

## **The early history of the Royal Society / by Henry Benjamin Wheatley.**

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THE EARLY HISTORY  
OF THE  
ROYAL SOCIETY.





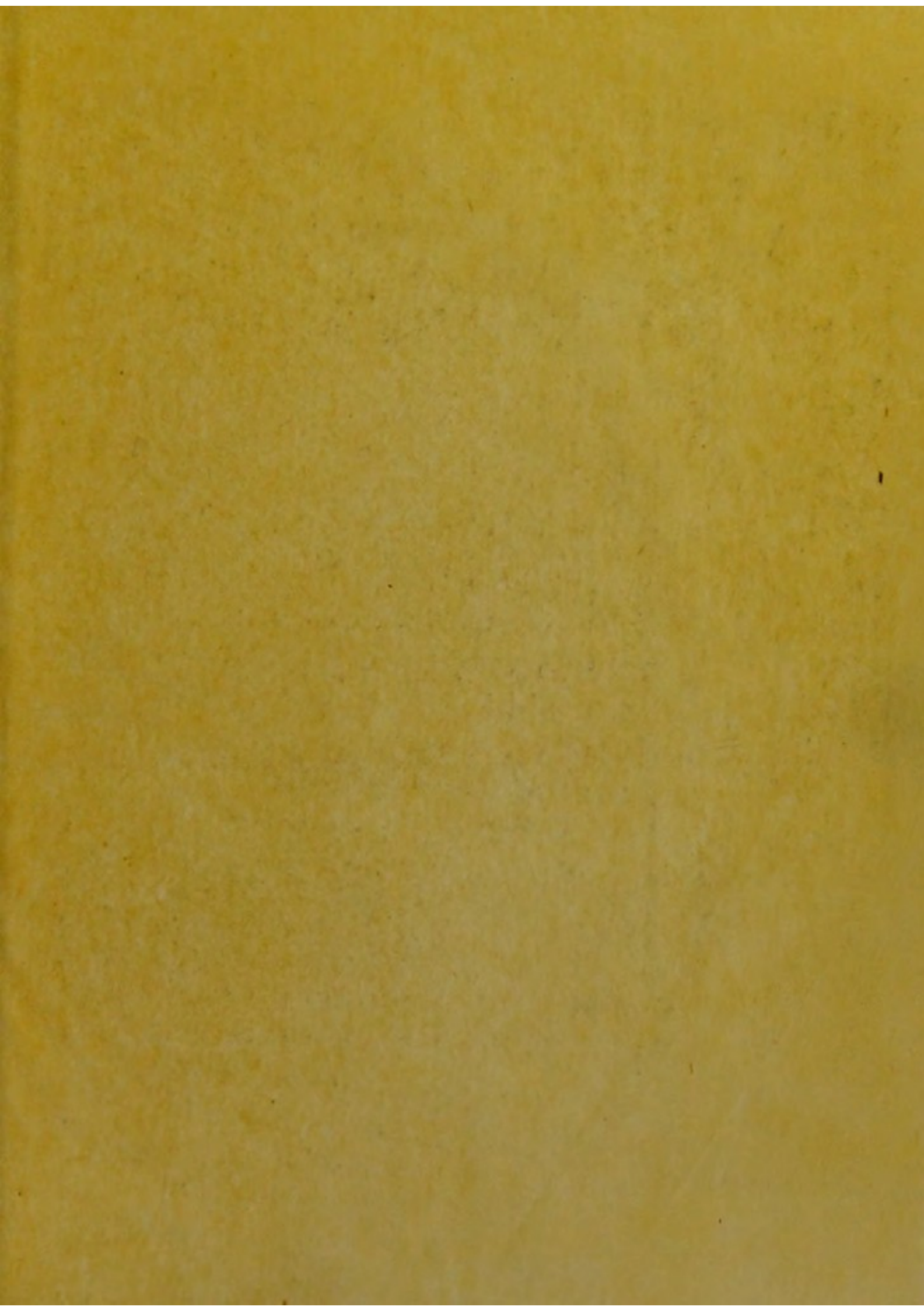




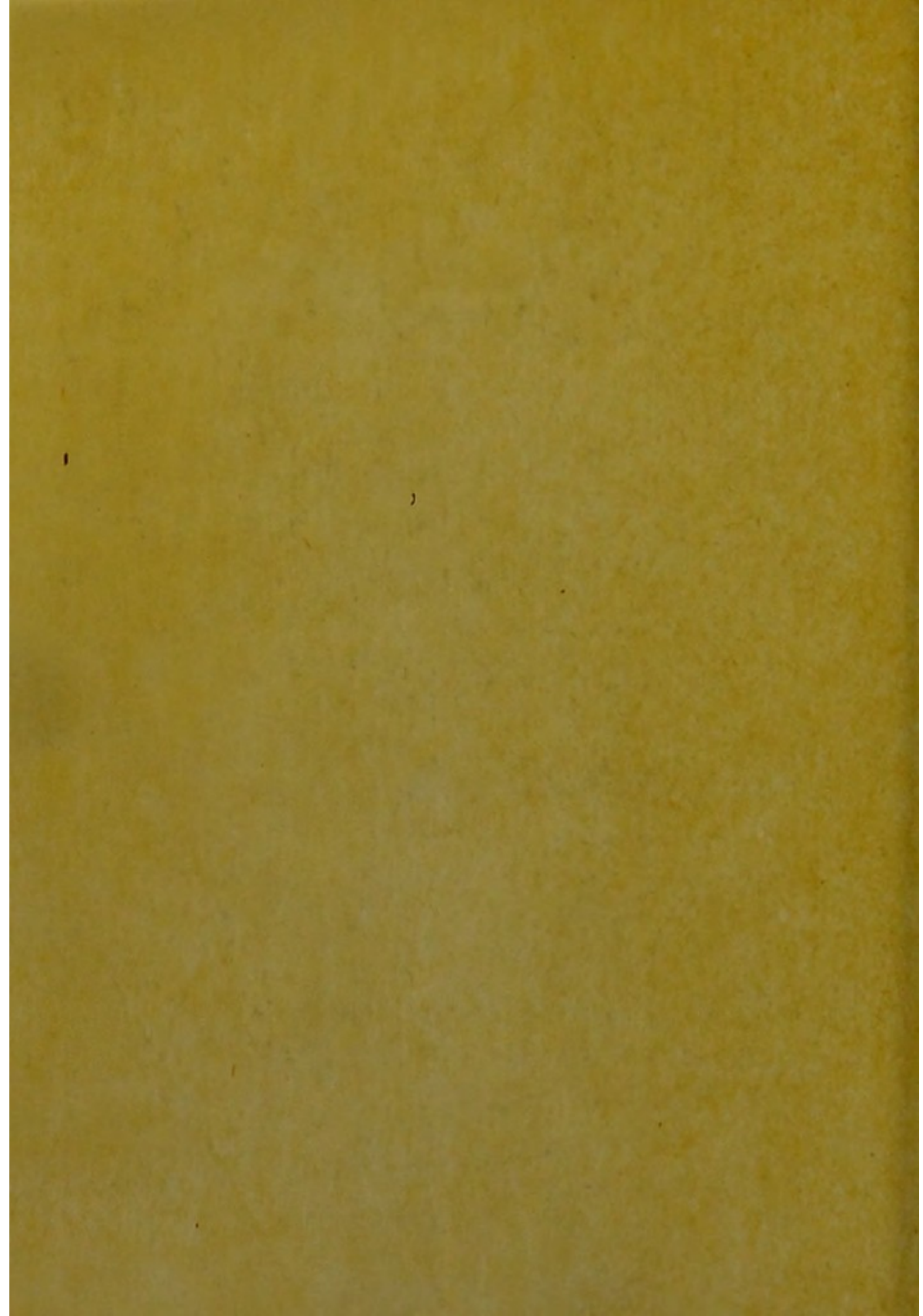


Walker & Boutall Ph.Sc.









# The Early History of the Royal Society

BY

HENRY B. WHEATLEY

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## P R E F A C E.

SEVERAL Histories of the ROYAL SOCIETY have been published at various periods, but there still appears to be room for a short notice of the Society's earlier years.

Sprat's work (1667) is rather an apology than a history, and was only published a few years after the foundation of the Society. Birch's History (4 vols., 1756) consists of abstracts from the Minutes, and is of great value, although it does not come down to a later date than 1687. Thomson's History (1812) contains an analysis of papers and a useful list of the Fellows from the foundation. Weld's History (2 vols., 1848) is the only one which contains an account of the doings of the Society apart from its scientific work, and is therefore the only true history.



## PREFACE.

When the present paper was read the following distinguished Fellows of the ROYAL SOCIETY were guests at the meeting :—Lord Kelvin (then President), the late Sir Frederick Bramwell, Dr. (now Sir) Lauder Brunton, Mr. (now Sir) William Crookes, Professor (now Sir) James Dewar, Sir John Evans (then Treasurer), Dr. J. W. L. Glaisher, the late Sir George Johnson, M.D., Professor (now Sir Norman) Lockyer, Professor Raphael Meldola, and the late Professor (afterwards Sir William) Roberts - Austen ; also Mr. Herbert Rix (then Assistant Secretary).

Several of the guests joined in the discussion after the reading of the paper.





