

American Philosophical Society.

CELEBRATION

OF THE

HUNDREDTH ANNIVERSARY,

MAY 25, 1843.

This being the hundredth anniversary of the organization of the American Philosophical Society under that title, the members, and a large number of guests invited by them, assembled at noon in the saloon of the Musical Fund Society, for the purpose of celebrating it.

The exercises of the day were opened by the President, Mr. Du Ponceau, in the following

ADDRESS.

We are assembled here to celebrate the hundredth anniversary of the formation of our Association, under the name of the American Philosophical Society, which it still bears, and which I hope it will long continue to preserve. In the regular course of things, it would have been my duty to address you on this occasion, and nothing could have afforded me greater pleasure; but, gentlemen, in the evening of life the power does not always follow the will.

You have, however, no reason to regret my deficiency; for the important duty is about to be performed by a gentleman, whose talents and capacity far exceed the ability for the task which I might at any time have claimed. He will relate to you the interesting his-

tory of our Association from its beginning, and the slow, but undeviating steps, by which it has risen to the distinguished rank which it now occupies among the learned societies of the civilized world. But before we proceed farther, it is necessary that we should recollect that "every good gift is from above, and cometh down from the Father of lights, with whom is no variableness, neither shadow of turning." It is right and meet, therefore, that we should begin by invoking the blessing of the Almighty Creator, that he may impart to us those perfect gifts which he alone can bestow, and direct our future labours to his immortal glory, and to the happiness of mankind. For this reason, I beg leave to call on the Rev. Provost of the University of Pennsylvania, here present, to perform that sacred duty, and to turn our minds to the great Source of knowledge, before we begin to speak of our humble efforts to promote its advancement.

The Reverend Dr. Ludlow, Provost of the University of Pennsylvania, then offered the following

PRAYER.

Almighty and most merciful God, who art the fountain of all being and blessing, the creator, preserver, and governor of all things, we revere thy glorious Majesty, and, with penitent and grateful hearts, acknowledge thy bountiful goodness to us, and to all men. We beseech thee, whose inspiration hath given us understanding, so to enlighten our minds in the study of thy works of nature and of grace, that we may have new and clearer discoveries of thy glorious perfections, and, above all, that we may know thee, through Jesus Christ, unto eternal life. Regard, O Lord, with thy merciful favour, the cause of science, as well as of religion. May both be constantly and harmoniously advancing, that they may together tend to further thy wise purposes, and the best interests of the whole family of man. Especially vouchsafe thy continued goodness to this scientific institution, whose hundredth anniversary we this day celebrate, that its usefulness to our beloved country and the world may go on increasing, and that all its members, purified by the power of divine truth, may rise at last to behold and study thy works and ways where no cloud shall interpose to obscure thy glory. This mercy we ask, with the forgiveness of our sins, for the sake of our blessed Saviour; and to God, only wise, be the praise, world without end. Amen.

The prayer being concluded, Dr. Patterson, one of the Vice-Presidents, pronounced the following

DISCOURSE.

A century is this day accomplished since the American Philosophical Society was first organized under that title, and we are met together to celebrate the event. When we reflect that it is not three hundred and fifty years since this continent was discovered, and that it is less than half that period since the spot where Philadelphia now stands was a forest occupied by savages, we see that our institution is one of no inconsiderable American antiquity. Our Society is, indeed, the oldest of its class in the new world; and it is not without a natural feeling of filial pride that we refer to the fact, that in the infancy of the country, and amid the cares and struggles of early colonization, there were found among our forefathers men who could employ themselves in the higher occupations of the mind, combine together for the advancement of knowledge, and feel and act upon the conviction, that science must always form one of the elements of honour and prosperity in a civilized state.

The occasion of our meeting has been deemed a suitable one for tracing the progress of our institution from its obscure and limited beginnings, through its struggles under different forms and different names, to the union which first gave it stability, and up to the time when, rising with the destinies of the country, it was able to take a station and a rank among the learned societies of the world. Such is the task that I am called upon to perform in the present address.

In this review, it is natural that we should attach a particular feeling of interest to the more remote periods; for societies, as well as individuals, are not without curiosity at least, and perhaps pride, in relation to their ancestry. Besides, the day we celebrate is of the olden time, and thus seems to call our special notice to events of early date. I shall not hesitate, therefore, to make the early history of our Society the prominent subject of this address.

Among the fathers of our city who possessed a love of knowledge and a desire to promote it, he that stood pre-eminent was the illustrious individual whom we claim as our founder—Benjamin Franklin. Possessing, as he did, skill, industry, and frugality, he might have safely walked alone through life, assured of personal success, and, like so many others, might have sought to dignify selfishness by calling it independence. But his course was far different. Without

neglecting his own advancement, he still kept constantly in view that of the community in which he lived, and of his country, and he knew that such objects could only be attained by combined efforts. Hence the number of associations in this city of which he was either the founder, or the most efficient promoter. We have examples in the establishment of the first fire company, the first public library, the first hospital, and the first academy, now the University of Pennsylvania.

But of all the societies which he originated, the earliest was one which requires our particular notice on this occasion; for it is claimed, not without plausibility, as being itself one of the branches of which our present Society is composed, and it is at least the original after which that branch was modelled. I refer to the celebrated *Junto*, which was founded when Franklin was but 21 years of age. In the story of his life, told by himself so simply yet so attractively, and which is read in every part of the civilized world, he gives the following account of the origin of this association:—

In the autumn of 1727, “I formed most of my ingenious acquaintance into a club for mutual improvement, which we called the *Junto*. We met on Friday evenings. The rules that I drew up required, that every member in his turn should produce one or more queries on any point of morals, politics, or natural philosophy, to be discussed by the company; and once in three months produce and read an essay of his own writing, on any subject he pleased. Our debates were to be under the direction of a president, and to be conducted in the sincere spirit of inquiry after truth, without fondness for dispute, or desire of victory; and to prevent warmth, all expressions of positiveness in opinions, or direct contradiction, were after some time made contraband, and prohibited under small pecuniary penalties.”

Franklin then gives the names of the first members, with brief outlines of their characters, drawn in his peculiar and happy style. Two of the individuals named in this list were afterwards among the original members of the Philosophical Society. These are William Coleman and Thomas Godfrey.

The first is described by Franklin as having “the coolest, clearest head, the best heart, and the exactest morals of almost any man he had ever met with. He afterwards became a merchant of great note, and one of the provincial judges.”

The second is thus introduced:—“Thomas Godfrey, a self-taught mathematician, and afterwards inventor of what is now called *Hadley's Quadrant*. But he knew little out of his way, and was not a

pleasing companion; as like most great mathematicians I have met with, he expected universal precision in every thing said, or was forever denying and distinguishing upon trifles, to the disturbance of all conversation."

