, requiring speed	200 00 00
New pale to the garden	50 00 00
The walls of the park, garden, and backsides, to be amended and new coped	250 00 00
Total, including the debt	£2830 00 00

" Much more should be done to make this house a residence; but nothing of this can be left undone, without greater ruin and charge. All which notwithstanding is most humbly submitted.

" CHRISTOPHER WREN."

" December 13, 1695."

On June 30, 1696, the first stone of the new naval hospital at Greenwich was laid by Sir Christopher Wren and Mr. Evelyn, attended by a select committee of the commissioners, precisely at five o'clock in the afternoon, after they had dined together; Mr. Flamsteed, the king's astronomical professor, observing the precise time for the operation by instruments *.

This building owes its foundation to Queen Mary †, the joint

* Evelyn's Diary, Vol. II. p. 55.

† The following authentic account of this building was prepared by the deputy-surveyor, Mr. Hawksmoor, anno 1728, for the perusal of parliament.

" Her Majesty Queen Mary, the foundress of the Marine Hospital, enjoined Sir Christopher Wren to build the fabrick with great magnificence and order; and being ever solicitous for the prosecution of the design, had several times honoured Greenwich with her personal views of the building erected by King Charles II., a part of his palace, and likewise of that built by Mr. Inigo Jones, called the queen's house, &c. On which views, she was unwilling to demolish either, as was proposed by some. This occasioned the keeping of an approach from the Thames quite up to the queen's house, of 115 feet broad, out of the grant that was made to the hospital, that her majesty might have an access to that house by water as well as by land: and she retained a desire to add the four pavilions to that palace, according to Inigo Jones's design, that she might make that little palace complete, as a royal villa for her own retirement, or from whence embassadors or publick ministers might make their entry into London.

" Her majesty's absolute determination to preserve the wing built by her uncle King Charles II.; the queen's house, and the approach of it, on the consideration above said, naturally drew on the disposition of the buildings, as they are now placed and situated.

" The principal front of this great building lies open to the Thames; from whence we enter into the middle of the royal court, near 300 feet square, lying open to the north, and covered on the west with the court of King Charles II., and on the east with that of Queen Anne, equal to it; and on the south, the great hall and chapel.

sovereign of these realms with King William; and was continued in his and the succeeeding reigns till its completion. The

"The court of Queen Anne contains the great range or wing next the royal court, as aforesaid, and holds 140 men. To the east of this court of Queen Anne is another range of building, which contains 66 persons, &c. The great pavilion, next the Thames, contains four very commodious apartments for officers.

"The great pavilion, at the south end of Queen Anne's court, contains lodgings for officers, and some proper rooms for the entertaining of the widows and children.

"The court of King Charles II. contains the great wing on the west of the royal court above-mentioned, built by that prince as part of his own intended palace. It is a noble pile, having in the middle a tetrastyle portico, with arcades: the walls are rusticated, all in Portland stone; the windows artfully decorated and proportioned; the order is Corinthian; the body of the building is crowned with an entablement of that order; and the two extremes in two great pavilions (all in the same style) rising with an attick order above the other part, making two eminent towers.

"This wing, together with the bass-wing to the west of the court of King Charles II., contains 206 persons, &c.

"The great pavilion to the Thames, closing the north side of this court, contains four apartments for officers, and other conveniences. The great pavilion on the south end of this court contains several lodgings for officers, a great kitchen, and rooms belonging to it.

"The wing to the west, which was built for officers for immediate service, contains chambers for servants and other uses of the family. This is called the bass-wing of King Charles II.

"Keeping the central lines of the whole projection that runs through the royal court, and the esplanade in the park, the next buildings we come at lie on the south side of the royal court, and are; first,

"The colonnade, having a portico on the right and left hands of Doric pillars, 20 feet high, is crowned with an entablement and balustrade of Portland stone, each of which porticos is in length 430 feet, and both together sustained by 300 pillars and pilasters.

first meeting concerning this important national institution was held shortly after the queen's death, and Evelyn was appointed treasurer *. This meeting was held at the Guildhall of the city of London, on May 5, 1695, and on the 21st Sir Christopher visited

" These porticos are intended for communication from the hall and chapel to the wards and dormitories, and to protect the men from the inclemency of weather, and give them air at any time without incommoding them; very useful where a number of people are to inhabit in one college.

" On the west side of this colonnade is built the court of King William, containing the great hall, vestibule, and cupola: the tambour of the cupola is a peristylium of pillars duplicated, of the composite order, and broke upon the quoines with group of pillars: the attick is a circle without breaks, covered with a tholus and small lantern.

" Under is a less hall, and room for the guard, and common rendezvous of the house. On the west side of this court is a large dormitory and sundry lodgments. This wing will contain 200 persons.

" On the south side of King William's court is another large dormitory, with several rooms. This wing will contain 320 persons.

" On the east of the colonnade is the court of Queen Mary, which contains the royal chapel, with the vestibule and cupola; and a large dormitory to the south, like that of King William, holding 320 persons; and a dormitory on the east side of this court, to hold 100 persons. Besides the grandeur, regularity, and beauty of this public building, the capacious accommodations, the wards and chambers, can entertain 1352 men, excluding officers and servants, and rooms of public use. This was once the only expectation: some gentlemen thought the bass-wing of offices was too mean for the rest of the building, and desired a proposal might be made to alter that, to the style and dignity of King Charles's front; which was done, and showed to the persons then in power: and this occasioned the doubling the great north pavilion, and making it so large as now it is, with the flag tower upon the centre, which completed the strength and beauty of the north front of this royal hospital towards the Thames." " N. H."

* Evelyn's Diary, Vol. II. p. 45.

Greenwich, with Sir Robert Clayton, Mr. Travers, the king's surveyor, Captain Sanders, and Mr. Evelyn; who made a report, that the part of the buildings already erected might be made serviceable for six thousand pounds, and farther reported what ground was necessary to complete the whole. Mr. Vanbrugh was made secretary to the commissioners, on the nomination of Mr. Evelyn *, who records many of the early transactions of the commissioners. The magnificent elms in the park were planted in 1664 †.

The old and magnificent palace of Whitehall, which contained upwards of one thousand apartments, was, in 1697, destroyed by fire; and the altar piece of the old chapel, designed by Wren, was consumed with it: but one of marble, which he executed for King James the Second's chapel, escaped, and was afterwards presented by Queen Anne to the collegiate church of St. Peter Westminster, and erected therein ‡.

On December 2 of this year, the choir of the new cathedral of St. Paul was opened for divine service § on the thanksgiving

* Evelyn's Diary, Vol. II. p. 47. † Ibid. Vol. I. p. 362.

‡ Parentalia, p. 330.

§ On this occasion the following prayer was added by the king's orders to the form appointed for the day, and used in the communion service: it is printed in the London Gazette, No. 3346, December 2 to 6, 1697. "Most gracious Father, who hast remembered thy ancient loving kindness, and restored to us the public solemnities of worship in this thy house; we offer our devout praises and thanksgivings to thee for this thy mercy, humbly beseeching thee to perfect and establish this good work. Thou, O Lord! dwellest not in houses made with hands: heaven and the heaven of heavens cannot contain thee; but, though thy throne is in heaven, earth is thy footstool. Vouchsafe, therefore, we beseech thee, thy

day for the peace of Ryswick *; the Bishop of Salisbury (Gilbert Burnet) preached before the king and a great court, which was held at Whitehall; and the evening concluded with grand illuminations and fireworks †. This was the first service in the church since the fire in 1666, which was continued on the next and subsequent Sundays ‡, and with uninterrupted regularity to the present hour.

In 1698 Sir Christopher was appointed surveyor-general, and a commissioner of the works and repairs of the ancient abbey church of St. Peter, in Westminster, on the passing of an act of parliament, charging a portion of the duty on coals for that purpose §. He was also elected a second time to the highly

gracious presence in this thy house, to hear our prayers and accept our sacrifices of praise and thanksgivings: and grant that it may never be defiled with idolatrous worship or prophaneness; but that truth and peace may dwell in this place; that sincere piety and devotion may be the glory of it; that they who here minister, may attend on their ministry; they who teach, on teaching; they who exhort, on exhortation; they who rule, with diligence; that thy name may be in all things glorified, through Jesus Christ our Lord. Amen."

* Ellis's Dugdale, p. 172.

† Evelyn's Diary, Vol. II. p. 58.

‡ Ibid. p. 59.

§ Parentalia, p. 264.—" 1698, Mar. 11, Architectus et sub-commissionarius (ut vocatur) ad reparandam antiquam basilicam D^vi Petri Westmonasterii. Ex originali."—WREN, *MS.* " 11 Mar. 1698, Instaurationem antiquæ basilicæ D^vi Petri Westm. suscepit, et continuavit ad hunc annum, 1720."—*Ibid.* In the Bodleian library, Oxford, in the collection of Richard Gough, is a folio manuscript volume, containing copies of all bills attested by Sir Christopher in his own hand-writing, relating to the repairs of the abbey, from 1698 to 1705.

honourable situation of grand master of the order of Freemasons, in the course of this year, on the resignation of the Duke of Richmond; and continued to execute the duties of his office till the death of King William in 1702 *.

* The introduction of this mysterious and honourable order into England is generally supposed to have been prior to the Roman invasion; and, as proofs, the remains of those stupendous works attributed to the Druids, who are believed to have had freemasonry among them, are cited; and also that they derived their government from Pythagoras. It flourished variously, according to its best historian, Mr. Preston, till the reign of Charles I., under whom Inigo Jones presided as grand master. It was much interrupted during the civil wars, and is supposed to have contributed in no small degree to the restoration of Charles II., who certainly patronised it, both during his exile and after his return. In 1666 Sir Christopher Wren was appointed deputy grand master under Earl Rivers, and distinguished himself beyond any of his predecessors, in legislating for, and promoting the success of the lodges under his care. He was master of the St. Paul's lodge, now the lodge of Antiquity, of which his Royal Highness the Duke of Sussex is past master; and attended their meetings regularly for upwards of eighteen years. During his presidency, he presented the lodge with three mahogany candlesticks, of beautiful carving, which the members still possess, and prize as they deserve; and also the trowel and mallet which he used in laying the first stone of St. Paul's cathedral. While the new city was building, lodges were held by the fraternity in different places; and many new ones constituted, to which the best architects of the day resorted. In 1674 Earl Rivers resigned his office of grand master in favour of George Villiers, Duke of Buckingham; who left the care to his wardens, and Sir Christopher, his deputy. During the short reign of James II. they were much neglected; but in 1685 Sir Christopher was elected grand master, and appointed Gabriel Cibber, the sculptor, and Edward Strong, the master mason at St. Paul's and other churches, his wardens. The

On the first day of February, 1699, the beautiful chapel, called the Morning-prayer Chapel, in St. Paul's, was opened for service with appropriate ceremony*; and on the 27th of the same month, a fire broke out at the west end of the north aisle of the choir, in a small room, now the prebendaries' vestry, which was prepared for the operations of the organ-builder: but the communication between this room and the organ gallery being broken down, and all possible means used, the conflagration was stayed, with but small damage†. The royal hospital of Greenwich was commenced on its present magnificent scale this year‡, the former being occupied in converting the building of Charles the Second's palace.

In the beginning of this year Sir Christopher finished his beautiful spire of St. Dunstan in the East, the body of the church being only repaired§. The design of this master-piece of construction may be seen in the accompanying plate; and it is not too much praise to say, that it stands unrivalled for ele-

society has continued, with various degrees of success, ever since; but revived under the present king when Prince of Wales. It is now in a flourishing state, under the grand mastership of the Duke of Sussex, who succeeded his royal brother a few years since.—*Preston—Harper—Rees's Cyclopædia, &c.*

* Ellis's Dugdale, p. 172.

† Strype's Continuation to Stowe, Vol. I. p. 155. fo. London, 1720.

‡ "1699.—Hospitium regale nauticum de Greenwich excogitavit, et incepit, et continuavit; perfecit feliciter Rex Georgius II."—WREN *MS.*

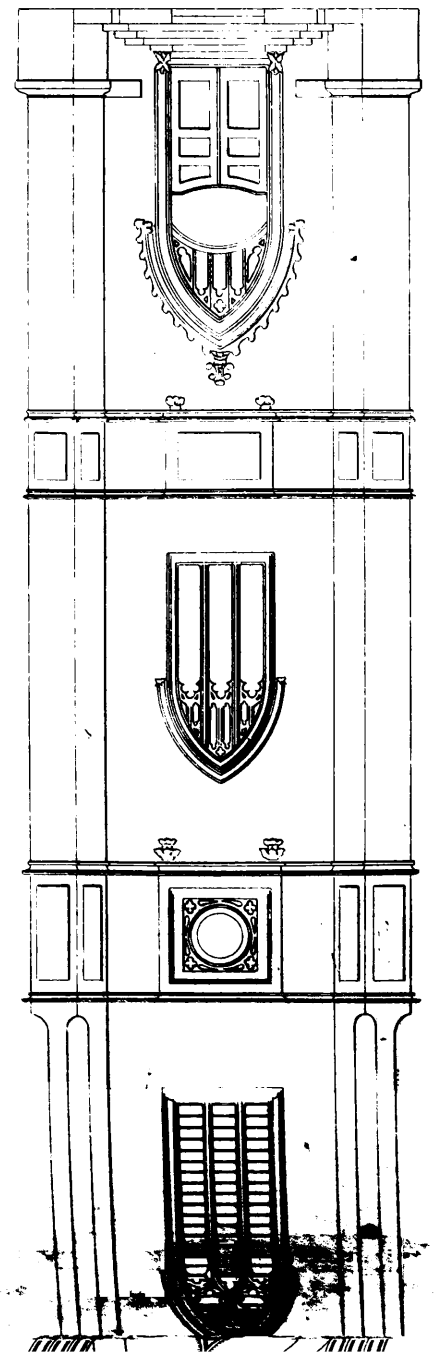
§ This part has been recently taken down and rebuilt, by Mr. Laing, the architect of the new Custom-house.

James Elmes, M.R.I.A.del.

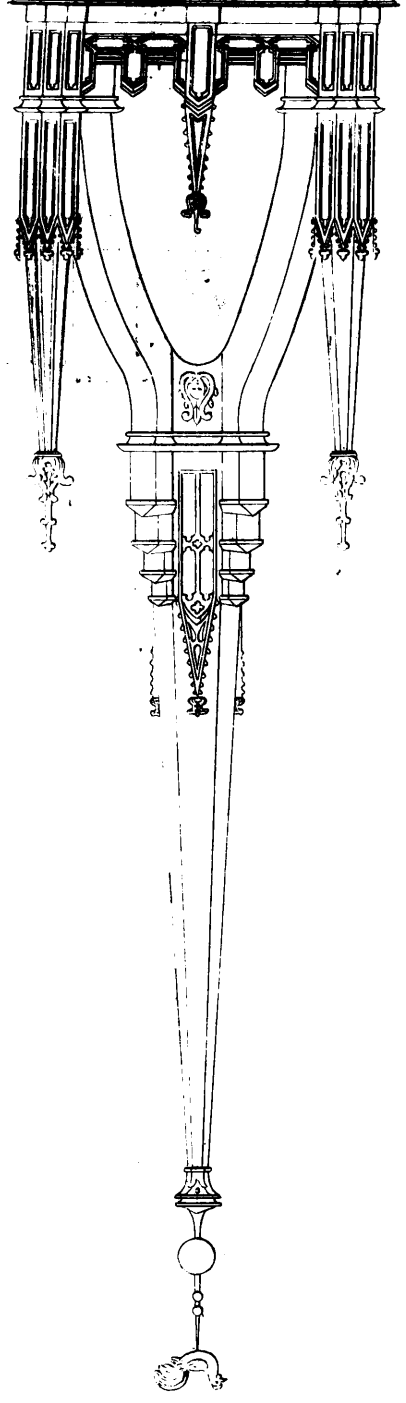
Sir Chr. Wren, Archt.

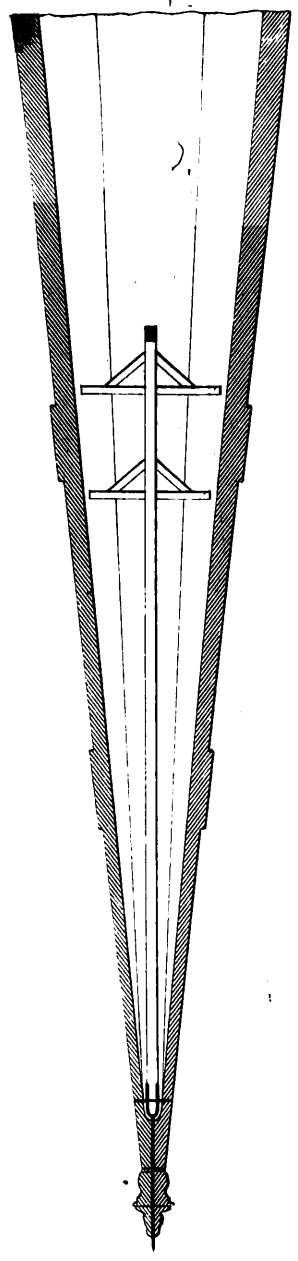
W. Lowry, sculp.

Elevation of the Tower and Choir of
St Mary Aldermary from Bread
Street in original dimensions, from actual
measurement by Joseph Gwilt, Esq.r F.A.S.
which is annexed the entire west front
the Lenten Teaching 1828.



Elevation of the Steeple





gance, beauty, and science. When Sir Christopher designed this steeple, the noblest monument of geometrical and constructive skill in existence, and unequalled also for lightness and elegance, he had doubtless those of St. Nicholas, at Newcastle upon Tyne, and of the High Church, Edinburgh, in his mind; but he has surpassed them in every essential quality*. He continued the works at Greenwich and St. Paul's, and farther embellished his beautiful work of St. Bride, Fleet-street.

In the year 1700 Wren was elected and returned member for the borough of Weymouth and Melcombe Regis, in the

* An anonymous friend sent me, during the progress of this work, the following anecdote; but as he communicated no authority, I have placed it as an entertaining note, rather than as a portion of the text. The first part is evidently incorrect, and it is hardly possible that such a mathematician as Wren would have attempted what he doubted. On the contrary, when he was informed that a hurricane, which occurred in the night, had damaged all the steeples in London, he replied, with the rapidity of thought, "Not St. Dunstan's, I am sure." The anecdote is as follows: "When Sir Christopher Wren made the first attempt of building a steeple upon quadrangular columns in this country (St. Dunstan's in the East), he was convinced of the truth of his architectural principle; but as he had never before acted upon it, and as a failure would have been fatal to his reputation, and awful in its consequences to the neighbourhood of the edifice, he naturally felt intense anxiety, when the superstructure was completed, in the removal of the supporters. The surrounding people shared largely in the solicitude. Sir Christopher himself went to London-bridge, and watched the proceedings through a lens. The ascent of a rocket proclaimed the stability of the steeple; and Sir Christopher himself afterwards would smile, that he ever could, even for a moment, have doubted the truth of his mathematics.—I. I."

county of Dorset; and served in that parliament which began at Westminster February 10, in the twelfth year of William III.* Notwithstanding this additional occupation, he found time to write a dissertation on the ascension of the sap in trees, and a paper on the superfice of the terraqueous globe †.

Wren had now attained the sixty-ninth year of his age, yet his zeal and activity continued unabated: his great public employments increased, his works proceeded with rapidity, and his fame was acknowledged wherever his name was mentioned. In 1701 he made the designs for the new church at Isleworth ‡, and continued the buildings of the royal hospitals of Chelsea and Greenwich, as well as his master work, St. Paul's.

In the course of this year, two of his royal patrons, the rivals for the English throne, were removed, by death, from this world, and all its glories and its difficulties: James II. died at St. Germains, and William III. at London.

The new sovereign, Queen Anne, continued Wren in all his situations, who proceeded with the public works without delay or hindrance. His high reputation continued undiminished; and the astronomer royal, Dr. Flamsteed, who well knew the depth and soundness of Wren's acquirements in astronomy, addressed

* Parentalia, p. 344.—" 1700, Electus in Parliamentum Burgensis Burgi de Weymouth et Melcomb Regis in agro Dorsetensi. *Rot. Parl.*"—Wren *MS.*

† " 1700, Dissertatio de ascensu succi in arboribus. De superficie orbis terraquei. Apud nos."—Wren *MS.*

‡ Lysons, Vol. III. p. 1004.

to him his profound reflections on Cassini's remarks relating to the motion of the earth, and referred to him as an umpire *.

* Parentalia, p. 247. They were introduced by the following letter:—

" The Observatory, Nov. 19, 1702.

" HONOURED SIR,

" I send you included a long letter, whereby you will find that Mons. Cassini has performed nothing of what he proposed to shew concerning *the effects of the earth's motion*, or the parallax of the orb at *the fixed stars*. As to what he adds " *and of the poles of the world and ecliptick*," after you have perused the latter part of the letter, it will appear to you he might have done better to leave it out, since the parallaxes of the fixed stars are determined without moving these poles at all, and making them to move misrepresents the parallaxes; so that, on the whole, you will conclude that he understood nothing of the business, and perhaps they as little that affect him. This I mind you of, because I have not mentioned it in the letter, which I have wrote after my usual way, with all the plainness and sincerity imaginable, and so as not to give Mons. Cassini, nor any other, any offence or cause to complain of uncivil usage. 'Tis something longer than I designed at first it should be: being a new subject, and uncommon, I thought it was better to err on this hand, than to make it obscure by my brevity.

" But I am sorry I must tell you this will not make me and Mr. Halley friends: I have some papers in my hands that prove him guilty of disingenuous practices, and know more of him than the generality of the world does. He knows I cannot cover dishonesty, or bear with any thing that is not just, honest, and true; and that I know he regards nothing of these in his practices: we must therefore keep him at a distance. I pray God make him sensible of his faults; and, as I told him at Brown's, whenever he becomes a sincere and honest man, he is sure to have me his friend.

" I shall be at your end of the town some time next week, when I will

This year Sir Christopher had the misfortune to lose his amiable and accomplished daughter Jane, who died in the 26th year of her age, and lies buried in St. Paul's cathedral *.

His able coadjutor and associate, Robert Hooke, also died this year, on March 3, in the 68th year of his age, after continuing some years in a wasting condition. He was buried in the church of St. Helen, in Bishopsgate-street, attended by all the members of the Royal Society then in London, who performed the last offices of respect to him when dead, who had been so highly esteemed while living, by the best philosophers both at home and abroad †.

In the year 1704 Sir Christopher added the plain square bell tower to the fine church of St. Andrew Holborn; and finished Christ church, near Newgate-street.

In 1705 he added the steeple, consisting of a lofty tower, surmounted by a lantern, a cupola, and spire, to St. Magnus

wait on you to clear up any thing that may appear obscure in my long letter, and pay you the sincere respects of

" Sir,

" Your most humble servant,

" John Flamsteed, M. R.

" I desire you to let your son acquaint my Lord Pembroke that you have the included letter from me; and present him with humble respects and services. I have acquainted Mr. Aston that I have sent you the included."

* See page 385 of this work. Ward's Lives of the Gresham Professors, p. 110.

† Ibid. p. 187.

London-bridge; and began the new body of Isleworth church, which does not merit particular notice.

The year following (1706) he lost his amiable friend and able associate John Evelyn, in the 85th year of his age.

In 1708 St. Paul's had proceeded so far towards completion, that on February 23, Sir Humphry Mackworth * brought up from the committee a report concerning the mode of covering the cupola; and presented two estimates, one from John Roberts, a plumber, offering to cover it with the best Derbyshire lead for the sum of £2500; and the other from Davis and Co., coppersmiths, proposing to cover it with the best copper for £3050. The committee recommended copper; but lead was finally adopted. Bird, the sculptor, carved the grotesque statue of Queen Anne, which is in the fore court of the cathedral, about this time, for which he received the sum of £250; and for each of the four figures round the same £220, besides £50 for the shield and arms †.

In the course of this year, an act of parliament ‡ was passed, to erect fifty new additional parish churches in the cities of London and Westminster; and Sir Christopher being appointed one of the commissioners for carrying on the works, attended to his duties with all the application that his professional avocations would permit. Preparatory to undertaking this office, he imparted his thoughts to one of his brother commissioners, upon the proper mode of con-

* Journals of the House of Commons, Vol. XV. pp. 556, 557. "Lunæ, 23° Februarii, Anno 6°. Annæ Reginæ. A. D. 1707-8.

† Malcolm's Lond. Rediv. Vol. III. p. 107.

‡ Anno 7°. Annæ reginæ, Cap. XXII. Sec. 9.

ducting such important business; pointing out the most fitting situations for the new churches, the best materials to be used, the most proper dimensions, situation of the pulpit, and other necessary considerations *.

* The following is this excellent paper referred to, which I give here, in preference to the Appendix, from its importance:—

"Since Providence, in great mercy, has protracted my age, to the finishing the cathedral church of St. Paul, and the parochial churches of London, in lieu of those demolished by the fire, (all which were executed during the fatigues of my employment in the service of the crown from that time to the present happy reign); and being now constituted one of the commissioners for building, pursuant to the late act, fifty more churches in London and Westminster; I shall presume to communicate briefly my sentiments, after long experience, and without further ceremony exhibit to better judgment, what at present occurs to me, in a transient view of this whole affair; not doubting but that the debates of the worthy commissioners may hereafter give me occasion to change, or add to these speculations.

1. "I conceive the churches should be built, not where vacant ground may be cheapest purchased in the extremities of the suburbs, but among the thicker inhabitants, for the convenience of the better sort, although the site of them should cost more; the better inhabitants contributing most to the future repairs, and the ministers and officers of the church, and charges of the parish.

2. "I could wish that all burials in churches might be disallowed, which is not only unwholesome, but the pavements can never be kept even, nor pews upright: and if the churchyard be close about the church, this also is inconvenient; because the ground being continually raised by the graves, occasions, in time, a descent by steps into the church, which renders it damp, and the walls green, as appears evidently in all old churches.

3. "It will be enquired, where then shall be the burials? I answer, in cemeteries seated in the outskirts of the town; and since it is become the fashion of the age to solemnize funerals by a train of coaches (even where

In the year 1710, when Sir Christopher had attained the 78th year of his age, the highest stone * of the lantern on the cupola

deceased are of moderate condition) though cemeteries should be half-a-mile, or more, distant from the church, the charge need be little, or no more than usual: the service may be first performed in the church: but for the poor, and such as may be interred at the parish charge, a public hearse of two wheels, and one horse, may be kept at small expense; the bearers to lead the horse, and take out the corpse at the grave. A piece of ground of two acres in the fields will be purchased for much less than two roods among the buildings: this being enclosed with a strong brick wall, and having a walk round, and two cross walks decently planted with yew trees, the four quarters may serve four parishes, where the dead need not be disturbed at the pleasure of the sexton, or piled four or five upon one another, or bones thrown out to gain room. In these places beautiful monuments may be erected: but yet the dimensions should be regulated by an architect, and not left to the fancy of every mason; for thus the rich, with large marble tombs, would shoulder out the poor; when a pyramid, a good bust, or statue on a proper pedestal, will take up little room in the quarters, and be properer than figures lying on marble beds: the walls will contain escutcheons and memorials for the dead, and the area good air and walks for the living. It may be considered further, that if the cemeteries be thus thrown into the fields, they will bound the excessive growth of the city with a graceful border, which is now encircled with scavengers' dung-stalls.

4. "As to the situation of the churches, I should propose they be brought as forward as possible into the larger and more open streets; not in obscure lanes, nor where coaches will be much obstructed in the passage: nor are we, I think, too nicely to observe east or west in the position, unless it falls out properly: such fronts as shall happen to lie most open in view should be adorned with porticos, both for beauty and convenience; which, together with handsome spires or lanterns, rising in good proportion above

* "1675, Novæ basilicæ D^ni^ Pauli Lon. primum posuit lapidem:—1710, supremum in epitholio, et exegit."—WREN *MS.*

of St. Paul's cathedral was laid by Mr. Christopher Wren, his son, attended by the venerable architect, Mr. Strong the master

the neighbouring houses (of which I have given several examples in the city of different forms), may be of sufficient ornament to the town, without a great expense for enriching the outward walls of the churches, in which plainness and duration ought principally, if not wholly, to be studied. When a parish is divided, I suppose it may be thought sufficient if the mother church has a tower large enough for a good ring of bells, and the other churches smaller towers for two or three bells; because great towers and lofty steeples are sometimes more than half the charge of the church.

5. "I shall mention something of the materials for public fabrics. It is true, the mighty demand for the hasty works of thousands of houses at once after the fire of London, and the frauds of those who built by the great, have so debased the value of materials, that good bricks are not to be now had without greater prices than formerly, and, indeed, if rightly made, will deserve them; but brick-makers spoil the earth in the mixing and hasty burning, till the bricks will hardly bear weight; though the earth about London, rightly managed, will yield as good bricks as were the Roman bricks (which I have often found in the old ruins of the city), and will endure, in our air, beyond any stone our island affords; which, unless the quarries lie near the sea, are too dear for general use. The best is Portland or Roch-Abbey stone; but these are not without their faults. The next material is the lime: chalk-lime is the constant practice, which, well mixed with good sand, is not amiss, though much worse than hard stone lime. The vaulting of St. Paul's is a rendering as hard as stone: it is composed of cockle-shell lime well beaten with sand: the more labour in the beating, the better and stronger the mortar. I shall say nothing of marble (though England, Scotland, and Ireland afford good, and of beautiful colours); but this will prove too costly for our purpose, unless for altar-pieces. In windows and doors Portland stone may be used, with good bricks and stone quoins. As to roofs, good oak is certainly the best, because it will bear some negligence. The church-wardens' care may be defective in speedy mending drips: they usually whitewash the church, and set up their names, but neglect to preserve the roof over their heads.

mason to the cathedral, and the lodge of freemasons, of which Sir Christopher was for many years the active as well as acting

It must be allowed, that the roof being more out of sight, is still more unminded. Next to oak, is good yellow deal, which is a timber of length, and light, and makes excellent work at first; but, if neglected, will speedily perish: especially if gutters (which is a general fault in builders) be made to run upon the principal rafters, the ruin may be sudden. Our sea-service for oak, and the wars in the North-sea, make timber at present of excessive price. I suppose, ere long, we must have recourse to the West Indies, where most excellent timber may be had for cutting and fetching. Our tiles are ill made, and our slates not good: lead is certainly the best and lightest covering, and being of our own growth and manufacture, and lasting, if properly laid, for many hundred years, is, without question, the most preferable; though I will not deny but an excellent tile may be made to be very durable: our artisans are not yet instructed in it, and it is not soon done to inform them.

6. "The capacity and dimensions of the new churches may be determined by a calculation. It is, as I stated it, pretty certain, that the number of inhabitants, for whom these churches are provided, are five times as many as those in the city, who were burnt out; and probably more than 400,000 grown persons, that should come to church, for whom these fifty churches are to be provided, besides some chapels already built, though too small to be made parochial. Now, if the churches could hold each 2000, it would yet be very short of the necessary supply. The churches, therefore, must be large; but still, in our reformed religion, it should seem vain to make a parish church larger than that all who are present can both hear and see. The Romanists, indeed, may build larger churches: it is enough if they hear the murmur of the mass, and see the elevation of the host; but ours are to be fitted for auditories. I can hardly think it practicable to make a single room so capacious, with pews and galleries, as to hold above 2000 persons, and all to hear the service, and both to hear distinctly, and see the preacher. I endeavoured to effect this in building the parish-church of St. James, Westminster, which, I presume, is the most capacious,

master. In the following year (1711), he built the spacious and handsome church of St. Mary Aldermary, in Bow-lane, Cheapside,

with these qualifications, that hath yet been built; and yet, at a solemn time, when the church was much crowded, I could not discern from a gallery that 2000 were present. In this church I mention, though very broad, and the middle nave arched up, yet as there are no walls of a second order, nor lanterns, nor buttresses, but the whole roof rests upon the pillars, as do also the galleries, I think it may be found beautiful and convenient, and, as such, the cheapest of any form I could invent.

7. "Concerning the placing of the pulpit, I shall observe a moderate voice may be heard fifty feet distant before the preacher, thirty feet on each side, and twenty behind the pulpit; and not this, unless the pronunciation be distinct and equal, without losing the voice at the last word of the sentence, which is commonly emphatical, and, if obscured, spoils the whole sense. A Frenchman is heard further than an English preacher, because he raises his voice, and sinks not his last words: I mention this as an insufferable fault in the pronunciation of some of our otherwise excellent preachers, which schoolmasters might correct in the young as a vicious pronunciation, and not as the Roman orators spoke: for the principal verb is, in Latin, usually the last word; and if that be lost, what becomes of the sentence?

8. "By what I have said, it may be thought reasonable, that the new church should be at least sixty feet broad, and ninety feet long, besides a chancel at one end, and the belfry and portico at the other.

"These proportions may be varied; but to build more than that every person may conveniently hear and see is to create noise and confusion. A church should not be so filled with pews, but that the poor may have room enough to stand and sit in the alleys; for to them equally is the gospel preached. It were to be wished there were to be no pews, but benches; but there is no stemming the tide of profit, and the advantage of pew-keepers; especially since by pews, in the chapel of ease, the minister is chiefly supported. It is evident these fifty churches are not enough for the present inhabitants, and the town will continually grow: but it is to be hoped, that hereafter more may be added, as the wisdom of the govern-

at the expense of an individual (Henry Rogers), upon the same plan as it was before the fire*. The interior is an imitation of the pointed style, with the blemish of a composite altar-piece.

ment shall think fit; and, therefore, the parishes should be so divided as to leave room for sub-divisions, or at least for chapels of ease.

" I cannot pass over mentioning the difficulties that may be found in obtaining the ground proper for the sites of the churches among the buildings, and the cemeteries in the borders without the town; and, therefore, I shall recite the method that was taken for purchasing in ground at the north side of St. Paul's Cathedral, where, in some places, houses were but eleven feet distant from the fabric, exposing it to the continual danger of fires. The houses were seventeen, and contiguous, all in leasehold of the bishop, or dean alone, or the dean and chapter, or the petty-canons, with divers undertenants. First recompensed in kind, with rents of like value for them and their successors; but the tenants in possession for a valuable consideration; which to find what it amounted to, we learned by diligent inquiry, what the inheritance of houses in that quarter were usually held at; this we found was fifteen years' purchase at the most, and, proportionably to this, the value of each lease was easily determined in a scheme, referring to a map. These rates, which we resolved not to stir from, were offered to each; and, to cut off much debate, which may be imagined every one would abound in, they were assured that we went by one uniform method, which could not be receded. We found two or three reasonable men, who agreed to these terms; immediately we paid them, and took down their houses; others, who stood out at first, finding themselves in dust and rubbish, and that ready money was better, as the case stood, than to continue paying rent, repairs, and parish duties, easily came in. The whole ground at last was cleared, and all concerned were satisfied, and their writings given up. The greatest debate was about their charges for fitting up their new houses to their particular trades: for this we allowed

* Newcourt's Repertorium.

Some of the commissioners for conducting the rebuilding of St. Paul's formed themselves into a cabal, and persecuted Wren with all the malevolence of inefficiency. The attacks that were made on his character have been alluded to in the Introduction *; and they succeeded, to a certain extent, in delaying the works at the cathedral, and thwarting the architect. The manner in which this great and disinterested man was treated by a faction can be best gathered from the following petition, which he found it necessary to present. The first was to Queen Anne, and is in the following terms:

"To the Queen's most excellent Majesty.

"The most humble petition of Sir Christopher Wren,

"Sheweth,

"That there being a clause in an act of parliament which suspends a moiety of your petitioner's salary at St. Paul's, till the building be finished, and being obstructed in his measures for completing the same, by the arbitrary proceedings of some of the commissioners for that fabric,—

"Your petitioner most humbly beseeches your majesty graciously to interpose your royal authority so as that he may be suffered to finish the said building, in such manner and after such

one years' purchase, and gave leave to remove all their wainscot, reserving the materials of the fabric only. This was happily finished, without a judicatory or jury; although, in our present case, we may find it perhaps sometimes necessary to have recourse to parliament."—*Parentalia.*

* See page xxx.

designs as shall be approved by your majesty, or such persons as your majesty shall think fit to appoint for that purpose.

" And your petitioner will ever pray, &c.

" CHRISTOPHER WREN."

" February 3, 1710."

This petition was handed over to the commissioners, by the lord chamberlain, on the 30th April following, who replied in a series of excuses *. He then addressed the Archbishop of Canterbury in a strongly-worded petition, and appealed to the public in a pamphlet †, from which the petition and complaints are extracted.

* See Appendix, No. 17.

† Called " An Answer to a Pamphlet entitled Frauds and Abuses at St. Paul's," 8vo. Lond. 1713; wherein is the following petition:

" To his Grace the Lord Archbishop of Canterbury, and the Bishop of London.

" MAY IT PLEASE YOUR LORDSHIPS,

" That I humbly lay before you the state of the suspension of a moiety of my salary (as surveyor of St. Paul's Cathedral) by a clause in an act of parliament; which is thus:

" The design of the parliament in granting the coal duty for the said cathedral at that time being to have the building completed with all possible speed, they did, to encourage and oblige the surveyor's diligence in carrying on the work, suspend half of his allowance, till all should be done. Whereby I humbly conceive it may justly from thence be implied that they thought the building, and every thing belonging to it, was wholly under my management and direction, and that it was in my power to hasten or protract it. How far it has been so your lordships know; as also how

The cabal among the commissioners continuing still to annoy the architect, he made further complaint against them in a peti-

far I have been limited and restrained. However, it has pleased God so to bless my sincere endeavours, as that I have brought the building to a conclusion, so far as is in my power; and I think nothing can be said now to remain unperfected, but the iron fence round the church, and painting the cupola, the directing of which is taken out of my hands, and therefore I hope that I am neither answerable for them, nor that the said suspending clause can, or ought to, affect me any further on that account. As for painting the cupola, your lordships know it has been long under consideration; that I have no power left me concerning it; and that it is not resolved in what manner to do it, or whether at all. And as for the iron fence, it is so remarkable and fresh in memory, by whose influence and importunity it was wrested from me, and the doing it carried in a way that I may venture to say will ever be condemned. I have just this to observe further, that your lordships had no hand in it; and consequently ought not to share in the blame that may attend it.

" This, then, being the case, and nothing left that I think can keep the said clause of suspension any longer in force against me,

" I most humbly pray your lordships to grant your warrant for paying me what is due to me on that article, which was £1,300 last Michaelmas. And if for the future my advice and assistance be required in any thing about the said cathedral, I will be ready to give the same, and to leave the consideration of it to your lordships: being, with all submission,

" My lords,

" Your lordships' most obedient,

" and most faithful humble servant

" CHRISTOPHER WREN."