**Q**UON St. Andrew's Day last year (1893) Lord Kelvin, in his Presidential Address to the Royal Society, said: "In 1684 the Senior Secretary of the Royal Society, Dr. Halley, went to Cambridge to consult Mr. Newton on the subject of the elliptic motion of the planets by a central force, and on December 10th of that year he announced to the Royal Society that he had seen Mr. Newton's book, *De Motu Corporum*."

In taking this date as the opening of the purely scientific history of the Royal Society the President was in accord with universal opinion. I also



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take this date, but as the limit of the period covered by the title of my paper, "The Early History of the Royal Society," and I venture to describe this as the Baconian period.

The new Philosophy was "in the air," but Bacon was the moving spirit in its gradual adoption, and his influence was widely acknowledged.

Sprat in his "History of the Royal Society" wrote that no other preface to his account was necessary but some of Bacon's writings. Moreover, Evelyn's design for the beautifully engraved frontispiece by Hollar, which is to be found only in the large-paper copies of Sprat's work, shows that it was generally held that Bacon was the inspirer of the founders of the Society (*artium instaurator*). This engraving, which is reproduced in this

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opusculum, shows the figure of Bacon seated to the left of the bust of Charles II.

Dr. Whewell put the relative positions of the Baconian and the Newtonian periods very clearly when he said that a group of philosophers began to knock at the door where truth was to be found, but it was left to Newton to force the door open.

Cowley in his "Ode to the Royal Society" laments the length of time that Philosophy lay neglected until

"Bacon at last, a mighty man, arose,  
And boldly undertook the injured pupils' cause."

The great philosopher

"led us forth at last,  
The barren wilderness he past ;  
Did on the very border stand  
Of the blest promis'd land ;  
And from the mountain top of his exacted wit  
Saw it himself and show'd us it."