The claim of Godfrey over Hadley to the invention of that valuable instrument the quadrant, seems to be fully established by our fellow-member, Dr. Miller, in his *Retrospect of the Eighteenth Century*. But a third party to the claim has been brought forward in the person of Sir Isaac Newton, and he has seized upon the lion's share. It appears that, after the death of Halley, a description of such an instrument was found among his papers, by his executor, in Newton's own handwriting, and was communicated to the Royal Society twenty-five years after Newton's death, which occurred in 1727. It is certain, therefore, that Godfrey cannot have had any knowledge of this paper, and it is matter of regret that it should interfere, in any degree, with his claim to originality in an invention which would make a reputation for any ordinary man, while it can scarcely add to that of Newton.

I hope I may be permitted to protest against any general conclusion being drawn from Franklin's experience of the captiousness of mathematicians; and to the example of one of the earliest of our American geometers, I would oppose that of one of the last and most distinguished,—Nathaniel Bowditch,—who was a man remarkable for his social virtues, modest and attractive manners, and Franklinian common sense.

The Junto was, properly speaking, a debating society. At first it met at a tavern; but subsequently at the house of one of the members, Robert Grace, whom Franklin characterizes as "a gentleman of some fortune, generous, lively, and witty, a lover of punning and of his friends." I am happy to say that Robert Grace is not without his successors in our present Society.

One of the rules of the Club was that the institution should be kept a secret; the intention being, as Franklin states, to avoid applications of improper persons for admittance. The number of members at any one time was limited to twelve, but vacancies were filled as they occurred, and the names of twenty-three members are preserved.

On admission into the Club, a course was followed which is too remarkable in itself, and in its bearing upon a difficult question in the history of this Society, not to be here introduced. It is thus presented in Franklin's papers:—

“ Any person to be qualified,—to stand up, and lay his hand upon his breast, and be asked these questions, viz:

“ 1st. Have you any particular disrespect to any present member?

Answer: *I have not.*

“ 2d. Do you sincerely declare that you love mankind in general, of what profession or religion soever? Ans. *I do.*

“ 3d. Do you think any person ought to be harmed in his body, name, or goods, for mere speculative opinions, or his external way of worship? Ans. *No.*

“ 4th. Do you love truth for truth’s sake, and will you endeavour impartially to find and receive it yourself, and communicate it to others? Ans. *Yes.*”

No minutes of the proceedings of the original Junto are preserved, but Franklin mentions in his autobiography several questions of great interest which were discussed at it, and several pieces read before it and afterwards published in his newspaper.

It was at one time proposed to increase the number of members; but to this Franklin was opposed, and instead of it he made “ a proposal that every member separately should form a subordinate club, with the same rules respecting queries, &c., and without informing them of the connexion with the Junto.” “ This project was approved, and every member undertook to form a club; but they did not all succeed. Five or six only were completed, which were called by different names, as, the *Vine*, the *Union*, the *Band*.” Of these subordinate companies, a brief paragraph in Franklin’s Life is the only remaining record.

In speaking of William Coleman, Franklin says: “ Our friendship continued without interruption to his death, upwards of forty years; and the Club continued almost as long, and was the best school of philosophy, morality, and politics, that then existed in the province.”

While Franklin was abroad, he shows by his correspondence that he still held the institution of his youth in affectionate remembrance. This appears repeatedly in his letters to his friend Hugh Roberts. He calls it “ the good old Club,” “ the ancient Junto.” So late as 1765, he says: “ I wish you would continue to meet the Junto, notwithstanding that some effects of our political misunderstanding may sometimes appear there. It is now perhaps one of the oldest clubs, as I think it was formerly one of the best, in the king’s dominions.” Even in 1766, he writes:—“ Remember me affectionately to the Junto.”

It appears, then, that the Junto continued in existence about forty

years. But did it keep up its original character? This may well be doubted. The members grew gradually to be old men, and it is hardly to be supposed that they would submit to the task of writing essays, or would formally propose questions, and afterwards debate them. Their fortunes were made, their education completed; and it is therefore much more probable, that when the remnant of the once youthful and active Junto met together, they indulged themselves in social conversation and temperate conviviality. Such is said to be the tradition in the Roberts family; and it is confirmed by a letter from Dr. Franklin to their ancestor, written in 1761, in which he says:—"You tell me you sometimes visit the ancient Junto. I wish you would do it oftener. Since we have held that Club till we are grown gray together, let us hold it out to the end. For my own part, I find I love company, chat, a laugh, a glass, and even a song, as well as ever; and at the same time relish better than I used to do the grave observations and wise sentences of old men's conversation; so that I am sure the Junto will be still as agreeable to me as it ever has been. I therefore hope it will not be discontinued, as long as we are able to crawl together."

In May, 1765, Hugh Roberts writes as follows to Dr. Franklin:—"I sometimes visit the worthy remains of the ancient Junto, for whom I have a high esteem; but alas, the political, polemical divisions have in some measure contributed to lessen that harmony we there formerly enjoyed." To this letter, Franklin answers in July following, urging his friend's attendance at the Junto, almost in the same terms used some years before, and which we have just quoted, and then closes his exhortation in the following touching words:—"We loved and still love one another. We are grown gray together, and yet it is too early to part. Let us sit till the evening of life is spent. The last hours are always the most joyous. When we can stay no longer, it is time enough then to bid each other good night, separate, and go quietly to bed."

Such appears to be the true history of this memorable Club, at least so far as regards its early members. In its youth it was full of activity and ambition: in its age, "frosty but kindly," these were blunted, but the social affections remained, and the old friends were happy to meet together, talk over the past, and enjoy the present. Examples of the same kind have not been uncommon; and Franklin's own Fire Company, the *Union*, was one. It was continued as a social club, long after age had unfitted the members for the active duties of firemen. Indeed, I understand that its organization still

continues, although it is very long since it has possessed an engine, or has pretended to aid at fires.

As there was a provision for filling up the places in the Junto as they fell vacant, the means existed of continuing the Club in constant vigour; and it may naturally be asked, whether this succession was not kept up, and for what time, and whether with younger members, the original rules of proceeding may not have been enforced. We shall have occasion to consider this question in another part of our narrative; but we have now to speak of the origin of an institution of a different character.

The Junto was, as we have seen, a secret society, limited to a small number of members, local in its character, and confined in its objects. It did not claim to be a scientific body. But the British provinces were fast advancing in population and prosperity, and the active mind of Franklin, ever seeking to do good, and especially anxious for the promotion of knowledge, became impressed with the importance of establishing a national institution for the cultivation of science; and he accordingly issued and distributed a proposal for this purpose, in the form of a printed circular. This proposal was the true origin of the *American Philosophical Society*. It bears date the 14th of May, 1743, old style, corresponding in the Gregorian calendar to the 25th, on which we are now met, after the lapse of one hundred years, to celebrate the birth-day of our Institution.

Dr. Franklin's circular is entitled "A proposal for promoting useful knowledge among the British Plantations in America." It commences by speaking of the great extent of the colonial possessions, "having different climates and different soils, producing different plants, mines, and minerals, and capable of different improvements, manufactures," &c.