" January 25, 1710-11."

Which representation being referred by their lordships to the attorney-general, he gave his opinion upon it as follows: viz.

" On the facts stated in the petition, I think Sir Christopher Wren's case is very hard; the stopping half of his salary being intended to en-

tion to the queen, wherein he specified some of their arbitrary and malicious deeds, and points them out by name. The follow-

courage him to use his utmost diligence to finish the cathedral; which, for all appears, he hath done, and the not finishing it is not his, but others' faults. However, if the church be not finished, and what remains unfinished will want surveying and direction, as it seems to do from Sir Christopher's offer of his service in the conclusion of his petition, and the act being positive that the payment of one half of his stipend is to be deferred till six months after the finishing the cathedral church, I do not see that the commissioners can order payment thereof, till the cathedral church be finished; but, in justice, are to determine the manner of doing it, that the charge of a surveyor may be saved, and Sir Christopher may have his full salary.

" EDWARD NORTHEY."

" January 30, 1710-11."

Sir Christopher observes further upon this opinion, which not admitting it to be in their lordships' power to grant him the relief he desired, (though he must acknowledge their readiness to comply with him, if it had) and the architectural part of the building being over, he had recourse to the House of Commons, and presented a petition in the following terms: viz.

" To the Honourable the Commons of Great Britain in Parliament assembled.

" The humble petition of Sir Christopher Wren,

" Sheweth,

" That in the act of parliament of 8 and 9 of the late King William, for completing the building and adorning the cathedral church of St. Paul, London, there being a clause for suspending a moiety of the surveyor's salary till the said church should be finished, thereby the better to encourage him to finish the same with the utmost diligence and expedition, your petitioner humbly conceives, that the parliament, by putting the surveyor under such obligation, did apprehend that the building, and every

ing is the petition taken from their own pamphlet entitled "Frauds and Abuses at St. Paul's."

"To the queen's most excellent majesty.

"The most humble representation of Sir Christopher Wren,

"Sheweth,

"That your majesty having been graciously pleased (on my humble application) to give some large blocks of marble for your majesty's statue, with figures and ornaments, to be set up before

thing belonging to it, was wholly under his management and direction, and that it was in his power to hasten or protract it.

"That your petitioner having been surveyor of the said cathedral church from the beginning of its rebuilding, and the same (as may be seen) being now completed, excepting the iron fence, some ornaments undetermined, and some other matters which some of the commissioners for the fabric have so interposed in, as that his measures for completing the same are wholly over-ruled and frustrated; and thereby he is under this hardship as neither to be paid the salary that is due to him, nor suffered to perfect the work that is made the condition of it.

"Your petitioner, therefore, most humbly prays your honours to grant him such relief in the premises as to your great wisdom and justice shall seem meet.

"And your petitioner will ever pray, &c.

"CHRISTOPHER WREN."

"Whereupon that honourable and august assembly," says Sir Christopher, "so considered his case, and were so well satisfied with the justice and the reasonableness of it, as to declare the church to be finished, so far as was required to be done and performed by him as surveyor-general: and it was accordingly enacted, that the suspended salary should be paid him on or before December 25, 1711. Which he has the truest sense of, and has not, he hopes, been wanting in all due acknowledgments and re-

the west front of St. Paul's, I employed a very able statuary therein, and have no reason to doubt but that all will be very well performed by him.

"That a pedestal for the said statue and figures being prepared after my design, I did intend to have an iron fence round the same, to be done by Mr. Tijoue in the best manner, and suitable to the other performances. But Mr. Dean of St. Paul's, Dr. Hare, Dr. Harwood, and two or three more commissioners, the Dean of Sarum also joins with them, having on Thursday last directed that it be done by such model only as they shall approve (and it is well known what sort of persons and way they are inclined to), I thought it my duty to lay this their treatment before your majesty, that they will not suffer your own surveyor to direct the fencing, &c. that your majesty so largely contributed to; and it is most humbly submitted to your majesty's judgment and consideration, by

"CHRISTOPHER WREN."

"February 13, 710-11."

In 1712, Dr. Woodward, the learned antiquary and natural philosopher, whose antique * shield was so unmercifully scowered

turns for it. Neither is it possible that he, or his posterity, should ever forget so signal and distinguishing a favour; while he can remember the unjust and vile treatment he had from some in the late commission for St. Paul's; which was such as gave him reason enough to think that they intended him none of the suspended salary, if it had been left in their power to defeat him of it."

* This curious and celebrated antique was a small round iron shield, of about fourteen inches diameter; on the concave side of which were

by the band of satiric wits who clubbed the history of Martinus Scriblerus, published his account of some Roman urns, and other antiquities recently discovered near Bishopsgate, with brief reflections upon the ancient and present state of London, in the form of a letter to Sir Christopher Wren *, who, notwithstanding it was at his desire that the letter was printed, did not agree † with the doctor, that a temple of Diana stood on the site of St. Paul's, although he had prepared a dissertation on her image, dug up near that cathedral ‡.

Sir Richard Steele, in the 552nd number of the Spectator, dated December 3, 1712, printed a series of proposals, which he conceived worthy of public attention, and stated that among other omissions of which he had been guilty, with relation to men of industry of a superior order, he was compelled to acknowledge

represented, according to the doctor's opinion, in the upper part, the ruins of Rome, when burnt by the Gauls, and below, the weighing out of the gold to purchase their retreat, together with the arrival of Canullus, and the flight of the Gauls; and in the centre was wrought a grotesque mask, with horns very large and prominent. When it came into the possession of Dr. Woodward, he had several casts made from it, and also, in 1705, had it engraved in Amsterdam, by Van Gunst, on a copper plate, the size of the original, copies of which he transmitted to many learned foreigners for their opinion.—*Ward's Lives of the Gresham Professors.*—See also note to page 202 of this work, page 290.

* Ibid.

† See Appendix, No. 20, concerning Westminster Abbey, near the beginning; and also, Appendix, No. 14, p. 72, line 4.

‡ This dissertation, which has never been printed, is in the possession of Mr. Alexander Chalmers, the author of the General Biographical Dictionary, who, it is hoped. will publish it.

his silence towards a proposal frequently made to him by Mr. Renatus Harris *, organ-builder. The ambition of this eminent artificer was to be permitted to erect an organ in St. Paul's Cathedral, over the great west door, at the entrance into the body of the church, which, in art and magnificence, was to have transcended any work of that kind ever before invented. The proposal set forth in perspicuous language the honour and advantage such a performance would be to the British name, as well as that it would apply the power of sounds in a manner more amazingly forcible than, perhaps, has yet been known, and Sir Richard adds to an end, he was sure much more worthy. " Had the vast sums," he continues, " which have been laid out upon operas, without skill or conduct, and to no other purpose but to suspend or vitiate our understandings, been disposed this way, we should now, perhaps, have an engine so formed as to strike the minds of half a people at once, in a place of worship, with a forgetfulness of present care and calamity, and a hope of endless rapture, joy, and hallelujah hereafter." This fine proposal, like many others, was however not executed.

This year our architect's eldest son, Christopher, was elected, and took his seat in parliament, for the borough of Windsor, a seat previously occupied by his father †.

In 1713, Sir Christopher published his reply to the anonymous attacks made upon him in the pamphlet called " Frauds and Abuses at St. Paul's;" both of which have contributed to

* See Sir John Hawkins's History of Music, Vol. IV. p. 353, and 354.

† Parentalia, Introd. p. ix.

these memoirs. He also presented to his late constituents of Windsor a statue of Prince George of Denmark, which is placed in a niche on the south side of the Town-hall, Windsor, corresponding to that of his royal consort and sovereign Queen Anne, which is on the north. The prince is represented in a Roman military habit, and on the pedestal is the following inscription:

Serenissimo Principi
GEORGII Principi DANIÆ,
Heroi omni sæculo venerando,
Christophorus Wren, Arm.
Posuit, MDCCXIII.

In this year he also surveyed Westminster Abbey, for his friend Bishop Atterbury, the Dean of Westminster; and wrote an excellent historical and scientific report on its structure and defects, communicating his opinions on the best modes of repairing it, and other observations connected with it*.

On July 31, 1714, Sir Christopher lost by death the last of his royal English patrons, Queen Anne; when, in pursuance to the act of succession, her majesty was succeeded by the Elector of Hanover, as George the First. The house of commons, as usual, became extinct; and at the meeting of the new parliament

* Appendix, No. 19. This report was written at the desire of Dr. Atterbury, Bishop of Rochester, Dean of Westminster, and principal commissioner for the repairs of Westminster Abbey. The heads of it are in the Journal of the Antiquarian Society: but the original was in possession of his son Christopher, and it is printed in Parentalia, whence it is copied into the Appendix of this work.

his son Christopher was a second time returned member for Windsor *. The office of commissioners for rebuilding St. Paul's also expired; and, in May 1715, a new commission was issued, dated 1 Geor. I. " for the carrying on, finishing, and adorning of this cathedral †." In this commission the name of Sir Isaac Newton appears for the first time.

The works at St. Paul's continued, and the petty opposition to its architect increased. His age (83), rather than his infirmities, gave them pretences to annoy him; and the king's partiality to his German subjects, their friends and connexions, to whom Wren would not condescend to stoop, removed the personal influence of the sovereign, no longer the protector of British interests when German influence prevailed, from our patriarchal architect ‡.

These cabals against the architect continued to increase, fostered, no doubt, by Benson and his German friends about the king, who opened a scene of bribery and corruption, in the disposal of places, scarcely equalled § in any period of our history.

* Parentalia, Introd. p. ix. † Ellis's Dugdale, p. 174.

‡ In a scarce work, called Memoirs of John Ker, of Kersland, in North Britain, Esq. published by himself, and dedicated to Sir Robert Walpole, he asserts, that " it is very well known that Mr. Benson was a favourite of the Germans; and I believe nobody had more occasion to be convinced of the power of this influence than myself: so great, indeed, that Sir Christopher Wren, the famous architect, who contrived the stately edifice of St. Paul's church, and finished it in his own time, was turned out of his employment of being master of the king's works, which he had possessed with great reputation ever since the Restoration, to make way for this favourite of foreigners.—*Ker's Memoirs*, p. 110. 8vo. London, 1726.

§ The same Mr. Ker, quoted in the last note, among other examples of

To instance one: Sir Christopher originally designed St. Paul's without the balustrade which crowns the upper cornices; but the commissioners determining to have one, sent him a copy of their resolution to that effect, to which he returned the following answer:—

"I have considered the resolution of the honourable the commissioners for adorning St. Paul's cathedral, dated October 15, 1717, and brought to me on the 21st, importing, 'that a balustrade of stone be set up on the top of the church, unless Sir Christopher Wren do, in writing under his hand, set forth, that it is contrary to the principles of architecture, and give his opinion in a fortnight's time; and if he doth not, then the resolution of a balustrade is to be proceeded with.'

"In observance of this resolution, I take leave, first, to declare I never designed a balustrade. Persons of little skill in architecture did expect, I believe, to see something they had been used to in Gothic structures; and *ladies think nothing well without an edging*. I should gladly have complied with the vulgar taste, but I suspended for the reasons following:

the corruption of the court of George I. says, "Robert Walpole, Esq. had got a patent for the reversion of a place in the customs for his son, which Mr. B., before-mentioned, being informed of, he told Mr. W. that he was in terms of disposing of it to another for £1500, and would let Mr. W. have it for the same sum, if he pleased; and upon that gentleman's contemptibly rejecting this proposal, he resented it so, that Mr. W. was turned out of his own public posts, and of all favour at court, even at a time when he was about to execute a generous public good,—to lessen the debt of the nation." —*Ker's Memoirs*, p. 109.

" A balustrade is supposed a sort of plinth over the upper colonnade, which may be divided into balusters over open parts or voids, but kept solid over solid parts, such as pilasters; for a continued range of balusters cannot be proposed to stand alone against high winds: they would be liable to be tipped down in a row if there were not solid parts at due distances intermixt, which solid parts are in the form of pedestals, and may be in length as long as the frieze below, where pilasters are double, as in our case; for double pilasters may have one united pedestal, as they have one entablature, and one frieze extended over both. But now in the inward angles, where the pilasters cannot be doubled, as before they were, the two voids or more open parts would meet in the angle with one small pilaster between, and create a very disagreeable mixture. I am farther to observe, that there is already over the entablature a proper plinth, which regularly terminates the building; and, as no provision was originally made in my plan for a balustrade, the setting up one in such a confused manner over the plinth must apparently break into the harmony of the whole machine, and, in this particular case, be contrary to the principles of architecture.

" The like objections arise as to some other ornaments; suppose of vases, for they will be double upon the solids; but in the inward angles there will be scarce room for one, though each of them be about 2 feet 9 inches at bottom, and 9 feet high; yet these will appear contemptible below, and bigger we cannot make them, unless we fall into the crime of false bearing, which artisans of the lowest rank will have sense enough to condemn.

" My opinion, therefore, is, to have statues erected on the four pediments only, which will be a most proper, noble, and sufficient ornament to the whole fabric, and was never omitted in the best ancient Greek and Roman architecture; the principles of which, throughout all my schemes of this colossal structure, I have religiously endeavoured to follow; and, if I glory, it is in the singular mercy of God, who has enabled me to begin and finish my great work so conformable to the ancient model.

" The pedestals for the statues I have already laid in the building, which now stand naked for want of their *acroteria*.

" CHRISTOPHER WREN *."

" October 28, 1717."

The following year witnessed the disgraceful fall of Sir Christopher Wren, in the 86th year of his age, and the 49th of his office as surveyor-general of the royal buildings; his mental faculties unimpaired, and his bodily health equal to the finishing, as the head of his office, the works he had so ably began. He could not stand against the German influence of his competitor Benson, and was compelled to yield to the cabal, who prevailed upon the king to supersede † the patent of the man, " the length

* From some family papers belonging to the late Mr. Hurst.

† " Ap^{l}. 26, 1718. Exauctoratus est: An^{o}. æt. *Octogesimo sexto*, et præfecturæ quæ operum regiorum *quadragesimo nono*. Ὅτι ανές-η Βασιλεὺς ἱερος ὃς (A A. c. 7.) ϐκ ἤδει τον Ἰωσηφ· καὶ οὐδέν τούτων τῳ (c. 18.) Γαλλιωνι ἔμελεν. ✠"— WREN *MS*. In reflecting upon the political influence that procured the expulsion of Wren for the elevation of Benson; Seward, in his very entertaining and interesting anecdotes, says, on quoting this transaction, that

of whose life enriched the reign of several princes, and disgraced the last of them *."

Benson was now in possession † of the high office which Wren had held, with unparalleled honour and abilities, for nearly half a century. But what a contrast did these disgraceful trans-

" none could credit it but those who know how the dæmon of politics, like that of fate, confounds all distinctions; *how it elevates blockheads, how it depresses men of talents;* how it tears from the mouth of genius, exhausted with toil for the public good, and bending under a load of helpless age, for which it has made no provision, that bread which it bestows upon the idle and the selfish; upon those whose life and death, as the acute Roman historian (Sallust) says, are nearly the same."

* Walpole.

† He did not, however, keep possession of this situation long; for being employed to survey the house of lords, he presented a report in 1719, that that building, and the painted chamber adjoining, were in immediate danger of falling. On this the lords met in a committee to appoint some other place for their meeting, while the house should be taken down and rebuilt; when it was suggested, that it would be expedient to take the opinion of some other persons; who, after a proper survey, reported that the buildings were in very good condition. The peers, justly irritated at Benson's ignorance and incapacity, or cupidity, addressed the king to remove and prosecute him *; and upon his majesty's most gracious answer to this complaint, communicated by the Earl of Sunderland, he not only ordered Benson's removal from his office, but that he should be publicly prosecuted according to law. His influence was however such, that, instead of prosecution, he was presented with the wharf at Whitehall, worth above £1500 per annum, for thirty years †; and farther consoled with the assignment of a considerable debt due to the crown in Ireland, and by the reversion of one of the two offices of auditor of the imprests, which he enjoyed after the death of Mr. Harley ‡.

* Ker's Memoirs, p. 110. † Ibid. p. 111. ‡ Chalmers's Biog. Dictionary.

actions present! Benson held the situation scarcely a twelve-month, with unexampled incapacity, and was disgraced by an ignominious expulsion from his office to avoid a prosecution, and an immortality in the Dunciad*; while Wren retired to a peaceful retirement at his house at Hampton Court, full of years and honours, saying, "Nunc me jabet fortuna expeditiùs philosophari †." In this philosophical retirement he passed the

* In the first edition of the Dunciad this architectural empiric is thus celebrated:—

"Beneath his reign shall Eusden wear the bays,
Cibber preside Lord Chancellor of plays,
Benson sole judge of architecture sit,
And namby-pamby be preferr'd for wit!"

In the subsequent editions the poet altered these lines to—

"See, see, our own true Phœbus wears the bays!
Our Midas sits Lord Chancellor of plays!
On poets' tombs see Benson's titles writ!
Lo! Ambrose Phillips is preferr'd for wit!"

And in a note he adds, "In favour of this man, the famous Sir Christopher Wren, who had been architect to the crown for above fifty ‡ years, who built most of the churches in London, laid the first stone of St. Paul's, and lived to finish it, had been displaced from his employment at the age of near ninety years."—*Dunciad*, Book III. v. 325 and note.

But of Wren our great poet says:—

"See under Ripley rise a new Whitehall,
While Jones' and Boyle's united labours fall;
While Wren with sorrow to the grave descends,
Gay dies unpension'd with a hundred friends."

† Parentalia.

‡ Forty-nine was the period; see this work, p. 242, note, and 269; he being appointed on the death of Sir John Denham, a poet and critic as well as Benson, in 1669, and superseded in 1718.

greater part of the remaining five years of his life, occasionally coming to London to inspect the progress of the repairs at Westminster Abbey, visiting his great work St. Paul's *, and indulging, after such an active life, in contemplation and studies †. In addition to the consoling study of the holy scriptures, which had been the guide of his whole life, and with which he was well acquainted ‡, he employed this leisure of his age in those philosophical studies to which he conceived it was the intention of Providence that he should apply himself more closely. Among these studies, he overlooked part of his thoughts for the discovery of the longitude at sea, a review of some of his former tracts in astronomy and mathematics, and other meditations and researches; whence it appeared, that though time had enfeebled his limbs, which was his chief ailment, yet it had but little influence on the

* Horace Walpole says, the beginning and completion of St. Paul's by Wren are "a fabric and an event which one cannot wonder left such an impression of content on the mind of the good old man; that being carried to see it once a year, it seemed to recal a memory that was almost deadened to every other use."

† Upon this occasion the author of Parentalia quotes a manuscript of Sir Christopher's friend Bishop Sprat, to the following effect:—

> "Heroic souls a nobler lustre find,
> E'en from those griefs which break a vulgar mind:
> That frost which cracks the brittle common glass,
> Makes crystal into stronger brightness pass."

‡ The Greek quotation in the note of page 510, which closes the Latin memoranda of his life and acts, is in Sir Christopher's handwriting, and shows the strength of his memory, and his ready acquaintance with the Greek testament.

vigour of his mind, which continued, with a vivacity rarely found at that age, till within a few days of his death *.

Sir Christopher notwithstanding his great age, outlived but one of his buildings, which would be no phenomenon in the history of some of his successors. His Custom-house, which he built in 1668 †, was consumed by fire in the course of this year.

In the year 1719, the lofty picturesque tower and steeple of St. Clement Danes, in the Strand, designed by Gibbs, was added to the body, which Sir Christopher built in 1682 ‡. Among his illustrious cotemporaries, his eminent and learned friend Flamsteed died on the last day of December this year, at his observatory at Greenwich: as did the elegant-minded Addison, on June 17, at Holland House.

The unparalleled neglect and ingratitude with which our illustrious architect was used had at least one eminent person to commiserate, in Sir Richard Steele; who, in his Tatler §, wrote an admirable character of him in the appropriate apologue of Nestor, elucidating, that though modesty is to the other virtues in a man, what shade in a picture is to the parts of the thing represented, making all the other beauties conspicuous, which would otherwise be but a wild heap of colours, it should however be justly applied; for if there be too much, it hides our good qualities, instead of showing them to advantage ‖. In a note to this paper, the writer

* Parentalia, p. 346. † See page 244 of this work.

‡ Ibid. p. 333. § No. 52.

‖ This apologue is as follows: "Nestor in Athens was an unhappy instance of this truth; for he was not only in his profession the greatest man of that age, but had given more proofs of it than any other man ever did;

declares that " any attempt to declare his extensive merit, to enumerate his manifold inventions, or even to mention his literary

yet, for want of that natural freedom and audacity which is necessary in commerce with men, his personal MODESTY overthrew all his public actions. NESTOR was in those days a skilful architect, and in a manner the inventor of the use of mechanic powers, which he brought to so great perfection, that he knew to an atom what foundation would bear such a superstructure: and they record of him, that he was so prodigiously exact, that, for the experiment's sake, he built an edifice of great seeming strength; but contrived so as to bear only its own weight, and not to admit the addition of the least particle. This building was beheld with much admiration by all the *virtuosi* of that time; but fell down with no other pressure but the settling of a Wren *, upon the top of it. Yet NESTOR's modesty was such, that his art and skill were soon disregarded, for want of that manner with which men of the world support and assert the merit of their own performances. Soon after this instance of his art, *Athens* was, by the treachery of its enemies †, burned to the ground. This gave NESTOR the greatest

* This passage, says the annotator, alludes to an opposition which was made to a digest of designs for the reparation of St. Paul's, laid before the king and the commissioners in the beginning of 1666, which, the author insinuates, was rather an opposition to Sir Christopher Wren than to his plan; it continued, however, till within a few days of the fire, on September 2, in that year, (see page 188 of this work) which put the *reparation* of that cathedral out of the question. There was also another model of St. Paul's, to which Sir Christopher, certainly the best judge, and far from mercenary, gave the preference, and which he would have executed with more cheerfulness and satisfaction, had he not been overruled by those whom it was his duty to obey. The subject being now before us, he was also thwarted about his beautiful plan for the rebuilding the city after the fire, in which the deformity and inconveniences of the former city were remedied, as may be seen in the engraved plan accompanying this work; but the execution of that noble design was unhappily prevented by the disputes which arose about private property, and the haste of rebuilding.

† The burning of Lyons in Gaul, as related by Seneca, Ep. 92, is the event in history that many have thought to come nearest to the fatal fire of London; of which Steele does not state, with strict precision, the extent, or the origin. Destructive as it was, says the annotator upon the apologue, it did not destroy the whole city; nor is it altogether certain that it was kindled *by the treachery of its enemies:* nor is there any such assertion in the original inscription written for it

productions and architectural works, in a note on a paper of half a sheet, to say nothing of the absurdity, would be an indignity to one of the most accomplished and illustrious characters in history."

In the year 1720, among other contrivances to annoy Sir Christopher in his declining age, a groundless rumour was raised, that the Sheldonian theatre at Oxford was in a dangerous state. To remove this false impression, no time was lost in obtaining the

occasion that ever builder had to render his name immortal, and his person venerable: for all the new city rose according to his disposition, *and all the monuments of the glories and distresses of that people were erected by that sole artist: nay, all their temples, as well as houses, were the effects of his study and labour;* insomuch that it was said by an old sage, 'Sure NESTOR will now be famous, for the habitation of Gods, as well as men, are built by his contrivance.' But this bashful quality still put a damp upon his great knowledge, which has as fatal an effect upon men's reputations as poverty, for it was said 'the poor man saved the city, and the poor man's labour was forgot*;' so here we find, the modest man built the city, and the modest man's skill was unknown. But surely posterity are obliged to allow him that praise after his death, which he so industriously declined while he was living. Thus, we see, every man is the maker of his own fortune; and what is very odd to consider, he must in some measure be the trumpeter of his own fame: not that men are to be tolerated who directly praise themselves; but they are to be endued with a sort of defensive eloquence, by which they shall be always capable of expressing the rules and arts whereby they govern themselves."—*Tatler*, No. 52.

by Sir Christopher, as may be seen in page 293 of this work. In the present inscription, cut, effaced and recut, it is roundly charged on the malice of the papists; the *pro* and *con* of the argument may be found in the first volume of Bishop Burnet's History of his own Times.

* Eccles. chap. ix. v. 15.

opinions of able and efficient persons, who, by command of the vice-chancellor, surveyed and made the following report upon it:

"We, William Townesend, of Oxford, mason, and Jeremiah Franklin, and Thomas Speakman, of the same, carpenters, do hereby certify, that by the command of the Rev. Robert Shippen, Doctor in Divinity, Vice-Chancellor of the University of Oxford, we did, on the day of the date hereof, survey, and strictly examine the whole fabric of the theatre in the said university, and do find, that all the same is in perfect repair, and good order; all the walls thereof no where appearing in the least defective; and the roof, which has been formerly swayed or sunk in the middle about eleven inches, occasioned by the shrinking of some of the timbers, and great weight of books formerly laid upon it, appearing to us to be in as good a condition as it was above twenty years since, when the like examination was made. And we do further certify, that the whole fabric of the said theatre is, in our opinion, like to remain and continue in such good repair and condition for one hundred or two hundred years yet to come. In testimony whereof, we have hereunto put our hands, the eighth day of March, Anno Domini, 1720.

"William Townesend,
"Jeremiah Franklin,
"Thomas Speakman *."

So vanished into vapour this and other attacks on the reputation of Wren, which was too firmly rooted to be demolished by such vain assaults, and is still growing and enlarging in public estimation.

* Parentalia, p. 337.

The accompanying plate, engraved after an accurately reduced drawing from the Parentalia, represents the construction of the ceiling of this fine structure, which I inspected, while under repair, about eighteen years since. As one proof of its excellence, I have only to say that the gilded ropes which passed under the painted ceiling were formerly conceived to be of iron, and assistants to its support; they were, however, only carved oak, affixed to the ceiling to represent, in relief, the cords on which the common curtain is supported.

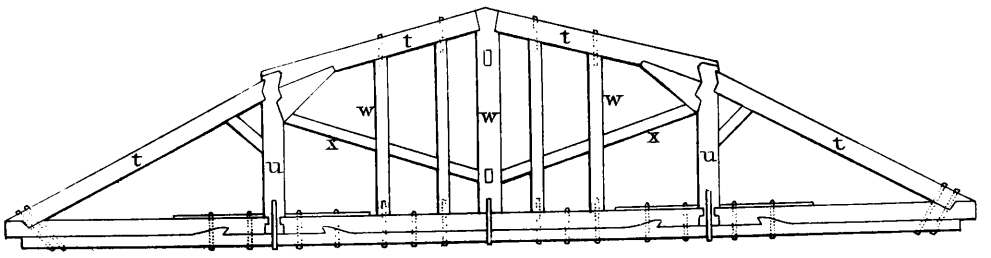
As an illustration, I have appended an account of it from Dr. Plot's Natural History of Oxon*; which, from its technicality, I have little doubt was obtained from Sir Christopher himself:

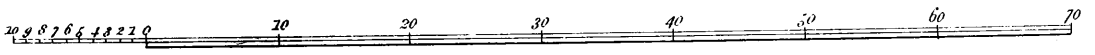
Fig. 1†.—" Wherein *a a a* and *b b b* show the walls of the theatre that support this frame of timber, and the places of the pilasters of the rail and baluster round it; *c c c* and *d d d* the leads and pipes let down into the wall for conveyance of water; *e e e* and *f f f* the wall plate, or lintol, and places of its joints; *g g g* the girders of the semi-circle, each supported by a king-post or crown-post, cut off at *h h h*, and secured into the binding-beam *i i i*, which is somewhat different from the rest of the binding-beams *k k k*, *l l l*, *m m m*, *n n n*, having several prick posts let into it at *o o o o o*, beside the king-posts that support this and the rest *p p p p p*, &c.

" The letters *q q q q* show the purlines between the binding-beams, not set right against one another, because of room to turn

* See chap. ix. † See plate annexed.

Fig. 2.





Scale of Feet.

Fig. 3.

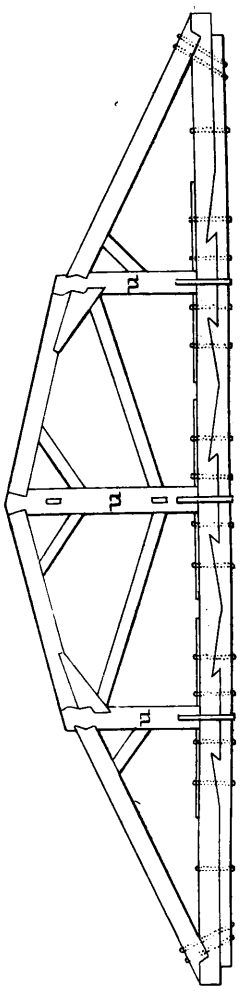


Fig. 1.

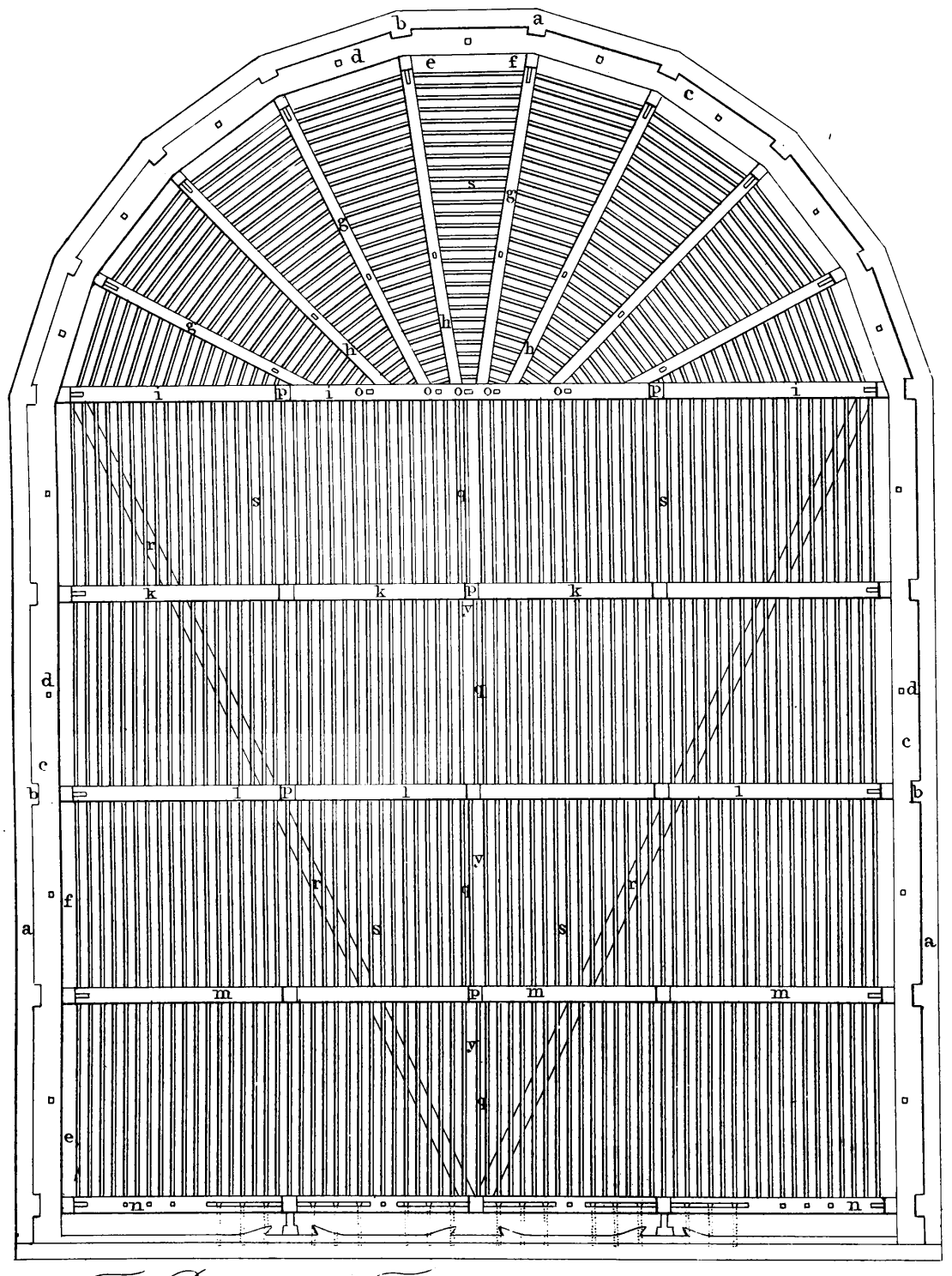
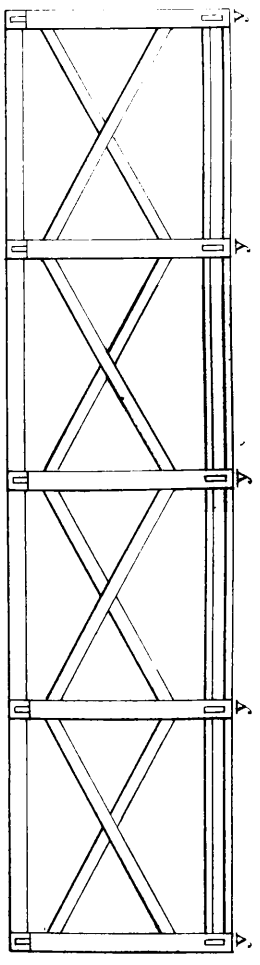


Fig. 4.



The Roof of the Theatre at Oxford.

James Elmes, M.R.I.A. del. Sir C. Wren Arch.t W. Lowry, sculp.

Published by Priestley & Weale Jan.y 1828.

the screws whereby they are fastened, and *r r r r* two dragon (perhaps rather trigon) beams or braces lying under the joints *s s s s s s*, &c.

"The true lengths and distances whereof, and of all other pieces of timber and plans whatever, are all shown by the scale, and so are the lengths and distances of the several pieces of timber set over this flat-floor, such as the principal rafters *t t t t*, the crown-posts or king-pieces *u u u u*, the prick posts *w w w*, braces or punchions *x x x*; by all which together, the binding beams, girders, joists, &c. are all held up as it were by an arch above, as in Fig. 2. which is all the band of timber that stands next the semi-circle, having prick-posts, and different one half of one of them, Fig. 3.—Which is all I think need be said concerning this fine piece of timber-work, only that there are cross braces between the middle crown-posts, as they stand in a line from the front to the semi-circle, as is represented, Fig. 4. marked with the letters, *y y y y y y*, both here, and as they stand, Fig. 1.—And that it was contrived by our English Vitruvius, the Right Worshipful and Learned Sir Christopher Wren, and erected at the sole charge of his Grace Gilbert Sheldon, Archbishop of Canterbury, and Chancellor of the University; who, besides the expense of the structure, gave £2000 to purchase lands for the perpetual repair of it, which is like to stand a most magnificent and lasting monument of his grace's munificence and favour of good learning to all posterity.

"The painting of the ceiling of the theatre is worth examination; for in imitation of the theatres of the ancient Greeks and Romans, which were too large to be covered with lead or tile,

this, by the painting of the flat-roof within, is represented open: and, as they stretched a cordage from pilaster to pilaster, upon which they strained a covering of cloth, to protect the people from the injuries of the weather, so here is a cord moulding gilded, that reaches cross and cross the house both in length and breadth, but now furled up by the genii round about the house toward the walls, which discovereth the open air, and maketh way for the descent of the arts and sciences, that are congregated in a circle of clouds, &c."

In addition to the public works of Sir Christopher Wren, and to which I have not been able to affix dates, are two splendid town mansions at Chichester; one near the east gate on the north side of East-street, and the other on the west side of South-street. They are both well built of red brick, with stone architraves round the windows, and finished with a Corinthian modillion cornice, much resembling the one near the south-west angle in St. Paul's church-yard, also by him. He also took down and rebuilt the upper part of the spire of the cathedral, and fixed therein a pendulum stage to counteract the effects of the south and south-westerly gales of wind, which act with considerable power against it, and had forced it from its perpendicularity. The section on the plate, which has also the elevation of the steeple of St. Dunstan's in the East, measured and delineated by the author of this work, under whose direction it was taken down and reinstated in 1813 and 14, shows the situation and dimensions of this curious and useful piece of machinery. To the finial is fastened a strong metal ring, and to that is suspended a large piece of yellow fir-

timber eighty feet long, and thirteen inches square; the masonry at the apex of the spire, being from nine inches to six inches thick, diminishing as it rises. The pendulum is loaded with iron, adding all its weight to the finial, and has two stout solid oak floors, the lower one smaller by about three, and the upper one by about two and a quarter inches, than the octagonal masonry which surmounts it. The effect in a storm is surprising and satisfactory. While the wind blows high against the vane and spire, the pendulum floor touches on the lee side, and its aperture is double on the windward: at the cessation, it oscillates slightly, and terminates in a perpendicular. The rest of the spire is quite clear of scaffolding. This contrivance is doubtless one of the most ingenious and appropriate of its great inventor's applications.

Of his private houses (and I by no means purpose this as a complete list) are Marlborough House, Pall Mall, now inhabited by his Royal Highness Prince Leopold of Saxe Cobourg, which was built by Sir Christopher for Anne, Duchess of Marlborough, after her quarrel with Vanbrugh *. Dwelling houses, bearing so much the fashion of the day, are less criterions of an architect's talents than his public works; yet Marlborough House possesses great claims to notice as a town mansion of much comfort and good taste. The large mansion on the south side of Queen square, Bloomsbury, now divided, is also by Wren, who built it for Lord Newcastle: the plans are among his drawings at All Souls College, Oxford. He also designed the Doric court, the council chamber, the audience room, drawing room, &c. of St. James's

* See D'Israeli's Curiosities of Literature.

palace, which are in the same collection; as also a town-house by the Thames for Lord Sunderland; another for Lord Allaston; the large house before mentioned in St. Paul's church-yard; the fine mansion in Great Russell-street, Bloomsbury, now divided into four; occupied, in its pristine state, by his son*; more recently, by the celebrated surgeon and anatomist, Mr. Shelden; and in my memory, by the late Mr. Alderman Combe in the larger portion, an eminent artist in the smaller. Sir Christopher's noble front, with its majestic cantaliver cornice, have now been taken down by a speculative builder, and common act of parliament fronts "run up," as the modern phrase goes for such works. Besides these, there are others in the same collection unnamed, and some enumerated; as Madam Cooper's lodging, Clefland-court, St. James's; the Earl of Oxford's house, at St. James's; the Duchess of Buckingham's, in St. James's Park; and various other plans, that had been left after the ransacking, before Judge Blackstone bought and presented them to the college.