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The appearance of Newton threw Bacon into the shade, but it would be less than fair not to remember that it was the latter that showed the world the absolute necessity of proof for every supposed fact, which was the guiding principle of the Fellows of the Royal Society and found expression in their motto : "Nullius in verba."

The origin of the Royal Society dates back to 1645 or earlier, but its existence as a corporate body with that particular name begins with the first charter in 1662. Much wasted ingenuity has been spent in seeking for the origin of the Society among the many Italian associations of the seventeenth century. I believe that the Royal Society is perfectly original and national, and has grown naturally and quietly like the British Constitu-

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tion. I find that men like Cowley, Boyle, and Evelyn all had strong views of their own respecting what such a Society should be. Evelyn proposed a scheme which appears much like a cross between a monastery and a college, but none of these men forced their views upon their fellow-members.

During the troublous times of 1645 certain philosophers met privately to discuss matters which were "caviare to the general," thus forming the "Invisible College" of Boyle. Similar meetings were held at Oxford in 1648-9, and in 1659 the Oxford philosophers came to London and, uniting with their friends, met at Gresham College. There is nothing here that requires us to seek for a prototype. Men have met to take



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counsel together in all times. Nearly a century before meetings of a similar character had taken place at the house of William Gilbert, the father of electricity and magnetism, of whom Dryden wrote

“Gilbert shall live till loadstones cease to draw  
Or British fleets the boundless ocean awe.”

In 1660 the political situation of the country was entirely changed, and the active spirits of the day had time to devote themselves to science. The stirring of mind which had been confined to the few was now felt by the many, and it was thought that the time had come for the establishment of a Society for the improvement of natural knowledge. Dr. Johnson hints “that the Royal Society was instituted soon after the Restoration to direct



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the attention of the people from public discontent" (*Works*, x, 86). But there is really no foundation for any such suggestion. As the possibilities of scientific inquiry were borne in upon the minds of men, and immense vistas of work to be done opened out before their eyes, they must have felt how little progress was to be made by individual effort. Remember that a new era had commenced: nothing was to be taken for granted, and everything was to be proved by experiment. Hence combination was a positive necessity. Individuals might write books, but a Society could more appropriately print each item as it was proved, and thus gather together the materials for a treatise.

On the 28th of November, 1660, certain of the philosophers, "after the

lecture of Mr. Wren at Gresham College, withdrew, for mutual conversation, into Mr. Rooke's apartment, where amongst other matters discoursed of, something was offered about a design of founding a college for the promoting of physico-mathematical experimental learning. And because they had these frequent occasions of meeting with one another, it was proposed, 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 in other countries, where there were voluntary associations of men into academies for the advancement of various parts of learning, they might do something here for the promoting of experimental philosophy."



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It may be objected to a previous remark respecting the futility of seeking abroad for the original idea of the Society, that here it is distinctly stated that the idea of the Royal Society was borrowed from that of the foreign Academies, but I contend that this was merely the general idea, and that nothing further than this conception of the meeting of men interested in similar pursuits was borrowed.

At this original meeting the subscription was fixed at one shilling a week, and within my own recollection there were Fellows living who paid £2 12s. per annum.

For a little less than two years the Society continued to hold weekly meetings although it had no definite name, but on the 15th of July, 1662, the first charter was obtained and the



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Society became known as the Royal Society.

After the Society was chartered it was often called by other names than its official one.' Thus Evelyn refers to the Philosophical Club and Pepys to the *Virtuosi*, while both constantly give the place of meeting—Gresham College—as a proper name for the Society itself.

It has been somewhat of a puzzle in the history of the Society that two first Presidents are registered, but I believe this has arisen entirely out of a mistake. Sir Robert Moray was a man of influence at Court who had first interested the King in the work of the philosophers, and he was one of the most energetic of the original members. It therefore seemed strange that he should have been appointed

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President on March 6th, 1660-1, and remained sole President until the incorporation (as stated by Weld in his list of Presidents, vol. ii, p. 559) and yet be superseded by Lord Brouncker when the charter was obtained. The office of President, however, before the incorporation of the Society, was apparently little more than that of chairman, and Weld was clearly wrong, as appears from the following references:—On December 12th, 1660, it was resolved “That the President be chosen monthly.” On March 6th, 1660-1, Sir Robert Moray was chosen President. On April 10th, 1661 (on this day he styles himself “Societatis ad tempus Præses”), Sir Robert Moray was chosen President for another month. Dr. Wilkins was President on October



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23rd, 1661, May 21st, 28th, and June 4th, 1662 ; Sir Robert Moray, June 11th, 18th, July 2nd, 9th ; and the Hon. Robert Boyle, June 25th.

I must not, however, linger too long over details, but rather select some general points which appear to be of the greatest interest. Chief of these, I think, is the remarkable continuity which we find in the history of the Society. Think of the changes which have come over the country and its institutions during the last two centuries, and then remember that during all the years which have elapsed since a handful of philosophers founded the Society weekly meetings have been held. The day of meeting was changed from Wednesday to Thursday, back to Wednesday, and then again to Thursday, as at present. The hours



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in 1663 were 3 to 6 p.m., which are not very different from the present hours, although up to a few years ago the meetings were held in the evening at half past 8.

The anniversary meeting, however, was held at an earlier hour than is consonant with our present notions. That of 1663 was summoned for 9 o'clock in the morning.

Two of the most interesting of the possessions of the Royal Society are the mace given by Charles II and the Charter Book, which contains the signatures of the Fellows from the founder, Charles II, to the last elected member. The King, the Duke of York, and the Duke of Albemarle signed this book at a meeting held on January 1st, 1664-5. Evelyn records in his Diary (May 31st, 1682) that

“The Morocco Ambassador being admitted an honorary member of the Royal Society, and subscribing his name and title in Arabic, I was deputed by the Council to go and compliment him.”