It then says: "The first drudgery of settling new colonies, which confines the attention of people to mere necessaries, is now pretty well over; and there are many in every province in circumstances that set them at ease, and afford leisure to cultivate the finer arts, and improve the common stock of knowledge. To such of these who are men of speculation, many hints must from time to time arise, many observations occur, which if well examined, pursued, and improved, might produce discoveries to the advantage of some or all of the British Plantations, or to the benefit of mankind in general. . . . But as, from the extent of the country, such persons are widely separated, and seldom can see and converse or be acquainted with each

other, so that many useful particulars remain uncommunicated, die with the discoverers, and are lost to mankind; it is to remedy this inconvenience for the future, proposed,—

“That one society be formed of *virtuosi*, or ingenious men, residing in the several colonies, to be called *The American Philosophical Society*, who are to maintain constant correspondence.

“That Philadelphia, being the city nearest to the centre of the continent colonies, communicating with all of them northward and southward by post, and with all the islands by sea, and having the advantage of a good growing library, be the centre of the Society.

“That at Philadelphia there be always at least seven members, viz. a physician, a botanist, a mathematician, a chemist, a mechanic, a geographer, and a general natural philosopher, besides a president, treasurer, and secretary.

“That these members meet once a month, or oftener, at their own expense, to communicate to each other their observations and experiments; to receive, read, and consider such letters, communications, or queries as shall be sent from distant members; to direct the dispersing of the copies of such communications as are valuable, to other distant members, in order to procure their sentiments thereupon.”

Then follows an enumeration, made with some detail, of the subjects on which it was proposed that the Society should be occupied: including investigations in botany; in medicine; in mineralogy and mining; in mathematics; in chemistry; in mechanics; in arts, trades, and manufactures; in geography and topography; in agriculture; and “all philosophical experiments that let light into the nature of things, tend to increase the power of man over matter, and multiply the conveniences or pleasures of life.”

The circular proposes that “a correspondence be kept up with the Royal Society of London, and the Dublin Society; that abstracts of the communications be sent quarterly to all the members; and “that, at the end of every year, collections be made and printed of such experiments, discoveries, and improvements, as may be thought of public advantage.”

The duties of the secretary are particularly laid down, and they are very arduous; requiring that he attend to all the correspondence, “abstract, correct, and methodize such papers as require it, and as he shall be directed to do by the president, after they have been considered, debated, and digested in the Society; to enter copies thereof in the Society’s books, and make out copies for distant members.”

And after enumerating these difficult duties, the circular closes by saying :—

“ Benjamin Franklin, the writer of this proposal, offers himself to serve the Society as their Secretary, till they shall be provided with one more capable.”

In this projét we find all the leading features of our present Society. There can be no doubt that from the day when it was proposed the necessary measures for carrying it into execution were taken. Dr. Thomas Bond, (himself one of the original members,) in an oration delivered before our Society in 1782, says:—“ Franklin gradually established many necessary institutions, among which was this Philosophical Society, so early as 1743, when the plan was formed and published, the members chosen, and an invitation given to all ingenious persons to coöperate and correspond with them on the laudable occasion.” It is true that Franklin, in his autobiography, gives the date 1744, saying, “ in that year I succeeded in proposing and establishing a Philosophical Society. The paper I wrote for that purpose will be found among my writings, if not lost with many others.” But Franklin wrote from memory, and the date of the paper referred to, which was doubtless the proposal of 1743, shows that he had made a mistake in the year.

In a letter to Cadwallader Colden, dated New York, 5th April, 1744, Dr. Franklin acquaints him “ that the Society, as far as relates to Philadelphia, was actually formed, and had had several meetings to mutual satisfaction.”

In this letter the following list is presented of the original members :

Dr. THOMAS BOND, as Physician.
 Mr. JOHN BARTRAM, as Botanist.
 Mr. THOMAS GODFREY, as Mathematician.
 Mr. SAMUEL RHOADS, as Mechanician.
 Mr. WILLIAM PARSONS, as Geographer.
 Dr. PHINEAS BOND, as General Natural Philosopher.
 Mr. THOMAS HOPKINSON, President.
 Mr. WILLIAM COLEMAN, Treasurer.
 BENJAMIN FRANKLIN, Secretary.

We have here many distinguished names.

The first president, Thomas Hopkinson, is said to have “ possessed a fine genius and a finished education, having been a student at Oxford. He was born in London in 1709, and came while young to

Philadelphia, where he died at the early age of forty-two." 'Being fond of the pursuits of science, as well as of letters, he often assisted in the electrical and philosophical experiments of Franklin, who, in one of his letters introduces the following note respecting him:—"The power of points to *throw off* the electrical fire was first communicated to me by my ingenious friend Mr. Thomas Hopkinson, since deceased, whose virtue and integrity in every station of his life, public and private, will ever make his memory dear to those who knew him, and knew how to value him." Doctors Thomas and Phineas Bond were eminent and learned men. The former of them was the original projector of the Pennsylvania Hospital, though he failed in his efforts to establish it, until he had recourse to the sagacity and powerful influence of Franklin. John Bartram was the founder of the Botanic Garden in our vicinity, which still exists, and bears his name. Thomas Godfrey is spoken of by Franklin as a great mathematician, always absorbed in his studies. Of his invention of the quadrant, I have already spoken.

There can be no doubt that the plan of establishing the Philosophical Society had been often brought before the Junto for consideration, for we know that it was the practice of Franklin, when he had new projects to propose, to have them first discussed in the Club. But a stronger evidence still of the part which they took in forming the new institution is presented by the fact that of the nine original members of the Philosophical Society, six, including the three officers, are known to have belonged to the Junto,—namely, Franklin, Hopkinson, Coleman, Godfrey, Rhoads, and Parsons.

The minutes of the early proceedings of the Philosophical Society are not preserved, and we are left in the dark, not only as to its labours, but as to the time that it remained in activity. It is only from indirect evidence that we are able to infer that it did not continue its meetings for more than ten years, when it went into a state of suspended animation, from which it was destined to revive, at a future period, and to flourish with greater vigour than it had ever possessed in the earliest days of its existence.

But before we speak of this revival, our attention must be directed to another institution, which came, in the end, to take its equal share in the formation of our present Society. It was at first, and for many years, called the *Junto*; and this name at once draws out attention, and leads us to inquire whether it was identical with the ancient Junto, or if not, what was the relation between them.

We are, fortunately, in possession of the minutes of the new Association from 1758 to 1768 inclusive, though with some intermissions; and from these and the Franklin correspondence, the following points may be established. And, first, I shall present the circumstances which tend to show an identity between the two Juntos.

Of these, the most striking is the name itself. Our venerable President, who laid before the Society, three years ago, a most interesting and able paper on its early history, took the ground that there can, in fact, have been but one Junto, and remarks, with great force, that "it is hardly credible that while the old Junto existed, another society should have adopted the same name," as "it would have been contrary to all the rules of delicacy and mutual respect."

Another point of correspondence is, that the number of members of the two Juntos was the same, namely twelve.

A third is, that they both met on the evenings of Friday, a time that has been so set apart by the different societies, founded by Franklin for promoting useful knowledge, from 1724 to the present day.