The life of this great and useful man began now to draw near a close; but accident, and, perhaps, disappointment at the ungenerous conduct of the king to him at so advanced an age, shortened that life which temperance and activity had so prolonged beyond the usual term of man's life. Till the time of his removal from the office of surveyor-general, he had principally resided at a house appropriated to his office in Scotland-yard, Whitehall; but afterwards he dwelt occasionally in St. James's-

* Miss Wren, of Ardbraccan, has letters of this gentleman to her father, Stephen Wren, dated from this house.

street, and remained surveyor of the Abbey till the time of his death. He also rented a house from the crown at Hampton-Court, to which he made great improvements *. Here he would often retire from the hurry and fatigue of business, and passed the greater portion of the last five years of his life in this calm recess, in those contemplations and studies which I have before enumerated.

In coming from Hampton-Court to London he contracted a cold, which, perhaps, accelerated his dissolution: but he died as he had lived, with the greatest calmness and serenity. The good old man, in his latter days, had accustomed himself to take a nap after his dinner; and on the 25th of February, 1723 †, the servant, who constantly attended him, thinking he slept longer than usual, went into his apartment, and found him dead in his chair.

* From a manuscript by Stephen Wren, his grandson, in the possession of Miss Wren.

† The placid soul of WREN might, by a poetical license, be imagined to have informed the equally placid mind of REYNOLDS, who was born the year that Wren died. No two men could be found to form a more just parallel:—equally distinguished for industry, love of art, placidity, modesty, communicativeness, disinterestedness. And the idea is by no means destroyed in remembering our illustrious painter's veneration for our great English cathedral, and his voluntary offer to decorate it with his magic pencil. Farewell, ye departed twin-spirits of British greatness; ye both were at the head of your respective arts; ye both lie in honour, and in possession of the love and reverence of your countrymen, beneath the same vast dome that honours both your memories. "Goodness and ye fill up one monument."

From a mask taken * shortly after this event, which I have contemplated with calm delight, it was as placid as sleep, and resembling, as his admiring friend Steele says of Dr. South, " that of the saints, and might well be called ' falling asleep :' for the innocence of his life made him expect it as indifferently as he did his ordinary rest †."

POSTSCRIPT.

The physiognomical character of Sir Christopher Wren may be gathered from the fine print which forms the frontispiece to this work, and which I selected from several others for its characteristic and historical traits. His person is said to have been short ‡ in stature, and his state of health originally delicate; but by temperance, exercise, and skilful management, he enjoyed through life a good state of health, and his life was protracted to an unusual length. By his works is he known, not only as an architect, but as a mathematician, and as a scholar of the first

* Now at Ardbraccan-house, the palace of the venerable Dr. O'Beirne, Bishop of Meath, in the possession of Miss Wren.

† Tatler, No. 61.

‡ Seward records, in elucidation of this fact, without naming his authority, that when Charles the Second came to see the hunting-palace which Sir Christopher had built for him at Newmarket, he thought the rooms too low. The architect walked about them, and looking up, replied, " Sir, an' please your majesty, I think them high enough." When the merry monarch, stooping himself to his architect's stature, replied, waddling about, " Upon second thoughts, Sir Christopher, I think so too."

eminence. His invention was so rapid and so fertile, that nearly all his propositions were at once ripe for execution; and his discoveries were so numerous and so useful, that he will always be esteemed a benefactor to his country and to mankind. It is enough to say, that NEWTON, BOYLE, HOOKE, EVELYN, BARROW, were among his associates, and joined in his praise.

His funeral was attended by a numerous assemblage of persons of honour and distinction from his house in St. James's-street, where he died, to the cathedral, which he erected to his own and his country's honour. Here his mortal remains were deposited in the crypt, in a recess under the southernmost window of the choir, near to others of his family. This honoured spot is railed in, and the plain slab of black marble which covers his coffin is inscribed in deeply cut letters:—

✠
HERE LIETH
Sr CHRISTOPHER WREN
The Builder of This Cathedral
Church of St PAUL &c
who Dyed
in the Year of our LORD
M DCC XXIII
And of his Age XCI

On the western jamb of the window is affixed a handsome marble tablet, six feet three inches long, and three feet high, sunk into a panel with a well-sculptured border of eggs and tongues on a moulded ovolo and hollow, and inscribed as follows: but the thought of "Reader, if you seek his monument, look around

you," argues that it was intended for a situation in the church: but if cabal and intrigue prevented its proper application at the time, the justice and firmness of Robert Milne, one of his worthy successors in the care of the cathedral, has remedied it by a handsome copy of it in large gilt brass letters on a well-proportioned tablet in front of the organ, forming an attic to the elegant marble screen which supports it. The reader may now, indeed, read and cast about his eyes in amazement and delight; but the debt due from his country will never be paid till parliament vote a sum of public money to erect a statue to the man who so enriched it by his works.

The inscription, which was written by his son Christopher, is as follows:—

SUBTUS CONDITUR
HUIUS ECCLESIÆ ET VRBIS CONDITOR
CHRISTOPHORUS WREN,
QUI VIXIT ANNOS ULTRA NONAGINTA,
NON SIBI SED BONO PUBLICO.
LECTOR SI MONUMENTUM REQUIRIS
CIRCUMSPICE
Obijt XXV Feb: An°: MDCCXXIII Æt: XCI.

Near to this honoured spot lie the remains of other great and illustrious men of renown in art; such as Reynolds, Barry, Opie, and West; and as Westminster Abbey has her poets' corner, this may as appropriately be named and kept sacred to art, as our artists' corner.

To the above just and filial testimonials to our great architect's

memory, his son added, as appears in Parentalia, the following distichs:—

"Marmora parva quidem, sed non cessura, viator,
Mausola saxis pyramidumque, legis."

MARTIAL.

"Umbræ Dii tenuem dent, et sine pondere terram,
Spirantesque crocos, et in urnâ perpetuum ver."

JUVEN. Sat. VII.

Other inscriptions were proposed: one, by the author of that which was adopted, and called in Parentalia an after-thought, runs thus:

H. S. E.
CHRISTOPHORUS WREN
HUJUS ECCLESIÆ ET URBIS CONDITOR
QUI VIXIT ANNOS ULTRÀ NESTOREOS,
NON SIBI, SED PATRIÆ.
VIATOR, SI TUMULUM REQUIRIS,
DESPICE;
SI MONUMENTUM,
CIRCUMSPICE.

OBIIT 25 FEB. ANNO MDCCXXIII. ÆTAT. XCI.

The following inscription, dated March 7, 1723, is attributed by the editor of Parentalia to a St. Paul's scholar:—

Suspice et mirare.
CHRISTOPHORUS WREN EQUES AURATUS,
TOTIUS HUJUS FABRICÆ
MAGNUS ARCHITECTUS:

MOLI HUIC IMMENSÆ,
SACRÆ, EXIMIÆ,
QUAM ANIMO CONCEPERAT,
QUAM INCHOAVERAT,
QUAM PERFECERAT,
UNIUS HOMINIS OPUS,
HAUD MORTALI DATUM.
BIS
FACTUS IMMORTALIS
DE CÆLO INVIGILAT,
MENTE PERMEAT, CORPORE SUSTENTAT,
QUANTELLI CORPORI
QUANTUS ANIMUS,
QUALIS MENS!
DEPOSITUM SERVET ECCLESIÆ
MEMOR SUI!
SUBTUS JACET
FUNDATOR, CURATOR.
QUAM GRANDE OPUS!
QUAM PERENNE MONUMENTUM!

The following Latin verses from the same work are also dedicated to his memory:—

Aliter
In eundem.
[Stylo Martialis.]

Quanta quies placidi est, et quanta scientia WRENNI!
Sed cohibet vires, ingeniumque pudor.
Ante fores dubitat fortunam admittere stantem;
Seque piget curæ præmia ferre suæ.
Laudes ex meritis, magnisque laboribus ortas,
Ore verecundo noluit esse suas.

Palladiam tenui frontem redimire coronâ
Contentus, famæ nec dare vela suæ.
Sed tamen hunc nostri scit temporis esse * RABIRUM
Artis mira suæ qui monumenta videt.

In eundem, astronomum et architectum, basilicæ divi Pauli, et urbis Londini conditorem.

Astra polumque suo concepit pectore WRENNUS,
Paulinam mirâ qui struit arte domum.
Ista manus Triviæ templi revocâsset honores;
Seu mausolëi; seu Babylonis opus.
Grandior ex flammis † AUGUSTA renascitur, artem
Stantia non poterant tecta probare suam.

De Londini post incendium restaurato.

Qualiter Assyrios renovant incendia nidos ‡,
Una decem quoties sæcula vixit avis:
Taliter exuta est veterem § NOVA TROJA senectam
Et sumpsit vultus || PRINCIPIS ipsa sui.

Since more than half this work has been put to press, a question has arisen relative to the accuracy of the date of the birth of Wren, as given in my first page. Walpole says he was born at London in 1632, but his authority is scarcely worth the quoting. Parentalia, which is but one of my authorities, says ¶, "Sir Christopher Wren, the *only* son of Dr. Christopher Wren, dean of Windsor, was born at East Knoyle in Wiltshire, on the 20th day

* Rabirius, architectus eximius, tempore Imp. Domitiani.
† Vetus Londini nomen.
‡ Martial, L. V. Ep. 7.
§ Vetus Londini nomen.
|| Caroli R.
¶ Page 181.

of October, 1632." Mr. Britton observes in his address read before the Society of Architects and Antiquaries of London, that " this is inconsistent with the entry in the parish register of East Knoyle, from which we learn that Christopher, the son of the Rev. Christopher Wren, was baptized Nov. 10, 1631 *." Sir Richard Colt Hoare, in his friendly wish to communicate knowledge, informs me by letter, that the following is a correct extract from the register at East Knoyle:—

" Christopher, *second* son of Christopher, doctor in divinity, Nov. 10, 1631." These dates cannot both be correct. Stephen Wren, his grandson, says he was the *only* son, and born in Oct. 1632 †, and the Knoyle register says he was baptized in Nov. 1631, eleven months before. My reasons for inclining to the date given in Parentalia are according to the laws of evidence, the preponderancy in number of the witnesses. First we have the authority of Parentalia, which was compiled by his son and grandson; next a manuscript in the possession of Miss Wren, written by her father, Sir Christopher's grandson; and last, but not least, the Latin manuscript of Mr. Christopher Wren, his son, in the Lansdowne collection at the British Museum, so often quoted in this work, and described in the third page. In addition to the note there given at the words Octob. 20, 1632, is added the following explanations from that manuscript.

* " History of Modern Wiltshire, Hundred of Mere." By Sir R. C. Hoare, Bart. 1822, p. 187.

† Parentalia also, in p. 147, has it " Christophorus Wren, filius *unicus* Reverendi Christoph. Wren, Decanus Windesori, natus erat die VIII^{bris} 20^{o} paulò ante octavam vespertinam, anno 1632.

" Periodo Juliana 6345, A. M. 5581, quo anno et menso contigit Σωματικὴ Συζυγία ☉ et ☿ quam (ad morierum Kepleri) observavit *Gassendus Parisiis.*"

" Item die inaugurationis R. Caroli II. conjunctio erat solis et Mercurii in corde solis."

To the words " *ex schedis avitis,*" quoted also in page 3, Mr. Wren adds as a note, " In domo convocationis; id sexta-gentibus D. D. D^bus^ Owen, vice Cancellario, et Wilkins, Guardiano de Wadham, et M^ro^ Ward, Astronomiæ Professore Amicissimus."

Thus, friendly reader, have I laid before you the best account of one of the most able and eminent of our countrymen that I have been able to indite. It may be inefficient, for few could adequately describe his great and various merits. His immediate successors, or the cotemporaries of his declining years, on whom the duty more immediately devolved, neglected the solid ore of his discoveries, his inventions, and his productions: and after they have lain buried in the rubbish of obscurity for an entire century *, I have attempted to unclose the mine and exhibit its wealth.

How far I have succeeded in attracting your attention from the whirlwind of to-day towards the calm of history and the claims of neglected genius, is yet to be discovered. If it should be, that I have failed, I take leave to assert, that it is neither the fault of the subject of my history, nor a deficiency of industry in its writer; for it has been my labour of love for nearly fifteen years,

* Wren died Feb. 25, 1723, and on Feb. 25, 1823, this work is published.

although the present version was began and completed within twelve months: but, my disappointed vanity must then confess, that it was entirely owing to my incapacity for the greatness of the task I had undertaken.

"Quem si non tenuit, magnis tamen excidit ausis."

OVID.

J. E.

London,
February 25, 1823.

END OF PART II.

APPENDIX.

PART III.

APPENDIX.

No. 1.

Dedications of his newly invented Astronomical Instrument and Treatise, to his Father.—Page 17.

Reverendo Patri Domino Christophero Wren, S. T. D. et D. W. Christopherus Filius hoc suum Panorganum Astronomicum D. D. XIII. calend: Novem. An°. 1645.

Si licet, et cessent rerum (pater alme) tuarum
Pondera, devotæ respice prolis opus.
Hîc ego sidereos tentavi pingere motus,
Cœlicaque in modulos conciliare breves.
Quo (prolapsa diù) renoventur tempora gyro,
Seculaque, et menses, imparilesque dies.
Quomodo sol abeat, redeatque, et temperet annum,
Et (raptum contrà) grande perennet iter;
Cur nascens gracili, pleno orbe refulget adulta,
Cur gerat extinctas menstrua luna faces.
His ego numinibus dùm lito, atque ardua mundi
Scrutor, et arcanas conor inire vias,

Adsis, O! faveasque, pater, succurre volanti
  Suspensum implumis dirige prolis iter,
Nè malè, præcipiti, nimiùm præ viribus audax
  (Sorte sub ICAREÂ) lapsus ab axe ruam:
Te duce, fert animus, studiis sublimibus hisce
  Pasci, dùm superas detur adire domos.

Dedicatio, ad Patrem, Tractatûs De Ortu Fluminum.

Jurè accepta TIBI refero mea FLUMINA; pulchrè
  Derivata suum respicit UNDA caput.

No. 2.

Letter to Prince Charles Elector Palatine.—Page 22.

To his Most Illustrious Highness CHARLES, Prince Elector Palatine of the *Rhine*, &c.

MOST ILLUSTRIOUS PRINCE,

When of old a votive table was hung up to some deity or hero, a few small characters, modestly obscuring themselves in some shady corner of the place (as yet the modern custom is) were never prohibited from revealing the poor artist, and rendering him somewhat a sharer in the devotion. Indeed, I was almost prompted to such a

presumption, out of my own zeal to a Prince, so much *mercurialium custos virorum;* but the learned votary who consecrates these tables to your Highness (being one who suffers me to be a most addicted client of his) civilly obstetricated my affection to your Highness, by adding his commands to me to tender this oblation; and had not my too indulgent patron, by undeservedly thinking them not unfit for his own presenting, (though exceedingly beneath your Highness's acceptance) robbed me of my humility, and taken away the extreme low thoughts I should otherwise have had of them, I must needs have called the first device, but a rustick thing concerning agriculture only*, and therefore an illiberal art, tending only to the saving of corn, improper in that glorious prodigal soil of yours, where every shower of hail must necessarily press from the hills even torrents of wine.

The other conceipt I must have deplored as a tardy invention, impertinently now coming into the world after the divine German art of printing. Of the third paper I cannot say any thing too little: it is extenuation enough to say that they are two mites, two living nothings, nay, but painted nothings, the shadow of nothing; and this shadow rarified too, even to forty thousand times its former extension, if it presents you with any thing in nature, it is but with a pair of atoms. Now if it be possible for your Highness to force yourself to accept such extreme littlenesses as these, you will therein imitate the Divinity, which shews itself *maxime in minimis*, and preserve that devotion towards your Highness, which I conceived while yet a child, when you was pleased to honour my father's house by

* A planting-instrument, which being drawn by a horse over land ready plowed and harrowed, shall plant corn equally without want and without waste.

your presence, for some weeks*, who therefore must eternally retain a sense of being

Your Highness's most humble and
Most devoted servant,
CHRISTOPHER WREN.

No. 3.

Letter from Thomas Aylesbury †.—Page *22.*

SPECTATISSIME JUVENIS,

Sciotericon tuum ΑΚΡΙΒΩΣ concinnatum, cursûsque heliaci fidelem interpretem accepi equidem, et summâ lustravi cum voluptate; cæterum hæreo, utrum artificis ingenium, an authoris munus magis congratuler, utrumque stupens demiror, deosculor; ubi solis diurna conversio, atque accessu, decessuque annuo intra solstitiales terminos dimetitur. 'ΟΡΓΑΝΟΝ ΟΡΓΑΝΩΝ non alio delectu gaudens quam proprio, et si magneticæ acûs invento minus æquale, certè magis infallibile, quòd illud alienum superbiens ductum tuo subdis dictamini, et sine istius adminiculo veraci concilias concordiâ, jubesque (tuâ manu dimotâ) ad institutum tuum subsistere. Insuper non infra hujus solarii circulum tua admiranda compinguntur. In paternis ædibus solertiæ tuæ specimina, et limatæ philosophiæ ΛΕΙΨΑΝΑ omnibus aulæis anteferenda appenduntur; et pro re natâ, in ca-

* The Deanery-house at Windsor, which his Highness occasionally made use of for retirement, and benefit of the air.

† Author of "Diatribæ de æterno divino beneplacito circa creaturas intellectuales decreto."—4to. Cantab. 1659.

meris, in tricliniis, et per quascunque fenestras sol radios immittit, eos gnomonicorum subjicis regulis. Neque cœlestis motûs contrario dispositu (qualis inter analemma et horologium solet dirigi) sed (retorti luminis beneficio) ipsissimi solaris circuitûs projectione æmula. Ut sol de sphærâ suâ deductus tamquam *sponsus procedens de thalamo exultat, ut gigas ad currendam viam.* O te fœlicem! qui ipsum Phœbum ante conspectum provehis! Quantam messem spondent hæc tenuioris ætatis semina? Nec malè auguror te id genus studiorum TAMEIA, et Eleusinia ingressum, ad illorum delicias provehendas natum, terrasque adhuc in hoc globo incognitas tuâ disquitionis clave adaperiendas; adeo in id nervos intendis tuos. Quodque vortat tibi fœliciter summoperè adprecor. Vale, mathematicorum ocelle, et ama

tui observantissimum

THOMAM AYLESBURY.

Die salutiferæ passionis,
10 April. 1649.

No. 4.

Letter to his Father concerning Dr. Scarborough, Mr. Oughtred, &c.
Page 28.

Anno 1647, *ætat. suæ* 15.

DOCTORIS CLARISSIMI* consortio (reverende pater) suprà modum mihi amicissimi utor; nec dedignatur affabilis et humillimus vir,

* *Scil.* Caroli Scarborough, M. D.

plurima quæ in mathematicis multo cum plausu egit, meæ (non dicam judicio) sed phantasiæ ineptæ subjicere, et quid sentiam lenissimâ aure attendere; sæpè etiam imparibus meis ratiociniis inniti, dum ipse vicissim quicquid in *Organicis, Mechanicisve* pulchrum inveni, aut a te accepi, magnâ cum illius delectatione profero; quorum aliqua, ut ex ære, sibi suis fabrefieri impensis curarem, heri à me impetravit; *Ætherocriticon* scilicet; et *Memoriale Cylindrum*, cujus ope, noctu et in tenebris scribitur. Composui nuper *Trigonometriæ Tractatum* *, qui methodo novâ totam, puto, *Trigonometriæ Sphæricæ Theoriam*, paucis quibusdam regulis brevissimè complectitur †: cujus epitomen ipse rursus in rotulâ æneâ, *Jacobi* circiter *aurei* magnitudine, descripsi; multumque in eâ, propriâ manu, arrepto artificis stylo sculpsi. Hâc visâ a doctore rotulâ, non acquievit donec sibi similem acquisierit. Extare nôsti in linguâ vernaculâ laudatissimum *Oughtredi* de *Horologiographiâ Geometricâ* tractatum, *quem* ut linguâ Romanâ vestiret, *Doctorem* [*Scarborough*] sæpissimè (senio fatigatus) *author* rogaverat; *ille* verò majoribus implicatus negotiis, in *me* laborem transtulit, *cui* jam penè finem imposui: *Epistolam* quoque *authori* additurus, ut hoc modo, in magnum mei commodum; (talia promittente *Doctore*) *senis* conciliem favorem, simulque totius studiosorum in mathesi chori, qui *Oughtredum*, quasi patrem et magistrum, agnoscunt.—

C. W.

* Extat in MS.

† Desideratur.

No. 5.

Epistle to the Rev. Mr. Oughtred.—Page 28.

Venerabili Authori
CLAVIS verè Aureæ *;
Sæculi sui
(Si quis unquam ab Apollonio et Diophanto Heroïbus)
Magno Geometræ,
Æterno Ornamento. S.

Tam appositè hoc nostro ævo, (vir ornatissime,) effulsit, e mathematicarum artium sphærâ, *Clavis tua*, ut illam vel ipsi peritiores cynosuram fidelem agnoverint; nec immeritò, quum jam, te duce, turbidum latumque algebræ oceanum, certo tutoque remigio exercent, ut reliqua illa Matheseios adhuc incognita paulatim detegant. Sed erant e trivio, lippi quidam, qui *Stellam hanc eximiam*, tamquam obscuram et nebulosam, culpabant, veluti scintillulas illas in cœlo minores, quæ licèt verè immensæ sint et fulgidæ, nec magnitudine nostro huic cedunt globo, imò nec cæteris forsan ejusdem chori, cum tamen vastissimâ sphæræ abysso lateant, nimiâ sublimitate suam adimunt gloriam, et vulgarem omnem effugiunt aciem. Optime igitur auctiori operis tui splendori consulens, tam nostro quam Romano horizonti (in secundis editionibus) conspicuum magis effecisti *hoc* pulcherrimum *sidus:* attamen in Romano hemisphærio, à *faculâ illâ* incomitatum apparuit, *quæ horologiographicam artem* tam eleganter illustravit. Quocircà ut in digniori quoque linguâ *Clavi tuæ* (ut gemmæ mar-

* *Scilicet* Mathematicæ.

garita pensilis) annexa prodeat, huic me rei, tenues conatus adhibere jussit clarissimus *Doctor Scarborough;* vir, cujus non ita tibi aliena est amicitia, non ita literatis ignotus est ingenii splendor, ut mihi necesse sit, *illum* non minùs in medicinâ et penitioribus harum artium adytis, quam omnimodâ ferè politiori literaturâ, versatissimum dicere; cujus humanitati, et apertissimo genio, non minimum e tenui (si quem habeo) Matheseios gustu debeo; imò cujus et arti vitam ipsam, dum nuper morbo languescerem, quasi ΘΕΟΥ ΧΕΙΡΙ, debeo. Parce igitur, vir optime, quod ex illius obsequio tantis nominibus sacro, in vestram peccarem gravitatem, dum *pueri* stylum tuis aptare scriptis conatus sum, *quæ* verborum lenocinia non ambiunt, sed propriâ magis brevitate renident, brevitate, inquam, illâ tam saturâ, sensuque ad apices usque literarum refertâ: merito enim in *Clavi tuâ*, usitatum mortalibus, sed mysteriis ineptum, ratiocinium rejecisti, et symbolis, notisque, sine perplexâ verborum farragine, legentium animis uno ferè intuitu mirandos conceptus tuos inseris. Ardua sanè methodus, sed eò magis divina; hoc enim, ut mihi videtur, est Cœlites imitari, qui locutionis humanæ morâ non impediti, reserando tantum animum mysteria invicem pandunt. Religiose igitur in hac *horologiographiâ tuâ* verbum ferè verbo reddere conatus sum; (licet hanc fortasse quùm ad praxin magis pertineat, laxiùs uti decebat, aliquanto scripsisti) nempè verebar, ne inscitiâ meâ vel unus istius scientiæ pereat apex, *cujus* ego me vel tyronem esse satis docilem, plurimum gloriæ duco, et hoc summè ambio, ut (licèt adhuc ignotum) annumeres inter cultores tui observantissimos

CHRISTOPHORUM WREN *.

* Parentalia, p. 186.

No. 6.

On the Reformation of the Zodiac.—Page 28.

Atria multiplici radiantia lumine cœli
Stellarumque sacros usus, quoscunque, vetusti
Vana superstitio fœdè detorserat ævi,
Pangere fert animus. Tu quem purissima vestit
Gloria circumdans, oculis impervia nostris,
Qui solo in numeros cogis vaga sidera nutu,
Mundi magne Parens! regni cœlestis origo!
Annue conanti, devotumque accipe carmen:
Nil mihi *Castalio* sapiunt de fonte liquores,
Nil mihi *Pierides*, et inania nomina *Musæ*
Dulce sonant: tu solus ades, placidèque faveto,
Dùm tua facta canam, vastumque ingentis Olympi
Dùm populo modulabor opus; gens nescia veri
Ut fatuum, longâque animum caligine mersum
Attollat cœlo, et flammantia lumina mundi
Dum stupet, Auctori solùm tibi ponat honores,
Codicis et sacri varios conformet ad usus.

Hos ergò æthereos ignes sub nocte micantes,
Indigenas cœli, numerosumque agmen Olympi,
Nominibus, numerisque suis distinguere primi
Cœpêre *Assyrii*, studiis gens dedita sacris;
Hi solis, lunæque vices, metasque vagantûm
Stellarum, liquidasque vias inquirere docti,
(Ne nimiùm confusa forent, quærentibus astra,
Aut forsan cœlo sua ne mensura deesset)

In species varias animantûm, et nomina certa
Disposuêre; novis ornantes astra figuris.
Fœlices animæ! (primò ratione sagaci
Quæ detexistis cœli secreta; docentes
Terrarum populos in cœli limina certos
Ferre gradus, primasque suas agnoscere sedes.)
Non vos incuso, cœli prosapia! quorum,
Nec cæca ambitio, nec lucri insana libido,
Fictorumque unquam veneratio stulta Deorum,
Sublimes animos formis pellexerit istis,
Fallere mortales miseros: sed degener orbis,
Et fictis ludens, vatum fanatica turba,
Falsidici vates, temerant qui carmine verum,
(Spurca superstitio postquam possederat urbes
Niliacas, mentesque leves) inventa *Parentûm*
In nugas torsêre suas, cœloque pudenda
Monstra intruserunt: nam quæ non horreat auris
Pasiphaën Tauro junctam? Vaccæque *Tonantem?*
Incestosque toros infandaque crimina Divûm,
Quæque Thyestæas absolvant fercula mensas*?
At licèt æternæ gens legis nescia, veri
Contemtrixque *Dei*, stolidè erravêre poëtæ,
Hæccine adhuc decuit servari nomina stellis
Christicolas inter? patriæ cœlestis alumnos,
His decuit sedem maculis fœdare futuram?
Cur nos alterius cœlestia regna patere,
Quam *veri Artificis*, tacitè pateremur honori?
Cumque, sub astrorum formis, celebrare poëtæ
Divorum soleant, præclaraque gesta virorum,

* Saturni, *scil.* filios suos devorantis.

Cur non fas nobis potius dispersa per orbem
Inclyta facta *Dei* canere, et miracula dextræ?
Immensam et quoties aulam stellantis Olympi
Suspicimus, sancto *Scripturæ* à fonte petitis
Historiis, veteres astrorum aptare figuras?

Aries, ♈.

Hic mihi *Zodiaci* princeps, et janitor anni
(Quà secat *Æquatrix* obliquam linea zonam,
Et monet æquales cum lucibus esse tenebras,)
Dux gregis occurrit stellato vellere fulgens.
Hunc, quià *Phryxum* olim vexit, Phryxique sororem
Trans mare, cum fugerent iram fraudemque novercæ,
Jupiter in cœlo (sic mendax fama) locavit:
At quonam hoc merito? Pecori debebat honores,
(Quòd profugi vector) tantos, ut ad æthera tollat?
Vah steriles nugæ! quid enim hæc deliria tanti?
Sed tu, quàm melius, fulgentia lumina cœli
Christicolâ, aspiciens, feriis *Paschalibus* ortum
Cum Phœbo, *Domini Paschalem* dixeris *Agnum!*
Ceu fuit ille *Aries* *, patriarchâ sacra parante,
Obtulit *Isaaco* qui se (vadis instar) ad aras;
Dignus ob hoc cœli nitidas augere figuras,
Quòd *Christo, Christique* typo se præstitit arrham.
Ipse (rubo quasi adhuc latitans) vix cernitur illic,
Ter sex exiguis ubi ducit sidera stellis:
Et, licèt occiduum rapiatur pronus in orbem,
Flectit in ortivum remeantia lumina solem.

* Gen. xxii. 13.

Taurus, 8.

Proxima *Lanigero*, roseum conversus ad ortum,
Lucida, procumbens, jactat sua sidera *Taurus* ;
Sive sit *Europæ Cretæas* vector ad oras,
Infamisve tuo scelerato, Taurus amore
Pasiphäe ; nostrum non est aspergere tantis
Criminibus sacrum (multò minùs æthera) carmen.
Aut si peccantûm populorum crimina cœlo
Inscribi fas sit, cur non hîc jure legendus
Aureus iste fuit vitulus *, cui turba rebellis
Isacidûm quondam (divino fœdere rupto)
Montibus *Horebi* stolidos celebrabat honores :
At nunc subvectus cœlo (memorabile signum
Fœdifragæ gentis) medio spectatur in orbe,
Ter denis de nocte micans stellisque duabus ;
Quarum quæ dextro nitidissima splendet ocello,
Stella Dei *Remphan Pharii* † est, in cujus inanem
Descivit fœdè cultum sine mente popellus,
Flevit et exsilium merito *Babylonis* in oris.
Apparent *Hyades* per frontem cornua sparsæ,
Et quæ collustrant septenâ lampade dorsum ;
Isacidûm lacrymæ, scelerisque piacula tanti ;
Iamque rigare solent effusis imbribus orbem,
Cùm primum madido *Phœbum* comitantur ab ortu,
Indicioque docent quâ sint ab origine natæ ;
Hactenus imbrifero *Graïis* cognomine dictæ ‡.

* Exod. xxxii. 4. † Act. vii. 43.

‡ Hyades, *ab* ὑειν, *pluere*.

Gemini, ♊.

Succedunt *Tauro*, *Geminorum* sidera, (*Phœbi*
Exurit *Libycas* ubi scandens currus arenas;
Quàque novas secat æstates à vere *Colurus*.)
Hæc erat (ut veterum commenta est fabula vatum)
Ledæ progenies, et *Cygni* furta *Tonantis*,
Quorum promeruit, vitâque et morte vicissim
Divisâ, pietas cœlum, æthereasque choreas.
Scilicet ex istis, *Pollux*, *Jovis* agnita proles,
Interitûsque expers, mortali semine cretum
Alternatim ornat, partito numine fratrem.
Nobile par fratrum! nisi nobis pagina fœtam
Nobiliore pari memorâsset sacra *Rebeccam* *;
E quibus, *æterno* selectus *Judice*, *Jacob*,
Pro *Polluce* magis, pro *Castore* convenit *Esau*.
Votigenæ fratres, dubiæ discordia matris.
Pondera, primatumque ipso captantia partu;
(Dum pater *Isaacus* senior, sterilisque stupescit
Conjux, dividuo turgentia viscera fœtu)
Nunc quoque sidereâ nudi spectantur arenâ,
Arcto stringentes luctantia pectora nexu;
Implicitumque jubar ter seno lumine vibrant.

Cancer, ♋.

Fallor? An æquorei jam nactus brachia *Cancri*
Cynthius, assiduis nostrum fervoribus orbem

* Gen. xxv. 21.

Torret, nocturnas vix admissurus habenas.
Hunc pede (non alio merito, vel origine) pressum
Alciden referunt cœlo posuisse, quod illi
Forcipibus calcem, missus *Junone*, momordit;
Quin potius terrâ sineret periisse sepultum,
Quam cœlo inscribi, quem vivum senserat hostem.
Siccine cœlorum splendentia regna patere
Fictilibus nugis pateretur dia poësis?
At mihi priscorum ratio non displicet illa,
Qui *Cancri* speciem stellis donâsse videntur,
Rursus in humentes, quià Sol cùm pervenit illuc,
Cancri more means retro, delabitur Austros,
Visurus nunquam flammis propioribus Arcton.
Cur non et nobis parili sub imagine, vates*
Devius, et similis *Cancro*, dicatur† Iädon?
Quem jussi immemorem, (nimiùm dum credulus ori
Mendaci auscultans, tulerat vestigia retrò)
A *Domino* immissi leto dedit ira leonis;
Hinc trux illa feræ propè stat frendentis imago,
Quà tribus atque decem (non multi luminis) ardet
Sideribus *Cancer*, *(delusi emblema prophetæ)*.
Ne tamen hîc *Geminos* nimium mireris‡ *Asellos*,
Quos mediâ *Cancri* cernis considere testâ;
Hic deceptoris vector, vectorque prophetæ,
Alter decepti, juncto augent lumine sidus.

* I Regum xiii. 22. † *Joseph* hoc nomine appellatur.
‡ Duæ stellæ in signo Cancri sic denominatæ.

Leo, ♌.

Nè mirere trucem pecudes comitare *Leonem*,
Indomitamque feram veteres posuisse furores;
Pacificum, variâ sphæræ testudine, cœlum
Ingeminare melos agnosce, modusque potentes,
Harmonicoque choros ducentia sidera gyro:
Attamen ingenitæ nondum satis immemor iræ,
Spirat adhuc ignes, et pectore flagrat anhelo,
Præcipuè tunc, cum rabientem *Syrius* urget.
Hunc, sylvis olim *Nemeæis*, vulnere clavæ
Herculeæ cecidisse ferunt, quem ad sidera *Juno*
Transtulit occisum, præclarâ quinque minores
Præter ter denas, accendens lampade flammas.
Quid tanti, hæc? Majora cano (nec ficta) *Leonem*
Herculeæ plusquam prostratum robore dextræ;
Scilicet hunc, imberbis adhuc quem* *Sampsonis* ira
Faucibus elisis, vasti nec vulnere trunci,
Sed manibus solùm jugulavit inermibus, *Hyblæ*
Florileges aptam prebens cultoribus alvum.
Seu fuit ex illis unus, quorum ora† *prophetes*
Clausa specu medio intrepidus mulcebat, atroces
Quem stupuêre feræ, nec jam discerpere pectus,
Angelicis totidem plenum virtutibus ausæ.
Sitve emblema ‡ *Leo* sceptrum gestantis *Jüdæ*,
Quem fore *Messiæ* stirpem, sobolisque futurum
Salvificæ proavum, sancti cecinêre prophetæ.

* Judicum xiv. 5. 6. 8. † Daniel, vi. 16. 22. 23.
‡ Apocal. v. 5.

Virgo, ♍.

Quod si virgineis mansuescere velle leones
Sub manibus constet, prægressum *Virgo Leonem*
Non inconcinnè sequitur; quam supplice voto
Jam *Vertumnus* adit, gravidis oneratus aristis,
Frugibus ut benè sit, satagens, dum *Virginis* astra
Spiciferæ refugum excipiunt *Hyperionis* axin.
Seu fuit illa *Ceres*, quæ latè prospicit arvis
Frugiferis, avidi fortunans vota coloni:
Sive *Isis*, totum Furiis agitatà per orbem,
De bove, jam *Pharium* numen: seu candida, sedem
Vendicet hanc potius, terras, *Astræa*, relinquens,
Ter denis ubi cincta micat, stellisque duabus.
At mihi, præ reliquis, placet, hæc illustria cœli,
Virginis eximias consignent sidera laudes
*Jepthiadis** ; castæ primo quam flore juventæ,
Intentam choreis, temerè devovit ad aras
Infœlix genitor, vittis nec tempora virgo
Funestis cingi, patriâ victrice, recusat.
Gloria fœminei sexûs miranda; minorem
Ni faculam, multò majori lumine, obumbres
Tu genetrix, tu sponsa *Dei*, tu palmitis illa
Divini radix, virgo intemerata Maria;
Numinis afflatu solo, maris inscia, cujus
Sancta salutifero tumuerunt viscera fœtu,
Illæsoque *Deum* peperisti virgine flore;
Tu sine pulchra tuæ hæc splendescant sidera laudi,
Et tremulis, præ se, vibrent tua nomina flammis,

* Judicum xi. 30. 31. 34.

Libra, ♎.

At jam *signiferi* medio sub tramite *circi*,
Libra pari, lucis mensurans tempora, lance,
Cum tenebris, rigido nimios cum frigore soles,
Occurrens jactat bis quatuor astra novemque,
  Virginis *Astrææ* trutina est (sic fama poëtis)
Quâ terrestris adhuc hominum discernere facta
Consuevit parili lancis libramine *Virgo;*
Jamque polo *dominæ* pedibus subjecta *(Colurus*
Signifero in partes quà sese dividit æquas)
Autumni à calido confinia separat æstu;
Ætnæumque Deum, *Siculis* qui præsidet antris,
Artificem agnoscit; puro nam cuderat auro,
Fabrilisque sui monumentum insigne laboris
Sideribus *Libram* inseruit: Tu *loripes* astra
Splendida conflâsti squallens? credamne *Cyclopûm*
Fumosis cœli partem radiare favillis?
  His consignetur potiùs sapientia stellis
Summa *Creatoris*, magnæque potentia dextræ,
Quæ regit immensum justo moderamine mundum,
Noctivagasque faces, quæ dat sua lumina soli;
Aëre quæ medio libratam sistere molem
Telluris, pelagique jubet; vastumque capaci
Continet oceanum palmà; spatiosaque cœli
Atria circumdat manibus; parilique supinos
Pondere suspendit montes; quæ nubila frænat;
Irrigat optatis sitientes imbribus agros;
Temperat et prudens structuræ cuncta *biformis*,
Non secus ac justo pendens libramine lancis.

Scorpio, ♏.