When a stranger attends a meeting he is struck by the fact that, just as a sitting of the House of Commons cannot take place until the mace is upon the table, so, in order that the proceedings of the Royal Society may be regular, the mace must first be brought out of its drawer. This was long supposed to be “the bauble” that Cromwell ordered away from the table of the House of Commons, and the publisher of the Abbotsford edition of the *Waverley Novels* went so far as to illustrate “Woodstock” with an engraving of “the bauble” taken



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from this mace, but Weld proved from the original documents that it was made specially for the Society by order of the King. The charter book, which is brought out whenever a new Fellow is admitted into the Society, is one of the most remarkable collections of autographs in existence, which all visitors are anxious to see. So attractive is Newton's signature, that the name below has been almost obliterated by the fingers of those who forget the damage they do by touching the vellum.

Here are two objects—survivals of the earliest days of the Society—which are still in constant use.

By the second charter Charles II granted the Society a very distinguished coat of arms, viz., "a field argent, with a canton of the arms of



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England (three lions); the supporters two talbots argent; crest an eagle or holding a shield with the arms of England."

John Evelyn had amused himself by suggesting various designs for a coat of arms, which of course became valueless when the King granted the present arms. Evelyn also suggested several mottoes, such as :—

"Et augebitur Scientia."

"Omnia probate" (1 Thess. v, 21).

"Quantum nescimus."

"Ad majorem lumen."

"Rerum cognoscere causas."

All these were superseded by the present motto—"Nullius in verba." This when we take the words with their context is appropriate, but as it stands it is not very intelligible :—The words are the words of a master, but

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we are not forced to swear by them. Instead, we are to be borne wherever experiment (the weather) drives us.<sup>1</sup>

Evelyn's own favourite motto, "Omnia explorate, meliora retinete," would have been more appropriate and intelligible.

The Presidents during the Baconian period were Lord Brouncker, the mathematician, who was succeeded, after 14 years' service, by Sir Joseph Williamson, the statesman. Williamson resigned in 1680, when the Hon. Robert Boyle, who has been described as "the father of chemistry and brother of the Earl of Cork," was elected. Evelyn wrote in his Diary: "The

<sup>1</sup> "Ac ne forte roges, quo me duce, quo lare tuter  
Nullius addictus jurare in verba magistri,  
Quo me cumque rapit tempestas deferor hospes."

HORATII *Epistolarum lib. i* :

Epist. i, 13-15.



Anniversary election at the Royall Society brought me to London, where was chosen President that excellent person and greate philosopher Mr. Robert Boyle, who indeede ought to have been the very first ; but neither his infirmitie nor his modestie could now any longer excuse him." In spite of all persuasion, however, Boyle refused to serve, and Sir Christopher Wren was elected. Wren was succeeded by Sir John Hoskyns, Hoskyns by Sir Cyril Wyche, and Wyche by Samuel Pepys. When Wren resigned Evelyn was solicited to allow himself to be put in nomination, but he refused and desired his friends to support Hoskyns.

By the statutes the President was privileged to sit with his hat on while the rest of the Fellows were uncovered.



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Moreover, in 1663 it was ordered that the Committee bring in a law *obliging* the President to be covered, "except when he speaks to the whole Society."

The Presidents of this period appear to have ruled the Society with tempered sway, and I see no evidence of dissensions within the ranks such as those which afterwards showed themselves. The Society grew and prospered, and a spirit of true fellowship flourished. Sir Isaac Newton with his 24 years of office, and Sir Joseph Banks with his 41 years, were somewhat more despotic. The weakest of the Presidents was probably Martin Folkes, the antiquary, of whom it may be said in the words of the epigram—

"If e'er he chance to wake in Newton's chair,  
He wonders how the devil he came there."

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During his reign many inappropriate papers were printed in the *Philosophical Transactions*, and thus some justification was given for the flippant and ignorant criticisms of the mountebank Sir John Hill.

As I have already said, it is not fair to disparage the early history of the Royal Society because some of the experiments made appear childish to us. We may paraphrase Horace and say many scientific men lived before Newton, but I will go further than this and say that until the renascence of Science some forty years ago, at no period of the Society's history were there so many distinguished and world-renowned men as those who flourished within the first twenty years of the Society's existence.

In the pages of Pepys' Diary and



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other memoirs of the time we seem to live with these men, and I feel that I know them better than many of those I come in contact with in the flesh. I fear, however, that in spite of this I shall be unable to present these men with any vividness to your minds, but I will attempt a few words on some of them, and I will ask you to excuse the baldness of my words.

On December 12th, 1660, the number of Fellows only reached fifty-five, but this was soon largely increased, and in 1682 we learn from Evelyn that it had become necessary to select with more care. The diarist writes on the 24th of January: "To the Royall Society, where at the Council we pass'd a new law for the more accurate consideration of candidates, as whether they would really be useful."



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Let us now see what manner of men some of these Fellows were.