Fourthly, the two Clubs (for so they both call themselves) had the same objects, and pursued them in the same manner. In each, the members sought their "mutual improvement," by reading essays, and proposing and discussing questions.

Fifthly, they were both secret societies.

Lastly, a most striking coincidence is presented in the fact, that the four qualifications for admission, required of new members on their initiation, were the same in both Juntos.

Were these the only facts known respecting the new Junto, we should not hesitate to conclude that it was but a continuation of the old, which had been kept up, as in other societies, by the successive admission of new members, as the older ones died or resigned. But there are other circumstances which are inconsistent with this view of the case, and which it is therefore necessary to consider.

One of these is the evidence of a distinct date for the origin of the new Junto. In a letter to Dr. Franklin, filled with interesting matter respecting this institution, written on the 6th of November, 1768, by Charles Thomson, (afterwards so well known as Secretary of the Congress of the Revolution,) he introduces his subject by saying:—"You remember the Society to which I belonged, which was begun in the year 1750." This, then, fixes the year. But again: in the minutes of the Junto, several notices are given of the celebration of its anniversary, when (in the words of the record) "it was cus-

tomary for them to express their good wishes for the Society's prosperity," at an entertainment provided for the occasion, and when "the original laws were distinctly read, and also the by-laws." Now this anniversary was, at least for many years, held on the 5th of February. It appears, then, that the institution must have had its origin certainly in 1750, and probably on the 5th of February of that year. But we learn, from the evidence of Franklin, that the old Junto was formed in the autumn of 1727. The two Juntos, therefore, cannot be the same.

Another proof of the want of identity of the two Juntos is found in a comparison of the lists of members. From the year 1758 the roll of the new Junto is recorded in their minutes, where the absent members are named as well as the present. Now it is a significant fact, that in these lists there is not found the name of a single member of the old Club, although five of them at least were living in 1758, viz. Franklin, Coleman, Hugh Roberts, Philip Syng, sen., and Samuel Rhoads, and continued to hold occasional meetings.

It appears to me then to be demonstrated, that the new Junto was not a mere continuation of the old, incorporated into it by election; and yet the name and the organization were the same. How is this remarkable correspondence to be accounted for? It might at first be supposed that the new Society was one of those Clubs formed by the members of the Junto, as proposed by Franklin, with the same rules, but without being informed of their connexion with the parent Club. But to this view there are some objections. One is that the date of this project was 1736, fourteen years before the formation of the new Junto. Another, that the new Clubs had new names given to them, such as the Vine, the Union, the Band; while this bore the old name itself. Another difference is, that it had not, like these branches, a member of the old Club in its number, to connect it with the parent institution.

When the branch Juntos were formed, the original Society was in full vigour and activity, and the new Clubs were established in order to prevent the necessity of increasing the number of the old. But in 1750 circumstances had changed. The members of the old Junto must then have felt that the original objects of the institution had been so far accomplished in regard to themselves, that they need no longer submit to the restraints and labours enjoined by the rules, but might indulge themselves at their meetings in the pleasures of social intercourse. It seems, then, that they did not think it desirable or proper to introduce young members among them, and they ceased to supply

any vacancies in their number. But this course would inevitably lead to the destruction of an institution which had proved itself so useful, to which they were warmly attached, and to which it may be supposed they would be ambitious to give perpetuity. How then could they prevent its dissolution? One way was presented to them, and there seems to be but one; and that was to form a Junto of young men, to whom they would give their name and their business, and communicate even their secret laws and regulations; thus making over to them, as it were, all but the privilege of being recognised as the remnant of the ancient Junto, and of meeting as such, from time to time, for social enjoyment. Such a Club was actually formed. It had in it the sons of Franklin and Syng. When, after some time, it was in danger of declining, we know from a letter of Charles Thomson, already referred to, that Franklin urged "the members to exert themselves for its revival," and that in consequence "new members were elected, and the meetings became more regular," so that the new Junto was approved and cherished by the founder of the old.

The identity of name, of number, of day of meeting, of rules of proceeding, of qualifications on initiation, cannot have been the result of chance, and as the old Junto was a secret Society, they can have been received only by direct communication from it. For all these reasons, there can, I think, be no doubt that the Junto of 1750 was formed with the knowledge and approbation of the original Club, and probably at its suggestion. But if this be the case, we can hardly suppose that the name Junto would have been given to it, unmodified even by the epithets new or junior, unless with the intention of making it the legitimate successor of the old company on its retirement. This view of the matter is strengthened by more than one analogous case which has occurred in Philadelphia, where the old members of long established fire-companies have given their name and their apparatus to young men able and willing to undertake the active duties, while the remnant of the ancient company, under the same name, has continued to meet as a social club.

We shall see, as we proceed in our narrative, that this Junto was one of the great branches from which our present Society is formed, and it is gratifying therefore to be able to establish, through it, our descent from the memorable Club of 1727, which contained so many distinguished men, originated so many important measures, and will ever hold a cherished place in the annals of this community. Such a connection was certainly claimed by the earliest members of this Society. Thus Dr. William Smith, in a eulogium pronounced be-

fore it on the decease of its illustrious first president, Franklin, says, in speaking of the original Junto, that "after having existed forty years, and having contributed to the formation of some very great men, besides Franklin himself, this Society became at last the foundation of the American Philosophical Society." The credit here given to the first Junto is, in every view of the question, too exclusive; but the reverend orator would hardly have ventured to make the claim, to any extent, on such an occasion, unless he had himself supposed and believed it to be understood by his audience, that the Junto of 1750 had succeeded to the honours, as well as to the name, of that of 1727.

The minutes of the Junto are, many of them, in such detail as to enable us to be present as it were at their proceedings, and to gratify a curiosity which is the greater, as we know that the sessions of the new Club must have resembled those of the old, in the manner of conducting business, in the kind of questions proposed, in the nature of the discussions, in all—except the presence of Franklin.

By a perusal of these minutes we see that the questions were very various, comprising subjects of natural philosophy, natural history, moral science, history, politics. The discussions in general show great sagacity, and no inconsiderable extent of knowledge.

Among the questions discussed are such as the following:

How may the phenomena of vapours be explained: of hail, of storms, the fall of the barometer before rain?

Why do the tides rise higher in the Bay of Fundy than in the Bay of the Delaware? Why are tides at a distance from the equator higher than those near it? What becomes of the water constantly flowing into the Mediterranean?

Is there an essential difference between light and heat? between the electric fluid and elementary fire?

Questions of a political character were frequently introduced; such as the following:

What form of government contributes most to the public weal? which was the first that prevailed among mankind? can any one suit all mankind?

Is there danger of the depreciation of our present paper currency?

Is it consistent with the prerogatives of the crown, and the security of the people's privileges, that the executive powers of government over any territory should be made hereditary, and transferable in the family of any subject?

Should the truth ever be punished as a libel? Should a grand jury hear evidence on both sides?