Quæ nova jam cœli facies? Quisve horridus annum
Declivem *Boreas* contristat, et asperat auras?
Scilicet auratas *Phœbi* jam tardat habenas
Scorpius, atque hebetes radios, gelidoque veneno
Lethiferi tinctos stimuli, vix sustinet ultrò
Extendi effœtis marcentia lumina terris.
Monstrum ingens latè protendit brachia, caudæ
Nigraque circuitu sinuat curvamina lóngo;
Undique bis denis, trinisque aspersa favillis;
Quas fertur posuisse *Jovem*, memorabile victi
Orionis signum; nam cum sua róbora jactans
Omnia derisit, terræque animalia sprevit;
Hoc monstrum objecit tellus irata, superbam
Sævo Uranigenæ domuit quod cuspide linguam,
Si documenta viris temerè deducat ab astris
Vana superstitio, meliori emblemate nobis
Hoc placet inventum; *mundi Fabricator*, Olympo
Sidus hoc inseruit, discant ut ad æthera duros,
Difficilesque aditus, et vix penetrabile, sedes
Ad superas quod ducit iter; per monstra ferarum,
Scorpium et horrendum, dirâ qui cuspide caudæ
Vulnerat in venas, subitum insinuatque venenum:
Haud aliter justos tenebrosi *tortor Averni*
Subdolus infestat, fidum, Christique ministrum,
Undique inexpleto quærit, quem devoret ore.
Ite procul timidi, sacrâque absistite sede,
Queis fixus stat córde pavor, procul ite, fugaces!
At vos heröes! Vos sancta in bella, piorum

Fortunata phalanx, *Christo* auctorata magistro;
Pergite magnanimi, fidoque umbone salutis
Muniti, *sanctique* armati *flaminis* ense.
Horrida inaccessum per monstra, per ardua, cœlo
Quærite iter; mundi transite obstacula; tandem
Eveniet tempus, quandò hæc super astra dabuntur
Æternæ sedes, requies et certa laborum;
Quâ sanctas, nec telum hostile, neve aspidis ira,
Sollicitent animas, nec mortis causa, metusve,
Nec *Satanæ* rabies; tuti gradiemini in atrum
Scorpium, et ardentes *Erebi* calcabitis angues,
Gaudentes *Christi* æternos celebrare triumphos,
Altitonans postquam descenderit æthere *Judex*,
Carne triumphali victricia signa reportans:
Tunc mortem absorptam, tunc cæco carcere clausum
Luciferum, eniti frustrà cernetis, *Averni*
Sulfureos nigris spumantem faucibus ignes.

Sagittarius, ♐.

Aspice ut intentus cursu venatur anhelo,
Stelliferasque plagas vasti perlustrat Olympi
Arcitenens jaculis, in cœli monstra minaci
Missurus nervo volucrem, diramque Sagittam,
Et certo letum tibi, *Scorpio*, destinat ictu;
Jam pede sanato, jam sævâ tabe sagittæ
Herculeæ lacerum miseratus *Jupiter*, astris
Chironem inseruit, dum morbo fractus atroci,
Et vitæ impatiens miseræ, crudelia sæpè
Fata vocat, *Parcas* surdas, nimiumque morantes;

Jussus at *Autumni* humiferam jam claudere metam,
Sidere triceno decoratus splendet, et uno.
Tantos *Centaurus*, pedibusque citatus equinis
Saturni incesti spurius meruisset honores,
Dedecus! impuro cœlum ut contaminet astro?
Planius et melius (nisi me sententia fallit)
* *Ipse* est aurato diademate tempora cinctus,
Et niveo portatus equo, fortemque sagittis
Armatus dextram, (sic visio sacra) *Johanni*
Spectandum qui se dederat dilapsus Olympo.

Capricornus, ♑.

Jamque *Magellanicas* linquens Australibus oras
Flammis, *Auricomus* nostrum meditatur ad orbem
Scandere paulatim *Phœbus*, tardeque morantem
Lucibus extentis, cogit decrescere noctem
Ægocerota intrans.
Pan Deus, Arcadiæ qui currere gaudet in altis
Montibŭs, *hunc* cœlo ascivit, quod fortè *Gigantes*
Immanes fugiens, variis cùm quisque Deorum
(Terrore anguipedûm) formis latuêre ferarum,
Ipse sub hirsuti velatus tegmine capri
Illusit rabidas hâc fraude *Typhöeos* iras,
Imposuitque sui stellis monumenta pericli.
Sunt quoque qui *Capram* puerum *quæ* læte *tonantem*
* * * * * *Desunt cætera.*

* Apocal. vi. 2.

Alia tentamina poëtica, stylo variato.
In *Domini* Natalem.

En qui supremâ luce prognatus, Patris
Splendor coruscus gloriæ ; qui sidera
Frænis coërcet, quem decemplex machina
Cœli pavescit, et tremunt fundamina
Mundi loquelis quassa fulminantibus ;
In ixoletâ nascitur jam infans casâ ;
Hospes jumentis ; brumæ adustus frigore ;
Dum mandra cunas præbet, et membris sacri
Culmus puelli gaudet agrestis premi ;
Circumque floccis puræ ab insolentibus
Nives tenelli provocantur pectoris.
An natus isto *viliùs* quis *Principe ?*
At ecce pennata tunc epheborum cohors
(Pompâ superbi major omni Cæsaris)
Tantis ministrat sedula in natalibus ;
Et non nocivo gloriæ dum fulgure
Squalentis antri dissipat caliginem,
Dat nesciente splendidissimam diem
Sole, exuitque noctis obscura peplum :
Nascentis illinc Solis a cubilibus
Ducit Sabæos stella natalis sophos,
Qui purpurato provoluti poplite,
Illustri fulvi e ponderosis offerunt
Gazis metalli munus, et quicquid tulit
(*Phœbi* renascentis jubar fragrantius

Experta) tellus, thuris et myrrhæ ferax.
An natus isto *ditius* quis *Paupere?*

Cum *Bethlemiacis*, nato, in præsepibus, agnos
Offerunt agno rustica turba Dei.
Eximii cepit species *Corydona* puelli,
Et qui divino fulsit in ore decor:
Arripuitque leves, (queis vincere suetus) avenas,
Talibus et laudes cœpit inire modis.
O nix! O niveo candor qui fronte relucet!
O niveo aspersum vellere molle caput!
O mitis tenero resides quæ pectore bruma!
O manus! O purâ roscida colla nive!
Audiit hunc pendens, nivibus gravis, aëre nubes,
Candoresne, inquit, deperit iste meos?
Nec plura, illimes diffundit credula floccos
Cœlo multiforæ quà patuêre casæ;
Sistite, cui *Corydon*, crudeles, sistite, plumæ,
Membra nec audaci lædite sacra gelu;
Non vestri hic candor generis, nix ista calescit,
Nempe empyræâ de regione venit.

C. W.

De *Pomo-Punico* immenso, quod, strenæ loco, *Jani* Kalendis exhibuit optimo viro amico suo clarissimo *E. F. Christophorus Regulus;* cujus in cortice erat fissura, ut solet, per quam grana apparuerunt, et circa corticem scriptus erat hic versiculus, literis aureis:—

Natum est in titulos crescere rite tuos.

Accipe quæ mitto (num dicam *Punica?*) dona;
Nescio quid falsi *Punica* dona sonent.
At nihil hîc falsi, nil fuci; ni male forsan
Gentilem sapiant *Punica Poma* fidem.
Candidus hîc amor est, et amici pectoris ardor,
Votaque ab officio scripta, dicata, pio.
Tot tibi fœlices concedat *Jupiter* annos,
Tot tibi *Nestoreos* mitia fata dies;
Candida tot facili surgant tibi sidera cursu
Grana quot extremo cortice tecta latent.
Grana * jacent intus positi velut ordine dentes;
Sic oris speciem *Punica Poma* gerunt:
Os istud tibi, si gustes, mea vota loquetur,
Nempe potest proprio dulcius ore loqui.

No. 7.

Letter written to his Father in the year 1649, *and the* 17*th of his Age* †.

To my Reverend Father, Doctor Wren.

Reverende Pater,

Humanissimo summorum amicorum hospitio receptus, ferias hasce paschatis transegi, et quantâ cum jucunditate, ex hoc brevissimo loci

* Scil. per fissuram.

† Parentalia, p. 194.

elogio conjicere licet: Domus præclara (vel potius palatium principe non indignum, sive amplitudinem, seu fabricæ pulchritudinem, seu supellectilis splendorem respicias) summo pænè montis altissimi clivo insidet; horti circumjacent amœnissimi, innumeris ambulacris referti, tam sabulo quam cespite montano stratis: nec desunt piscinæ ingentes, nec luci altissimi, quorum summitates, clamosissimæ cornicum respublicæ, nidorum suorum pagis, seu potius civitatibus integris, onerant: vivarium quoque adjacet satis amplum et amœnum; foris sane paradisum esse terrestrem, intus autem cœlum ipsum, dixeris; (et quidem verius quam de Cæsaris palatio poëta, "Par cœlo domus est, at melior dominus *.") Quidni enim beatissimum hunc locum Cœlum vocem? In quo prisca Pietas et Religio, terris fugatæ sceleratis, latibulum hîc tandem invenisse dicantur, in quo Virtutes omnes, non ut alibi sæpe, degunt, sed hîc incolere amant; Gratiæque tergeminæ (divinæ scilicet) hunc sibi locum, quasi Parnassum suum aut *Pindum* evangelicum, elegerunt; Quo denique matres sanctæ, et virgines, cantica divina psallendo, aut orationum thura castissima offerendo, aut sacra legendo, meditando, confabulando, diem fere integram in beatissimo Dei et angelorum consortio absumunt. Inter tot delicias, tibi, quod benè valeam scribere, quid erit nisi ΤΑΥΤΟΛΟΓΕΙΝ? Tantæ fœlicitati meæ vix certè quicquam amplius desiderari potest, modo valeas ipse, et benedicas

Filio tuo obsequentissimo,

CHRISTOPHORO WREN.

5 Cal. April.
1649.

* Martial.

No. 8.

Oratio inauguralis, habita Londini, in collegio Greshamensi, per Christophorum Wren, A. M. astronomiæ professorem electum, Ann. 1657, *ætatis suæ* 25.

QUANQUAM ex circumfusâ hac undique, auditores spectatissimi, tam illustri coronâ fœlix, admodum mihimet augurium facio, facile captandam fore germanam illam, quæ candidis mathematicorum pectoribus innasci solet, benevolentiam; ut ingenue tamen, quod sentio, fatear, id mihi, utpote juveni, sublimem astronomiæ cathedram hodie conscendenti, quod in æreâ turris cujusdam speculâ positis, accidit: quibus, etiamsi nihil visum effugiat; sed integrum cœli fornicem, subjectæ planitiei in finitore quasi incumbentem, prospicere detur, et pulcherrimâ longe lateque rerum varietate afficiantur oculi; caligine tamen ex inusitato spectaculo facile confunduntur. Neque mihi sane, propter immensam materiæ copiam et altitudinem, satis in promptu est, quid imprimis, quid ultimo, in hoc minime vulgari dicendi genere vobis expediam. Quin ea est præterea harum scientiarum pressa et bene morata oratio, quæ rhetoricæ solutam loquacitatem nullo modo ferat; adeo ut nihil insolentius videatur, quam astronomiæ encomium pro more dicere, vel ipsâ reclamante Uraniâ Musarum castissimâ, quæ sola docere contenta, verborum non ambit fucum. Nec fortasse rem minus absonam aggreditur, qui gravissimis artibus plumas inducere varias conatur, quam comicus ille Aristophanes, qui Socratem, sanctissimæ et severæ admodum philosophiæ parentem, in corbe pendentem, et nubibus inhiantem, in scenam impudentissime produxit. Quamobrem ne expectate, auditores, eloquentiæ flumen, quod lene fluit;

Sed quæ per salebras, saxaque, verba sonant.

Futurarum scilicet prælectionum procœmium quoddam, et scholia potius mathematica, quam oratio arte concinnata, vobis hodie parantur.

SIQUIDEM nimis ambitum fortasse quærerem, qui edocerem, tanto præ aliis eminere scientiis astronomiam, quanto præ illis nobiliori certiorique gaudet argumento, cœlis nempe pulcherrimis. Quorum materiam si spectes, ea quidem purissima est, subtilissima, et æviterna: si expansum ingens, tantum sane est, ut omnem humani acuminis aciem effugiat; imo non arithmeticum quodvis ratiocinium subeat, nisi forte adsit denuo Archimedes aliquis arenarius*: si lucidissima demum ornamenta, tam fixa quam vaga, quem non attonitum reddere solent philosophum, sive contempletur planetarum phases, figuras, asseclas; sive motus rapidissimos, sed maxime æquales simul et harmonicos, adeoque ad geometriæ normam confectos? ut facile crederes Opt. Max. geometram, Deum, nunc in albâ diei, nunc in atrâ noctis tabulâ, lineas, circulos, plana duxisse, imo et conos tornâsse varieque secuisse, spirasque et helices involvisse, nimirum ut seipsum undiquaque mortalibus demonstraret. Crepundiis poëticis vos oblectare viderer, si commemorarem divinæ particulam auræ, et cognatas cœlo animas, erectosque vultus, ideo sane nobis concessos, ut auream cœli supellectilem contemplaremur. Quinimo sobrius addam eam esse mathesin, quæ, si quas habemus igniculas æthereas, eas vehementius eliciat, et nobilissimo fomite accendat. *Ardetque tuendo*, qui cœlos aspicit. Ex ejusmodi enim studiis instrumentum unumquodque animi (sensus internos nominant) expurgatur, acuiturque; quod antea aliis studiis infectum

* Ψαμμῖτις. Numeroque carentis arenæ mensor.

occæcatumque fuerat. Solæ demonstrationes mathematicæ, immobili fundamento geometriæ et arithmetices superimpositæ, invictam obtinent veritatem; cum aliæ semper dissertationes eo plus minusve veritatis acquirant, quo magis ad geometricam propositi investigandi methodum accedere videantur. Quare certioris omnis scientiæ ὄργανον ὀργάνων mathesin potius, quam logicam, appellare fas sit; quamvis hæc ne sit instrumentum rationis, nullus veto, sed potius geometriæ subjicio. Quid enim logicâ utilius? quid, inquam, aliud agunt syllogismus et cætera disserendi artificia, quam more geometrico data disponere per media proportionalia, quo exinde quæsitum rite innotescat?

Hanc methodum secuti veteres scientiarum inventores, mathematicas reliquis prius ediscendas præposuêre. Quis nescit scholæ Platonicæ programma, sive statutum potius, οὐδεὶς ἀγεωμέτρητος εἰσίτω? Quis gradus, quos Pythagorei suscipiebant; qui primo ἀκουστικοὶ, et, quinquennii silentio peracto, mathematici nominabantur, deinde physici, postremo politici? Quanto matheseωs amore flagravit Plato? quanto Aristoteles? Neque enim scripsisset Aristoteles mechanicam, opticam, musicam; itemque plurima de Pythagoræ et Architæ philosophiâ, περὶ στοιχείων; neque hypotheses planetarias, quas Eudoxus invenerat, cum Calippo correxisset; neque Alexandrum monuisset, ut, captâ Babylone, Chaldæorum observationes cœlestes annorum fere bis mille, coctilibus laterculis inscriptas, in Græciam mitteret (hæc scilicet optima Orientis spolia a philosopho expetita sunt) neque bini demum Aristotelis discipuli, Eudemus et Theophrastus, geometrica et astronomica scripsissent; nisi sanctum prorsus et inviolabile Platonicis omnibus fuisset, ἀγεωμέτρητον in scholam non admittere.

Dies me deficeret, si totum scientiarum orbem percurrerem, magnam ubique astronomiæ ditionem vobis ostensurus. Ipsa sane

regina Theologia fidissime ancillanti Astronomiæ multum se debere fatetur, quod sacram historiam juxta seriem temporum scite disposuerit, opitulante Chronologiâ. Quæ cum hujus scientiæ membrum sit, ita maxime observationibus (gestorum scilicet Superûm commentariis) innititur, et minime sublestâ fide eclipsium, conjunctionum majorum, et ejusmodi phænomenon comprobatur; absque quibus temporum indicibus sacra simul et profana historia labyrinthæa forent involucra, quibus nec introitus facile daretur, neque exitus. At subveniens chronologia hujus labyrinthi nobis ichnographiam quandam descripsit, temporaque tamquam in tabulâ geographicâ depinxit, cujus ope ad elapsas usque annorum chiliadas datur recurrere; ne minus cum remotorum, ut ita dicam, sæculorum hominibus consuetudinem inire, et incognita indagare, quam hodie, ope chartæ hydrographicæ, cum longinquarum regionum incolis, concedatur.

Porro quis mihi plenius et melius astronomo describet hexæmeron? Quis mihi præterea quoad sensum æqualem, sed reverà quam disparem, luminarium majorum magnitudinem demonstrabit; cum luna millies a sole superetur? cum etiam a ratione non prorsus alienum sit solem non unicam esse lucis scaturiginem dicere, sed stellam e multis stellarum millibus, quas absorbet distantia incredibilis? Cui magis verenda erit cœlorum artifex manus; quam cui probe innotuerit, quod septies millies mille passus haud æquentur dimetienti hujus puncti terrestris pilæ, hæc vero dimetiens millies repetita solem non attingat? et quod hæc rursus distantia, quæ inter nos solemque est, vastissima licet, et millies repetita, ad viciniores tamen e stellis fixis non accedat? Quamobrem, sicut veram gestorum principis cujusdam historiam posse accurate scribere iis solum competit, qui principibus iisdem a secretis fuerint; ita is solus Opt. Max. Mundi Conditorem recte laudare novit, cujus in re astrono-

mica celebritas ei splendidum illud nomen (Hipparcho olim datum) contulit, ut *conciliorum naturæ particeps et interpres* audiat.

Erunt fortasse, qui frontem corrugent, asserente me codicem ipsum sacrum sæpe astronomo egere interprete. Liceat tamen quærere, quomodo retrocesserit umbra in horologio Ahaz*, cum inviolatis naturæ legibus, ex merâ horologii fabricâ, pluribus modis id fieri possit; vel ex projectione quâdam horarum non vulgari, vel ex gnomonis figurâ, aut planorum quorundam positione variâ. Verum cujusmodi fuerit horologium illud, intelligere licet, si modo fides adhibenda sit Hebræo cuidam scriptori; ex cujus nimis involutâ descriptione datur tamen conjicere, ejusdem esse generis, quo Chaldæi fuerint usi, quodque Berosum primum in Græciam intulisse a Vitruvio accepimus, scilicet *hemicyclium excavatum ex quadrato, ad enclimaque succisum,* ut verbis ipsius Vitruvii utar†, qui marmora polire, quam paginas, doctior, sic potius voluit: *Hemicylindrus concavus excavatus ex cubo succiso ad angulum elevationis poli.* Necesse est ergo in ejusmodi horologio vel solem, vel umbram, vere illis decem gradibus retrocessisse. At quid si parelium subito apparuisse dicerem? Parelii sane in halonum peripheriis semper apparent. Sunt halones majores, semidiametrum obtinentes, 22 circiter graduum coronæ albicantes, et coloribus languentibus pictæ; sunt et halones interiores, 10 aut 11 circiter graduum, magis saturis coloribus variegatæ, in quarum circumferentiâ (tanquam gemma in annulo arte encausticâ picto) lucet parelius. Qui spectrorum in aëre historias colligere velit, mecum faciet. Cum ergo absit 10 gradibus a sole parelius, ponamus verum solem nuperrime occidisse; igitur parelius, subito enascens, potuit vicariam umbram 10 gradibus horizonte altiorem projicere, et pro sole vero retrogresso reputari. Quid autem

* II Regum, c. 20. v. 7. † Lib. IX. Cap. 9.

si eo modo fiat, quo mense Aprili aiunt in insulâ Sumatrâ quotannis solem ad satis observabile cœli spatium retrocedere videri? Penes rerum Indicarum scriptores fides esto. Quod si non ficta referunt, necesse est id fieri ex refractione validâ radiorum solarium trans vaporem nitrosum, in nubem angularem efformatum, prismati crystallino simillimam; talis enim nubes, vento leniter promota, simul ac solem angulo anteriori operuerit, distortis radiis eum resilire cogat, et, donec pertranseat vapor, in alio manere loco necesse est. Sic enim rerum species intuentibus e locis suis amovent pulchra trigoni vitrei mendacia. Neque sic miraculis parum pie detraho. Hebræorum enim regi hæc umbræ insolita retrocessio in signum erat; erat et iris diluvianis patribus signum; quæ si nunquam postea affulsisset, quis iridem, vere Thaumantiam, pro miraculo non haberet?

Verum extra oleas feror, qui astronomiæ ditionem ad cœlum usque empyræum extendo; major illius in inferioribus scientiis potentia cernitur. Etiam ipsi medicinæ opem ferre assererem, nisi abhorrerem, cum insanis illis pseudomedicis, nempe astrologis circulatoriis, facere videri, quibus nihil agere, nisi auspicante domorum cœlestium themate, conceditur; singulis vero herbis medicamentisque proprias vires ab aliquo planetâ, herbæ istius tutore, impertiri volunt, scilicet cum primum planetæ per otium licuerit; nam multum sæpe expectant, rite observatis temporum mysteriis, donec benigne aspiciat. Verumtamen fastiditis his ineptiis, dicat mihi serio in medicinâ indagator vere philosophicus; num aphorismi illi, quibus regimini singularum anni tempestatum, ventorumque, aërisque vicissitudinum, morbos subjecit Hippocrates, reliquis minus aphorismi, hoc est, minus certitudinis, præ se ferant? num in his solum æneæ templorum tabulæ, experimenta præceptorum, longâ serie derivata, et sua se fallendi nescia defecit industria? Fateor equidem ejusmodi aphorismos Chaldaïcum quid sapere; neque enim

ab Oriente disciplinas fere omnes Græci, nihil autem in arte medendi, acceperunt. Certe medicinam totam aphorismis involvi proprium Babyloniis videtur; qui cum omnium maxime literarum astrologiam excoluerint, credere licet, epidemicorum morborum rationibus, ab intemperie aëris, influxuve cœlestium corporum generatorum, eos perquam accurate incubuisse; quas hodie vel deperditas, vel depravatas, seu climati nostro non bene consonas, dolemus. Et profecto nisi ejusmodi observationes continerent libri Περὶ ἀκαιρίων καὶ ἐπικαιρίων, quos inter opera ad rem medicam pertinentia Democritum, Hippocrati familiarem, scripsisse recenset Laërtius; nequeo, quales fuerint, conjicere. Verum exploratum habeo, quod, si quis ejusdem speciei animalia dissecare voluerit circa maximas tempestatum mutationes, insignem inveniet differentiam, in cerebro quoad siccitatem, humiditatem, ejusdemque pondus; similiter in visceribus; nec non in ipso sanguine, nunc magis dulci, nunc salso, nunc amaro. Idem forte chylo evenit, et lymphæ ductuum aquis. His si adjungamus, quæ vino aliisque liquoribus accidunt, qui fermentescunt dum pluit, dum tonat acescunt; his etiam si pestium morborumque epidemicorum historiam adjiciamus; erit, sane erit, quare suspicemur genuinam in naturâ latitare astrologiam, non nisi diuturnâ sagacitate explorandam, medicinæ vero mire usui futuram; quamvis vulgare illud astrologorum lenocinium, inter vanissimas quantumvis inveteratas præstigias, qui semel demonstrationi se dederit, nemo non recensere queat.

Hactenus majorum gentium literis, philosophiæ, theologiæ, medicinæ, necnon historiæ, astronomiam subsidium aliquatenus afferre posse vidimus; quantum autem ad inferioris subsellii artes, totas hasce Uraniæ deberi fatebimur. Huic acceptum referimus, quod orbi terrarum, post barbarorum incursiones in feritatem pæne degeneranti, prima literarum, denuo politiorum amorem in Hispaniam,

deinde in cæteram Europam invexerit. Nec magis scientiarum augmentis, quam habitationum consuluit Astronomia. Contemplantibus etenim nobis, intra quam exiguos globuli nostri cancellos totum orbem habitabilem concludi veteres existimabant; quis non gratulatur generi humano, quod tanto ampliorem hodie possideat hæreditatem, largiente Astronomiâ? Cujus munere datur vastissimum exarare oceanum, in ipsis vindemiare Fortunatis Insulis, et messes aromaticas sericasque ex ultimis Sinarum oris colligere; in nostram denique congerere Europam, quicquid utriusque axis glacies, aut medium jubar torridum produxerit. Astronomia navigantium tutelam prima suscepit, cum adhuc ab incunabulis artis remorum palmulis lente repebant naves; quamvis sæpius se nubibus obvelans morosa ductrix, puppes sine duce relinquere solebat sævienti mari ludibrium; ast simul ac dignata est vel minimam e septentrionalibus faculam ostendere, sufficit, strata via est: per horrentes fluctus, et tenebras, impavide remigant nautæ. Sic vere astrologi, sic vere conceditur cœlorum influxus, cum unius Cynosuræ tacita radiatio vel mille onerarias naves, etiam Cycladibus majores, movere valeat. Sic undique maria Mediterranea excoluerunt veteres, intacto fere oceano; formidini vero religionem obtendebant, scilicet ne Thetidis sacra violarent, et ignotorum numinum vetita mortalibus loca turbarent. Neque aliis multum indidit fiduciæ, quod Hanno Carthaginiensis ad promontorium illud Africæ altissimum, quod Θεῶν ὄχημα appellavit*, nostris *Sierra Liona* dicitur, impune pervenisset; superstitione adhuc non dissimili absterrente proavos nostros, ne antipodes crederent.

Tandem autem aliquando Astronomia, ignaviæ humanæ pertæsa, incognitam veteribus scientiam sibi assumpsit collegam, Magneticen

* Vid. Periplum Hannonis *inter* Geographiæ veteris scriptores Græcos minores, ed. Oxon. 1698. Vol. I. page 5.

vocant. Hæc terrestris quædam astronomia est, quâ proprietates motusque proprios mensuramus nostri, quem hîc incolimus, planetæ. Nempe terra parens (cum ingens magnes a quibusdam habita sit) lapides, magnetes, et terellas, ut vocant, tanquam ova excludit, in quibus vis ipsa seminalis terræ latet et viget. Quare magnes dum sese in certos componit situs, motusque majoris illius, unde decerptus fuit, magnetis æmulus, eâ virtute pollet; ut ingentem nos oceanum, vel invidentibus lucem nubibus, impavidos permeare, et terraqueum hunc globum humano generi concessum undique totum possidere suadeat. Interim vapulant miseri Anaximander, Anaximenes, Leucippus, ridentibus jam pueris, terram fieri posse (quod illis placuit) aut columnam, aut mensam, aut tympanum. Paucis mensibus datur coram compellare antipodes, et de piâ magis quam bene perpensâ sanctorum patrum sententiâ queri; qui terram esse planam, oceano humiliorem, et infinitis radicibus deorsum sustentatam voluerunt.

Verum Astronomia, impense benefica, non solum novum orbem Americæ, ævumque aureum, in nos contulit; sed suas etiam gazas, adhuc absconditas, novosque mundos cœlestes mortalibus ostentare voluit. Namque post celebre Columbi facinus, et postquam circumnavigatores nostrates, audacissimi heroës, et oceanum et sese cinxissent navali coronâ; Copernico venit in mentem, tellurem æque posse esse mobilem, ac figuræ ad motum aptissimæ. Placuit opinio, gaudetque sic melius etiam apparentias exhiberi posse; cum invenisset, etiam inter antiquata veterum placita, statutum est illi, hac ansâ arreptâ, Astronomiam vacillantem erigere. Et jam docti incalescere, scholæ ortis disputationibus fremere; mathematici vero candidiores deperire istam hypothesin, quod rerum naturam levaverit multo labore, et impensis tantam intelligentiarum familiam alendi, singulis orbibus et epicyclis natandis necessariam. Philosophis adhuc inconditum videbatur; nisi quibus adeo placuit paradoxi mira con-

cinnitas, ut contra authoritatis monstrum animos resumere, et, suspectis veterum placitis, naturam ipsam penitus scrutari statuerint.

Et jam primum philosophiæ, Græcorum tyrannide oppressæ, restituta libertas illuxit. Etiam huic certamini literario debemus, quicquid in philosophiâ magnum præstiterunt Cartesius, Gassendus, et plurimi alii; quos si novisset antiquitas, maluerit esse suos. Inter venerandos hujus libertatis assertores, Gilbertus noster mihi annumerandus venit; cujus pulcherrima in rebus magneticis inventa hinc obiter dimanârunt, quod hac methodo ad motus telluris demonstrationem pervenire posse existimaverit. Familiares habuit Lyncæos academicos Romæ, maxime Franciscum Sagredum, in *Dialogis Galilæi* personatum. Itaque Galilæus motum attractionis, in descensu scilicet gravium, omnino mirâ sagacitate prosecutus est; Gilbertus ingentes hujus magnetis magis arcanos motus directionis, et inclinationis. Hunc sane exosculor, quod ansam Keplero, confitente ipso, dederit magneticos motus in cœlum introducendi, unde hypothesis elliptica nata est; illum, quod telescopia tantum non invenerit, quibus consummatum in istam hypothesin aliquando dabitur. Neque leviter stringenda sunt duo tam admiranda hypothesis ellipticæ, et telescopiorum inventa; verum cum a te, Galilæe, teque, Keplere, hæc magnalia teneris adhuc cauliculis acceperimus, expectandum est, donec ad maturitatem usque foveantur literatorum quorundam nostræ ætatis industriâ. Laudet posteritas simul et hos et illos, cum jam magis opportunum fuerit inter summos inventores iisdem apotheosin conferre. Macti ingenio este, cœli interpretes, argumenti repertores, quo Deos hominesque vicistis. Namque Dii veterum vel edulia vel mechanica quædam invenerunt; at qui telescopia perfecistis, vos animæ addidistis humanæ, dum sensum visûs millies auxistis; vos animæ addidistis mundanæ, dum objecta visûs millies auxistis.

Fingite, auditores, vosmet Senecam de Americâ repertâ notis

illis versiculis vaticinantem audire; et tum demum intelligetis, quanti fuerit hoc sæculo nasci, si ad nostra usque tempora vaticinium extendisse cogitetis, et suis invidentibus cantâsse:

Venient annis sæcula seris,
Quibus Oceanus vincula rerum
Laxet, et ingens pateat Tellus,
Novosque Tiphys detegat orbes,
Nec sit terris ultima Thule *.

Si descripsisset galaxiæ stellatum populum, si nebulosam quamque stellam, potius firmamentum esse, non nostrum fortasse, sed remotissimi cujusdam mundi quam vastis intermundiis dissiti; si Saturnum videri magis, quam ipsa luna, Proteum dum varie sua corpora nunc in brachia extendit, nunc in ansulas curvat, nunc penitus abscondit, atque interim suam secum vehit lunam; si Jovem terram esse quandam, cui noctem quatuor lunæ pellunt, eclipses quotidianas efficientes; si Martem cavam quandam maculam, tanquam vulnus in pectore, ostentare; Venerem et Mercurium lunam gibbosam, dimidiatam, novellam æmulari; si deinde Solem, lucis limpidissimum fontem, tamen maculis suis, certis illum periodis ambientibus, variegari; si demum pergeret idem Seneca, aliquando posteris concedi lunam cominus inspiciendi facultatem, atque ibi juga montium annularia, valliumque discos, et scaphas, mariumque sinus, syrtes, insulas oculis pererrare, metiri, atque etiam in tabulis selenographicis pingere posse; facile crederem illius sæculi philosophos vitam nobiscum mutare voluisse superstitem, ut minimum in nostro hoc sæculo temporis spatium jucundissimis hisce telescopii spectaculis tererent. Sed hîc sinite paulisper, auditores optimi, sinite me a me sensim abstrahi: sinite, quod de Jamblico dicitur, in aërem ipsis cogitationis viribus sublimem rapi et attolli. Etenim hæc illa est universitatis

* Medea, act 2.

contemplatio, quâ quidem perculsa mens veternosæ corporis moli repudium mittit, et originis suæ memor immortalitatem ipsam ceu postliminio accipit.

Sed quo feror attonitus! Latissimus sane aperitur campus contemplanti solummodo vel cœlestium corporum phases; nec ad unum Saturnum accurate pingendum unius astronomi ætas sufficiet: quo minus ad perplexissimas motuum planetarum tricas describendas? De quibus nihil hodie loquendum, cum perpetuum sit instituti nostri hoc in loco curriculum futurum. Hîc, inquam, loci, in quo illustris fundatoris nostri Greshami magnificentia opulentissimam hanc civitatem condecoravit, aperta propriis in ædibus schola, et rarissimo exemplo Musas sibi hæredes constituit. Quantum vero Musæ hos sacros excoluêre secessus, testatur honorata Gunteri, Brerwoodii, Gellibrandi, Fosteri, aliorumque memoria mathematicorum per ora volitans; testantur erudita eorum opera, tam sub prælo emissa, et doctorum manibus trita, quam in hoc Lyceo prælecta.

Et jam, tam illustribus viris memoratis, qui rempublicam literariam domi forisque fundatori nostro adeo devinctam effecerunt; quid de me sentiam, auditores? Annon aliquis me fungum dixerit, sub umbrâ Greshami subito enatum; præsertim apparente me eo in loco, quo doctissimus meus Rookius etiam (quod non parum est) vobis, lectissimâ coronâ, judicibus, tantam laurum promeruerit? Verum cum e geometriæ cathedrâ majoris acuminis effata proferentem illum adhuc habeatis; siquid vestræ de me expectationi, vel ambitioni propriæ, ne partum ab antecessoribus huic cathedræ honorem elabi sinam, minus respondeam, facilius vos condonaturos esse speramus.

Quod superest, cum hujus civitatis sit, quo deinceps fungor munere, finem dicendis huic urbi fœlicissimæ fausta omnia precatus imponam. Floreat in sæcula, Superûm influentiis irrigua, et inter urbes Pandora, in quam planetarum chorus sua certatim beneficia infudisse videtur. Saturnus diuturnam esse dedit, æramque ab urbe

conditâRomuli mœniis paulo inferiorem annumerare; Jupiter semper regiam fuisse, et justitiæ fora, divitiasque inexhaustas contulit: Mars bellicis viribus armavit: Sol illi benignissime subridet: quænam enim totius orbis habitabilis urbs adeo innumeris referta populis, tam salubribus auris, tam fœcundo circum pomœria ubique solo fruitur? Venus situ pulcherrimo beavit, amœnissimo totius Europæ fluvio irrigavit, et myriadibus elegantium ædificiorum ex terrâ quotidie germinantium ornavit: Mercurius artibus omnigenis expolivit, et mercatorum frequentiâ nulli cedere emporio voluit, nec politioribus eam scientiis ornare destituit; vix enim mathesin, liberamque illam philosophiam, alibi magis excoli mihi (licet academico) videre contigit: Luna denique, aquarum domina, locum deperiisse videtur,

. . . *atque urbem magis omnibus unam,*
Posthabitâ, coluisse, Delo;

ubi enim terrarum adeo a longe salum, errantesque in mediam usque insulam maris Deos invitat, ut hinc magni Maragnonis, illinc Indi calentis gazas in sinum amati Thamesis exoneret, qui vicissim refluus lanis nostris frigidiora vestit climata? Et jam cum navigandi artes simul inferant, et divitias, et mores, et literas; quid amplius beatissimæ urbi bene ominari possim, quam ut semper optimos omnium navarchos alat, qui (quod Tyriis primum, deinde Rhodiis datum est) θαλασσοκρατοῦντες audiant? Quod denique quo fœlicius eveniat, hoc in votis non infimum addam necesse est; Londinum ut nostrum altera Alexandria, et mathematicarum artium certissima sedes evadat *. C. W.

August, 1657.

* Ad exemplar MS. a viro illustri Ricardo Mead, med. reg. mecum communicatum.—I. W.

No. 9.

First Sketch, in English, of the Inaugural Oration, delivered at Gresham College.—Page 54.

Looking with respectful awe on this great and eminent auditory—while here I spy some of the politer genii of our age; here, some of our patricians; there, many choicely learned in the mathematical sciences, and everywhere, those that are more judges than auditors; I cannot but with juvenile blushes betray that which I must apologize for. And, indeed, I must seriously fear, lest I should appear immaturely covetous of reputation, in daring to ascend the chair of astronomy, and to usurp that big word of demonstration, *dico*, with which (while the humble orator insinuates only) the imperious mathematician commands assent; when it would better have suited the bashfulness of my years, to have worn out more *Lustra* in a *Pythagorean* silence.

I must confess I had never designed any thing farther, than to exercise my *radius* in private dust, unless those had inveighed against my sloth and remissness with continual but friendly exhortations, whom I may account the great ornaments of learning and our nation, whom to obey is with me sacred, and who, with the suffrages of the worthy senators of this honourable city, had thrust me into the public sand. That, according to my slender abilities, I might explain what hath been delivered to us by the ancients, concerning the motions and appearances of the celestial bodies, and likewise what hath been found out new by the moderns: for we have no barren age; and now, in this place, I could point to *Inventors*;—inventors—

title so venerable of old, that it was merit enough to confer on men patents of divinity, and perpetual adoration.

" Nor need I therefore to so knowing an auditory relate to what end, or praise of Hercules, (as they say) by troubling you with a tedious encomium of astronomy; we shall leave this to the Dutch writers, whose swelling title-pages proclaim that their books are useful to theologians, philosophers, philologers, mathematicians, grammarians, and who not? It were frivolous to tell you, how much astronomy elevates herself above other sciences, inasmuch as her subject, the beauteous heavens, (infinite in extension, pure and subtile, and sempiternal in matter, glorious in their starry ornaments, of which every one affords various cause of admiration, most rapid, yet most regular, most harmonious in their motions, in every thing, to a wise considerer, dreadful and majestic) doth precede either the low or the uncertain subjects of other sciences. It were pedantic to tell you of the infinity of our souls to heaven, of our erect countenances given us on purpose for astronomical speculations; or to acquaint you that Plato commended it to his commonwealth's men, while he says, " *Ex ejusmodi disciplinis, instrumentum quoddam animi expurgatur, reviviscitque quod anteà ex aliis studiis infectum occæcatumque fuerat; solo enim hoc inspicitur veritas:*" Tho' truly elsewhere he gives us this great truth—" *Animadvertisti eos, qui naturâ mathematici sunt, ad omnes ferè disciplinas auctiores apparere; qui autem ingenio hebetiores sunt, si in hoc erudiantur, etiamsi nihil amplius utilitatis assequantur, seipsis tamen ingeniosiores effici solere.*" I might be too verbose should I instance this particularly in showing how much the mathematical wits of this age have excelled the ancients (who pierced but to the bark and outside of things) in handling particular disquisitions of nature, in clearing up history, and fixing chronology; for, mathematical demon-

strations being built upon the impregnable foundations of geometry and arithmetic, are the only truths, that can sink into the mind of man, void of all uncertainty; and all other discourses participate more or less of truth, according as their subjects are more or less capable of mathematical demonstration. Therefore, this rather than logic is the great organ Organωn of all infallible science; altho' I will not exclude logic from being an instrument of reasoning, but rather include it in geometry; for, the technical, and most useful part of it, concerning syllogism, and the art of reasoning, is but a geometrical ordering the *data per media proportionalia* to determine the *quesitum*. It would be endless to run through the whole Encyclopædia, and show you in every part the great use of astronomy; even queen theology hath been much beholding to the trusty service of this ancilla, in settling the sacred history by the help of chronology, which as it is a part of astronomy is built chiefly upon the unerring chronicles of the *gesta superûm* et *cœlorum*, observations of eclipses, great conjunctions, and the like appearances; without which indexes of times, all sacred and profane history were but indigested heaps and labyrinths, where men are at a loss either to begin or end. But chronology (a thing too much neglected by the ancients) hath given an ichnography of this labyrinth, and described times, as it were in a map, by which we may run back secure to many chyliads of years, conversing with those remote ages, and there finding new discoveries as by navigation, we converse with those of distant climates.