First, room for the King, "Founder, Patron, and one of the Royal Society of London for improving Natural Knowledge." The Royal Society was greatly indebted to Charles II, who took a genuine interest in its advancement. True, he did not give any money, but then money was never very plentiful with His Majesty. He was always ready to assist with his name and influence. His interest doubtless made the Society the fashion. He had a laboratory at Whitehall, and was anxious to know what was being done. On January 16th, 1660-1, he sent two loadstones by Sir Robert Moray, with a message that he expected an account from the Society of some of the most con-

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siderable experiments upon them. On March 4th he sent by Sir Paul Neile five little glass bubbles, two with liquor in them and the other three solid, in order to have the judgment of the Society concerning them. In May he desired that a globe of the moon should be made for him, and in July he demanded that a reason should be assigned why the sensitive plants stir and contract themselves upon being touched. Christopher Wren prepared the lunar globe, which "represented not only the spots and various degrees of whiteness upon the surface of the moon, but the hills, eminences, and cavities of it moulded in solid work."<sup>1</sup> The King was much pleased with the globe, and ordered it to be placed among the curiosities of

<sup>1</sup> Birch, i, 21.



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his cabinet. At a later date, January, 1670-1, Charles wagered £50 to £5 "for the compression of air by water," and by the help of Hooke's experiments it was acknowledged that His Majesty had won the wager. Great preparations were made in 1663 when the King was expected to visit the Society, but apparently the visit never took place. He was fond of making fun in a good-humoured way at some of the experiments of the Society. Pepys says: "Gresham College he mightily laughed at for spending time only in weighing of air, and doing nothing else since they sat" (February 1st, 1663-4). I much doubt, however, the truth of the story of his 'sell' concerning the weight of respective bowls of water with or without fish in them. I have seen no contemporary



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account of this, and some time ago Dr. Sharpey, for many years the respected senior secretary, desired me to try to find the origin of the story, but I have never been able to trace it.

I do not wish to whitewash the character of Charles II, which would doubtless be a difficult matter, but I do honestly think that he has been somewhat uncharitably judged by historians, who are usually fond of working with strong colours. When a new appreciation of the King is attempted his love of science must be allowed its due weight, and this, in common with some other overlooked points, will do much to lighten the dark outlines.

The Royal Society was singularly fortunate in the time of its foundation, for it obtained the services of two

remarkable men who have never been surpassed in their own lines, Robert Hooke and Christopher Wren. While they were in office there was never any difficulty as to such experiments as were needed. Either of them could provide material for a meeting at the shortest notice. Being capable and willing they were frequently employed.

Aubrey wrote of Hooke: "As he was of prodigious inventive head, so is a person of great vertue and goodness. Now when I have sayd his inventive faculty is so great you cannot imagine his memory to be excellent, for they are like two buckets, as one goes up the other goes downe. He is certainly the greatest mechanick this day in the world."

Wren is so absolutely known to us now as England's greatest architect



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that it is difficult to bear in mind that in the early days of the Royal Society he was "the admirable Crichton" of Science, who had not yet devoted his life entirely to architecture. It will be remembered that Evelyn, in 1654, called Wren "that miracle of a youth."

There was a third skilful experimenter in Jonathan Goddard, M.D., of whom Aubrey writes: "He was fellow of the Royal Society and a zealous member for the improvement of naturall knowledge amongst them. They made him their drudge, for when any curious experiment was to be done they would lay the taske on him."

Dr. Seth Ward affirmed that Goddard was the first Englishman who made telescopes, but there is another claimant for this honoured position,



and I believe that Thomas Harriot, who, according to Anthony Wood, "tumbled out of his mother's womb into the lap of the Oxonian Muses," shares with Galileo the honour of making the first telescope. Seth Ward himself, afterwards Bishop of Salisbury, was a very active member of the Royal Society, but I imagine he is not so well known as he ought to be, for I remember a very popular and distinguished Fellow of the Royal Society writing on one occasion, "Newton I know, Wallis I know, but who is Seth Ward?"

Probably the philosopher who bulked largest in the sight of his fellows was Robert Boyle. Respecting him Aubrey wrote: "He has not only a high renown in England, but abroad, and when foreigners come hither it is

one of their curiosities to make him a visit."

Evelyn highly appreciated the greatness of this distinguished man, and he wrote of him in 1676 to Wotton: "But by no man more have the territories of the most usefull philosophy been enlarged than by our hero, to whom there are many trophys due. And accordingly his fame was quickly spread, not onely among us here in England, but through all the learned world besides. It must be confessed that he had a mervailous sagacity in finding out many usefull and noble experiments. Never did stubborn matter come under his inquisition but he extorted a confession of all that lay in her most intimate recesses; and what he discover'd he as faithfully register'd and frankly communicated."



Probably in the present day Boyle's general fame is not so great as it deserves to be. To many he remains little more than a name.<sup>1</sup>

Isaac Barrow, the first Lucasian Professor, who resigned his Chair to Newton in 1669, was described by Charles II as the best scholar in England when he appointed him Master of Trinity by royal mandate. He was said to have shown a compass of invention equal, if not superior, to any of the moderns, Sir Isaac Newton only excepted. The King said he was an unfair preacher, because he exhausted every subject and left no room for others to come after him.

Another remarkable Fellow was

<sup>1</sup> In 1898 Brother Silvanus Thompson, F.R.S., presented to the Sette a reprint of two Tracts on Electricity and Magnetism by Boyle from the rare editions of 1675 and 1676 (Opusculum No. xlv).

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Dr. John Wallis, whose *Arithmetic of Infinites* is said to contain the germ of future discoveries, and he did not confine his learning to Mathematics, for his *English Grammar* can still be read with interest.