But I find that I am presenting to the audience a catalogue of queries, which is likely to run into too great a length; and I must therefore content myself now with saying that questions of equal interest were offered on many other speculative and practical subjects; and that the members followed the example of Franklin, by also discussing projects for the advantage of the city: such as the education of children at the public expense; the establishment of public baths; means of supplying the poor with fire-wood at a moderate cost,—and the like.

In the records, a summary of the debates is given by the secretary, but it is remarkable that the names of the speakers are never mentioned.

One of the exercises required of the members was what is called in the minutes a *declamation*. It seems to have been an unwelcome task, for fines were frequently imposed for its neglect. Although the term declamation was used, it consisted simply of a written paper, read by the author. Thus in February, 1760, there is the following minute:

“Charles Thomson read to the Company a declamation, in which, from matters of fact joined with probable conjecture, it was endeavoured to account for the *gossamer*, or those filmy threads which are sometimes seen to cover whole fields in a dewy morning, especially in the autumn, and to show that they might be the threads or webs of the flying spider, weighed down by the particles of water they collect, from the condensing of vapours, upon the sun’s withdrawing his beams.”

On this minute it may be proper to remark, that we must not infer from the use of the term “flying spider,” that Mr. Thomson was ignorant of the fact that no spiders have wings; for the same name is still applied to such of these insects as have the faculty of floating through the air attached to fibres of their own spinning.

From the 22d of October, 1762, until the 25th of April, 1776, an interval of three and a half years, no minutes of the Junto are known to exist; yet it is certain that meetings must have been held, for when the minutes are resumed we find that six new members had been added; and besides, during the two first of these years, Dr. Franklin was in Philadelphia, and it must therefore have been to this time that Charles Thomson refers when he says, in his letter to Franklin of Nov. 1762. “From some conversation I had with you, some few of

ns exerted ourselves to revive it (the Junto) again, new members were elected, and our meetings became more regular.”

During this interval Owen Biddle and Isaac Paschall had been appointed “to revise the laws, and to make a few alterations in them,” and the new code was adopted on the 30th of May, 1766. It differs very little, however, from the old. Yet from this time a new spirit seems to have been infused into the body. Their views became gradually enlarged, and their ambition excited. A time had arrived when it was thought that they might aim at higher things than the mere mutual improvement of a limited and secret club; when they might increase their number, open their doors, and extend their influence for the promotion of knowledge over the American colonies.

The first step in this course was to add to their list of members, and this they did without regard to the old limit of twelve. To the engrossed copy of the laws in the minute book thirty names are subscribed. At the close of the year, (Dec. 13, 1766,) rules were adopted for the admission of non-residents as corresponding members, so that the bounds of the Society could now be extended to the utmost limits of the Provinces, and even into Europe.

By such a step as this, the association lost its character of a club, and accordingly, at the same meeting, it abandoned the name of Junto, which had been used by itself and the parent institution for nearly forty years, and adopted the more ambitious title of “The American Society for promoting and propagating Useful Knowledge, held at Philadelphia.”

The Junto thus became a *Society*, took the broad name of *American*, and announced as its aim the promotion of useful knowledge. To act up to these great pretensions was not an easy task, and immediate success was not to be looked for. We ought not, therefore, to be surprised at finding that for many months little was accomplished by the Junto Society that can be said to correspond with its new claims. This failure was painfully felt by some of the members, and particularly by the most zealous of them all, Charles Thomson. Schemes were proposed, from time to time, for placing the Society really in the station to which it aspired, when, on the 1st of January, 1768, Thomson reported, “that he had, as far as he was capable, collected the sense of the Company on the subject, and committed it to writing, with such thoughts as had occurred to himself on reconsidering the matter.” This paper he then read under the title “Proposals for enlarging this Society, in order that it may the better an-

swer the end for which it was instituted, namely, the promoting and propagating of useful knowledge." It presents an extended and interesting view of the numerous subjects of inquiry calling the attention of the cultivators of science in America. Every department of knowledge seems to be touched upon, but a special reference is always had to immediate utility, and agriculture is the favourite topic. The paper concludes in the following words:

"The spirit of inquiry is awake, and nothing seems wanting but a public Society, such as the American Society is now proposed to be, formed on a plan to encourage and direct inquiries and experiments, collect and digest discoveries and inventions made, and unite the labours of many to attain one grand end, namely, the advancement of useful knowledge and improvement of our country. As Philadelphia is the centre of the colonies, as her inhabitants are remarkable for encouraging laudable and useful undertakings, why should we hesitate to enlarge the plan of our Society, call to our assistance men of learning and ingenuity from every quarter, and unite in one general noble attempt, not only to promote the interests of our country, but to raise her to some eminence in the rank of polite and learned nations."

These proposals were printed and distributed at the time, and subsequently the substance of them was embodied in the preface to the first volume of our Transactions.

The year 1768 continued to be one of great activity in the American Society. Large additions were made to their list of fellows and correspondents, and among them were Dr. Franklin himself, (then in England,) and other men of great distinction. The proceedings were no longer those of a debating club, but of a learned society. Papers were read, some of which are introduced into our printed Transactions; machines and inventions were submitted for examination; communications were received from foreign correspondents; premiums were awarded; donations were received, and a cabinet formed.

On the 23d of September a code of laws was adopted, suited to the new position assumed by the Society, which was now called, by a slight alteration of the former name, "The American Society, held at Philadelphia, for promoting Useful Knowledge." On the fourth of November it made its first election of officers, and the list presents to us the following distinguished names:

President, Dr. Benjamin Franklin.

Vice President, Samuel Powel.

Secretaries, Charles Thomson, Thomas Mifflin.

Curators, Dr. John Morgan, Lewis Nicola, Isaac Bartram.
Treasurer, Clement Biddle.

We have now to welcome the return to the fields of science of another of our parent institutions. The American Philosophical Society, after struggling some years without success, had fallen into total inactivity. The failure showed that in 1743 the time was not ripe for founding a scientific institution in the colonies, and that in making the attempt, Franklin was before his age. And where else, indeed, should we expect to find him? He was born to be a leader among his fellow men, and his place was always in the advance. If this enterprise, however, was seen by its founders to have been premature, the noble views which gave it origin were not abandoned by them, and they awaited with confidence the coming of a season when a renewed effort on their part might prove more successful. In a young and thriving community, ages of improvement pass over rapidly, and the period thus looked for was not long delayed. The members remaining in Philadelphia of the old Society, reduced to six in number, thought (to use the expression of one of them) that "they saw their way clear for its revival," and they accordingly took measures for this purpose. At what time they first reassembled, we do not know; but it appears that in Nov. 1767, they elected four new members, and in the following January no less than forty-four, including men of the highest rank and most distinguished talent in the colony. From the 19th of Jan. 1768, minutes of the proceedings were regularly recorded, and are preserved in the archives of our Society. These minutes show that the revived institution began its new career with great advantages. Even before the election of its regular officers, the governor of the province, John Penn, consented to become its patron; the use of the council chamber at the State-house was granted for its meetings; the college rooms and apparatus were also put at its command, "whenever the members should choose to meet there, or have any experiments performed before them." It was considered, in fact, as more immediately connected with the aristocratic or proprietary party, and therefore enjoyed the special countenance and aid of the men in power.