Some, it may be, will knit the brow, if I should say, that even Holy Scripture itself sometimes requires an astronomical interpreter; who else shall give a good account of the *Hexameron*, or decide the controversy about the retrocession of the shadow upon the dial of *Ahaz?* When without a miracle that might be many ways done by

the mere fabric of the dial; for it is easy to frame such a dial with such a stile, that every day at such a time, the shadow shall seem to return; but what the dial was, we know, if we may believe the *Hebrew* writer, who describes it obscurely, yet so that I can easily fancy it to be the same with that which the Eastern nations used, and which Vitruvius tells us, Berosus Chaldæus brought into Greece —Hemicyclium *excavatum ex quadrato, ad enclimaque succisum, hoc est, ad elevationem poli.*—The retrocession must therefore be real, either in the sun or shadow only; but what if it were in neither truly, but from a parelion? the sun returned ten degrees by which it had gone down: might not a parelion suddenly appear at ten degrees distance from the sun, the sun being just set under the horizon, or being hid by a cloud? (for parelions are refractions made in nitrous vapours higher than the clouds) so started back; tis what Cadamustas, and other describers of the East Indies, say, happens often in the Island Sumatra, in the month of April; for ten or fifteen degrees the sun seeming to start back, and then to return again, where otherwise he would have appeared. This may be done either by a parelion, or a strong refraction through a vapour in an angular form, like a glass prism, passing between the eye and the sun; for, if you gently pass a prism of crystal before any objects, the objects will appear to start out of their places. Neither need we fear to diminish a miracle by explaining it; this retrocession of the sun was given as a sign, so was the rainbow, which, had it appeared never since, had been miraculous.

I might ask the theologian, who shall explain to me how our Saviour, who was buried on Friday-night, and rose again before day on Sunday, could be said to be three days and three nights in the sepulchre, when his stay there was but a full day and two nights? The world hath hitherto shifted off this difficulty with a synedoche,

by taking in parts of Friday and parts of Sunday; but yet there wanted a third night; neither doth *Grotius*, with an exception sometimes of any part of a day or night, for a whole nycthemeron, in the civil law, much mend the matter: here seems to be need of an astronomer, who thus possibly may explain it.—While there was made, by the motion of the sun, a day and two nights in the hemisphere of Judea, at the same time in the contrary hemisphere was made a night and two days; join these together, you have three days and three nights; for Christ suffered not for Judea alone, but for the whole world, and in respect of all the inhabitants of the earth conjunctim he rested three days and three nights, though in respect to Judea, or any particular horizon, but one day and two nights.

Who but the astronomer shall explain to us how many hundred times one of the great luminaries exceeds the other, which yet is but one of some thousands as great as itself, or bigger? Who can better magnify the Arm that expanded the heavens, than he who tells you, that seven thousand miles will fall short of the diameter of this earth, and yet that this diameter repeated a thousand times will not reach the sun; or this distance between the sun and us, repeated a thousand times, reach the nearest fixed star? And yet in probability some are infinitely more remote than others. Certainly as secretaries of princes are they only, from whom true histories of those princes are to be expected; so he only can truly describe the world, whom skill in astronomy hath given him right to the glorious title of Hipparchus, to be *conciliorum naturæ particeps et interpres.*

But not to enlarge in extending the dition of astronomy to the empyræum; her influence is great over sublunary sciences; among which, should I say that even physic hath its use of astronomy, I might seem to patronise the ungrounded fancies of that sort of astrological medicasters, who do nothing without the favour of their

Achæus, and entitle one planet or other to every herb, or drug, which they suppose invalid, unless mystically timed with this or that aspect; ceremoniously numbering the critical days, not considering that neither time nor number had any reality *extra intellectum humanum*. But, tho' with contempt of these follies, let me seriously ask the most rational philosophical inquirer into medicine, whether those aphorisms, wherein Hippocrates hath marshalled diseases under the seasons of the year, and the several winds, and the varieties of weathers, have not as much of the aphorism in them as the rest; and were not as diligently collected from the brazen tables, from experiments derived in succession from his aged preceptors before him, and from his own unerring industry, as the rest? But it may be objected, that these astrological aphorisms savour much of the Chaldean and Syrian, from whom it appears the Grecians received much of their art of healing, as they did almost all their other learning; and indeed we find by Herodotus, that the knowledge of physic by way of aphorism was proper to the Babylonians, who recorded publicly the history of the disease, and method of cure of every particular patient that recovered, to which records others resorted in difficult cases, that had the like diseases, and the great learning of these nations being astrology, we may imagine that they made good observations of epidemical diseases from the distempers of the air, from the celestial influxes, which are now either wholly lost, or depraved, or useless, as not suited to our climate. What other subject those medical books of the friend and contemporary of Hippocrates, Democritus ΠΕΡΙ ΑΚΑΙΡΙΩΝ ΚΑΙ ΣΠΙΚΑΙΡΙΩΝ, reckoned in the catalogue of his works, by Laertius, should contain, I know not; sure I am, that if we dissected animals of the same species, in various changes of weather, we should find great difference in the brain, as to dryness or moisture, and weight: and in the viscera, and

mass of blood, as to the quantity, and salt in it: and in the lymphæductus, as to their turgency, as I have frequently tried: and if with these, we join the experiments of the fermenting of wines, and other liquors against moist weather; the souring of them in thunder, and dry weathers; adding likewise the history of pests, and epidemical diseases, we shall find a great deal of reason to conclude, that there is a true astrology to be found by the inquiring philosopher, which would be of admirable use to physic, though the astrology vulgarly received cannot but be thought extremely unreasonable and ridiculous, as any thing among the many impostures that have been imposed by antiquity upon the credulous world to him that hath given up himself to demonstration.

Hitherto in these greater faculties, theology, sacred and profane history and physic, we have been but assisted a little by astronomy, but if we look into the next class of science, we shall perceive ourselves wholly indebted to her. It is astronomy that enlarged both our understanding and habitation; hath given politeness, and consequently religion and laws, to the barbarous world. He that looks upon that little parcel of the world, which the ancients contented themselves with, and sees now how we furrow the great ocean, and gather our aromatic harvests from the remotest parts of the globe, and can enjoy in our own Europe whatever Thule or Ethiopia, the rising or setting sun can produce, must needs rejoice, that so much larger an inheritance is fallen to mankind, by the favour of astronomy. It was astronomy alone, that of old undertook to guide the creeping ships of the ancients, whenever they would venture to leave the land to find a neighbour shore; tho' then she was a humorsome guide, and often veiling the face of heaven with clouds, would cruelly leave them to the giddy protection of fortune, and for the most part only tossed them up and down, and sported herself

with their ruin. But if she deigned to show them one glimpse of a star, if but of alcor, or the least albicant spot of heaven, it was enough to pave a way for them homeward, through the horror of the waves and night. In this is truly perceived the influx of heaven, when the influx of one *Cynosura* can move a thousand sail of fraught ships, and render one element as habitable and more fruitful than the other, though more hazardous. Thus did the ancients every where cultivate the Mediterranean waters; but their fear of venturing into the ocean they dissembled by religion, lest they should violate the rights of *Thetis*, and the water deities.

At last, astronomy took to herself another assistant, magnetics, a kind of terrestrial astronomy, an art that tells us the motions of our own star we dwell on, whose every fragment moving in true sympathy with the great one, bids us, in spite of clouds, pass the vast ocean, and possess every piece of our own star; and now were the gates of true science opened, and the poor philosophers Anaximander, Anaximenes, Leucippus, Empedocles, are laughed at, for making the earth a pillar, or a table, or a drum, or inclined of its own nature. In a few months we shake hands with the Antipodes, and pity the supposed heretical bishop for his unseasonable venting the truth; and also the pious ignorance of the fathers, that would have the plane earth fixed upon infinite long roots. But divine astronomy intended to discover to man her own yet hidden glory, as well as those of the terrestrial globe; for after the prodigious attempt of Columbus, and, as it appears to me, the difficulter voyage of Vasco de Gama, who before pursued the weak beginnings of Hanno the Carthaginian, and twice scoured through the torrid zone, in doubling the Cape, first finding it habitable, discovering the errors of the ancients about Africa, and first opening a way to the Indies by sea. By these and succeeding voyages, performed by the circumnavigators of our nation, the earth was concluded to be truly globous, and

equally habitable round. This gave occasion to Copernicus to guess why this body of earth, of so apt a figure for motion, might not move among other celestial bodies; it seemed to him in the consequences probable, and apt to solve the appearances, and finding it likewise among the antiquated opinions, he resolved on this occasion to restore astronomy. And now the learned begin to be warm, the schools ring with this dispute; all the mathematical men admire the hypothesis, for saving nature a great deal of labour, and the apparent absurdity of a moving earth makes the philosophers contemn it, though some of them, taken with the paradox, begin to observe nature, and to dare to suppose some old opinions false; and now began the first happy appearance of liberty to philosophy, oppressed by the tyranny of the Greek and Roman monarchies.

Among the honourable assertors of this liberty I must reckon Gilbert, who having found an admirable correspondence between his Ferella, and the great magnet of the earth, thought this way to determine this great question, and spent his studies and estate upon this inquiry; by which *obiter* he found out many admirable magnetical experiments: this man would I have adored, not only as the sole inventor of magnetics, a new science to be added to the bulk of learning, but as the father of the new philosophy; Cartesius being but a builder on his experiments. This person I should have commended to posterity in a statue, that the deserved marble of Harvey might not stand to future ages without a marble companion of his own profession. He kept correspondence with the *Lyncei academici* at Rome, especially with Franciscus Sagudus, one of the intulocutors in the dialogues of Gallilæus, who laboured to prove the motion of the earth, negatively, by taking off objections, but Gilbert positively; the one hath given us an exact account of the motion of gravity upon the earth; the other of the secret and more obscure motion of

attraction and magnetical direction in the earth; the one I must reverence for giving occasion to Kepler (as he himself confesses) of introducing magnetics into the motions of the heavens, and consequently of building the eliptical astronomy; the other of his perfecting the great invention of telescopes, to confirm this astronomy; so that if one be the Brutus of liberty restored to philosophy, certainly the other must be the Collatinus.

And here I should not slightly mention that great foreign wit, Kepler, the compiler of another new science, Dioptrics, (in which, of the mathematics only, we can boast that we had not the Grecians for our masters,) but more eminent for being the Eudoxus of this age, the inventor of the eliptical hypothesis; but since he was only the first founder of these *magnalia*, and that the perfection of both these are justly to be expected from men of our own nation at this day living, and known to most of this auditory, the claritas of these latter makes me cease from a larger encomium of Kepler, and reserve it for posterity to bestow upon them, when it shall be more seasonable to give them an apotheosis among those great inventors I have named.

And indeed, of all the arguments which the learned of this inquisitive age have busied themselves with, the perfection of these two, dioptrics and the eliptical astronomy, seem most worthy our inquiry; for natural philosophy having of late been ordered into a geometrical way of reasoning from ocular experiments, that it might prove a real science of nature, not an hypothesis of what nature might be, the perfection of telescopes and microscopes, by which our sense is so infinitely advanced, seems to be the only way to penetrate into the most hidden parts of nature, and to make the most of the creation.

I cannot (most worthy auditors) but very much please myself in introducing Seneca, in his prophecy of the new world,—

Venient annis sæcula seris,
Quibus Oceanus vincula rerum
Laxet, et ingens pateat Tellus,
Novosque Tiphys detegat orbes,
Nec sit terris ultima Thule.

But then I only begin to value the advantages of this age in learning before the former, when I fancy him continuing his prophecy, and imagine how much the ancient laborious inquirers would envy us, should he have sung to them, that a time would come, when men should be able to stretch out their eyes, as snails do, and extend them fifty feet in length; by which means they should be able to discover two thousand times as many stars as we can; and find the galaxy to be myriads of them; and every nebulous star appearing as if it were the firmament of some other world, at an incompre-hensible distance, buried in the vast abyss of intermundious vacuum: that they should see Saturn, a very *Proteus*, changing more admirably than our moon, by the various turnings and inumbrations of his several bodies, and accompanied besides with a moon of his own: that they should find Jupiter to be an oval earth, whose night is enlightened by four several moons, moving in various swiftnesses, and making multitudes of eclipses: that they should see Mars, Venus, and Mercury to wax and wain: and of the moon herself, that they should have a prospect as if they were hard by, discovering the heights and shape of the mountains, and depths of round and uniform valleys, the shadows of the mountains, the figure of the shores, describing pictures of her with more accurateness than we can our own

globe, and therein requiting the moon for her own labours, who, to discover our longitudes by eclipsing the sun, hath painted out the countries upon our globe, with the point of her conical shadow, as with a pencil. After all this, if he should have told them how the very fountain of light is variegated with its *Faculæ* and *Maculæ*, proceeding round in regular motions, would not any of the astronomers of his time have changed their whole life for a few windy days (in which principally the solar spots appear), or a few clear nights of our *Sæculum?*

But I have lost myself upon this subject, as endless as the universe itself: so large a field of philosophy is the very contemplation of the phases of the celestial bodies, that a true description of the body of Saturn only, were enough for the life of one astronomer, how much more the various motions of them; which I am not now to descant on, but reserve for the continual subject of my future discourses in this place—a place, in which the magnificence of our illustrious founder, Gresham, hath adorned this opulent city with the profession of the sciences in his own house, by a rare example, leaving the muses to be here his heirs and successors for ever; who seem to be affected with the place, having preserved it in esteem, by furnishing it hitherto with men of most eminent abilities, especially in mathematical sciences; among whom the names of Gunter, Brerewood, Gilibrand, Forster, are fresh in the mouths of all mathematicians, for the excellent remains they have either left behind them in print, or adorned the tables with in reading. Amongst which, the useful invention of logarithms, as it was wholly of a British art, so here especially received great additions; and likewise the whole doctrine of magnetics, as it was of English birth, so by the professors of this place was augmented by the first invention and observation of the mutation of the magnetical variation; a thing, I con-

fess, as yet crude, yet what may prove of consequence in philosophy, and of so great use possibly to the navigator, that thereby we may attain the knowledge of longitudes, than which former industry hath hardly left any thing more glorious to be aimed at in art.

And now, since the professorship I am honoured with is a benefit I enjoy from this city, I cannot conclude without a good omen to it. I must needs celebrate it, as particularly favoured by the celestial influences; a Pandora, on which each planet hath contributed something. Saturn hath given it diuturnity, and to reckon an earlier era, *ab urbe conditâ*, than Rome itself. Jupiter hath made it the perpetual seat of kings and of courts of justice, and filled it with inexhausted wealth. Mars has armed it with power. The Sun looks most benignly on it; for, what city in the world, so vastly populous, doth yet enjoy so healthy an air, so fertile a soil? Venus hath given it a pleasant situation, watered by the most amœne river of Europe, and beautified with the external splendour of myriads of fine buildings. Mercury hath nourished it in mechanical arts and trade, to be equal with any city in the world; nor hath forgotten to furnish it abundantly with liberal sciences, amongst which I must congratulate this city that I find in it so general a relish of mathematics, and the *libera philosophia*, in such a measure, as is hardly to be found in the academies themselves. Lastly, the Moon, the lady of the waters, seems amorously to court this place:

> "....*atque urbem magis omnibus unam,*
> *Posthabitâ coluisse*, Delo."

For to what city doth she invite the ocean so far within land as here? communicating by the Thames whatever the banks of Maragnon or Indus can produce, and at the reflux warming the frigid

zone with our cloth; and sometimes carrying and returning safe those carines that have encompassed the whole globe. And now, since navigation brings with it both wealth, splendour, politeness, and learning, what greater happiness can I wish to the Londoners, than that they may continually deserve to be deemed, as formerly, the great navigators of the world; that they always may be what the Tyrians first, and then the Rhodians, were called, "the masters of the sea;" and that London may be an Alexandria, the established residence of the mathematical arts?

No. 10.

Preamble of a Charter to incorporate the Royal Society (from a first essay, and rough draught, by Mr. Christopher Wren).

Charles, &c.

Whereas amongst our regal hereditary titles (to which by divine Providence, and the loyalty of our good subjects, we are now happily restored), nothing appears to us more august, or more suitable to our pious disposition, than that of father of our country, a name of indulgence as well as dominion; wherein we would imitate the benignity of Heaven, which in the same shower yields thunder and violets; and no sooner shakes the cedars, but, dissolving the clouds, drops fatness. We therefore, out of a paternal care of our people, resolve, together with those laws which tend to the well administration of government, and the people's allegiance to us, inseparably to join the supreme law of *salus populi*, that obedience may be mani-

festly not only the public but private felicity of every subject; and the great concern of his satisfactions and enjoyments in this life. The way to so happy a government, we are sensible, is in no manner more facilitated than by promoting of useful arts and sciences, which, upon mature inspection, are found to be the basis of civil communities, and free governments, and which gather multitudes by an *Orphean* charm into cities, and connect them in companies; that so, by laying in a stock, as it were, of several arts and methods of industry, the whole body may be supplied by a mutual commerce of each other's peculiar faculties; and consequently that the various miseries and toils of this frail life, may, by as many various expedients, ready at hand, be remedied or alleviated; and wealth and plenty diffused in just proportion to every one's industry, that is, to every one's deserts.

And there is no question but the same policy that founds a city, doth nourish and increase it; since these mentioned allurements to a desire of cohabitation, do not only occasion populosity of a country, but render it more potent and wealthy than a more populous, but more barbarous nation; it being the same thing, to add more hands, or by the assistance of art to facilitate labour, and bring it within the power of the few.

Wherefore our reason hath suggested to us, and our own experience in our travels in foreign kingdoms and states hath abundantly confirmed, that we prosecute effectually the advancement of natural experimental philosophy, especially those parts of it which concern the increase of commerce, by the addition of useful inventions tending to the ease, profit, or health of our subjects; which will best be accomplished by a company of ingenious and learned persons, well qualified for this sort of knowledge, to make it their principal care and study, and to be constituted a regular society for this purpose, endowed with all proper privileges and immunities.

Not that herein, we would withdraw the least ray of our influence from the present established nurseries of good literature and education, founded, by the piety of our royal ancestors and others, and those laws, which, as we are obliged to defend, so the holy blood of our martyred father hath inseparably endeared to us; but, that we purpose to make further provision for this branch of knowledge likewise, natural experimental philosophy; which comprehends all that is required towards those intentions we have recited, taking care in the first place for religion, so next for the riches and ornament of our kingdoms; as we wear an imperial crown, in which flowers are alternately intermixed with the ensigns of Christianity.

And whereas we are well informed that a competent number of persons of eminent learning, ingenuity, and honour, concording in these inclinations and studies towards this employment, have for some time accustomed themselves to meet weekly, and orderly to confer about the hidden causes of things, with a design to establish certain, and correct uncertain, theories in philosophy; and by their labours in the disquisitions of nature, to approve themselves real benefactors to mankind: and, that they have already made a considerable progress, by divers useful and remarkable discoveries, inventions, and experiments, in the improvement of mathematics, mechanics, astronomy, navigation, physic, and chymistry; we have determined to grant our royal favour, patronage, and all due encouragement, to this illustrious assembly, and so beneficial and laudable an enterprise. Know, therefore, &c.

No. 11.—Page 77.

List of the first Members of the Royal Society, taken from Dr. Sprat's History.—Page 431.

The King's Majesty, Founder and Patron.
His Royal Highness the Duke of York.
His Highness Prince Rupert.
His Highness Ferdinand Albert, Duke of Brunswick and Lunenburgh.

The Duke of Albemarle,
The Earl of Alesbury,
The Earl of Argile,
The Lord Ashley,
The Lord Annesley,
Mr. Ashmole,
Sir Robert Atkins,
Mr. Austin,
Mons. Ausout,
Mr. Aubrey,
The Duke of Buckingham,
The Lord George Berkeley,
The Lord Brereton,
Mr. Bagnal,
Mr. Bains,
Mr. William Balle,
Mr. Isaac Barrow,
Dr. George Bate,
Dr. Bathurst,
Dr. Beal,
Mons. Beaufort de Fresars,
Sir John Birkinhead,
Mr. Blunt,
Mr. Boyl,
Mr. Brook,
Dr. Bruce,
Mons. Bullialdus,
Mr. Burnet,
Sir Edward Byshe,
The Lord Archbishop of Canterbury,
The Earl of Clarendon,
Lord Chancellor of England,
The Earl of Carlile,

The Earl of Craford and Lindsay,
The Lord Cavendish,
The Lord Clifford,
Mr. Carkess,
Mr. Carteret,
Dr. Charleton,
Sir Winstone Churchill,
Sir John Clayton,
Sir Clifford Clifton,
Mr. George Cock,
Sir Richard Corbet,
Dr. Cotton,
Dr. Cox,
Mr. Thomas Cox,
Mr. Daniel Cox,
Mr. Creed,
Mr. Crispe,
Sir John Cutler,
The Marquess of Dorchester,
The Earl of Devonshire,
The Earl of Dorset,
Mons. Vital de Damas,
Sir George Ent,
Mr. Ellise,
Mr. John Evelyn,
Sir Francis Fane,
Mons. le Febvre,
Sir John Finch,
Mr. Henry Ford,
Sir Bernhard Gascoigne,
Mr. Joseph Glanvile,
Dr. Glisson,
Mr. William Godolphin,
Mr. Graunt,
The Lord Hatton,
Mr. Haak,
Mr. William Hammond,
Mr. William Harrington,
Sir Edward Harley,
Sir Robert Harley,
Mr. Harley,
Dr. Henshaw,
Mons. Hevelius,
Mr. Abraham Hill,
Mr. Hoar,
Dr. Holder,
Mr. Hook,
Mr. Charles Howard,
Mons. Huygens,
Mr. Richard Jones,
The Earl of Kincardin,
Sir Andrew King,
Mr. Edmund King,
The Earl of Lindsay,
The Lord Bishop of London,
Mr. Lake,
Sir Ellis Leighton,
Mr. James Long,
Sir John Lowther,
Mons. Hugues de Lyonne,

The Earl of Manchester,
Mons. Nicolas Mercator,
Dr. Jasper Needham,
Dr. Needham,
Mr. Thomas Neile,
Mr. William Neile,
Mr. Nelthorp,
Mr. Newburgh,
Sir Thomas Nott,
The Earl of Peterborough,
Mr. Packer,
Mr. Samuel Parker,
Sir Robert Paston,
Dr. John Pearson,
Dr. Pell,
Sir William Persall,
Sir Peter Pett,
Mr. Peter Pett,
Mons. Petit,
Sir William Portman,
Mr. Francis Potter,
Mr. Povey,
Dr. Power,
Sir Richard Powle,
Mr. Pepys,
The Lord Roberts (Lord Privy Seal),
The Lord Bishop of Rochester,
Mr. Rolt,
Mr. Rycaut,
The Earl of Sandwich,
The Lord Viscount Stafford,
The Lord Stermount,
Mr. Schroter,
Sir James Shaen,
Mr. Skippon,
Sir Nicholas Slaney,
Mr. Henry Slingsby,
Mr. Smethwick,
Mr. Edward Smith,
Dr. George Smith,
Mons. Sorbiere,
Sir Robert Southwell,
Mr. Alexander Stanhop,
Mr. Thomas Stanley,
The Earl of Tweedale,
Sir Gilbert Talbot,
Sir John Talbot,
Dr. Terne,
Mr. Thomas Thyn,
Dr. Thruston,
Sir Samuel Tuke,
Sir Theodore de Vaux,
Mr. Vermuyden,
Mons. Isaac Vossius,
The Lord Bishop of Winchester,
Mr. Waller,
Mr. Waterhouse,
Dr. Whistler,
Mr. Joseph Williamson,

Dr. Willis,
Mr. Francis Willughby,
Mr. Wind,
Mr. Winthorp,
Mr. Woodford,
Mr. Matthew Wren,
Dr. Thomas Wren,
Sir Cycil Wyche,
Sir Peter Wyche,
Mr. Wilde,
The Lord Archbishop of York,
The Lord Yester,
Dr. More.

The present Council are these that follow:

William Lord Viscount Brouncker, President: which office has been annually renewed to him by election, out of the true judgment which the society has made of his great abilities in all natural and especially mathematical knowledge.

Mr. William Aerskin,
Dr. Peter Ball,
Dr. Timothy Clerk,
Mr. Daniel Colwall,
Dr. Croon,
The Lord Bishop of Exeter,
Dr. Jonathan Goddard,
Mr. Henry Howard of Norfolk,
Mr. Henshaw,
Mr. Hoskins,
Sir Robert Moray,
Sir Anthony Morgan,
Dr. Merret,
The Earl of Northampton,
Sir Paul Neile,
Mr. Oldenburg,
Sir William Petty,
Doctor Pope,
Dr. Wilkins,
Dr. Christopher Wren.

No. 12.—Page 163.

SIR CHRISTOPHER WREN'S *Hypothesis, and Geometrical Problem, about the Comets of* 1664, 1665, *and of April,* 1677.—*Extracted from Hooke's Cometa, London,* 4to. 1678.

"A THIRD way of finding the parallax of comets is wholly new, and though hypothetical (as supposing the annual motion of the earth and the motion of the comet in a right line through equal spaces in equal times) yet it is founded upon a problem in geometry, invented by the incomparable mathematician, Doctor Christopher Wren, which is truly noble and wholly new, and though it had been of no use in astronomy, deserves none of the meanest places in geometry, by the help of which (which is much more than either of the other ways is capable of), one may easily find the true parallax of the comets, from any four exact observations of it, made at different times at the same place. Nor does it require so nice and accurate instruments and observators as are altogether necessary in the other ways. The problem, as I received it, is this. (See the plate.)

R. H.

PROBLEMA.

Datis quatuor lineis utcunque ductis (quarum nec tres sunt parallelæ neque ab eodem puncto ductæ) quintam ducere quæ à quatuor primo datis in tres partes secetur ratione et positione datas.

Sint in figuris 1, 2, 3, 4, 5, 6, quatuor rectæ ADC, BEC, AE, BD, productæ versus K, γ, ϕ, M, oportet quintam ducere ut KM, quæ secetur à primo datis in segmenta KN, NO, OM, secundum

Wrens theory of Comets.

Fig. I.

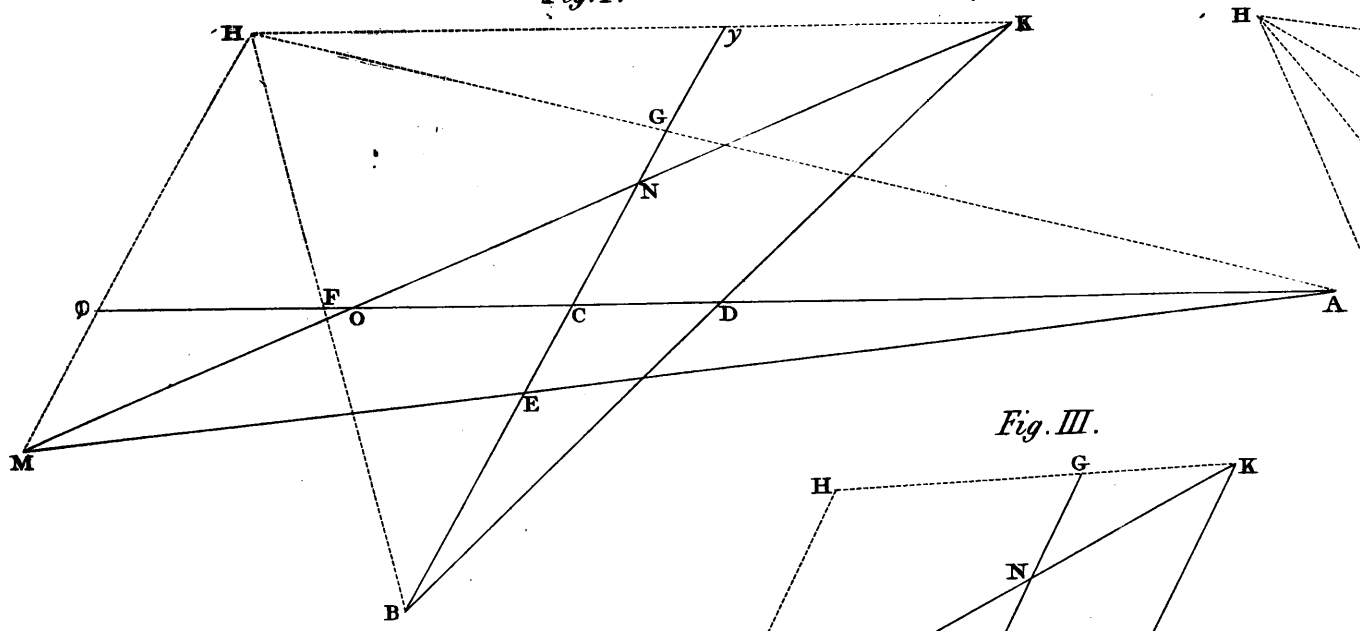


Fig. II.

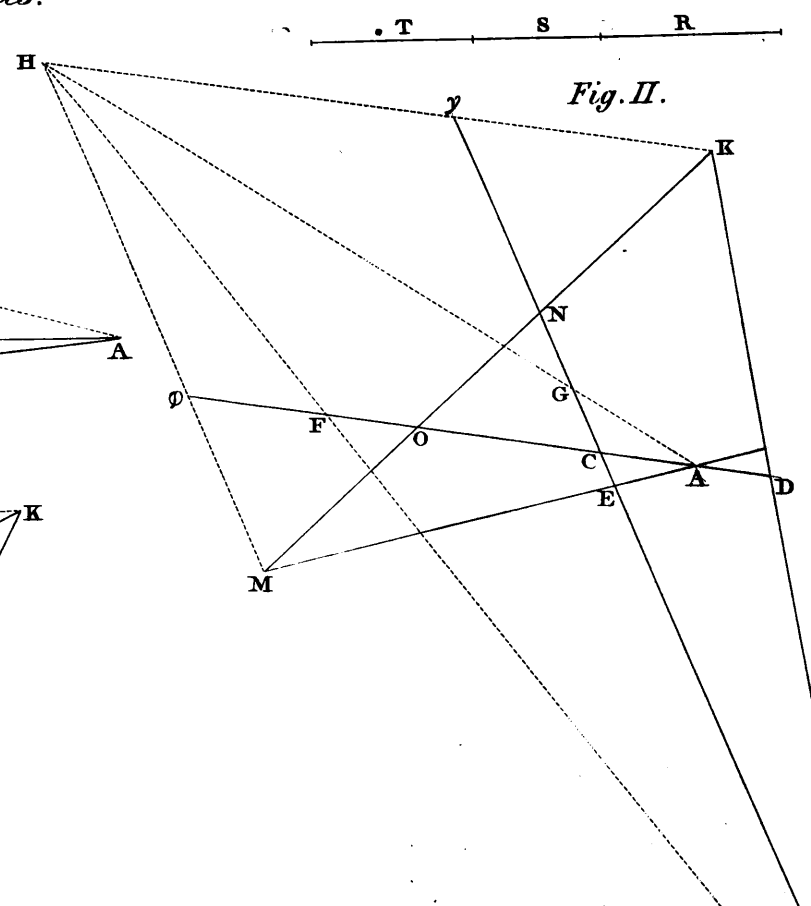


Fig. III.

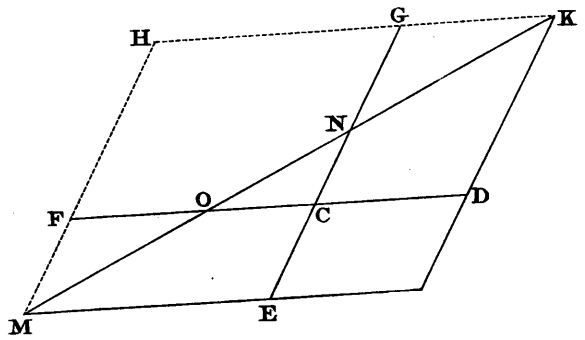


Fig. V.

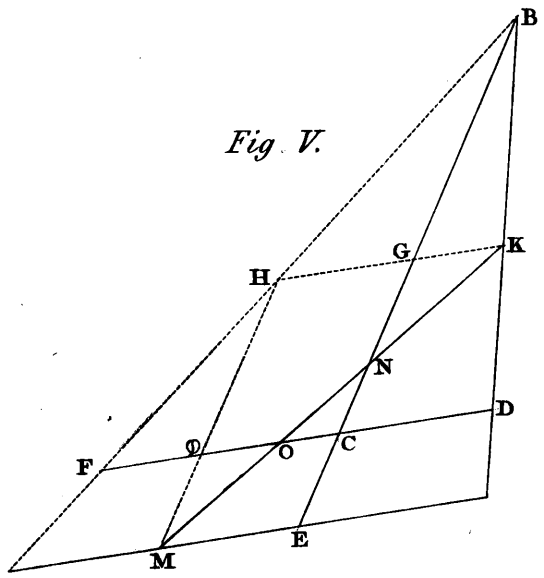


Fig. VI.

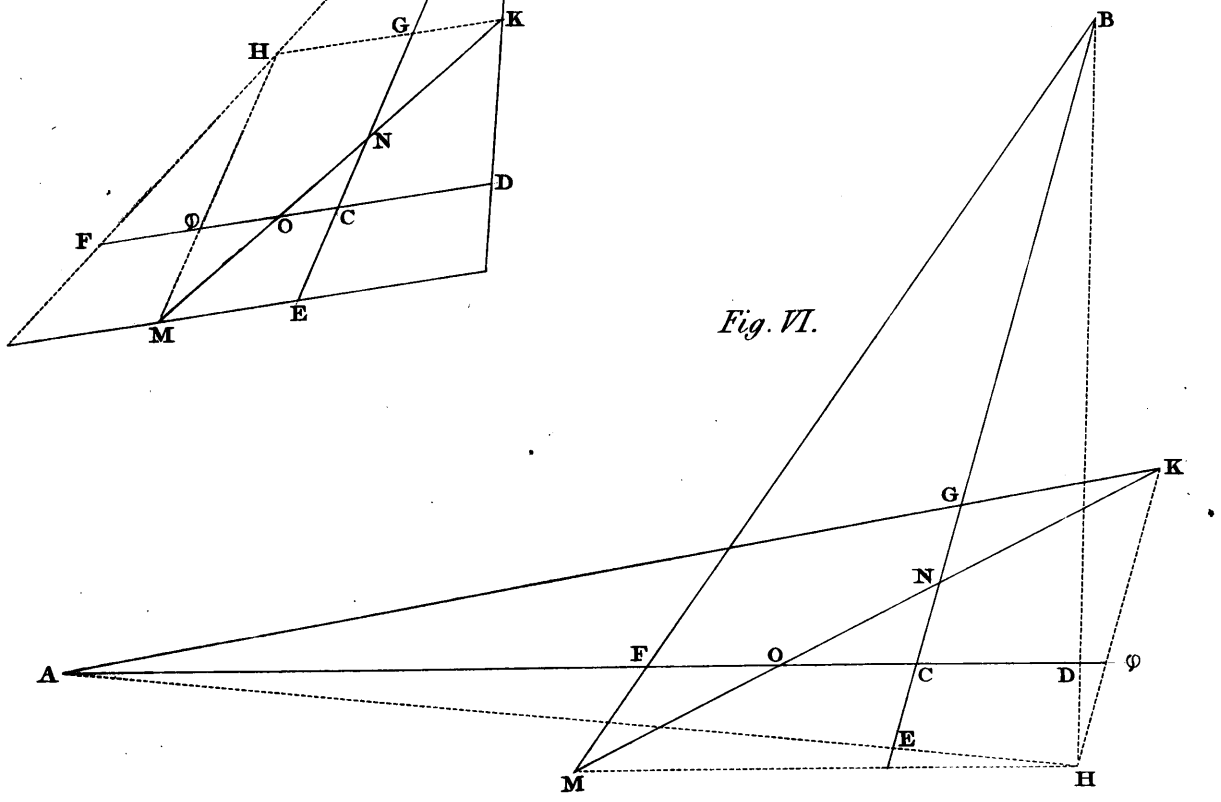
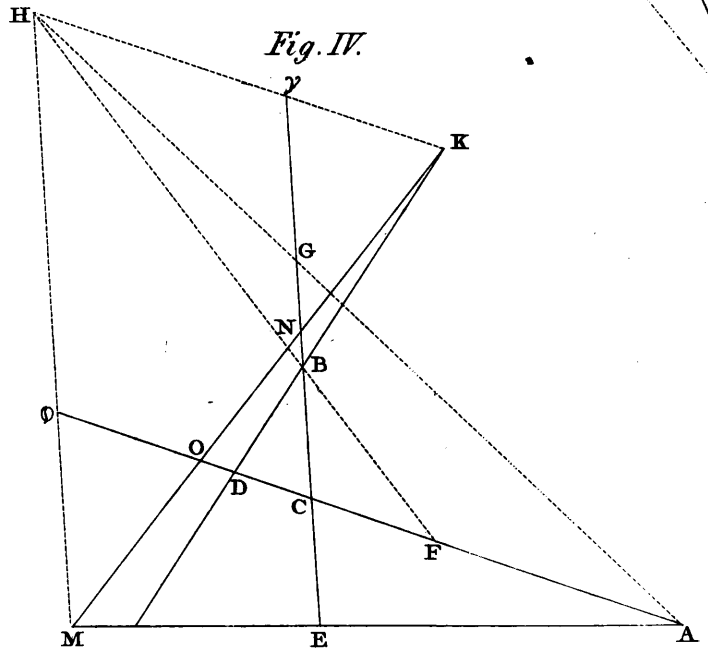


Fig. IV.