Dr. Nehemiah Grew was the first person to begin the anatomical examination of plants, and he held the office of Curator. He is known to us now chiefly by his "*Catalogue of the Natural and Artificial Rarities belonging to the Royal Society and preserved at Gresham College*," 1681. I may perhaps be allowed to relate an anecdote connected with this book. Some twenty or more years ago the late Sir Victor Brooke bought at Jamracks the horn of an unknown animal. He was much puzzled respecting his purchase, and he came



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to the Royal Society to see whether he could gain any light on its history. By chance we looked at Grew's book, and there we found Sir Victor's horn was catalogued. Whether any further light was discovered I do not know, but I believe, the mystery as to how this specimen got away from its surroundings and as to its wanderings for nearly two centuries till it came to Jamracks remains unsolved.

I have not mentioned many of the philosophers who worked for the Society in its early days, nor the poets such as Dryden and Waller, the men of fashion such as the Duke of Buckingham and the Earl of Sandwich, or the cranks, such as that remarkable man Sir Kenelm Digby, whom I honour more as a collector of beautiful bindings than as a scientific man, but

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I dare not go on for fear of boring you. I will only mention two men who share the honour of having formulated the principles of political economy and statistics—Sir William Petty and John Graunt. Petty was the inventor of the double-bottomed boat, which greatly interested the Royal Society and is frequently mentioned by Pepys. A model of the ship was presented to the Royal Society, and is still preserved among its curiosities. The principle is the same as that of the modern ‘Calais-Douvres.’ To Petty we owe a humorous suggestion as to the Society’s anniversary. Aubrey is the narrator, and he writes: “I remember one St. Andrew’s day I sayd methought it was not so well that we should pitch upon the Patron of Scotland’s day.



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We should rather have taken S. George or S. Isidore, a philosopher canonized. No, said Sir William Petty, I would rather have had it been St. Thomas's day." It being objected to Graunt that he was a shopkeeper, the King, who recommended him for election, "gave this particular charge to his Society, that if they found any more such tradesmen they would be sure to admit them all, without any more ado." Graunt dedicated his book of Observations on the Bills of Mortality to "the King's Privy Council for Philosophy, and his great Council for the three Estates of Mathematics, Mechanics, and Physics."

There has been a great controversy as to the authorship of this book, many claiming it entirely for Petty, but I think, as I have stated in another place,

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“that although Petty probably made contributions to the book, Graunt was its virtual author.”

Work was largely done at the Royal Society by means of Committees, and I find that in 1664 the following had been appointed :—

1. Mechanical (to consider and improve all mechanical inventions). This was a very strong Committee.

2. Astronomical and Optical.

3. Anatomical (consisting of Mr. Boyle, Mr. Hooke, Dr. Wilkins, and all the ‘physicians’ of the Society). The direction to this Committee was “constantly to consider what is necessary to be prosecuted in anatomy and chirurgery.”

4. Chemical. (The Duke of Buck-



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ingham, Mr. Boyle, and Sir Kenelm Digby were among the members, and each of these Fellows possessed a private laboratory.)

5. Georgical.

6. For Histories of Trade.

7. For collecting all the phenomena of Nature hitherto observed, and all experiments made and recorded.

8. For Correspondence.

On June 8th the Society proceeded to nominate a Chairman for each Committee, and to appoint times and places for the meetings.

Lord Brouncker was chosen for No. 1, which was to meet at his lodgings the first and third Saturday of the month, in the morning about nine of the clock.

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Dr. Goddard for No. 2, to meet at his lodgings in Gresham College the first and third Monday of the month, in the afternoon about two of the clock.

Dr. Ent for No. 3, to meet twice a week at his house, about 2 o'clock in the afternoon.

Dr. Goddard for No. 4, to meet at his lodgings the second and fourth Saturday of the month, at 3 o'clock.

Mr. Howard for No. 5, to meet at Arundel House the first and third Thursday of the month, at 2 o'clock.

Dr. Merret for No. 6, to meet at his lodgings in the College of Physicians twice a week, at 2 o'clock.

Mr. Hoskyns for No. 7, to meet at his lodgings in the Temple the second and third Thursday of the month, at 2 o'clock.



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Mr. Povey for No. 8, to meet at his lodgings in Lincoln's Inn Fields the third Friday of the month, at 3 o'clock.

As an instance of the Society's work outside pure Science may be mentioned the Committee on the improvement of the English language, which was appointed on December 7th, 1664. "It being suggested that there were several persons of the Society, whose genius was very proper and inclined to improve the English tongue, and particularly for philosophical purposes, it was voted, that there be a Committee for improving the English language, and that they meet at Sir Peter Wyche's lodgings in Gray's Inn, once or twice a month, and give an account of their proceedings to the Society when called upon." Dryden, Evelyn, Sprat, Sir Samuel Tuke, and

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Waller were members of this Committee.

It is worthy of note that the Royal Society, founded in the seventeenth century, and the Society of Arts, in the eighteenth, both proceeded in their earlier years by means of experiment and committees, and both have now resolved their business largely into the reading of papers.

*Places of Meeting.*—On the 19th December, 1660, it was resolved that the next meeting should be at Gresham College, and the future ones continued there weekly. Soon, however, some of the Fellows expressed the opinion that this place was too much in the east of London, and on November 27th, 1666, we read in the minutes, "That at the next council it should



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be considered where the Society should meet for the future, Gresham College being, by reason of its too great distance from the habitations of the greatest number of the Society, very inconvenient to meet in, especially in the winter season." Mention was made of hiring a house somewhere in the city of Westminster, and Dr. Wilkins offered to contribute something towards it, if he might have some rooms in it. Owing to the Great Fire, Gresham College was required for public offices, and the Society found shelter at Arundel House, where it was proposed to build a house on ground presented by Henry Howard of Norfolk. Nothing, however, came of this proposal, and in 1674 the Society was back again at Gresham College, where it remained until 1710,

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when it took possession of its own house in Crane Court.