On the 9th of February, (1768,) the Society elected the following officers:

President, The Hon. James Hamilton.

Vice Presidents, Dr. William Shippen. Dr. Thomas Bond.

Treasurer, Philip Syng.

Secretaries, Rev. Dr. William Smith, Rev. Mr. John Ewing, Dr. Charles Moore.

The first president, James Hamilton, had preceded John Penn as governor of the province, and was a man of wealth and influence; but it does not appear that he ever attended the meetings of the Society after his election.

On the 22d of March, 1768, the first scientific communication was made to the Philosophical Society, and it now stands as the first paper in our series of Transactions. It is entitled "A Description of a New Orrery, planned and now nearly finished by David Rittenhouse, A. M." The instrument described has been an object of wonder for three quarters of a century. It is not a philosophical toy, employed for the purpose of giving a general notion of the movements of the planets round the sun; but a mechanical ephemeris, made to exhibit the relative positions of the heavenly bodies at any past or future epoch of time. To construct it, required a man who should be at the same time a scientific astronomer and a skilful mechanic, and such a man was Rittenhouse. Two of these orreries were actually made; one for the college at Princeton, the other for the college at Philadelphia.

Throughout the year, the meetings of the Society were kept up with great spirit, and many communications were made, which are to be found in the printed Transactions. But by far the most important proceedings of the Society were those which had relation to the transit of Venus over the Sun's disc, that was to occur on the 3d of June, 1769, and to which the attention of astronomers throughout the world was anxiously directed. On the observations of this transit depended the more accurate determination of that great astronomical element, the sun's parallax; from which is deduced the distance of the earth from the sun, and thence the absolute distances of all the planets, their relative distances being already known by other means. The greater interest was attached to this phenomena as it is of very rare occurrence. Indeed it had been before then but twice observed. The first time was in 1639, when Venus was in its ascending node; a transit which, after an interval of two hundred and thirty-five years, will again be seen in 1874, and is the next to be looked for. The occurrence of this transit was foreseen only by one individual, named Horrox, who lived near Liverpool. All other astronomers were ignorant of its happening, and therefore failed to observe it. Horrox had computed the transit from improved tables of Venus, corrected by his own observations; and yet this is considered one of

the least of his astronomical performances, though he died at the early age of twenty-two.

The next transit of Venus occurred in 1761, the planet being then in its descending node; and it was carefully observed in different parts of the world, and important conclusions drawn from it as to the sun's parallax. It was known, however, that its second recurrence, which was to take place in 1769, would be under more favourable circumstances; and at the time of the new organization of the Junto, and of the revival of the Philosophical Society, the attention of learned men throughout the civilized world was anxiously directed to the great approaching astronomical phenomenon. To show the importance attached to it, I need only mention that the first of the celebrated voyages of Captain Cook, of which the story is so familiar to us all from our childhood, was made by order of the British government, for the special object of carrying out astronomers to observe the transit at the island of Otaheite, where it was known that the whole transit, which would occupy about six hours, could be seen; an advantage enjoyed by few other observers.

The attention of the Philosophical Society was first formally called to this subject, by a written application from one of its secretaries, the Rev. John Ewing, afterwards for many years pastor of the First Presbyterian Church in Philadelphia, and provost of the University of Pennsylvania. In his letter he states that "having gone through the calculation and projection of the next transit of Venus, he found that the beginning, and a great part of it, would be visible at Philadelphia, if the weather should be favourable." He then speaks of the importance of multiplying observations of it in different parts of the world, and concludes by saying, "I would humbly propose to this Society, that effectual provision be made for taking the said observations in this city, which is the more necessary as such another opportunity will not occur for more than a century."

This recommendation was referred to the Committee for Natural Philosophy and Astronomy, "to consider the proposal, and make some estimate of the probable expense of preparing for and making the observations;" and at the meeting of June 21st, the Society took active measures, by appointing a committee to make the necessary preparations, and to observe the transit at Norriton; and another committee, to erect an observatory at Philadelphia, and make preparation for ascertaining the latitude, and for observing the transit; and the Society agreed to defray the expenses of the observations in both places.

This was a noble undertaking for a Society just beginning its career; but it was at the same time a very difficult one, and it was soon found that it could not be accomplished without aid. Accordingly, a memorial was presented in September to the Assembly, then in session, praying their assistance. It is pleasing to find that this application was acted upon favourably and promptly; for, at the next meeting, Secretary Bond reported that the Assembly had voted a sum not exceeding one hundred pounds sterling, for purchasing a reflecting telescope, &c. I may here mention that this instrument, made by Nairn, with a Dollond's micrometer, was afterwards procured in London by Dr. Franklin.

We have now traced the progress of both the American and the Philosophical Society, to the close of the year 1768, and we have seen that they were engaged, with great zeal and activity, in the same pursuits, and under nearly the same organization. It was impossible, therefore, that they should not both feel the importance of being united, and accordingly negotiations were early set on foot for this purpose.

To the American Society belongs the honour of making the first overtures. On the 26th of January, the question was discussed, "whether, since the two Societies had the same views, it would not be desirable that they should be united, if this could be done on an equal footing, and on terms equally honourable to both;" and it was "voted unanimously, that such a union would be desirable, and would conduce to the public good, if it could be effected on these terms, but on no other."

After a consultation between some of the leading members of both institutions, this minute was sent, on the 2d of February, with a list of fellows and correspondents, to the Philosophical Society. The course taken by this Society, on the occasion, was a singular one; for they immediately suspended their rule requiring proposals for membership to lie over for one meeting, and introduced all the members of the American Society into their own body by election. This measure was communicated to the members, with an assurance that every thing respecting them had been conducted with the greatest marks of regard, and with the same good disposition, which they had shown, for uniting in the common design for the advancement of useful knowledge; that it had been agreed to postpone the proposal of new members and the election of officers until the following meeting, when they might be present, and give their votes and advice.

This course of proceeding was not relished by the American Society, who did not consider that it brought about a union equally honourable to both parties; and they prepared an answer, in which they state, that although their election into the other Society might be deemed an honour to them as individuals, yet as a Society they could not consider it in that light; and they then go on to assert their claims in such terms as plainly show their feeling of offended dignity. Before this communication was delivered, however, some of the members, apprehending that it might give offence, had a special meeting called, when the answer agreed upon at the preceding meeting was suppressed, and the following brief resolution was substituted for it: "The minute of the American Philosophical Society, of the 2d of February, which declares our election into that Society, being considered, it was unanimously determined that, as it was not on the terms proposed, we are under the necessity of declining the union." This minute was communicated to the Philosophical Society, and no measure with regard to it was taken for some months.