Sir Chr. Wren, inv.t

James Elmes, M.R.I.A. del.t

W. Lowry, sculp.

Published by Priestley & Weale, Jany. 1823.

datas rationes R, S, T. Fiat ut R ad S, T, simul sumptas ita CD ad CF. Rursus ut T ad S, R, simul sumptas, ita EC ad CG, ductis autem AGH, BFH, à mutua intersectione H, ducantur H γ K, H φ M, parallelæ nimirum lineis AC, BC, quæ mediæ interjacent inter extremas, BD, AE. Denique inter puncta extremarum KM, ducatur recta secans medias in NO. Dico segmenta KN, NO, OM, esse in data ratione RST.

Quoniam FD parallela est ipsi HK, ergo ut CD ad CF, ita K γ, ad γ H, et quoniam γ N parallela est ipsi HM, ergo, ut K γ ad γ H, ita KN ad NM, ergo ut KN ad NM, ita CD ad CF; sed CD ad CF, est ut R ad S, T, simul sumptas, ergo KN est ad NM, ut R ad ST, simul sumptas. Similiter quoniam EG parallela est ipsi MH, et φ O ipsi HK, demonstratur MO esse ad OK, ut T ad S, R, simul sumptas. Quare tres KN, NO, OM, erunt ad invicem ut R, S, T, ergo ducitur linea KM, cujus tria segmenta à quatuor lineis datis intercepta sunt in data ratione R, S, T, et servata quidem positione sive rationum ordine R, S, T, quod erat faciendum.

C. W.

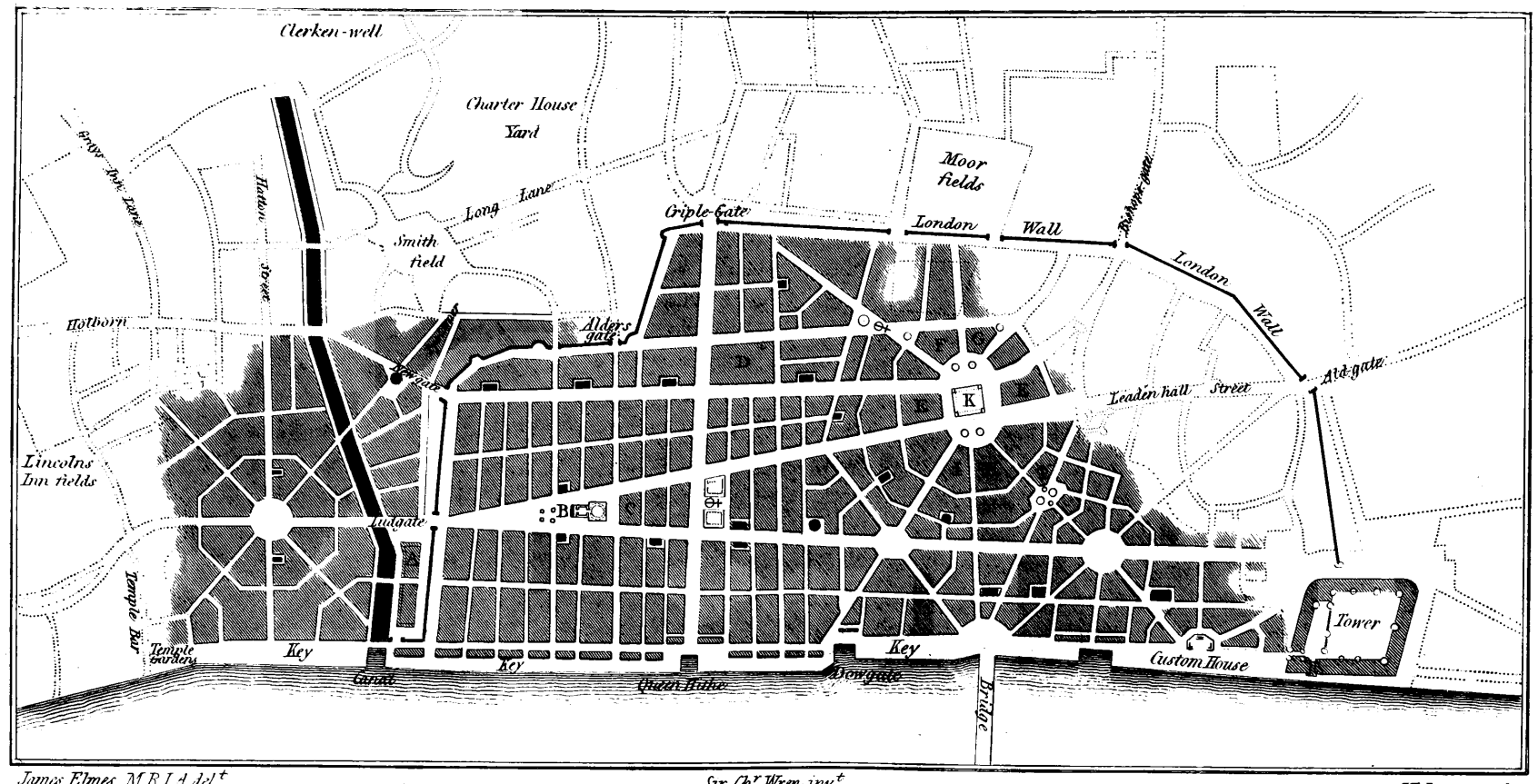
No. 13.—Page 197.

Proposals for Rebuilding the City of London after the great Fire.—
By Sir Christopher Wren.

The manner of building in the city of London, practised in the former ages, was commonly with timber, a material easily procured, and at little expense, when the country was overburthened with

woods. This often subjected the town to great and destructive fires, sometimes to the ruin of the whole, as happened, for instance, in the year 1083, and reign of William the Conqueror; the houses being then of timber covered with thatch. Notwithstanding these incidents, this mode continued until the two fatal years 1665 and 6; but then the successive calamities of plague and fire gave all people occasion seriously to reflect on the causes of the increase of both to that excessive height, viz. closeness of buildings, and combustible materials; and hence the wishes for the necessary amendment of both, by widening the streets, and building with stone and brick, became universal.

Some intelligent persons went farther, and thought it highly requisite the city in the restoration should rise with beauty, by the straightness and regularity of buildings, and convenience for commerce, by the well disposing of streets and public places, and the opening of wharfs, &c. which the excellent situation, wealth, and grandeur of the metropolis of England did justly deserve: in respect also of the rank she bore with all other trading cities of the world, of which though she was before one of the richest in estate and dowry, yet unquestionably the least beautiful: informe, ingens cui lumen ademptum. In order therefore to a proper reformation, Dr. Wren (pursuant to the royal commands) immediately after the fire, took an exact survey of the whole area and confines of the burning, having traced over with great trouble and hazard the great plain of ashes and ruins, and designed a plan or model of a new city, in which the deformity and inconveniences of the old town were remedied by the enlarging the streets and lanes, and carrying them as near parallel to one another as might be: avoiding, if compatible with greater conveniences, all acute angles, by seating all the parochial churches conspicuous and insular; by forming the most public places



James Elmes, M.R.I.A. del.t — Sir Chr. Wren, inv.t — W. Lowry, sculp.

A Plan for rebuilding the City of London: according to the design proposed by Sir Chrs. Wren. shewing the situations of the Principal Streets and Public Buildings.

References

- ▬ *Churches*
- Φ *Markets*
- A *Wood Market*
- B *St. Pauls*
- C *Doctors Commons.*
- D *Guildhall*

Continued.

- E. E *Goldsmiths*
- F *Post Office*
- G *Excise Office*
- H *Mint*
- I *Ensurance*
- K *Exchange*

Published by Priestly & Weale Jun.r 1823

into large piazzas, the centers of eight ways; by uniting the halls of twelve chief companies into one regular square annexed to Guildhall; by making a commodious key on the whole bank of the river, from Blackfriars to the Tower.

Moreover, in contriving the general plan, the following particulars were chiefly considered and proposed.

The streets to be of three magnitudes; the three principal leading straight through the city, and one or two cross streets, to be at least ninety feet wide; others sixty feet; and lanes about thirty feet, excluding all narrow dark alleys without thoroughfares, and courts.

The Exchange to stand free in the middle of a piazza, and be, as it were, the nave or centre of the town, from whence the sixty feet streets, as so many rays, should proceed to all principal parts of the city; the building to be contrived after the form of the Roman Forum, with double porticos. Many streets also to radiate upon the bridge. The streets of the first and second magnitude to be carried on as straight as possible, and to center into four or five piazzas.

The key, or open wharf, on the banks of the Thames, to be spacious and convenient, without any interruption; with some large docks for barges deep laden.

The canal to be cut up Bridewell, 120 feet wide, with sashes, (sluices, or flood-gates) at Holborn-bridge and at the mouth, to cleanse it of all filth; and stores for coal on each side. The churches to be designed according to the best forms, for capacity and hearing, adorned with useful porticos, and lofty ornamental towers and steeples, in the greater parishes. All church-yards, gardens, and unnecessary vacuities, and all trades that use great fires, or yield noisome smells, to be placed out of the town.

The model or plan formed on these principles, delineated by

Dr. Wren, was laid before the king, and the honourable house of commons, and is thus explained.

From that part of Fleet-street which remained unburnt, about St. Dunstan's church, a straight street, ninety feet wide, crosses the valley, passing by the south-side of Ludgate prison, and thence in a direct line ends gracefully in a piazza at Tower-hill; but before it descends into the valley where now the great sewer (Fleet-ditch) runs, about the once middle of Fleet-street, it opens into a round piazza, the center of eight ways, where at one station are these views—first, straight forward quite through the city; second, obliquely towards the right hand to the beginning of the key, that runs from Bridewell Dock to the Tower; third, obliquely on the left to Smithfield; fourth, straight on the right, to the Thames; fifth, straight on the left, to Hatton-street, and Clerkenwell; sixth, straight backwacks, towards Temple Bar; seventh, obliquely on the right, to the walks of the Temple; eighth, obliquely on the left, to Cursitor's-alley.

Passing forward, we cross the valley, once sullied with an offensive sewer, now to be beautified with a useful canal, passable by as many bridges as streets that cross it. Leaving Ludgate prison on the left side of the street, (instead of which gate, was designed a triumphal arch to the founder of the new city, king Charles II.) this great street presently divides into another as large, which carries the eye and passage to the south front of the Exchange, (which we leave as yet for a second journey) and before these two streets, spreading at acute angles, can be clear of one another, they form a triangular piazza, the basis of which is filled by the cathedral church of St. Paul.

But leaving St. Paul's on the left, we proceed, as our first way led us, towards the Tower, the way being all along adorned with parochial churches.

We return again to Ludgate, and leaving St. Paul's on the right hand, pass the other great branch to the Royal Exchange, seated at the place where it was before, but free from buildings, in the middle of a piazza, included between two great streets: the one from Ludgate leading to the south front, and another from Holborn over the canal to Newgate, and thence straight to the north front of the Exchange.

The practicability of this whole scheme, without loss to any man, or infringement of any property, was at that time demonstrated, and all material objections fully weighed and answered; the only and, as it happened, insurmountable difficulty remaining, was the obstinate averseness of great part of the citizens to alter their old properties, and to recede from building their houses on the old ground and foundations; as also the distrust in many, and unwillingness to give up their properties, though for a time only, into the hands of public trustees, or commissioners, till they might be dispensed to them again with more advantage to themselves than otherwise was possible to be effected: for such a method was proposed, that by an equal distribution of ground into buildings, leaving our churchyards, gardens, &c. (which were to be removed out of town) there would have been sufficient room both for the augmentation of the streets, disposition of the churches, halls, and all public buildings, and to have given every proprietor full satisfaction; and although few proprietors should happen to have been seated again directly upon the very same ground they had possessed before the fire, yet no man would have been thrust any considerable distance from it, but placed at least as conveniently, and sometimes more so, to their own trades than before. By these means, the opportunity, in a great degree, was lost, of making the new city the most magnificent as well as commodious for health and trade of any upon earth; and the sur-

veyor being thus confined and cramped in his designs, it required no small labour and skill to model the city in the manner it has since appeared.

In the acts of parliament, 19 and 22 Car. II. for the rebuilding the city of London, among other rules and directions consistent with the surveyor's opinion and advice, it is enacted, " That there shall be left a key, or open wharf, from London-bridge to the Temple, forty feet broad; and in order thereunto, all buildings, sheds, &c. within forty feet northward of the Thames, shall within eight months ensuing be taken down and removed; and the buildings to front the said key shall be of the second or third rate of buildings, observing uniformity as in other streets," &c. A clause so well calculated for the ornament and advantage of the city required to have been punctually observed and executed by the citizens, according to the full extent and virtue of the law.

The observation of a late critic* (allowing for some mistakes in his description of Sir Christopher Wren's scheme for rebuilding the city) are judicious and right.

" Towards the end of King James the First's reign, and in the beginning of his son's, taste in architecture made a bold step from Italy to England at once, and scarce staid a moment to visit France by the way. From the most profound ignorance in architecture, the most consummate night of knowledge, Inigo Jones started up, a prodigy of art, and vied even with his master, Palladio himself. From so glorious an outset there was not any excellency that we might not have hoped to attain; Britain had a reasonable prospect to rival Italy, and foil every nation in Europe beside. But in the midst of these sanguine expectations, the fatal civil war commenced, and all the arts and

* Author of the Critical Review of the Buildings of London.

sciences were immediately laid aside, as no way concerned in the quarrel. What followed was all darkness and obscurity; and it is even a wonder they left us a monument of the beauty it was so agreeable to their natures to destroy.

"Wren was the next genius that arose, to awake the spirit of science, and kindle in his country a love for that science which had been so long neglected. During his time a most melancholy opportunity offered for art to exert itself in the most extraordinary manmer; but the calamities of the present circumstance were so great and numerous, that the pleas of elegancy and beauty could not be heard; and necessity and conveniency took place of harmony and magnificence.

"What I mean is this: the fire of London furnished the most perfect occasion that can ever happen in any city, to rebuild it with pomp and regularity. This Wren foresaw, and, as we are told, offered a scheme for that purpose, which would have made it the wonder of the world. He proposed to have laid out one large street from Aldgate to Temple Bar, in the middle of which was to have been a large square, capable of containing the new church of St. Paul, with a proper distance for the view all round it; whereby that huge building would not have been cooped up, as it is at present, in such a manner as nowhere to be seen to advantage at all; but would have had a long and ample vista at each end, to have reconciled it to a proper point of view, and given it one great benefit, which, in all probability, it must now want for ever. He further proposed to rebuild all the parish churches in such a manner as to be seen at the end of every vista of houses, and dispersed in such distances from each other, to appear neither too thick nor thin in prospect, but give a proper heightening to the whole bulk of the city, as it filled the landscape. Lastly, he proposed to build the houses uniform, and sup-

ported on a piazza, like that of Covent Garden; and by the water-side, from the bridge to the Temple, he had planned a long and broad wharf, or key, where he designed to have ranged all the halls that belong to the several companies of the city, with proper warehouses for merchants between, to vary the edifices, and make it at once one of the most beautiful and most useful ranges of structure in the world. But the hurry of rebuilding, and the disputes about property, prevented this glorious scheme from taking place."

No. 14.—Page 229.

Of London in ancient Times, and the Boundary of the Roman Colony, ascertained by Sir Christopher Wren, *after the great Fire* *.

To have a right idea of London of old, it will be necessary to consider the state of the Britons at the time the Romans made their first descent on the island; and surely we cannot reasonably think them so barbarous, at least in that age (and the accounts before that are too fabulous) as is commonly believed. Their manner of fighting was in chariots, like the ancient heroes of Greece in the Trojan war, and occasionally on foot, with such good order and discipline, as much embarrassed the Roman legions, and put a stop to the progress of the invincible Cæsar; who could do nothing great, nor conquer any part, but, says Tacitus, only showed the country to the Romans; and, according to Lucan, was obliged shamefully to retreat—

Territa quæsitis ostendit terga *Britannis*.

* Parentalia, p. 264.

The Britons went to sea in vessels covered with hides, for they wanted pitch: they traded chiefly with the Gauls; and certainly the principal emporium, or town of trade, to which the Gallic ships resorted, must be London, though situated far up the country, yet most commodiously accessible by a noble river, among the thickest inhabitants; taking its name (according to some derivations) from the old British term of ship-hill, or otherwise a harbour of ships.

Here the Romans fixed a civil or trading colony, in the reign of Claudius, which greatly increased under Nero, by the concourse of merchants, and convenience of commerce, and was inhabited by Christians and Heathens together.

The extent of the Roman colony or præfecture, particularly northward, the surveyor had occasion to discover by this accident. The parochial church of St. Mary-le-Bow, in Cheapside, required to be built after the great fire: the building had been mean and low, with one corner taken out for a tower; but upon restoring that, the new church could be rendered square. Upon opening the ground, a foundation was discovered firm enough for the new intended fabric, which (on further inspection, after digging down sufficiently, and removing what earth or rubbish lay in the way) appeared to be the walls, with the windows also, and the pavement of the temple, or church, of Roman workmanship, entirely buried under the level of the present street. Hereupon, he determined to erect his new church over the old; and in order to the necessary regularity and square of the new design, restored the corner; but then another place was to be found for the steeple. The church stood about forty feet backwards from the high street, and by purchasing the ground of one private house, not yet rebuilt, he was enabled to bring the steeple forward so as to range with the street houses of Cheapside. Here, to his surprise, he sunk about eighteen feet deep through

made ground, and then imagined he was come to the natural soil and hard gravel; but, upon full examination, it appeared to be a Roman causeway of rough stone, close and well crammed with Roman brick and rubbish at the bottom, for a foundation, and all firmly cemented. This causeway was four feet thick [the thickness of the Via Appia; according as Mons. Montfaucon measured, it was about three Parisian feet, or three feet two inches and a half English.] Underneath this causeway lay the natural clay, over which that part of the city stands, and which descends at least forty feet lower. He concluded then to lay the foundation of the tower upon the very Roman causeway, as most proper to bear what he had designed, a weighty and lofty structure.

He was of opinion, for divers reasons, that this highway ran along the north boundary of the colony. The breadth then, north and south, was from the causeway, now Cheapside, to the river Thames; the extent, east and west, from Tower-hill to Ludgate; and the principal middle street, or Prætorian Way, was Watling-street.

The colony was walled next the Thames, and had a gate there called Dow-gate, but anciently Dour-gate, which signified the Water-gate.

On the north side, beyond the causeway, was a great fen, or morass, in those times; which the surveyor discovered more particularly when he had occasion to build a new east front to the parochial church of St. Lawrence, near Guildhall; for the foundation of which, after sinking seven feet, he was obliged to pile twelve feet deeper; and if there was no causeway over the bog, there could be no reason for a gate that way.

At length, about the year 1414, all this moorish ground was drained by the industry and change of Francerius, a lord mayor, and

still retains the name of Moorfields, and the gate Moorgate. London-stone, as is generally supposed, was a pillar, in the manner of the Milliarium Aureum, at Rome, from whence the account of their miles began; but the surveyor was of opinion, by reason of the large foundation, it was rather some more considerable monument in the Forum: for in the adjoining ground on the south side (upon digging for cellars, after the great fire) were discovered some tesselated pavements, and other extensive remains of Roman workmanship and buildings *.

On the west side was situated the prætorian camp, which was also walled in to Ludgate, in the vallum of which was dug up near the gate, after the fire, a stone with an inscription, and the figure of a Roman soldier, which the surveyor presented to the Archbishop of Canterbury, who sent it to Oxford, and it is reposited among the Arundelian marbles. This is a sepulchral monument, dedicated to the memory of Vivius Marcianus, a soldier of the second legion, styled Augusta, by his wife Januaria Matrina. The inscription is in this manner:

† D. M.
VIVIO MARCI
ANO MIL. LEG. II.
AVG. IANVARIA
MATRINA CoNIVNX
PIENTISSIMA POSV
IT ME MORIAM.

* Probably this might, in some degree, have imitated the Milliarium Aureum at Constantinople, which was not in the form of a pillar, as at Rome, but an eminent building; for under its roof (according to Cedrinus and Suidas) stood the statues of Constantine and Helena, Trajan, an equestrian statue of Hadrian, a statue of Fortune, and many other figures and decorations.

† Camden's Britannia, 2d edition, by Bishop Gibson, Vol. I. p. 375.

The soldiers used to be buried *in vallo*, as the citizens *extrà portas in Pomœripis*: there, it is most probable, the extent of the camp reached to Ludgate, to the declining of the hill that way. The surveyor gave but little credit to the common story, that a temple had been here to Diana (which some have believed, upon the report of the digging up, formerly, and of later years, horns of stags, ox-heads, tusks of boars, &c.), meeting with no such indications in all his searches; but that the north-side of this ground had been very anciently a great burying-place was manifest; for upon digging the foundations of the present fabric of St. Paul, he found under the graves of the latter ages, in a row below them, the burial-places of the Saxon times. The Saxons, as it appeared, were accustomed to line their graves with chalk-stones, though some more eminent were entombed in coffins of whole stones. Below these were British graves, where were found ivory and wooden pins, of a hard wood, seemingly box, in abundance, of about six inches long: it seems the bodies were only wrapped up, and pinned in woollen shrouds, which being consumed, the pins remained entire. In the same row, and deeper, were Roman urns intermixed; this was eighteen feet deep or more, and belonged to the colony when Romans and Britons lived and died together.

The most remarkable Roman urns, lamps, lacrymatories, and fragments of sacrificing vessels, &c. were found deep in the ground, towards the north-east corner of St. Paul's church, near Cheapside: these were generally well wrought, and embossed with various figures and devices, of the colour of the modern red Portugal ware; some brighter like coral, and of a hardness equal to China ware, and as well glazed. Among divers pieces which happened to have been preserved, are a fragment of a vessel, in shape of a basin, whereon Charon is represented, with his oar in his hand, receiving a naked ghost; a patera sacrificalis with an inscription PATER. CLO.; a

remarkable small urn, of a fine hard earth, and leaden colour, containing about half a pint: many pieces of urns, with the names of the potters embossed on the bottoms; such as, for instance, ALBUCI. M *. VICTORINVS. PATER. F †. MOSSI. M. OF ‡ . NIGRI. . AↃ . MAPILII. M. &c.: a sepulchral earthen lamp, figured with two branches of palms, supposed Christian; and two lacrymatories of glass.

Among the many antiquities the surveyor had the fortune to discover, in other parts of the town, after the fire, the most curious was a large Roman urn, or ossuary of glass, with a handle, containing a gallon and half; but with a very short neck, and wide mouth, of whiter metal, encompassed girthwise with five parallel circles. This was found in Spitalfields; which he presented to the Royal Society, and is preserved in their museum.—*Parentalia*, p. 267.

* Manibus. † Fecit. ‡ Officina.

No. 15.—Page 240*.

(From the Philosophical Transactions, No. 43, for January 11, 1669.)

DR. CHRISTOPHER WREN'S *Theory concerning the general Laws of Motion. Imparted to the Royal Society, December* 17, 1668; *though entertained by the author divers years ago, and verified by many experiments, made by himself, and that other excellent mathematician, M. Rook, before the said society, as is attested by many worthy members of that illustrious body.*

LEX NATURÆ DE COLLISIONE CORPORUM.

Velocitates corporum propriæ et maxime naturales sunt ad corpora reciproce proportionales.

Lex Naturæ. { Itaque corpora R S habentia proprias velocitates, etiam post impulsum retinent proprias.

Et corpora R S improprias velocitates habentia ex impulsu restituunter ad equilibrium; hoc est quantum R superat, et S deficit à propria velocitate ante impulsum, tantum ex impulsu abstrahitur ab R et additur ipsi S & e contra.

Quare collisio corporum proprias velocitates habentium æquipollet libræ oscillanti super centrum gravitatis.

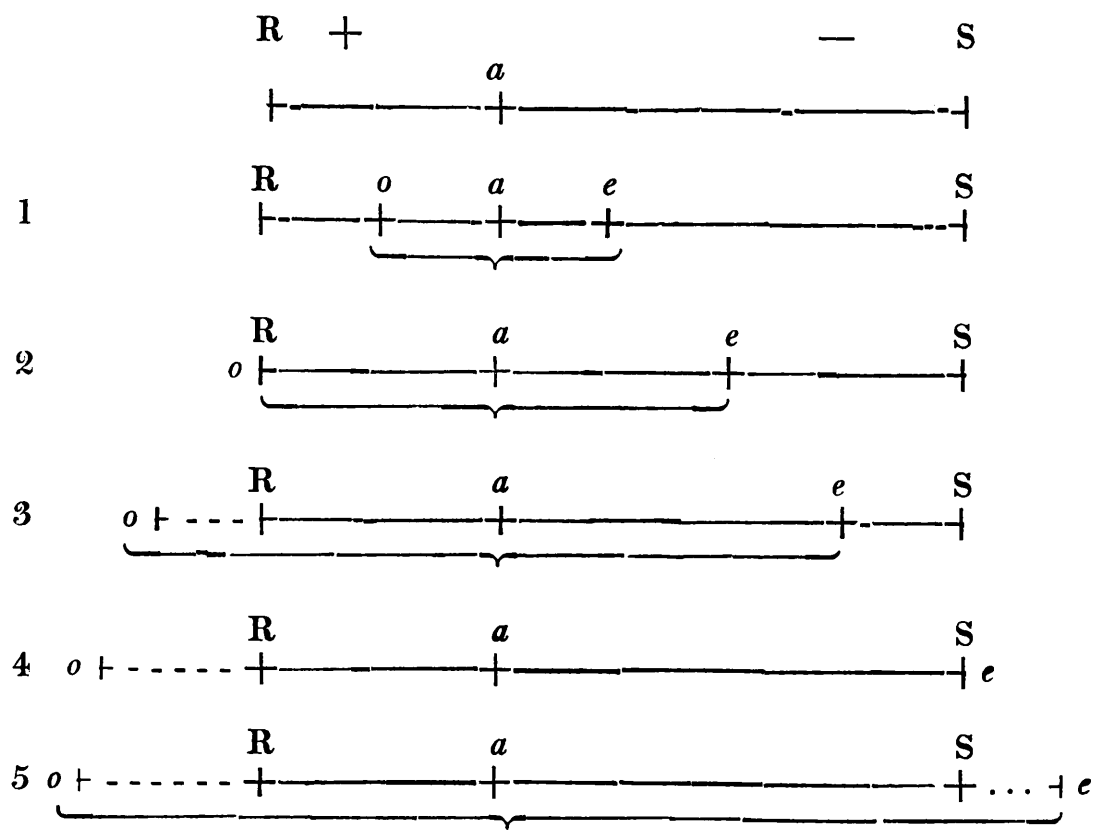
Et collisio corporum improprias velocitates habentium æquipollet libræ super bina centra æqualiter huic inde à centro gravitatis distantia: libræ vero jugum, ubi opus est, producitur.

Itaque corporum æqualium improprie moventium tres sicut casus. Corporum vero inequalium impropriæ moventium (sive ad

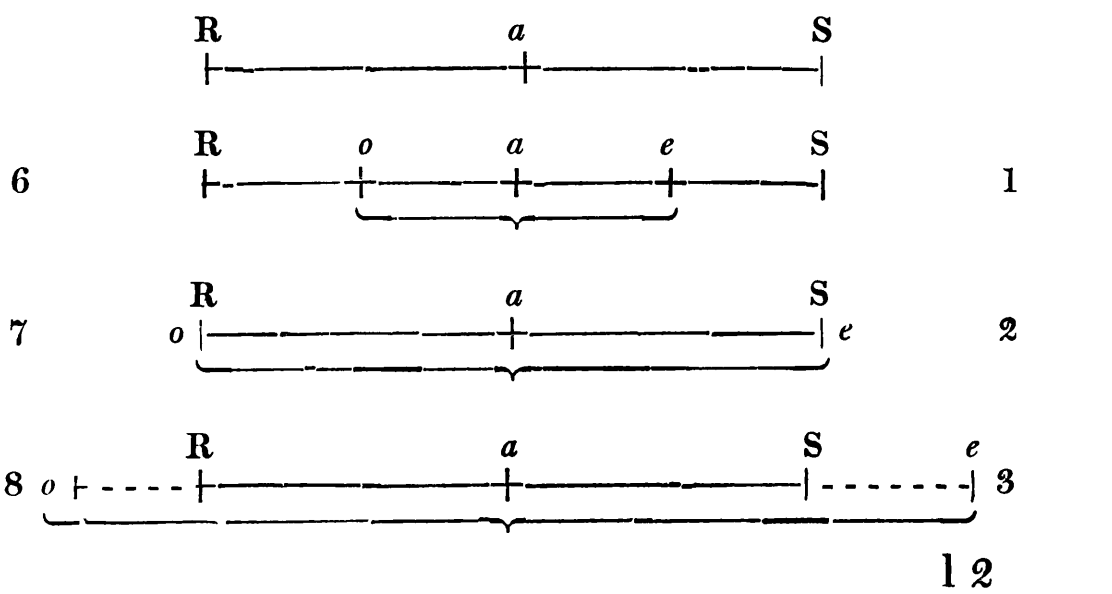
* See also page 266.

contrarias sive ad easdem partes) decem sunt omnino casus, quorum quinque oriuntur ex conversione.

Inæqualia.



Æqualia.



R S corpora æqualia, vel R corpus majus, S corpus minus, *a* centrum gravitatis sive ansa libræ, Z summa velocitatem utriusque corporis.

$$\left.\begin{matrix} \mathrm{R}\ e \\ \mathrm{S}\ e \end{matrix}\right\}\text{veloc. corp.}\left\{\begin{matrix}\mathrm{R}\\ \mathrm{S}\end{matrix}\right\}\text{ante impulsum data}\Bigg\}\text{vel}\begin{cases}\left.\begin{matrix}\mathrm{S}\ o\\ \mathrm{R}\ o\end{matrix}\right\}\text{veloc. corp.}\left\{\begin{matrix}\mathrm{S}\\ \mathrm{R}\end{matrix}\right\}\text{ante impuls. data.}\\ \left.\begin{matrix}e\ \mathrm{S}\\ e\ \mathrm{R}\end{matrix}\right\}\text{veloc. corp.}\left\{\begin{matrix}\mathrm{S}\\ \mathrm{R}\end{matrix}\right\}\text{post impuls. quæsita.}\end{cases}$$
$$\left.\begin{matrix} o\ \mathrm{R} \\ o\ \mathrm{S} \end{matrix}\right\}\text{veloc. corp.}\left\{\begin{matrix}\mathrm{R}\\ \mathrm{S}\end{matrix}\right\}\text{post impuls. quæsita}\Bigg\}$$

[Lege syllabas (quamvis disjunctas) R *e* S *e o* R *o* S vel R *o* S *o e* R in linea cujus libet casus, et harum quæ scribitur in *schemate* more *Hebraico*, ea indicat motum contrarium motui, quem notat cujusvis syllabæ scriptio *Latina*. Syllaba conjuncta quietem corporis denotat.]

Calculus

$\mathrm{R}+\mathrm{S}:\mathrm{S}::\mathrm{Z}:\mathrm{R}\,a$	$\mathrm{R}\,e-2\,\mathrm{R}\,a=o\,\mathrm{R}$	$\mathrm{S}\,o-2\,\mathrm{S}\,a=e\,\mathrm{S}.$
$\mathrm{R}+\mathrm{S}:\mathrm{R}::\mathrm{Z}:\mathrm{S}\,a$	$2\,\mathrm{S}\,a\pm\ \mathrm{S}\,e=o\,\mathrm{S}$	$2\,\mathrm{R}\,a+\ \mathrm{R}\,o=e\,\mathrm{R}.$

Natura observat regulas additionis et subductionis *opeciora*.

No. 16.—Page 325.

King Charles the Second's Commission for rebuilding the cathedral church of St. Paul, London.—Dated November 12, 1673.

His Majesty's commission for the more speedy procedure of the works in rebuilding St. Paul's, unto several of the lords, spiritual and temporal, and other persons of distinction, authorising them, or so many of them as are therein appointed and enabled to act, to proceed in that great undertaking.

CHARLES THE SECOND, by the grace of God, King of England, Scotland, France, and Ireland, Defender of the Faith, &c. *

Whereas our most dear and royal grandfather and father were pleased to begin and set forward that great honourable work of upholding and repairing the cathedral church of St. Paul, in London, and granted several commissions, in order to the accomplishing of that work, with sundry good directions therein contained to that purpose; and whereas we, in pursuance of their pious and royal intentions, resolving to make a further and more effectual progress in that work, which, by the iniquity of the late times, had been so much and so long interrupted, did, by our commission, under our great seal of England, bearing date the 18th day of April, in the fifteenth year of our reign †, directed to the several lords, spiritual

* Then follow the names of the individuals to whom it is addressed, with their respective titles, as is usual in such instruments; which are omitted here, as they are repeated in the body of the instrument.

† Anno 1663, 15 Car. II.

and temporal, and others the persons of eminent rank and quality therein named, authorize and empower them, or so many of them as are therein appointed and enabled to act, to proceed in that great undertaking, and to endeavour the perfecting thereof by such ways and means, and according to such rules and orders, as are therein mentioned. Since the issuing out of which commission, the late dreadful fire in London hath destroyed and consumed the said cathedral to such a degree, that no part of the ancient walls or structures can, with any safety, be relied upon, or left standing; insomuch that it is now become absolutely necessary totally to demolish and raze to the ground all the relicks of the former building, and, in the same place, but upon new foundations, to erect a new church (which, that it may be done to the glory of God, and for the promoting of his divine worship and service therein to be celebrated, and to the end the same may equal, if not exceed, the splendour and magnificence of the former cathedral church, when it was in its best estate, and so become, much more than formerly, the principal ornament of that our royal city, to the honour of our government, and of this our realm; we have caused several designs, to that purpose, to be prepared by Dr. Christopher Wren *, surveyor-general of all our works and buildings, which we have seen, and one of which we do more especially approve, and have commanded a model thereof to be made, after so large and exact a manner, that it may remain as a perpetual and unchangeable rule and direction for the conduct of the whole work). And whereas our former commission, in which the *upholding and repairing* the ancient cathedral church is only designed and mentioned, doth not sufficiently authorize and empower

* This again proves the error of Parentalia, in asserting that the honour of knighthood was conferred on our architect before the date of this commission.

our said commissioners therein named to begin and complete a new fabrick upon new foundations. Know ye, that we, reposing especial trust and confidence in your approved wisdoms, sincerity, and diligence, have nominated, appointed, assigned, and constituted, and do, by these presents, nominate, appoint, assign, and constitute you, the said Sir Robert Hanson *, Lord Mayor of our said city of London, and the Lord Mayor of our said city of London for the time being; Gilbert, Lord Archbishop of Canterbury, and the Lord Archbishop of Canterbury for the time being; Anthony, Earl of Shaftsbury, Lord High Chancellor of England, and the Lord High Chancellor, and Lord Keeper of the Great Seal of England for the time being; Richard, Lord Archbishop of York, and the Lord Archbishop of York for the time being; Arthur, Earl of Anglesey, Lord Keeper of our Privy Seal, and the Lord Keeper of the Privy Seal for the time being; George, Duke of Buckingham; Christopher, Duke of Albemarle; John, Duke of Lauderdale; James, Duke of Ormond, Lord Steward of our Household, and the Lord Steward of our Household for the time being; Henry, Lord Marquess of Worcester; Henry, Lord Marquess of Dorchester; Henry, Earl of Ogle; Thomas, Earl of Ossory; Robert, Earl of Lindsey, Lord Great Chamberlain of England, and the Lord Great Chamberlain of England for the time being; Henry, Earl of St. Albans, Lord Chamberlain of our Household, and the Lord Chamberlain of our Household for the time being; Aubrey, Earl of Oxford; John, Earl of Bridgewater; Philip, Earl of Chesterfield; William, Earl of Craven; Henry, Earl of Arlington, our principal Secretary of State; Thomas, Viscount Falconberg; George, Viscount Halifax; Humphrey, Lord Bishop of London,

* Who were all before enumerated, as "trusty, right trusty, well beloved cousins, counsellors," &c. &c. as is usual in such commissions.

our Almoner; George, Lord Bishop of Winchester; Benjamin, Lord Bishop of Ely; John, Lord Bishop of Rochester, and Dean of Westminster; Walter, Lord Bishop of Worcester, Dean of our Chapel Royal; Nathaniel, Lord Bishop of Oxford, Clerk of our Closet; and the Bishops of London, Winchester, Ely, Rochester, Worcester, and Oxford, our Almoner, the Dean of our Chapel, the Clerk of our Closet, and the Dean of Westminster, for the time being; Henry, Viscount Cornbury, Lord Chamberlain to our royal Consort the Queen; Francis, Lord Newport, Treasurer of our Household, and the Treasurer of our Household for the time being; William, Lord Maynard, Comptroller of our Household, and the Comptroller of our Household for the time being; Henry Coventry, Esq. one of our principal Secretaries of State, and both of our principal Secretaries of State for the time being; Sir George Carteret, Vice Chamberlain of our Household, and the Vice Chamberlain of our Household for the time being; Sir Orlando Bridgeman; Sir John Duncomb, Chancellor and Under-Treasurer of our Exchequer, and the Chancellor and the Under-Treasurer of our Exchequer for the time being; Sir Robert Carr, Chancellor of our Duchy of Lancaster, and the Chancellor of the Duchy of Lancaster for the time being; Sir Thomas Chichley, Master of our Ordnance, and the Master of our Ordnance for the time being; Sir Matthew Hale, Chief Justice of the Pleas before us to be holden, and the Chief Justice of the Pleas, before us to be holden, for the time being; Sir Harbottle Grimstone, Master of the Rolls, and the Master of the Rolls for the time being; Sir John Vaughan, Chief Justice of our Court of Common Pleas, and the Chief Justice of our Court of Common Pleas for the time being; Sir Edward Turner, Chief Baron of our Court of Exchequer, and the Chief Baron of our Court of Exchequer for the time being; Sir Thomas Twisden, Sir Richard Rainsford, and Sir William Wild,

Justices of the Pleas before us to be holden, and the Justices of the Pleas before us to be holden for the time being; Sir Christopher Turner, Sir Timothy Littleton, and Sir Richard Thurland, Barons of our Court of Exchequer, and the Barons of our Court of Exchequer for the time being; Sir Heneage Finch, our Attorney-General, and Sir Francis North, our Solicitor-General, and our Attorney-General and Solicitor-General for the time being; Sir Edward Dering; Sir John Howel, Recorder of our City of London, and the Recorder of our said city for the time being; Sir Philip Warwick; Sir John Berkenhead, Master of the Faculties, and the Master of the Faculties for the time being; Sir John Nicholas, Sir Edward Walker, Sir Robert Southwell, and Sir Joseph Williamson, Clerks of our Council, and the Clerks of our Council for the time being; Sir Robert Wiseman, Dean of the Arches, and Vicar-General of the Lord Archbishop of Canterbury, and the Dean of the Arches, and Vicar-General to the Lord Archbishop of Canterbury for the time being; Sir Leolin Jenkins, Judge of the Prerogative Court of Canterbury, and Judge of the Court of Admiralty, and the Judge of the Prerogative Court of Canterbury, and Judge of the Court of Admiralty for the time being; Sir Walter Walker, our Advocate-General, and our Advocate-General for the time being; Dr. Thomas Exton, Chancellor of the Lord Bishop of London, and the Chancellor of the Lord Bishop of London for the time being; Sir Richard Chiverton, Sir Thomas Allen, Sir John Frederick, Sir John Robinson, Sir John Lawrence, Sir Thomas Bludworth, Sir William Peak, Sir William Turner, Sir Richard Ford, Sir Samuel Sterling, Sir George Waterman, Sir William Hooker, Sir Robert Viner, Sir Joseph Sheldon, Sir Dionis Gardens, Sir Thomas Davys, Sir Francis Chaplin, Dannet Forth, John Forth, Patience Ward, Sir James Edwards, Sir Robert Clayton, Sir John More, and Sir William Pritchard, aldermen of our city of London,

and the aldermen of our said city for the time being; Sir Thomas Player, Chamberlain of our said city, and the Chamberlain of our said city for the time being; Sir John Cutler, Sir John Shaw, Sir Theophilus Biddolp, Sir Andrew King, Sir Thomas Beverley; William Sancroft, Dean of the cathedral church of St. Paul, in London; Edward Layfield, Francis Turner, and Edward Stillingfleet, Residentiaries of the said cathedral church, and the Dean and the Residentiaries of the said cathedral church for the time being; CHRISTOPHER WREN, Surveyor-General of our Works, and the Surveyor-General of our Works for the time being; William Dugdale, John Philips, and William Llewellen, to be our Commissioners for the rebuilding, new erecting, finishing, and adorning the said cathedral church of St. Paul, in London, in the same churchyard, upon new foundations, and according to the design and model abovementioned.