Gresham College, which was situated in Bishopsgate Street and reached back to Broad Street, will ever be associated with the Royal Society. Sir William Temple rather contemptuously called the Fellows "Men of Gresham," with a sly reference to the Men of Gotham. In a MS. in the British Museum "In praise of the choice company of Philosophers and Witts who meet on Wednesdays weekly at Gresham College," signed W. G., and probably by William Glanvill, we read—

"The College Gresham shall hereafter  
Be the whole world's university ;  
Oxford and Cambridge are our laughter,  
Their learning is but pedantry.  
These new collegiates do assure us  
Aristotle's an ass to Epicurus."



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We cannot very accurately picture the meetings, for although we have engravings of the exterior of Gresham College and Arundel House, we have none of the interior. A contemporary gives us a little insight. "Here the Royal Society has one publick room to meet in, another for a repository to keep their instruments, books, rarities, papers, and whatever else belongs to them, making use besides, by permission, of several of the other lodgings as their occasions do require, and when I consider the place itself, methinks it bears some likeness to their design. It is now a college, but was once the mansion house of one of the greatest merchants that ever was in England, and such a philosophy they would build; which should first wholly consist of action and

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intelligence, before it be brought into teaching and contemplation."

When distinguished visitors came to the meetings special experiments were often prepared for them. One of the most interesting of these visitors was the eccentric Duchess of Newcastle, who attended the Society in great pomp on May 30th, 1667. The President, with the mace borne before him, received her at the door of the meeting-room. Experiments on weighing the air, on mixing of colours, and of the dissolving of flesh with a certain liquor of Mr. Boyle's suggesting were shown, and at the end of the meeting Evelyn conducted her Grace to her coach. The Duchess was rather a fantastical creature, but Charles Lamb loved her, and we, as admirers of Lamb, feel bound to love her too.



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Both Evelyn and Pepys give descriptions of this visit in their respective Diaries. Evelyn describes the Duchess as "a mighty pretender to learning, poetrie, and philosophie." Pepys is more severe, for although he allows she had been "a good, comely woman," yet "her dress so antick, and her deportment so ordinary, that I do not like her at all, nor did I hear her say anything that was worth hearing, but that she was full of admiration, all admiration."

The Duchess had asked to be invited, and the Fellows had much debate before they decided on the invitation being given. Pepys feared that the town would be full of ballads on the meeting, but apparently his fears were groundless.

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There are many other things that I should like to mention, but I must hurry on.

The first number of the *Philosophical Transactions* consists of sixteen pages, and is dated Monday, March 6th, 1664-5, and from that day to this this remarkable series, which contains the history of science for more than two centuries, has been continued.

There is a gap in the set of *Philosophical Transactions* between 1678 and 1683 which is filled by the *Philosophical Collections* of Robert Hooke. Evelyn has the following entry on this subject in his *Diary* (April 5th, 1682): "To the Royal Society, where at a Council was regulated what Collections should be published monthly, as formerly the transactions, which had of late been discontinued, but were now



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much called for by the curious abroad and at home.”<sup>1</sup>

The Society's present Library consists almost entirely of scientific books, but in the early days Henry Howard of Norfolk, afterwards Lord Howard and Duke of Norfolk, a munificent benefactor, presented the Norfolk Library to the Royal Society. This contained a large number of valuable books, but as these were largely of miscellaneous literature they have been disposed of. The Arundel Manuscripts had previously been sold to the British Museum.

The great difficulty the Society in

<sup>1</sup> Weld mentions the remarkable fact that almost all the philosophical papers in the early numbers of the *Journal des Sçavans*, first published on the 5th January, 1665, are translations of the papers in the *Philosophical Transactions*.—"History of the Royal Society," vol. i, p. 180.

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its early years suffered from want of money. Its object was the subjection of the whole realm of nature, and the means at its disposal for this purpose consisted of a certain number of subscriptions of 1s. a week, many of which were very tardily paid.

The Society was persistent in its attempts to get money. On April 2nd, 1668, Pepys complained that he was forced to subscribe £40 for the building of a house. About the same time the Bishops and the temporal lords among the Fellows were specially asked to contribute towards placing the funds upon a more satisfactory basis.

Willughby's "*Historia Piscium*" (1685-6) was published by the Royal Society, and the cost of publication so far exhausted the Society's income that it was found necessary to pay the



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arrears of the officers' salaries in kind by a supply of copies of this work. When the Society resolved on Dr. Halley's undertaking to measure a degree of the earth, it was voted that "he be given £50 or fifty books of fishes."

The Society's good work was not allowed to pass without some jeers from the wits. Every great movement has to submit to this, and the attacks were not very terrible, but they were sufficient to work the gentle Evelyn into a fury.

The attacks did not come from the Church (it is indeed striking how many Churchmen belonged to the Society and took an active interest in its work), but from a strange individual termed an Aristotelian, who supposed that all possible knowledge was settled by a

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Greek philosopher of the fourth century before Christ.

Butler's Elephant is a severe and witty joke against the Society, and later wits followed Butler's lead.

The most serious shock received by the Society was when its Secretary, Henry Oldenburgh, was sent to the Tower.

I have not said anything of the actual scientific work of the Society, because this is too large a subject to be discussed with any advantage during the short time at our disposal. Much was done, as could not fail to be the case when the whole of the intelligence of the country was brought to bear upon experimental science. The philosophers were not in a hurry ; they came with open minds to the consideration of the questions before



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them. All things were to be proved, and it was strongly felt that the premature formation of any general scientific system would only hinder progress. They did not search for abstract truth, but for truth in individual instances. The natural consequence of this has been that the heedless inquirer has been too apt to lose sight of the true discoveries, while his attention has been diverted to questions which were occasionally discussed and have since been proved to be absurdities. Some things that looked absurd have been proved to be otherwise.