Such a state of disunion, however, between two kindred institutions, interested in the same great objects, and entertaining a sincere regard for each other, was unnatural, and could not be permitted long to continue. The next overtures came, as of right they should, from the Philosophical Society, which, on the 15th of November, appointed their two vice-presidents, two secretaries, and two members, a committee "to concert measures, and prepare the way for a union." This proceeding, being made known to the American Society, was kindly but cautiously received, and a committee of conference was appointed, consisting of the vice-president, two secretaries, two curators, and a member, and instructions were given to them as to the conditions to be required for insuring perfect equality between the contracting parties. The negotiations were conducted with a degree of diplomatic formality, which shows the importance that was attached to the measure on both sides. The desire of union, however, was sincere, and on the 20th of December, both societies being in session, the terms on which it should take place were mutually agreed upon. They were the following; and it will be perceived how cautiously they are framed with a view to the perfect equality in the claims of the two parties to the treaty.

1st. The united society to bear a name composed of the former two, viz. "The American Philosophical Society held at Philadelphia for promoting Useful Knowledge."

2d. No new members to be proposed until the union takes place.

3d. The first meeting to be held at the College on Monday, the 2d of January, 1769.

4th. The officers to be one patron, one president, three vice-presidents, one treasurer, four secretaries, and three curators, to be chosen by ballot at the first meeting, excepting that instead of electing a patron, the governor of the province be requested to act as patron.

5th. A new set of laws to be formed, taking in whatever may be thought proper out of the former laws of both Societies.

6th. Each Society to pay off its debts before the joint meeting, and the new treasurer then chosen to receive the balances in the hands of the other two.

7th. The books and collections of the two Societies to be handed over to the united Society.

8th. In the joint publication of transactions, no preference to be given to the papers of either, but that they be arranged and digested according to their subjects and dates.

9th. That there be a new book for the proceedings of the united Society, and that it be opened with a preface or declaration, stating the circumstances of the union, &c.

The ratification of this treaty was the last great act of the two rival Societies, and at the close of the year 1768, a few days afterwards, their existence as separate bodies came to a termination.

The 2d of January, 1769, is an epoch in the history of our institution. On the evening of that day, the united Society (our present Society) held its first meeting, and its first election. From the very equal distribution of all the subordinate offices among the members of the two parent institutions, it would seem that there must have been a previous arrangement of the ticket generally agreed upon; but we have the evidence of the late venerable Bishop White, that, as to the presidency, there was an active contest. The candidates were, Dr. Franklin, president of the American Society, and identified with the popular party in politics, and ex-governor Hamilton, president of the Philosophical Society, and a leader of the proprietary party. At the time of the union the total number of members was 251, of whom about 124 resided in the city and county. Of this number no less than 89 voted, showing how great an interest was felt in the election. The result was a happy and a proper one. The philosopher triumphed, and Franklin was chosen the first President of a society, in which he already possessed the higher title of the Founder. The vice-presidents, Dr. Thomas Cadwalader, Dr. Thomas Bond, and Joseph Galloway, Esq., were appointed to wait on the governor, John Penn,

and request him to be patron of the Society; and they reported at the following meeting, that he had declined the office. Bishop White has said, that the language which the governor used on the occasion was, "No, gentlemen, I cannot be the patron of a Society whose first president is the greatest enemy of my family." Two years afterwards, his successor, Governor Richard Penn, showed a better feeling. When asked to accept the place of patron, he consented in the most courteous terms, his answer concluding in the following words: "I beg leave to assure you, that I shall not consider the patronage of the Philosophical Society, begun and flourishing in this province, as the least honourable appendage to my present appointment."

The first business of the new Society was one of legislation; and at an early meeting, it adopted a code of laws, which is substantially the same as that by which it still continues to be governed.

But the great scientific enterprise commenced by the Philosophical Society, of taking effectual measures for observing the expected transit of Venus, was now to be resumed by the united body, and measures for this purpose were promptly taken. The means of the Society not being sufficient, aid was solicited from the Assembly, and it was liberally granted, by voting money toward erecting observatories, and giving liberty to place one of them in the State-house square. Suitable temporary observatories were constructed accordingly; one in Philadelphia, the other at the residence of Mr. Rittenhouse, in Norriton township, Montgomery county, about twenty miles N. W. of Philadelphia. Measures were also taken for making observations at Cape Henlopen on the Delaware Bay, where a building was found that could be used for the purpose.

Committees were appointed by the Society to conduct the observations at the three different stations. Good instruments were provided. One telescope, with a Dollond micrometer, was procured at London, by Dr. Franklin, with the money voted by the Assembly; another, of the same character, was sent by Thomas Penn, one of the proprietaries, with a request that after it had been used for the transit, it should be given to the College; where it now is. Other instruments were supplied in sufficient number and of good quality. Careful observations were made at each station, for determining the essential elements of latitude, longitude, and time.

The great day so long predicted, so anxiously expected, so carefully, expensively, and laboriously prepared for, was at hand. An envious cloud might disappoint all hopes, and render all the preparations vain. At the observatories in the north of Europe this actually oc-

curred. How was it in Pennsylvania? The Rev. Provost Smith, who was one of the observers at Norriton, says: "The prospect before us was very discouraging. The first of the month, and several preceding days, had been overcast with clouds and frequent heavy rains. But on the 2d the weather cleared up; and on the 3d, the day of the transit, there was such a state of serenity, splendour of sunshine, and purity of atmosphere, that not the least appearance of cloud was to be seen." He adds, that the sun was so intensely bright, that the coloured glasses sent from England with the reflector could not be used, and a deeply smoked glass had to be substituted.

The long looked for moment was now approaching. A concourse of the inhabitants of the county, and many persons from the city, had crowded about the observatory, and there was some apprehension that the perfect silence necessary on the occasion might be broken. But so great, says Dr. Smith, was the interest and anxiety of the company during the critical period, "that there could not have been a more solemn pause of silence and expectation, if each individual had been waiting for the sentence that was to give him life or death."

If such was the anxiety of the mere lookers-on, what must have been the feeling of the observers themselves, when the predicted moment brought with it the sight so long expected,—witnessed but twice before since the creation,—the *Venus in sole visa* of Horrox! Dr. Rush, in his eloquent funeral oration on Rittenhouse, pronounced before the Society in 1796, mentions a report that "in the instant of one of the contacts of the planet with the sun," our astronomer was affected by "an emotion of delight so exquisite and powerful, as to induce fainting." I am happy to say that the deliberate and detailed record which Dr. Rittenhouse gives of all the phenomena, including both the contacts, is inconsistent with this improbable story. I would not certainly underrate the intensity of his emotions: but he was performing a duty of which he felt all the importance, and "how could he find leisure to be sick?" It is known that, in urgent circumstances, even the epileptic can postpone his fits; and I cannot believe that Rittenhouse, while engaged in observing the transit of Venus, would *permit* himself to faint.

The observations, at Philadelphia, at Norriton, and at Cape Henlopen, were all successful, and the account of them and of the results to which they led is given in full detail in the first volume of our Transactions. In no part of the world were they more perfect or more important. Writing to Thomas Penn, Dr. Maskelyne, the astronomer royal, says: "I thank you for the account of the Pennsyl-

vania observations, which seem excellent and complete, and do honour to the gentlemen who made them, and to those who promoted the undertaking."