And we do, by these presents, give full power and authority to you, or any six or more of you (whereof the Lord Bishop of London, or the Dean of St. Paul's, for the time being, to be one), to *demolish and take down* what is yet remaining of the old fabrick, and to begin and carry on the new work, or such part or portion of it, and in such order and method, and by such ways and means, and according to such rules and orders, as to you shall seem best; and to call to your aid and assistance such skilful artists, officers, and workmen, as ye shall think fit, and to appoint to each of them his several charge and employment; to minister to such artists and officers, and to all and every other person and persons to be employed in the said service, (to whom you shall think meet), such oath or oaths for the due performance of their several duties, employments, offices, charges, and trusts, to them, or any of them, to be committed, as shall by you be thought reasonable and convenient; and, out of such money as shall

be received for this work, to allow to them, and every of them, such salaries, wages, and rewards respectively, as to you shall seem fitting, and proportionable to their employment, and the service they shall do; and to consider, devise, agree of, and set down particular orders and instructions, as well for the safe and well keeping of the money from time to time brought into the treasury, and of the materials and provisions to be from time to time brought into the stores, as also for the faithful and frugal issuing out and disposing of the same for the publick use intended, and no other; and to direct and appoint by whom, and in what manner, the books and accompts of both shall be, from time to time, kept and comptrolled, audited, transcribed, and certified; and to put such a check upon the receipt and issuing out of both, as you shall judge necessary; and, out of yourselves, and such other persons of known ability and integrity as you shall choose from time to time, and as often as you shall judge it expedient, to appoint, constitute, and make such, and so many, sub-committees, as you shall think meet for the better managing and carrying on of this whole work; and to invest them with such powers, pursuant to the authorities hereby given, as shall be requisite; and to revoke, annul, and determine the same; and to revive and make new the said sub-committees, or any others, when and as often as you shall find it needful and conducing to the service; and (in sum) to advise, treat, and consider of all things, ways, and means, for the better advancement and furtherance of this great and excellent work, and to the finishing and perfecting the same, and to put the same ways and means in due and speedy execution; and, finally, to consult of, and frame, meet orders, ordinances, and constitutions, for the better preservation and maintenance of the said cathedral church in time to come, and for the preventing and suppressing of all present and future annoyances, purprestures, encroachments, which do, shall,

or may any way tend to the damage or hurt, blemishing or disgrace of the same; and the said orders, ordinances, and constitutions, being reduced into writing to present to us, to the end that the same being by us perused and considered of, may receive our royal approbation and allowance, with such further order from us for the strengthening the same by our royal signature, or under our great seal or otherwise, as we shall find meet, that so they may be put in due execution accordingly.

And although we are very sensible that *the erecting such a new fabrick or structure, according to the design above-mentioned, will be a work not only of great time, but also of very extraordinary cost and expense (far above that of the repairs, either former or later), yet are we in no sort discouraged from undertaking the same, being resolved, on our part, to contribute thereunto all fitting aid and assistance; and no way doubting but that the piety and charity of our good subjects will eminently appear by their frequent and liberal contributions to so honourable and pious a design,* whereby, at last, all kind of difficulties will be overcome.

In order whereunto, as we were formerly graciously pleased (beside our royal grant of all arrears of impropriations, not pardoned by the act of free and general pardon and indemnity), farther to signify our good affection toward the repair of the said cathedral, by *the free gift of* £1000, *by the year, to be paid quarterly out of our privy purse*, and to be continued during the reparation of the said church; so are we pleased much rather hereby to confirm and continue it, for the rebuilding and new erecting of the same.

And forasmuch as we are very confident, that not only our clergy, but many of our nobility, gentry, and other loving subjects, and especially the citizens and inhabitants of our said royal city of London (to whom we do most earnestly recommend the advance-

ment of this work), will be ready to follow our example, by cheerful and bountiful supplies to the carrying on and finishing the said work; we do hereby give and grant unto you the said Humphrey, Lord Bishop of London, and to the Bishop of that see for the time being; and to you, the present dean, and others, residentiaries of our said cathedral church, and to your successor, the dean, and other residentiaries there for the time being, full power and authority to ask, demand, receive, and take the free and voluntary contributions of all such of our nobility, bishops, judges, serjeants, and counsellors at law, officers, and others of quality and ability, and of all such our subjects as shall willingly contribute to the said work; and also to provide and keep books or registers, or some of them, to take the several subscriptions of any such person or persons before mentioned, for such several sum or sums of money, as they shall, out of their christian charity, freely bestow in that behalf: all which money already so subscribed or given, raised, collected, or received, as well for the former repairs, as for the works at .present in hand, or so to be hereafter subscribed or given, raised, collected, or received, we require all persons concerned to pay accordingly, for the carrying on and perfecting of the present design of rebuilding the said cathedral, into the receipt of the chamber of our said city of London (the said chamber having been with our good liking and approbation rightly chosen and appointed, according to our former commission, to be the receipt and treasury of all the money due and payable to the work), or unto such person or persons, as by any six or more of you our said commissioners (whereof the Lord Bishop of London, or the Dean of St. Paul's, for the time being, be one), shall be, from time to time, chosen and appointed to receive the same; which said receiver or receivers are hereby authorised to receive the same, and to give acquittances and discharges for it to such person or persons

as shall pay it in as aforesaid; and are hereby required not to issue out any money so received, but by order and warrant under the hands of six or more of our said commissioners, (whereof the Lord Bishop of London, or Dean of St. Paul's, for the time being, always to be one).

And our farther will and pleasure is, and we do hereby straitly charge and command the judges of the prerogative courts of both provinces, and the vicars general, commissaries, and officials, and all others having and exercising ecclesiastical jurisdiction within this our kingdom and dominion of Wales, that henceforth they take especial care that out of such money as shall from time to time fall into their power, for or by reason of commutations of penance, or upon any other occasion whatsoever, (being designed or proper to be bestowed to pious or charitable uses), some convenient proportion to be assigned or set apart toward the supply of this work; and hereof the bishops also in their several dioceses are hereby required to take notice and effectual care, and to make certificate at the end of every six months to the Bishop of London for the time being, what hath within their respective jurisdictions been done herein, and what hath been neglected to be done, and by whose default; and withal to cause all the monies so assigned and reserved to be sent up and paid to the receiver or treasurer of this work for the time being, rightly constituted and appointed as aforesaid.

And for a farther supply to this great and chargeable work, which will necessarily require a general and liberal contribution of all our able subjects of this kingdom; we do hereby give unto you our said commissioners, or to any six or more of you, (whereof the Lord Bishop of London, or the Dean of St. Paul's, for the time being, to be one), full power and authority from time to time to consult, advise, and agree of such form or forms of letters-patent, to be

drawn in a more special manner than ordinary briefs are wont to be, according to the extraordinary nature of this case, for public collections to be made throughout our said realm of England, and dominion of Wales, of the charity of our loving and well-disposed subjects, towards the present work, and for the bringing in of the same to the receiver or receivers for the time being; reciting therein so much of the premises as shall be found needful, and adding thereto such other necessary clauses, as you shall conceive most likely to advance the collections and contributions to be made thereupon. Which said letters-patent, or briefs, so advised and agreed upon, and testified to be so under the hands of any six or more of you, (as aforesaid), we will and command you, our chancellor of England, or keeper of our great seal of England, without any farther or other warrant from us procured or obtained in that behalf, and these presents shall be to you and them, and every of them, a sufficient warrant and discharge for the same.

And for the farther easing and defraying of so vast an expense as this work will require, and in order to the better recovery and preservation of whatsoever hath or shall be given, or intended, purchased, or provided to that purpose, being very desirous that a true and perfect discovery may be made, as well of all such legacies, bequests and gifts, both of lands and sums of money, or other profits, as have been at any time heretofore or hereafter shall be given, subscribed, or intended for the rebuilding, maintaining, repairing, or adorning of the said church; as also of all materials, instruments, or utensils, at any time purchased or prepared for that work, but fraudulently and sacrilegiously concealed, detained, or converted to private use and advantage: we do by these presents give and grant unto you, or any six or more of you, (whereof the Bishop of London, or the Dean of St. Paul's, for the time being, to be one), full power

and authority, as well by the oath of honest and lawful men, as by the examination of witnesses upon their oaths, (which oaths, both to jurors and witnesses, you, or any six or more of you, whereof the Lord Bishop of London, or the Dean of St. Paul's, for the time being, to be one, are hereby authorised to administer), or without oath, and by all other ways and means whatsoever, from time to time to inquire and examine as well of, for, and concerning all and every sum and sums of money, or other gifts whatsoever, which heretofore have, or hereafter shall be given and bequeathed, subscribed, advanced, raised, collected or received for or toward the reparation or rebuilding of the said cathedral church, or for the beautifying and adorning thereof, or for providing of any instruments, utensils, or ornaments for the same, and touching the payment and employment thereof, and what remains yet unpaid or accounted for, and in whose hands; as also of and concerning all and every the materials and utensils at any time provided for the repairing or rebuilding of the said church, or any way belonging to the same; and of the particular value thereof, and how and by whom the same, or any part thereof, hath been taken away, disposed, converted, and employed otherwise than to the use intended: and to send for and convene, and cause to come before you, all such farmers, tenants, trustees, treasurers, receivers, accomptants, clerks, and other officers and ministers, parties and witnesses whatsoever which are any way concerned, or can give testimony touching the premises, and which you shall think necessary to call before you, and to examine them severally upon their oaths; and to cause all and every person and persons, whom you shall think good, from time to time to bring and show before you, either upon oath or without oath, all and singular such books, records, registers, surveys, accompts, evidences, and other notes and writings, any way relating

to the premises, may the better and more plainly be found out and discovered, and to let you have the use and perusal of the same. And for your ease and better expedition in the execution of this part of our commission, our will and pleasure is, and we do hereby charge and command, that all such surveyors, actuaries, registers, officers, and ministers whatsoever, which you or any six or more of you (whereof the Lord Bishop of London, or the Dean of St. Paul's, for the time being, to be one) shall think fit and require, shall be ready and attend upon you, or any six or more of you, for the doing and performing any thing necessary, or expedient to be done in the execution of this our commission; and that all sheriffs, justices of the peace, constables, bailiffs, and all other our officers, ministers, and loving subjects whatsoever, upon any warrant or precept to be issued from you our said commissioners, or any six or more of you (whereof the Lord Bishop of London, or the Dean of St. Paul's, for the time being, to be one) do return jurors, serve orders and summons, and be aiding and assisting in all things tending to the effectual execution of the said commission. And we do hereby authorise you our said commissioners, or any six or more of you (as aforesaid), to demand, call for, and order to be paid into the hands of the receiver or receivers for the time being, so appointed as aforesaid, all such sum and sums of money, as by the means and methods, and in any of the cases aforesaid, now are, or hereafter shall be found to be remaining in the hands, or due and payable by, or chargeable upon any person or persons whatsoever, with the damages for the same, or such compositions, either of principal or damages, as you shall think fit to be made therein; and in default of payment, to inform us and our council of such person and persons so found to be indebted, which shall, in contempt of this our commission, refuse to pay the said debts: and out of such money as shall be so discovered, re-

covered, and received, to allow fitting and proportionable salaries, gratuities, and rewards, to such clerks, messengers, or others, who shall any way advance the said service, or be employed in discovering or getting in the said money.

And lastly our pleasure is, that this commission shall continue in force; and we do hereby authorise you our said commissioners, or any six or more of you, (whereof the Lord Bishop of London for the time being, or the Dean of St. Paul's for the time being, always to be one), to proceed in the execution thereof, and of all and every the matters and things therein contained, from time to time, as often as you, or any six or more of you (whereof the said bishop, or the said dean, for the time being, to be always one) shall think convenient; although the said commission be not continued from time to time by adjournment.

And for the doing of all this, and for the using and exercising all and every of the powers above herein granted, or mentioned to be granted, in such manner as is above directed, these presents shall be unto you, and unto every of you, and to all persons employed therein, a sufficient warrant and discharge.

In witness whereof, we have caused these our letters to be made patents: witness ourself at Westminster, the twelfth day of November *, in the five and twentieth year of our reign.

Per breve de privato sigillo,

BARKER.

GOD SAVE THE KING.

* An. 1673.

No. 17.—Page xxxiii.

Representation of the Commissioners for rebuilding St. Paul's to the Duke of Shrewsbury.

To his Grace the Duke of Shrewsbury, Lord Chamberlain of her Majesty's Household.

May it please your Grace,

We, her majesty's commissioners for rebuilding the church of St. Paul in London, having considered the petition and representation of Sir Christropher Wren, presented to her majesty on February 3, 1710, and transmitted to us, by your grace's order, April 30, 1711, do humbly lay before your grace the following answer.

That we never thought the salary of Sir Christopher Wren too great which was settled upon him by the commissioners, nor ever did any thing to obstruct his receiving it in full; but the parliament, to hasten the work, which appeared to them to go on slowly, did suspend a moiety of that salary, till the building should be finished.

That we ever, as we hold ourselves bound in honour, interest, and duty, did endeavour, as much as in us lay, to hasten the finishing of the work; but Sir Christopher, or some employed by him, who by many affidavits have been proved guilty of great corruption, may be supposed to have found their advantage in this delay.

That we are much surprised that Sir Christopher Wren should accuse us of arbitrary proceedings, when he himself being one of the commissioners, and till of late frequently present at our meetings, very well knows that we always have made her majesty's com-

mission, under her great seal, the rule of our proceedings, and are most confident that he cannot instance, in any particular, wherein we have deviated from the said commission. And for the fuller satisfaction of your grace in this matter, we now take the liberty to lay before you the commission itself.

It is true, we sometimes, but seldom, differed in opinion from Sir Christopher Wren, and particularly about the iron fence or rail which is to encompass the church, which he intended to have made of hammered iron; but the commissioners, with whom he also agreed, ordered it to be done with cast iron, which is at least ten times as durable as the other; a good part of which fence being now set up, and universally approved, it will not be difficult to determine who were in the right, the commissioners or Sir Christopher.

And we cannot but here observe, that the person who makes this fence of cast iron, having not been brought in by Sir Christopher Wren, hath perpetually met with hindrances and difficulties from him, and those employed by him: from what secret motives these impediments have proceeded, we submit to others to judge.

And we further take notice, that the order for encompassing the church-yard was made at Lambeth, by a larger number of commissioners than usually met to do business, whose names we here subjoin; viz.

Lord Abp. of Canterbury,
Lord Bishop of Ely,
Mr. Dean of St. Paul's,
Mr. Dean of Sarum,
Dr. Hare,
Sir Christopher Wren,
Dr. Bramston,
Dr. Harwood.

The following order of the commissioners, February 1, 1710, that no rail be set up about the queen's statue, until a model of it be approved by the commissioners, was only made, that the fence might be noble, and in some measure agreeable to the statue. And we were the rather induced to do this, because Sir Christopher had just before, without consulting the commissioners, set up a poor mean iron rail on each side of the great ascent at the west end, disliked by every body, and which we conceive ought to be taken down. The commissioners present at making of this order were,

Mr. Dean of St. Paul's,
Sir Thomas Meeres,
Sir Nathaniel Lloyd, Her Majesty's Advocate General,
Dr. Bettesworth, Dean of the Arches,
Mr. Dean of Sarum,
Dr. Hare,
Dr. Harwood.

Of these commissioners, Sir Christopher is pleased to say, it is well known what sort of person and way they are inclined to; which is a very malicious and unjust reflection, they never having had any inclination or design, but for the honour of majesty, and the benefit of this church.

It may here be remarked, that most of Sir Christopher's performances without the approbation of the commissioners have proved very faulty; to instance only in the great bell *, which hath been

* Sir Christopher Wren, in his answer to the tract, entitled "Frauds and Abuses at St. Paul's," gives us the history of the present bell. He says, "when the great bell brought from Westminster was broken by their (some of the chapter) exposing it to be made a show of, and to be struck

cast once, and must be cast again; and the clock, which is perpetually out of order. Now when there were most able bell-founders, and most skilful clock-makers, who made application to be employed, that Sir Christopher should use such mean and unskilful artificers, can

upon by those who gave money for seeing it, one Mr. Wightman was, by their influence and solicitation, appointed to new-cast that bell; which bell (so new-cast) being faulty in metal and make, and defective in weight, and no caution being taken for the performance, (unless the bell-founder's bare word must be allowed to be so) he was paid; and then died without making any satisfaction for the badness of the bell. Upon this, Sir Christopher employed an honest and able bell-founder (as appeared by several specimens and testimonials) to make a bell proper for the clock, all of new metal; and the agreement was so ordered, that this new bell should be delivered and approved before he was paid any thing for it; and that he should accept the bell cast by Wightman, in part of payment towards the new one, so far, and at so much, as the weight produced at the price of old bell-metal; and Wightman's was likewise to remain at the church, till the new bell was approved. And there were all other due and necessary cautions used in the agreement with Mr. Phelps, as may be seen by it, at the office of the works at St. Paul's.

"This new bell then, after trial, being found good and approved of, Wightman's faulty bell was delivered to Mr. Phelps, and he received the balance of his account. But because some prejudiced persons made impertinent cavils, and because he was satisfied that his bell was of the best metal, and performed in the best manner, and that it would in all respects stand the strictest test, he voluntarily gave bond to the dean and chapter to cast it over again at his own expense, if it should be demanded of him within a year; but that time elapsing without any thing being required, that may be justly said to imply either their good liking and approbation of the bell, or their gross neglect in not having it new-cast, when it was so freely and fully put into their power to have it done for nothing," pp. 68, 69. The present bell has no other inscription on it than "Richard Phelps made me, 1716."

proceed only from such private considerations as every body may reasonably suspect.

And we think it our duty to lay before your grace, that Mr. Jennings, the master carpenter, by his own confession before the commissioners, hath paid the under workmen a great deal less wages than the commission allowed, and he received for that purpose; and confidently pretended he hath a right so to do. And it appears further, by the testimonies and affidavits of many under workmen, that they hardly received above two-third parts of the wages which the church allowed; by which fraudulent practice it is computed that he hath gained above fifteen hundred pounds per annum; that the goods and the materials of the church were much embezzled by him; that greater quantities of timber, boards, nails, ropes, &c. were, by his direction, or those acting under him, conveyed away; that several workmen, after they had answered their call, were set to work by him in other churches and places; and some of our workmen were employed within the church to make models for other churches, presses, window-cases, &c. of the church's materials.

Wherefore we humbly desire your grace to beseech her majesty to direct her council, learned in the law, to prosecute the said Mr. Jennings, for his great frauds and abuses of the church; whereby it will plainly appear whether the commissioners, or Sir Christopher Wren, have more faithfully discharged the trust reposed in them by her majesty.

We beg leave to conclude with observing, that Sir Christopher Wren, in his petition to the queen, prays that he may be suffered to finish the building in such manner, and after such designs, as shall be approved by her majesty, or such persons as her majesty shall think fit to appoint; whereby he seems to insinuate a desire, that there may be a new commission, when yet the commission in being consists of the

two archbishops, several bishops, the lord mayor and sheriffs of London, her majesty's attorney-general, solicitor-general, advocate-general, the dean and residentiaries of St. Paul's, and several other worthy persons, whose known honour, justice, and integrity, should have kept Sir Christopher from making any reflections upon them.

Wherefore, in an humble confidence of our uprightness and care in our whole proceedings, we submit them to the queen's great wisdom and goodness, and humbly pray your grace to a representation of them to her most gracious majesty.

No. 18.—Page xxxii of Introduction.

To his Grace the Lord Archbishop of Canterbury.

The humble representation of the Dean and Chapter of St. Paul's, in pursuance of an order of the commissioners, March 20, 1710-11 *.

At a meeting of the Commissioners for St. Paul's, March 20, 1710-11,

Present,

Lord Bishop of Ely,
Lord Bishop of Lincoln,
Sir Thomas Meeres,
Dr. Harwood,
Mr. Dean of St. Paul's,
Mr. Dean of St. Asaph,
Dr. Hare.

* Frauds and Abuses, p. 9.

The dean and chapter are desired by the commissioners to draw up a representation of what appears to them, upon the examinations that have been taken in relation to Mr. Jennings, and to lay it before the Lord Archbishop of Canterbury and the Lord Bishop of London; and also that it is the commissioners' opinion, that the said Mr. Jennings ought to be dismissed from the service of the church, and prosecuted for the frauds and abuses mentioned in the said representation.

May it please your Grace,

In pursuance of this order, we take the liberty humbly to lay before you, that at a meeting of the commissioners at St. Paul's, on the 20th February last, a petition and articles were exhibited to them against Mr. Jennings, the carpenter, by several under carpenters lately employed by him, representing their hard and unjust usage in relation to the short wages he has paid them, compared with what he is allowed for them; and setting forth many frauds and abuses committed by him, with respect both to the materials provided for the church, and the employment of the men in the pay of it.

A copy of this petition and articles was ordered Mr. Jennings, to which to give in his answer at the next meeting, February 26; and the petitioners were ordered to attend at the same time, when they were examined distinctly upon the matter of their petition, and the several articles exhibited by them; as were also other under carpenters, who appeared at our next meeting, March 5; and upon examination, it did appear, that a former petition had been prepared to be laid before the commissioners about December last, signed by twenty-two hands; but that Mr. Jennings having notice of it, employed one Huntley to join himself with them, upon pretence that Mr. Jennings had turned him out, that he might learn the contents

of the petition, and the several steps taken in it; which the said Huntley accordingly did, and getting the petition into his hands, gave it Mr. Jennings, who suppressed it.

The substance of that former petition, and this now given in, was the same; viz. to represent, that whereas Mr. Jennings was allowed 15*s.* per week for each man, he had paid them, for four years past, but 7*s.*, 8*s.*, 9*s.*, and at most but 12*s.* per week.

And upon examination of the petitioners to the truth of what they had alleged, it did appear that several of them had never received more than 12*s.* per week, and one of them, for his man, but 8*s.*; two others declared they had never more than 12*s.*, and often but 9*s.*, 10*s.*, or 11*s.*, upon pretence of being pricked for not working, though they did attend, and had nothing to do. And upon the examination of others, March 5, one declared he received sometimes 12*s.* per week, and sometimes but 11*s.*; another that he was an apprentice, and received but 9*s.*; one Jones, a carpenter, and freeman of London, that he and his son having been both employed by Mr. Jennings in the work of the church, he hath received but 12*s.* per week for himself, and for his son one year but 5*s.*, and another 6*s.*; and the son going off to better wages, Mr. Jennings, upon hearing it, said he would send the father after him. Thus great appears to have been the disproportion between what Mr. Jennings paid his men, and the pay he was allowed for them; which, that it might the better be concealed, the men were ordered not to tell one another what wages they received.

As to the articles, they are all of two sorts: first, such as concern the materials of the church; secondly, such as concern the employment of the men in the pay of it.

To the first the petitioners and others depose,

1. That great quantities of good building timber, scaffolding,

poles, &c. were sawed to pieces, and carried away by order of Mr. Jennings. Some declare they have seen two waggons loaded with timber, cut into billets, go from the church about a year ago; others that they have seen one; another that a cart load of good knee-oak timber was carried away at one time.

2. That shutters, tables, sashes, presses, and other things were made at the church, and of the materials of the church, for private persons.

3. That the materials of the church, nails, cleats, ropes, and boards, were carried away for work at other places.

To the second, relating to the employment of the men, they depose,

1. That men were employed for great spaces of time, sometimes for half a year, sometimes for a year together, in sawing and cutting out good useful timber for firing, which was carried to other places.

2. That men were often employed, and sometimes for a considerable time together, in making at the church things for the use of private persons.

3. That many men were employed, and for a considerable time, in repairing private houses, or working at other churches; and while they were so employed, they were ordered to come regularly, morning, noon, and night, to their call at St. Paul's.

One Randal, who worked for Mr. Jennings about seven years, and received 13*s.* per week, declares, he worked sometimes three days in the week at St. Paul's, and three at other places; and that he made models for several churches out of the timber of the church, and has carried away cleats, tackle, and other things to the said churches.

These articles the deponents declared themselves ready to make good upon oath: and at another meeting of the commissioners,

March 12, another paper was brought in, signed by four hands, confirming the substance of these articles by a great many instances; and praying protection against Mr. Jennings, who, they say, had set aside the most material evidences by continual threats, sending them out of the way, and promising them work at other places.

To this petition and articles, Mr. Jennings left an answer with Mr. Spencer, February 26, but did not appear then before the commissioners himself, as he ought to have done, according to their order of the 20th. Upon which, he was ordered to attend at their next meeting, March 5, which he did; and again, March 12; at which last time he delivered to the commissioners a testimonial in his behalf from Sir Christopher Wren, and a second answer, to the same effect with the former.

That as to his men's wages, he gave them what he agreed for; and that all master carpenters pay their men less than they are allowed for them: and as to the materials, he says, they were either carried away without his knowledge, or are discounted in his bills; and that the men were not paid by the church when employed elsewhere.

But this answer was judged by the commissioners to be by no means satisfactory; for, as to the men's wages, though other master workmen may perhaps get some small matter by their men, so great a disproportion can never be thought just or reasonable, as there is between being allowed 30*d.* per day for each man, and paying them but 10, 12, 16, 18, 22, and 24 pence per day, which appears to have been the practice of Mr. Jennings. And the consequence of giving such small wages, has been the employing insufficient hands, and particularly men fetched out of the country, who are far inferior in ability and skill to our London workmen, who have a right to be employed in the work of our church, but will not work at such low

rates; and that has necessarily occasioned a great waste of time and materials. Besides, upon examination, it did appear that a great many more men were employed than there was occasion for; and that there were among them people not bred to the trade, apprentices, and old disabled men: and by the abuses committed in this single article, there must, in a few years, have been unjustly gained a great sum of money, which the church will probably feel the want of before the works of it are quite finished. But whether it does or not, it is certain, that if the men employed had been able, skilful workmen, it was great injustice not to give them better wages; and if they did not deserve better wages, they were not able workmen; and either way, the commissioners have great reason to be dissatisfied. As for the materials, it is of public notoriety, that the men used, twice a day at least, to carry away in numbers lap-fulls of timber well cut and sawed into billets; which, so far as they had it for their own use, we cannot but suppose was allowed in consideration of the shortness of their wages: but it is plain, from the examinations taken, that great quantities were carried away for the use of other persons, by the express order of Mr. Jennings or his foreman.

As for such materials as were employed in other works, which Mr. Jennings pretends were discounted in his bills; this, and what he says of the employment of his men, that they were not paid by the church for the time they worked in other places; the commissioners had no certain way to judge of this but by the accounts themselves; and therefore at a meeting, March 12, they ordered Mr. Bateman to bring the books, containing an account of all workmen's bills to Christmas last, to the chapter-house, to be deposited for the perusal of the commissioners; but, to their great surprise, when they expected to find this order complied with, they were told that the

books for two years past, ending at Midsummer last, were in the hands of the auditor, and that Mr. Bateman had no workmen's bills since that time; though there have been paid great sums between Midsummer and Christmas last; particularly to Mr. Strong, the mason, near £3000, and to Mr. Jennings, £500, and to Mr. Robinson, the smith, £600.

The commissioners cannot but think, that if these books and bills themselves, and without alteration, were in favour of Mr. Jennings, they would readily have been laid before them; and since they have not been brought, they think they have, from the examination they have made, and other occurring circumstances, great reason to conclude that Mr. Jennings is guilty of the frauds and abuses he is charged with.

But before we conclude this representation, we beg leave to observe further to your grace, that Mr. Jennings, while the examination into these matters was depending, has used many indirect methods to stifle the evidences, and deter them from appearing, to make good the things alleged against them.

To say nothing of the base endeavours used to hinder a committee by letters sent to several of the commissioners without name; at our first meeting, Feb. 20, one of the men coming to give evidence was accosted at the church door, and another, at our next meeting, Feb. 26; both at the suit of men employed by Mr. Jennings at the work of the church. And at the next meeting, March 5, it appeared that Mr. Jennings, two days before, summoned his men to a public-house they had not been used to, and there drew in as many as he could to sign two pretty long papers, ready drawn up; one relating to the men's wages, and the other to their being employed in other works; and this last paper was signed by about thirty hands: from whence we cannot but infer, that at least so many

had worked at other places, and might appear against him, which, by making them sign this paper, he intended to prevent. And in a paper given to the commissioners, March 12, they that sign it desire to be protected from the threatenings Mr. Jennings endeavoured to terrify them with. And at our last meeting, March 20, a paper was given in to the commissioners, signed by eleven hands, complaining, that on the seventeenth, they, with others, were required by Mr. Jennings's foreman to sign a receipt for forty-eight pounds odd monies, in full of all account, dues, and demands; and that because they refused to sign such a paper, they were refused their wages, and told they should have none till they did sign: and since that, the commissioners having ordered that no man should be turned out without their knowledge, Mr. Jennings has left the work he was upon in the church unfinished, and of a sudden dismissed all the men, and then immediately employed such of them as would comply with him in the work of the chapter-house; and being ordered on this occasion to attend at a meeting of the dean and chapter the next day, he took no notice of it, but went out of town, which leads us to add one thing more, and that is:—

That Mr. Jennings's behaviour, each time he has appeared before the commissioners during this examination, has been extremely rude and insolent, to the great astonishment of all present; and we have been told, that it is common with him to make his boasts how he has bullied them. And by an affidavit before a master in chancery, given into the commissioners at their last meeting, March 20, it appears, among other base and vile practices there set forth, that the impudent advertisements that have been so often printed in relation to the iron work, came from him; for it is there declared upon oath, that one Sharp, Mr. Jennings's foreman and kinsman, did generally tell the deponent of them before they were in print.

This, my lord, is, as briefly as we could put it, the state of the matter, which we are ordered by the commissioners to lay before your grace, as may be seen more at large in the papers from whence this representation is taken, which are all lodged in Mr. Spencer's hands. We are directed humbly to add, that it is their opinion, upon full consideration of the particulars here mentioned, that Mr. Jennings ought to be dismissed from the service of the church, and prosecuted for the frauds and abuses charged on him.

We are, with all submission, my lord,
your grace's most dutiful and most
obedient servants.

No. 19.—Page 506.

Report to the Bishop of Rochester on the State of Westminster Abbey.
From Parentalia, page 296.

When I had the honour to attend your lordship to congratulate your episcopal dignity, and pay that respect which particularly concerned myself, as employed in the chief direction of the works and repairs of the collegiate church of St. Peter in Westminster; you was pleased to give me this seasonable admonition—that I should consider my advanced age *; and as I had already made fair steps in the reparation of that ancient and ruinous structure, you thought it very requisite for the public service, I should leave a memorial of

* His 81st year.

what I had done, and what my thoughts were for carrying on the works for the future.

In order to describe what I have already done, I should first give a state of the fabric as I found it; which being the work of 500 years, or more, through several ages and kings' reigns, it will come in my way to consider the modes of building in those times, and what light records may afford us: such as at present I am able to collect, give me leave to discourse a little upon.

That a temple of Apollo was here in Thorney island (the place anciently so called, where the church now stands) and ruined by an earthquake in the reign of the Emperor Antoninus Pius, I cannot readily agree. The Romans did not use, even in their colonies, to build so slightly; the ruins of ancienter times show their works to this day: the least fragment of cornice, or capital, would demonstrate their handywork. Earthquakes break not stones to pieces, nor would the Picts be at that pains; but, I imagine, the monks finding the Lon-

doners pretending to a temple of Diana, where now St. Paul's stands, (horns of stags, tusks of boars, &c. having been dug up there in former times, and it is said also, in later years) would not be behindhand in antiquity; but I must assert, that having changed all the foundations of old St. Paul's, and upon that occasion rummaged all the ground thereabouts, and being very desirous to find some footsteps of such a temple, I could not discover any, and therefore can give no more credit to Diana than to Apollo.

To pass over the fabulous account, that King Lucius first founded a little church here, A. D. 170, out of the ruins of the temple of Apollo, destroyed by an earthquake a little before: but it is recorded with better authority, that Sebert, King of the East Saxons, built a monastery and church here, 605, which, being destroyed by the Danes, was about 360 years after repaired by the pious King Edgar.

This, it is probable, was a strong good building, after the mode of that age, not much altered from the Roman.

We have some examples of this ancient Saxon manner, which was with piers or round pillars, much stronger than Tuscan, round-headed arches, and windows; such was Winchester Cathedral of old; and such at this day the royal chapel in the White Tower of London, the chapel of St. Crosses, the chapel of Christchurch, in Oxford, formerly an old monastery, and divers others I need not name, built before the Conquest; and such was the old part of St. Paul's built in King Rufus's time.

King Edward the Confessor repaired, if not wholly rebuilt, this abbey-church of King Edgar; of which a description was published by Mr. Camden in 1606, from an ancient manuscript, in these words: " Principalis area domûs, altissimis erecta fornicibus quadrato opere, parique commissura circumvolvitur; ambitus autem ipsius ædis duplici lapidum arcu ex utroque latere hinc inde fortiter solidata operis compage clauditur. Porrò crux templi quæ medium canentium Domino chorum ambiret, & sui gemina hinc inde sustentatione mediæ turris celsum apicem fulciret, humili primùm & robusto fornice simpliciter surgit; deinde cochleis multipliciter ex arte ascendentibus plurimis intumescit; deinceps vero simplici muro usque ad tectum ligneum plumbo diligenter vestitum pervenit."

The sense of which I translate into language proper to builders, as I can understand it.

" The principal aisle or nave of the church being raised high, and vaulted with square and uniform ribs, is turned circular to the east. This on all sides is strongly fortified with double vaulting of the aisles in two stories, with their pillars and arches. The cross building fitted to contain the quire in the middle, and the better to support the lofty tower, rose with a plainer and lower vaulting;

which tower then spreading with artificial winding stairs, was continued with plain walls to its timber roof, which was well covered with lead."

These ancient buildings were without buttresses, only with thicker walls; the windows were very narrow, and latticed; for King Alfred is praised for after-invention of lanterns to keep in the lamps in churches.

In the time of King Henry the Third, the mode began to build chapels behind the altar of the Blessed Virgin. What this chapel here was is not now to be discovered; I suppose all the foundations of it are under the steps of King Henry the Seventh's chapel, and this work probably semi-circular (as afterwards four more were added without the aisles) was also intended for his own sepulchre; some of his own relations lying now just below those steps, and may be supposed to have been within his chapel: of this he laid the first stone, anno 1220, and took down the greatest part of St. Edward's Church to rebuild it according to the mode which came into fashion after the Holy War.

This we now call the Gothic manner of architecture (so the Italians called what was not after the Roman style), though the Goths were rather destroyers than builders; I think it should with more reason be called the Saracen style, for those people wanted neither arts nor learning: and after we in the west lost both, we borrowed again from them, out of their Arabic books, what they with great diligence had translated from the Greeks.

They were zealots in their religion, and wherever they conquered (which was with amazing rapidity) erected mosques and caravansaras in haste, which obliged them to fall into another way of building; for they built their mosques round, disliking the Christian form of a cross. The old quarries, whence the ancients took their large

blocks of marble for whole columns and architraves, were neglected, and they thought both impertinent. Their carriage was by camels, therefore their buildings were fitted for small stones, and columns of their own fancy, consisting of many pieces, and their arches were pointed without key-stones, which they thought too heavy.

The reasons were the same in our northern climate, abounding in free-stone, but wanting marble.

The crusado gave us an idea of this form, after which King Henry built his church, but not by model well digested at first; for, I think, the chapels without the aisles were an after-thought; the buttresses between the chapels remaining, being useless if they had been raised together with them; and the king having opened the east end for St. Mary's Chapel, he thought to make more chapels for sepulture; which was very acceptable to the monks, after licence obtained from Rome to bury in churches, a custom not used before.

The king's intention was certainly to make up only the cross to the westward, for thus far it is of a different manner from the rest more westward, built after his time, as the pillars and spandrils of the arches show.

I am apt to think the king did not live to complete his intention, nor to reach four inter-columns west of the tower; the walls of this part might probably be carried up in his time, but the vaulting now covering the quire, though it be more adorned and gilded, is without due care in the masonry, and is the worst performed of all done before. This stone vault was finished twenty-three years after his disease, in the reign of King Edward the First, so that the old verse is not punctually right—

"Tertius Henricus est templi conditor hujus."