Now that my notes must come to an end, not from want of material but from lack of time, I would again refer to the curious fact that the Baconian period of the Society's history, with

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which I have dealt, came to an end during the presidency of Samuel Pepys, and this is strikingly brought before us by the title-page of the "Principia" itself. This masterpiece of man's genius was ordered to be printed by Pepys as President of the Royal Society. Here the two representatives of different states of mind are brought together. No one, I think, will accuse me of disparaging Pepys, but it must be allowed that he was essentially credulous and that his mind was not formed in a scientific mould.

There has been ebb and flow in the history of the Royal Society, and, as in all institutions, periods of dulness have preceded periods of revival. The great revival of science of the latter half of the nineteenth century, which



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influences us now so deeply, was preceded by a period of stagnation. In the forties the supply of papers for reading frequently ran short, and one evening was taken up with a paper on the mace read by the Assistant Secretary, there then being no other paper before the Society for reading. How different from the state of things a few years later when the present flow set in!

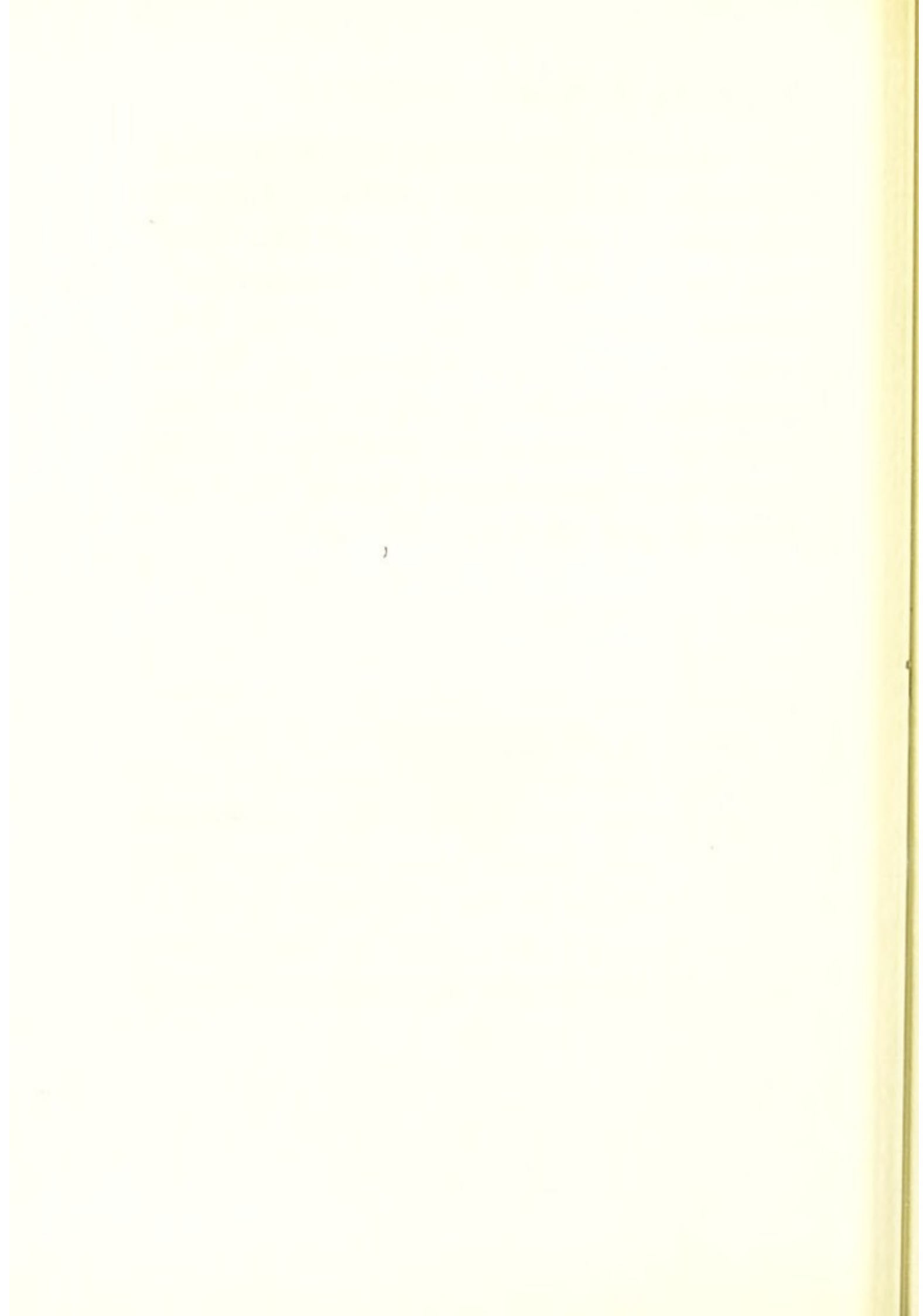
Those who have lived through this period of revival scarcely realise how unlike it is to what had gone before. I think it is necessary to go back to the early years of the Society to find the same enthusiasm, the same devotion, and the same triumphs. I dare to speak like this, for I have read the particulars of the one period and I have lived through the other. I have

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been merely a doorkeeper in the palace of Truth, but in that position I have seen the great pass to and fro, and have been brought into intimate connection with those whose names will never die. This knowledge is a possession which I cherish, and which forms my excuse for coming before you with a paper on the Early History of the Royal Society.







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