But, alas! it was now like to have been all spoiled: the abbots would

have a cloister, but scrupled, I suppose, at moving some venerable corpses laid between the outside buttresses; then comes a bold, but ignorant architect, who undertakes to build the cloister, so that the buttresses should be without the cloister, spanning over it, as may be seen in the section.

This was a dangerous attempt. It is by due consideration of the statick principles, and the right poising of the weight of the butments to the arches, that good architecture depends; and the butments ought to have equal gravity on both sides. Although this was done to flatter the humour of the monks, yet the architect should have considered that new works, carried very high, and that upon a newer foundation, would shrink; from hence the walls above the window are forced out ten inches, and the ribs broken. I could not discern this failure to be so bad till the scaffold over the quire was raised to give a close view of it, and then I was amazed to find it had not quite fallen.

This is now amended with all care, and I dare promise it shall be much stronger and securer than ever the first builders left it.

After what had been done by King Henry the Third and his successor, it is said, the work was carried further by the abbots and monks toward the west, and I perceive also the contiguous cloister, after the manner it was begun by King Henry the Third, with butments spanning over the cloister, which they were necessitated to proceed upon, according as it had been begun, though by error, not to be amended till it was carried beyond the cloister; but then they proceeded with regular butments, answerable to the north side, till they came to the west front.

This west vault was proceeded on with much better care and skill, and was a work of many years, during the reigns of the three succeeding Edwards, and King Richard the Second. I suppose there was a great intermission or slackness of work, till the Lancas-

trian line came: for then, in the first bay of this work, I find, in the vaulting, and the key-stones, the Rose of Lancaster. In the tumultuous and bloody wars between the two Houses of York and Lancaster, little was done to the abbey, but by the zeal of the abbots, who drove the work on as well as they were able, though slowly, to the west end, which was never completely finished. When King Henry the Eighth dissolved the monastery, the cloister was finished, and other things for the convenience of the abbey.

The consistory (no contemptible fabric) was, I think, done in the time of King Edward the First, and, in order to join it to the church, the east side of the cloister was taken out of the west side of the cross part of the church, (by ill-advice) for it might have otherwise been done by a more decent contrivance, but it may be the king was to be obeyed, who founded this octagonal fabric: the abbot lent it to the king for the use of the house of commons, upon condition the crown should repair it, which, though now used for records, hath lately been done.

The Saracen mode of building, seen in the east, soon spread over Europe, and particularly in France, the fashions of which nation we affected to imitate in all ages, even when we were at enmity with it. Nothing was thought magnificent that was not high beyond measure, with the flutter of arch-buttresses, so we call the sloping arches that poise the higher vaulting of the nave.

The Romans always concealed their butments, whereas the Normans thought them ornamental. These I have observed are the first things that occasion the ruin of cathedrals, being so much exposed to the air and weather; the coping, which cannot defend them, first failing, and if they give way the vault must spread.

Pinnacles are of no use, and as little ornament. The pride of a very high roof raised above reasonable pitch is not for duration,

for the lead is apt to slip; but we are tied to this indiscreet form, and must be contented with original faults in the first design. But that which is most to be lamented is the unhappy choice of the materials: the stone is decayed four inches deep, and falls off perpetually in great scales. I find, after the Conquest, all our artists were fetched from Normandy; they loved to work in their own Caen-stone, which is more beautiful than durable. This was found expensive to bring hither, so they thought Rygate-stone, in Surrey, the nearest like their own, being a stone that would saw and work like wood, but not durable, as is manifest; and they used this for the ashlar of the whole fabric, which is now disfigured in the highest degree: this stone takes in water, which being frozen, scales off; whereas good stone gathers a crust, and defends itself, as many of our English free-stones do. And though we have also the best oak timber in the world, yet these senseless artificers, in Westminster-hall and other places, would work their chesnuts from Normandy: that timber is not natural to England; it works finely, but sooner decays than oak. The roof in the Abbey is oak, but mixt with chesnut, and wrought after a bad Norman manner, that does not secure it from stretching and damaging the walls: and the waters of the gutters are ill carried off. All this is said, the better, in the next place, to represent to your lordship what has been done, and is wanting still to be carried on, as time and money is allowed, to make a substantial and durable repair.

First, in repair of the stone work, what is done shows itself: beginning from the east window, we have cut out all the ragged ashlar, and invested it with a better stone, out of Oxfordshire, down the river, from the quarries about Burford.

We have amended and secured the buttresses in the cloister garden, as to the greatest part, and we proceed to finish that side:

the chapels on the south side are done, and most of the arch-buttresses all along as we proceeded. We have not done much on the north side, for these reasons: the houses on the north side are so close, that there is not room left for the raising of scaffolds and ladders, nor for passage for bringing materials; besides, the tenants taking every inch, to the very walls of the church, to be in their leases, this ground, already too narrow, is divided as the backsides to houses, with wash-houses, chimnies, privies, cellars, the vaults of which, if indiscreetly dug against the foot of a buttress, may inevitably ruin the vaults of the chapels (and, indeed, I perceive such mischief is already done, by the opening of the vaults of the octagonal chapel on that side), and unless effectual means be taken to prevent all nuisances of this sort, the works cannot proceed; and if finished, may soon be destroyed. I need say no more; nor will I presume to dictate, not doubting but proper means will be taken to preserve this noble structure from such nuisances as directly tend to the demolition of it.

And now, in further pursuance of your lordship's directions, I shall distinctly set down what remains to finish the necessary repairs for ages to come: and then, in the second place (since the first intentions of the founders were never brought to a conclusion), I shall present my thoughts and designs, in order to a proper completing of what is left imperfect, hoping we may obtain for this the continuance of the parliamentary assistance.

I have yet said nothing of King Henry the Seventh's Chapel, a nice embroidered work, and performed with tender Caen stone; and though lately built, in comparison, is so eaten up by our weather, that it begs for some compassion, which I hope the sovereign power will take, as it is the regal sepulture.

I begin, as I said, to set down what is necessary for completing

the repairs, though part thereof at present I can only guess at, because I cannot as yet come at the north side to make a full discovery of the defects there; but I hope to find it rather better than the south side; for it is the vicissitudes of heat and cold, drought and moisture, that rot all materials more than the extremities that are constant of any of these accidents: this is manifest in timber, which, if always under ground and wet, never decays, otherwise Venice and Amsterdam would fall: it is the same in lead work, for the north side of a steep roof is usually much less decayed than the south; and the same is commonly seen in stone work: besides, the buttresses here are more substantial than those of the south side, which I complained before were indiscreetly altered for the sake of the cloysters: and I find some emendations have been made about eighty years since, but not well. Upon the whole matter I may say, that of the necessary repairs of the outward stone work, one third part is already compleated. The most dangerous part of the vaulting over the quire now in hand will be finished in a few months; but the roof over it cannot be opened till summer. The repairs of the stone work, with all the chapells, arch-buttresses, windows, and mouldings of the north side, are yet to be done, excepting part of the north-cross aisle: a great part of the expense will be in the north front, and the great rose window there, which being very ruinous, was patched up for the present to prevent further ruin some years since, before I was concerned, but must now be new done: I have prepared a proper design for it. The timber of the roof of the nave, and the cross, is amended and secured with the lead, and also the chapels; but the whole roof and aisles, from the tower westward, with lead and pipes to be new cast, remains yet, with all the timber work, to be amended, as hath been done eastward of the tower already.

The chapels on the north side must have their roofs amended, when we can see how to come at them, after the removal of one little house.

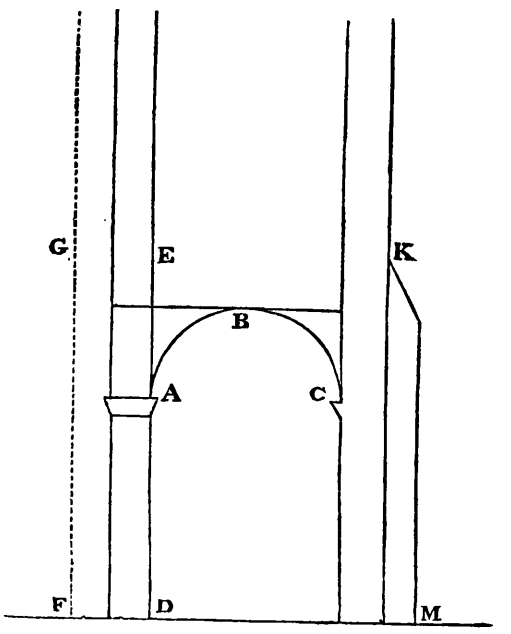
And now having given a summary account of what will perfect the meer repairs, let me add what I wish might be done to render those parts with a proper aspect, which were left abruptly imperfect by the last builders, when the monastery was dissolved by King Henry the Eighth. The west front is very requisite to be finished, because the two towers are not of equal height, and too low for the bells, which being so much lower than the roof, that they are not heard as far as they should be: the great west window is also too feeble, and the gabel end of the roof over it is but weather boards painted. The original intention was plainly to have a steeple, the beginning of which appears on the corners of the cross, but left off before it rose so high as the ridge of the roof; and the vault of the quire under it is only lath and plaister, now rotten, and must be taken care of.

Lest it should be doubted, whether the four pillars below be able to bear a steeple, because they seem a little swayed inward, I have considered how they may be unquestionably secured, so as to support the greatest weight that need be laid upon them, and this after a manner that will add to their shape and beauty.

It is manifest to the eye, that the four innermost pillars of the cross are bended inward considerably, and seem to tend to ruin; and the arches of the second order above are cracked also: how this has happened, and how it is to be secured, I shall demonstrate.

I conceive that the architect knew very well that the four pillars above the intersection of the cross-nave would not prove a sufficient butment to stand against the pressure of so many arches, unless they were very much bigger than the other piers; but that could not be

without cumbering up the principal part of the church: but though these angular pillars could not be made bigger, yet they could be made heavier to stand against the pressure of the several rows of arches, which might prove an equivalent, as may appear thus:



Let ABC be an arch resting at C against an immoveable wall KM, but at A upon a pillar AD, so small as to be unable to be a sufficient butment to the pressure of the arch AB: what is then to be done? I cannot add FG to it to make it a butment, but I build up E so high, as by addition of weight, to establish it so firm as if I had FG to it to make it a butment: it need not be inquired how much E must be, since it cannot exceed, provided AD be sufficient to bear the weight imposed upon it; and this is the reason why, in all Gothick fabricks of this form, the architects were wont to build towers or steeples in the middle, not only for ornament, but to confirm the middle pillars against the thrust of the several rows of arches, which force against them every way.

The architect understood this well enough; but knowing that it might require time to give such a butment as the tower to his arches, which was to be last done; and lest there should be a failing in the mean time—he wisely considered, that if he tied these arches every way with iron, which were next to the middle of the cross; this might serve the turn, till he built the tower, to make all secure, which is not done to this day. These irons, which were hooked on from pillar to pillar, have been stolen away, and this is the reason of the four pillars being bent inward, and the walls above cracked; but nothing can be amended till first the pillars are restored, which

I have considered how to perform, and represented in a model. This must be first done; otherwise the additions of weight upon that which is already crooked and infirm will make it more so; but the pillars being once well secured from further distortion, it will be necessary to confirm all by adding more weight upon them, that is, by building a tower according to the original intention of the architect, and which was begun, as appears by the work, but left off before it rose to the ridge of the roof. In my opinion the tower should be continued to at least in height above the roof, as it is in breadth; and if a spire be added to it, it will give a proper grace to the whole fabrick, and the west end of the city, which seems to want it.

I have made a design, which will not be very expensive, but light, and still in the Gothick form, and of a style with the rest of the structure, which I would strictly adhere to* throughout the whole intention: to deviate from the whole form would be to run into a disagreeable mixture, which no person of a good taste could relish.

I have varied a little from the usual form in giving twelve sides to the spire instead of eight, for reasons to be discerned upon the model.

The angles of pyramids in the *Gothick* architecture were usually enriched with the flower the botanists call *calceolus*, which is a proper form to help workmen to ascend on the outside to amend any defects, without raising large scaffolds upon every slight occasion: I have done the same, being of so good use, as well as agreeable ornament.

The next thing to be considered is, to finish what was left undone at the west front.

* It would be well if all our repairers of churches would observe the same honourable caution.—J. E.

It is evident, as is observed before, that the two west towers were left imperfect, and have continued so since the dissolution of the monastery, one much higher than the other, though still too low for bells, which are stifled by the height of the roof above them: they ought certainly to be carried to an equal height, one story above the ridge of the roof, still continuing the Gothick manner in the stone-work and tracery.

Something must be done to strengthen the west window, which is crazy; the pediment is only boarded, but ought, undoubtedly, to be stone. I have given such a design as I conceive may be suitable for this part: the Jerusalem chamber is built against it, and the access from Tothill-street not very graceful.

The principal entrance is from King-street, and, I believe, always will continue so; but, at present, there is little encouragement to begin to make this north front magnificent in the manner I have designed, whilst it is so much incumbered with private tenements, which obscure and smoke the fabrick, not without danger of firing it.

The great north window had been formerly in danger of ruin, but was upheld, and stopt up, for the present, with plaister. It will be most necessary to rebuild this with Portland stone, to answer the south rose window, which was well rebuilt about forty years since; the staircases at the corners must be new ashlard, and pyramids set upon them conformable to the old style, to make the whole of a piece. I have therefore made a design *, in order to restore it to its proper shape first intended, but which was indiscreetly tampered with some years since, by patching on a little Dorick passage before the great window, and cropping off the pyramids, and covering the

* This front, commonly called Solomon's porch, Sir Christopher lived to see finished in 1722.

staircases with very improper roofs of timber and lead, which can never agree with any other part of the design.

For all these new additions I have prepared perfect draughts and models, such as I conceive may agree with the original scheme of the old architect, without any modern mixtures to shew my own inventions: in like manner, as I have among the parochial churches of London, given some few examples (where I was obliged to deviate from a better style), which appear not ungraceful, but ornamental, to the east part of the city; and it is to be hoped, by the public care, the west part also, in good time, will be as well adorned; and surely by nothing more properly than a lofty spire and western towers to Westminster Abbey.

C. W.

TRACT I.

The following Tracts are from unfinished Sketches by Sir Christopher Wren, printed in Parentalia; and contain the Germs of an excellent Discourse on Architecture, founded on the soundest Principles and the profoundest Results of great Experience.

ARCHITECTURE has its political use; public buildings being the ornament of a country; it establishes a nation, draws people and commerce, makes the people love their native country, which passion is the original of all great actions in a commonwealth. The emulation of the cities of Greece was the true cause of their great-

ness. The obstinate valour of the Jews, occasioned by the love of their temple, was a cement that held together that people, for former ages, through infinite changes. The care of public decency and convenience was a great cause of the establishment of the low countries, and of many cities in the world. Modern Rome subsists still, by the ruins and imitation of the old; as does Jerusalem by the Temple of the Sepulchre, and other remains of Helena's zeal.

Architecture aims at eternity; and therefore the only thing incapable of modes and fashions in its principles, the orders.

The orders are not only Roman and Greek, but Phœnician, Hebrew, and Assyrian; therefore being founded upon the experience of all ages, promoted by the vast treasures of all the great monarchs, and skill of the greatest artists and geometricians, every one emulating each other, and experiments in this kind being greatly expenseful, and errors incorrigible—is the reason that the principles of architecture are rather the study of antiquity than fancy.

Beauty, firmness, and convenience, are the principles: the first two depend upon geometrical reasons of optics and staticks; the third only makes the variety.

There are natural causes of beauty. Beauty is a harmony of objects, begetting pleasure by the eye. There are two causes of beauty, natural and customary: natural is from geometry, consisting in uniformity (that is, equality) and proportion. Customary beauty is begotten by the use of our senses to those objects which are usually pleasing to us for other causes; as familiarity, or particular inclination, breeds a love to things not in themselves lovely. Here lies the great occasion of errors: here is tried the architect's judgment; but always the true test is natural or geometrical beauty.

Geometrical figures are naturally more beautiful than other irregular: in this all consent as to a law of nature. Of geometrical figures, the square and the circle are most beautiful; next the paral-

lelogram and the oval. Straight lines are more beautiful than curve: next to straight lines, equal and geometrical flexures: an object elevated in the middle is more beautiful than depressed.

Position is necessary for perfecting beauty. There are only two beautiful positions of straight lines, perpendicular and horizontal: this is from nature, and, consequently, necessity; no other than upright being firm. Oblique positions are discord to the eye, unless answered in pairs, as in the sides of an equicrural triangle; therefore Gothick buttresses are all ill-favoured, and were avoided by the ancients, and no roofs almost but spherick raised to be visible, except in the front, where the lines answer: in spherick, in all proportions, the ribs answer. Cones and multangular prisms want neither beauty nor firmness, but are not ancient.

Views contrary to beauty are deformity, or a defect of uniformity, and plainness, which is the excess of uniformity: variety makes the mean.

Variety of uniformities makes complete beauty; uniformities are best tempered, as rhimes in poetry, alternately, or sometimes with more variety, as in stanzas.

In things to be seen at once, much variety makes confusion, another vice of beauty. In things that are not seen at once, and have no respect one to another, great variety is commendable, provided this variety transgress not the rules of opticks and geometry.

An architect ought to be jealous of novelties, in which fancy binds the judgement; and to think his judges, as well those that are to live five centuries after him, as those of his own time. That which is commendable now for novelty will not be a new invention to posterity, when his works are often imitated, and when it is not known which was the original; but the glory of that which is good of itself is eternal.

The architect ought, above all things, to be well skilled in per-

spective; for, every thing that appears well in the orthography, may not be good in the model, especially where there are many angles and projectures; and every thing that is good in model, may not be so when built; because a model is seen from other stations and distances than the eye sees the building: but this will be universally true; that whatsoever is good in perspective, and will hold so in all the principal views, whether direct or oblique, will be as good in great, if this only caution be observed—that regard be had to the distance of the eye in the principal stations.

Things seen near at hand may have small and many members, be well furnished with ornaments, and may lie flatter; on the contrary, all this care is ridiculous at great distances; there bulky members, and full projectures casting quick shadows, are commendable; small ornaments, at too great a distance, serve only to confound the symmetry, and to take away the lustre of the object, by darkening it with many little shadows.

There are different reasons for objects, whose chief view is in front, and for those whose chief view is sideways.

Fronts ought to be elevated in the middle, not the corners; because the middle is the place of the greatest dignity, and first arrests the eye; and rather projecting forward in the middle, than hollow. For these reasons, pavilions at the corners are naught; because they make both faults—a hollow and depressed front. Where hollows and solids are mixed, the hollow is to be in the middle; for hollows are either niches, windows, or doors. The first require the middle to give the statue dignity; the second, that the view from within may be direct; the third, that the visto may be straight. The ancients elevated the middle with a tympan, and statue, or a dome. The triumphant arches, which now seem flat, were elevated by the magnificent figure of the victor in his chariot with

four horses abreast, and other statues accompanying it. No sort of pinnacle is worthy enough to appear in the air, but a statue. Pyramids are Gothick; pots are modern French. Chimnies ought to be hid; if not, to be well adorned. No roof can have dignity enough to appear above a cornice, but the circular; in private buildings it is excusable. The ancients affected flatness. In buildings where the views are sideways, as in streets, it is absolutely required that the composition be square, intercolumniations equal, projectures not great, the cornices unbroken, and every thing straight, equal, and uniform. Breaks in the cornice, projectures of the upright members, variety, inequality in the parts, various heights of the roof, serve only to confound the perspective, and make it deformed; while the breaches and projectures are cast one upon another, and obscure all symmetry. In this sort of building there seems no proportion of length to the heighth; for a portico, the longer the more beautiful, in infinitum; on the contrary, fronts require a proportion of the breadth to the heighth: higher than three times the breadth is indecent, and as ill to be above three times as broad as high. From this rule I except obelisks, pyramids, columns, such as Trajan's, &c. which seem rather single things than compositions. I except also long porticoes, though seen direct; where the eye, wandering over the same members infinitely repeated, and not easily finding the bounds, makes no comparison of them with the heighth.

Vitruvius hath led us the true way to find out the originals of the orders. When man first cohabited in civil commerce, there was necessity of forums and publick places of meeting. In cold countries, people were obliged to shut out the air, the cold, and the rain; but in the hot countries, where civility first began, they desired to exclude the sun only, and admit all possible air for coolness and health: this brought in naturally the use of porticoes, or roofs for shade set

upon pillars. A walk of trees is more beautiful than the most artificial portico; but these not being easily preserved in market places, they made the more durable shades of porticoes, in which we see they imitated nature: most trees in their prime, that are not sapplings or dotards, observe near the proportion of Dorick pillars in the length of their bole, before they pass into branches: this I think the more natural comparison, than that to the body of a man, in which there is little resemblance of a cylindrical body. The first pillars were the very boles of trees turned, or cut in prisms of many sides. A little curiosity would induce to lay the torus at the top; and the conjecture is not amiss, to say it was first a band of iron, to keep the clefts, occasioned by the sun, from opening with the weight above; and to keep the weather from piercing those clefts, it was necessary to cover it with the plinth, or square board. The architrave conjoined all the pillars in length, the couples joined them crossways. I suppose now, that the ends of the couples might be hollowed away, as in this scheme. * * * * * * (The rest is wanting).

TRACT II.

MODERN authors who have treated of architecture seem generally to have little more in view, but to set down the proportions of columns, architraves, and cornices, in the several orders, as they are distinguished into Dorick, Ionick, Corinthian, and Composite; and in these proportions finding them in the ancient fabricks of the Greeks and Romans, (though more arbitrarily used than they care to acknow-

ledge) they have reduced them into rules too strict and pedantick, and so as not to be transgressed, without the crime of barbarity; though, in their own nature, they are but the modes and fashions of those ages wherein they were used: but because they were found in the great structures, (the ruins of which we now admire) we think ourselves strictly obliged still to follow the fashion, though we can never attain to the grandeur of those works.

Those who first laboured in the restoration of architecture, about three centuries ago, studied principally what they found in Rome, above-ground, in the ruins of the theatres, baths, temples, and triumphal arches; (for among the Greeks little was then remaining) and in these there appeared great differences: however, they criticised upon them, and endeavoured to reconcile them, as well as they could, with one another, and with what they could meet with in the Italian cities: and it is to be considered, that what they found standing was built, for the most part, after the age of Augustus, particularly the arches, amphitheatres, baths, &c. The Dorick order they chiefly understood, by examining the theatre of Marcellus; the Ionick, from the temple of Fortuna Virilis; the Corinthian, from the Pantheon of Agrippa; the composite, from the triumphal arch of Titus, &c. I have seen, among the collections of Inigo Jones, a pocket-book of Pyrrho Ligorio's, (an excellent sculptor and architect, employed by Pope Paul the Third, in the building of the Vatican Church of St. Peter in Rome, about the year 1540) wherein he seemed to have made it his business, out of the antique fragments, to have drawn the many different capitals, mouldings of cornices, and other ornaments of friezes, &c. purposely to judge of the great liberties of the ancient architects, most of which had their education in Greece.

In further proof of this, we have now a very remarkable account

of an eminent and learned critick * in architecture; viz. "The first story of the Coliseo at Rome is said to be Dorick, and yet the frieze of it is not plain and smooth. The third story is Corinthian, but without carving or ornaments, except in the capitals. The fourth story is composite, but with Corinthian capitals, and like those of the third orders; the corbills in the frieze shewing them of the composite order. The pillars of the four orders, one above the other, do not diminish in dimension, according to rule, but are all of a thickness; and the void of the arches, the parts, ornaments, and measures in the different stories, have not that diversity of proportion which is believed to be essential to different orders. By the example of this amphitheatre, (the noblest remain of ancient magnificence) as well as by many others, it is evident, that in the rules of the proportions, and different members, &c. of the orders, there was no certain perpetual and universal law; but the same orders, measures, and manners differed, according to the various kinds of buildings, the judgement of the architect, and the different circumstances of things."

But although architecture contains many excellent parts, besides the ranging of pillars; yet curiosity may lead us to consider whence this affectation arose originally, so as to judge nothing beautiful but what was adorned with columns, even where there was no real use of them; as when half-columns are stuck upon the walls of temples, or basilicæ; and where they are hung on, as it were, upon the outside of triumphal arches, where they cannot be supposed of any use, but merely for ornaments; as Seneca observed in the Roman baths: Quantum columnarum est nihil sustinentium, sed in ornamentum positarum, impensæ causâ †! It will be to the purpose, therefore, to examine whence proceeded this affectation of a mode

* Hist. of Amphitheatres, by C. Maffei. † Epist. 87.

that hath continued now at least 3000 years; and the rather, because it may lead us to the grounds of architecture, and by what steps this humour of colonnades came into practice in all ages.

The first temples were, in all probability, in the ruder times, only little cellæ to inclose the idol within, with no other light than a large door to discover it to the people, when the priest saw proper, and when he went alone to offer incense, the people paying their adorations without doors: for all sacrifices were performed in the open air, before the front of the temple; but in the southern climates, a grove was necessary, not only to shade the devout, but, from the darkness of the place, to strike some terror and recollection in their approaches: therefore, trees being always an adjunct to the cellæ, the Israelites were commanded to destroy, not only the idols, but to cut down the groves which surrounded them: but trees decaying with time, or not equally growing, (though planted at first in good order) or possibly not having room; when the temples were brought into cities, the like walks were represented with stone pillars, supporting the more durable shade of a roof, instead of the arbour of spreading boughs; and still in the ornaments of stone work was imitated, (as well as the materials would bear) both in the capitals, friezes, and mouldings, a foliage, or sort of work composed of leaves, which remains to this age. This, I am apt to think, was the true original of colonnades environing the temples in single or double aisles.

People could not assemble and converse, but under shade, in hot countries; therefore the forum of every city was also at first planted round with walks of trees——

"Lucus in urbe fuit mediâ, lætissimus umbrâ."

These avenues were afterwards, as cities grew more wealthy, reformed into porticoes of marble; but it is probable, at first, the

columns were set no nearer than the trees were before in distance, and that both architraves and roofs were of timber; because the intercolumns would certainly have been too large to have had the architraves made in stone; but the architects in after ages, being ambitious to perform all in stone, and to load the architraves also with heavy cornices of stone, were necessitated to bring the pillars nearer together; and from hence arose the differences of the eustyle, sustyle, diastyle, and pycnostyle disposition of columns, by which Vitruvius and his followers would make a systematical science of their art, forming positive rules, according to the diameters of their columns, for the intercolumns, and the proportions of the architrave, cornice, and all the members of which they are composed.

But, by the way, it is to be observed, the diameters of columns were grosser at first, though timber architraves did not require to be borne by a more substantial pillar, as in the Tuscan order; but, because in the groves, the ancient trees of large growth (and antiquity always carries veneration with it), were used to be of most esteem, so at first the columns were six diameters in heighth: when the imitation of groves was forgot, the diameters were advanced to seven; then to eight; then to nine, as in the Ionick order; then, at last, to ten, as in the Corinthian and Italick orders; and herein the architects had reason; for the great expence is in raising and carving of the columns; and slenderer columns would leave them more opportunity to shew their skill in carving and enriching their works in the capitals and mouldings. Thus the Corinthian order became the most delicate of all others, and though the column was slenderer, yet bore a greater weight of entablature than the more ancient orders.

When the old statuaries in Greece, such as Phidias, Praxiteles,

and their disciples, began to be celebrated for their art, and people grew fond of their works; it is no wonder (for honos alit artes) they fell upon the Corinthian capital, which, in no after age to this time, has been amended, though the French King, Lewis the Fourteenth, proposed rewards to such artists as should find out a Gallick order: therefore Callimachus, the old architect and inventor (according to Vitruvius's story of the Nurse and Basket), must still retain the honour of it; for, neither will the flower-de-luce of the French, nor the palms of Villalpandus, in his imaginary scheme of the temple of Solomon, come up to the grace of the old form of the Corinthian capital.

It seems very unaccountable, that the generality of our late architects dwell so much upon this ornamental, and so slightly pass over the geometrical, which is the most essential part of architecture. For instance, can an arch stand without butment sufficient? If the butment be more than enough, 'tis an idle expence of materials; if too little, it will fall; and so for any vaulting; and yet no author hath given a true and universal rule for this, nor hath considered the various forms of arches.

The rule given by the authors for the butment of arches is this: [see figure 1.] Let ABC be the arch, of which B is a third part; extend the line BC, and make CD equal to CB, and draw the perpendicular CDF: this determines the butment GF (as they say); but wherefore? for add to the bottom, as KL, the arch then must certainly press more upon the higher part than the lower; or if some additional weight be added above the arch, that must still press more than before this was added. So this rule (if it were built upon any sure geometrical theorem, as it is not) is neither true nor universal; and what is true will be shewn to be only determinable by the doctrine of finding the centers of gravity in the parts of the pro-

Fig. 1.

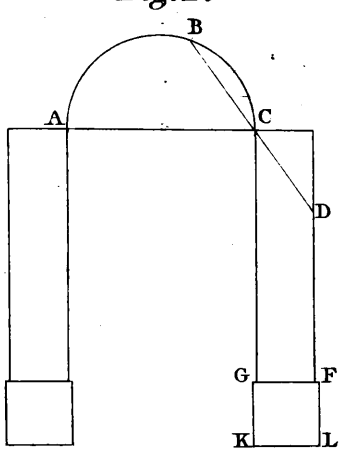


Fig. 2.

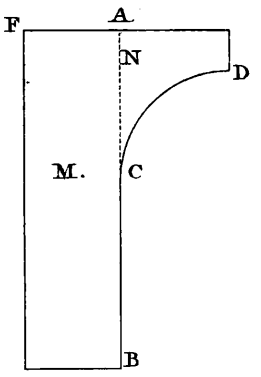


Fig. 3.

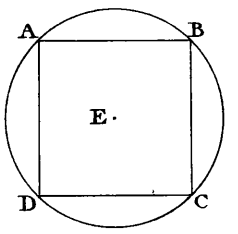
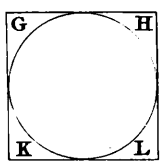


Fig. 4.



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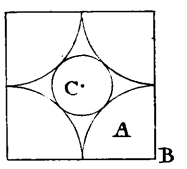


Fig. 6.

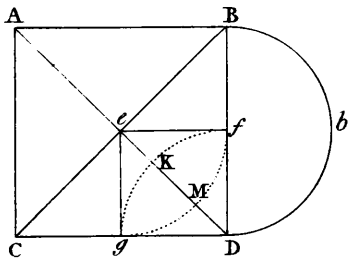


Fig. 7.

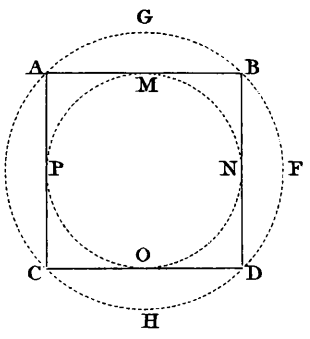
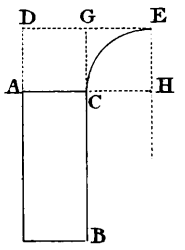


Fig. 8.



James Elmes, M.R.I.A. del.t *Sir Ch.r Wren, inv.t* *W. Lowry, sculp.*

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posed design. In demonstrating this, I will not trouble the reader with nice geometrical speculations or calculations, but by easy inductions; supposing he hath read Archimedes, or the modern geometricians, who have purposely treated of centers of gravity; or at least, that he will give credit to those who have established all the principles of this science by demonstration unquestionable: so it will not be necessary to dive into the rudiments.

Fig. 2.—Let a stone be cut in this form: FB a parallelogram, CD a semicircle added, AB a perpendicular, M the center of gravity of FB, and N of ACD; now if N be equiponderant to M on each side the perpendicular AB, it is certain the whole stone will stand immoveable upon the basis at B, although it be but half an arch: add the like stone on the opposite side, till the horns meet in an entire arch, so the whole will stand as well as the halves. If any thing be added without M, that alters nothing, only 'tis an useless expence; but if any thing be added above N, that alters the center of gravity, which therefore must be provided for by adding more weight to M; and the same may be shewn in all kinds of vaulting. So it appears that the design, where there are arcades, must be regulated by the art of staticks, or invention of the centers of gravity, and the duly poising all parts to equiponderate; without which, a fine design will fail and prove abortive. Hence I conclude, that all designs must, in the first place, be brought to this test, or rejected. I have examined some celebrated works, as the Pantheon, and judge there is more butment than necessary, though it is flat and low: but I suppose the architect provided it should stand against earthquakes, as indeed it hath and will. The great fabrick of St. Peter's, if it had been followed as Bramante had designed it, would have been as durable; but the butment of the cupola was not placed with judgement; however, since it was hooped with iron, it is safe at present, and, without an earth-

quake, for ages to come. Iron, at all adventures, is a good caution, but the architect should so poise his work, as if it were not necessary.

The free-masons were not very solicitous about this, because they used buttresses on the outside of the wall, which they extended as far as they guessed would be sufficient; and they had yet a farther help, by loading the buttress with a pinnacle, to the height of which they were not confined. The Romans never used buttresses without, but rather within, though they cut off a part of the arch, but not of the vaulting that depended on the arch, as it appears in the ailes of Dioclesian's baths, and in some respect also in the Templum Pacis.

The different forms of vaultings are necessary to be considered, either as they were used by the ancients, or the moderns, whether Free-masons, or Saracens. The Romans, though they sometimes used a hemisphere, where the room was round; or half-hemispheres, as in the exedræ of the baths, or the tribunes of temples and basilicæ, yet generally they used a plain cylindrical vaulting, where the walls were parallel; or cross-vaulting, where two cylinders intersect in diagonals, as in the Templum Pacis; and in all the theatres in the passages under the steps. The moderns, whose arches were not circular, but made of sections of circles, used commonly another sort, where the spandrils resting upon the pillars, sprang every way round as their arch rose. It is not easy to give a geometrical definition, but by calling it a circular inverted cone (A), (Fig. 5.) resting upon its apex (B); (C) the middle, they filled up with tracery work, for which this way gave them great opportunity of divers variations, which I need not insist on. Another way (which I cannot find used by the ancients, but in the later eastern empire, as appears at St. Sophia, and by that example, in all the mosques and cloysters of the dervises, and every where at present in the east), and of all others the most geometrical, is composed of hemispheres, and their sections only: and whereas a

sphere may be cut all manner of ways, and that still into circles, it may be accommodated to lie upon all positions of the pillars. (Fig. 3.) Let E be a cupola or hemisphere, resting upon four pillars ABCD, from whence arise the four arches; to which the sections, being semicircles, must join on all sides, whether AB be equal to BC or not. Cut the hemisphere again horizontally, the section will be an entire circle, touching in the keys of the arches, and GHKL (Fig. 4.) will be spandrils resting upon the pillars, yet still are parts of the hemisphere; and if the horizontal circle be taken away, you may build upon that circle an upright wall, which may bear a cupola again above, as is done at St. Sophia and St. Peter's, and at all the churches at Rome. I question not but those at Constantinople had it from the Greeks before them, it is so natural, and is yet found in the present seraglio, which was the episcopal palace of old; the imperial palace, whose ruins still appear, being farther eastward. Now, because I have for just reasons followed this way in the vaulting of the church of St. Paul's, I think it proper to shew, that it is the lightest manner, and requires less butment than the cross-vaulting, as well as that it is of an agreeable view; and, at the same time, I shall shew how the centers of gravity are to be computed. To shew that it requires less butment than the diagonal cross-vaulting, I will compare them both together, without any perplexed demonstration, as follows:—

It is evident that the spandrils, or loading of the diagonal cross-arches, where two cylindrical vaults meet, must be an inverted pyramid, whose basis is a parallelogram, with two sides strait, and two circular; and wherever it be cut horizontally, it will be cut into like parallelograms: now, in the other eastern way of vaulting by hemispheres, the spandrils are the solids, which are left when a hemisphere is taken out of a half-cube; each of these also must be a sort of inverted Pyramid, whose bases and sides are circular, and wherever it is cut horizontally, it is cut into pieces of circles.

What these are that give the butment of arcades in the several forms of arches may be geometrically determined, for example in the Roman way of cross-arches.

Fig. 6.—Let ABCD represent the whole vaulting between four pillars, then *efg* will represent the quarter of this vaulting resting upon D. Now, because the solid half-cylinder CD is cut off by the half-cylinder BD, it is evident the whole cross-vault will be equal to one half-cylinder, whose diameter is BD, the heighth *fh*, and the length AB; and because D*gef* is one-fourth part, this being deducted out of the cube of *f*D, the remainder (supposing it filled up to the crown) *e*, is the body we suppose at D, for the butment, and the parts of this circular inverted pyramid will bear a proportion with the ordinates of the quadrant, being the radius less the ordinates squared: so the ordinates of the pyramid are known; and by the known methods the centers of gravity will be known of the whole or part. As for the Gothick vaulting, turn this pyramid upon its axis, and it will be a conoide in the whole, and in its parts as the circle to the square circumscribed, and the centers will be given of the whole and the parts. Now, the third way of vaulting by parts of hemispheres may be thus considered. Fig. 7. Let ABCD be four pillars, and GFH be supposed the whole hemisphere, before it be cut off by six arches, and by the two horizontal sections PON, then is DON one of the eight spandrils; therefore the said spandril is the sphere less the cube divided by 8, or the hemisphere less half the cube divided by 4, which is one spandril, such as OND. Now, let these several spandrils in the Roman, the Gothick, or Saracen way be compared together (see fig. 6.) *gf*D in the Roman, is the basis of the square inverted pyramid; *g*KD in the Gothick is but the quadrant of a circle inscribed, and *g*MKD but the remainder to the square; which being evidently the least and lightest, and the center of gravity nearest to D, I have therefore followed in the vaultings of St. Paul's, and, with good reason, preferred it above any

other way used by architects. But none of these vaultings are in buildings thought necessary to be filled up to the crowns of the vaultings, but so high as to give butment to the arches above the pillars, which architects have determined, by practice, to be a third part of the heighth of the arch. It seems necessary to consider the proper butment of cylindrical or strait vaultings upon parallel walls, or two pillars only of some breadth. In order to find this by steps we will consider an arch abstracted from what may be laid upon it, or affixed to it. Fig. 8.—Let AB be a body (the heighth or thickness doth not enter into this consideration) upon the level top, to lay the body GED, the line GE being a quadrant, DE a tangent to it * * * * [The rest is wanting.]

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