I have dwelt with the more detail on the account of this great work of the Society, because it was its first, and because I believe that the anticipation of the transit, and the necessity of preparing for it, was a principal cause of the revival of one of the parent institutions, and afterwards of the happy union of the two.

One would suppose that this astronomical enterprise would have been labour and honour enough for the first year of the Society's existence. Yet another work was undertaken by it, scarcely less laborious or less expensive. On the 7th of April, 1769, the Committee for American Improvements were instructed to take measures for the purpose of ascertaining "the best place for cutting a canal to join the waters of the Delaware and Chesapeake, with the probable expense that would attend the execution of it." This work was prosecuted with great spirit. An appeal for pecuniary aid was made to the Philadelphia merchants, and they answered it with the liberality for which they have ever been conspicuous. Committees were appointed to conduct the surveys and levels; and on the different routes no less than fifteen members of the Society were thus employed. The results of their labours, illustrated by a map, are given in the first volume of Transactions. I will not attempt an analysis of this paper; but will merely mention, that the upper route, for a barge navigation, (afterwards begun under the direction of Mr. Henry Latrobe, and unfortunately abandoned,) was preferred by the committee; and that "they declined making an estimate what the cost would be to make a clear passage from river to river, judging it an undertaking beyond the abilities of the country." This last plan, however, has, as you know, been since executed; but it was at an enormous cost, which has proved ruinous to the company that undertook it.

Very soon after the union, the Society appointed a committee to revise the papers on hand, and to prepare a volume of Transactions for the press. This committee reported a list on the 18th of August, 1769, and a new committee was appointed to superintend the publication.

We can hardly realize, at the present day, how difficult a task was the printing of this volume. A whole year elapsed before the first part, containing the astronomical papers, was finished; and it was not till the 22d of February following, that the Society had the plea-

sure of presenting to the Library and to each member of the Assembly, a copy of the entire volume, "as an acknowledgment of the grateful sense which they retained of the public patronage and encouragement which they had received from the Assemblies of Pennsylvania." The address on the occasion concludes with the following paragraph:

"As the various societies which have of late years been instituted in Europe have confessedly contributed much to the more general propagation of knowledge and useful arts, it is hoped that it will give satisfaction to the members of the honourable House, to find that the Province which they represent can boast of the first Society and the first publication of a volume of Transactions for the advancement of useful knowledge on this side of the Atlantic; a volume which is wholly American, in composition, printing, and paper, and which, we flatter ourselves, may not be thought altogether unworthy of the attention of men of letters in the most improved parts of the world."

The ordinary proceedings of a learned society are not generally such as can make any figure in a mere narrative like the present. It is not by joint undertakings, such as those we have been speaking of, that the cause of science is usually advanced; but by individual efforts and solitary labours, of which the results, after being matured in the closet, are at length communicated to the public, and thus made to form part of the common stock of knowledge. It therefore happened, that although the Society went on with great activity and zeal, and without interruption in its labours for some years, yet as its "promotion of useful knowledge" was, for the most part, effected by individual exertions, there are but few marked places in its course to which I can further direct special attention.

There was indeed a great effort made, on the suggestion of the president, Dr. Franklin, to promote the culture of silk, by encouraging the growth of mulberry trees, and establishing a public filature at Philadelphia. Application was made to the provincial Assembly to give their aid to this scheme, but they adjourned without acting upon the case. After this, a society, for this object, was formed under the auspices of the Philosophical Society, and subsequently the Assembly voted £1000 to aid the undertaking. The business was committed to managers, who set up a filature, where, as they state, "silk was prepared and reeled on public account;" and specimens were presented to the Society, "in consideration that the laudable design was first set on foot by them." Our present venerable President showed

himself a worthy successor of Franklin in this cause, by the great and expensive efforts which he made to promote it, by spreading information before the people, urging Congress to follow the example of patronage set by a provincial Legislature seventy years before, and at last by establishing a filature at his own cost.

The eminently useful science of agriculture attracted a large share of the early attention of the Society, and no branch of it perhaps more than the cultivation of the vine. The first premium awarded,—and it was by the American Society before the union,—was for a successful effort in this branch of industry; and there is a very long and laborious paper on the same topic, in the first volume of Transactions, by the Hon. Edward Antill of New Jersey. This essay begins with a eulogy on wine, which would hardly be relished by the temperance advocates of the present day, although it *does* end by the words: “wise and happy is the man that shuns excess, that prudently avoids turning this cordial into a cup of poison, and moderately enjoys the blessing with a thankful heart.” A scheme for establishing a public vineyard was submitted to the Society in January, 1743; but they informed the proposer of it that though “they highly approved the encouraging of the culture of vines, yet as lotteries were contrary to the laws of the Province, they could not countenance the undertaking.” Thanks to the exertions of a member of our Society now present, lotteries are again unlawful in Pennsylvania, and it is impossible now, as it was seventy years ago, to build schemes of public improvement upon a basis of public demoralization.

In the minutes of August, 1773, there is a record which is too curious to be passed over without notice. It is the report of a committee, of which David Rittenhouse was the chairman, on the first steam engine erected in America. It was made by Christopher Collis, for the purpose of pumping up water at a distillery. We cannot avoid smiling, in this day of steam power, when we find a committee give a favourable report, and declare the “undertaker worthy of public encouragement,” because “they saw the engine perform several strokes,” though in consequence of its execution “being attempted at a very low expense,” “it did not continue its motion long.”

How different is the state of the mechanical arts at the present time in Philadelphia; where one of the members of our Society has constructed, for a public institution, an engine which for perfection of form, of workmanship, of finish, and of operation, may challenge the world; where another, the first to make a locomotive engine in America, is now, by these productions of his skill, bearing anxious travel-

lers and rich burdens along nearly every iron road in the country; where another has made, for the new steam-ships constructed for our protection and defence, gigantic engines, which in ancient times would have been deemed a work to be accomplished only by Vulcan and his Cyclopes; where a fourth has been found boldly and successfully to carry American competition into Europe, so that the traveller in England, in France, in Prussia, in Austria, may find himself drawn upon his road by engines that bear upon them the names of William Norris and of Philadelphia.

From the month of March, 1774, there was an interruption of some months in the meetings of the Society; and similar interruptions occurred, from time to time, in several of the following years. No one acquainted with the history of the time need ask the reason. There are duties sometimes required of us, as men and as citizens, before which the pursuits of science, however useful or attractive, must give place; and at the period of this first suspension, the encroachments of the British government occupied the thoughts and engaged the active exertions of all true patriots, to the exclusion of such pursuits as require leisure and a mind at ease.

On a temporary resumption of the meetings in December, the following remarkable note appears in the minutes, in the handwriting of Dr. Benjamin Rush, one of the secretaries.

“The acts of the British Parliament for shutting up the port of Boston, for altering the charters, and for the more impartial administration of justice in the Province of Massachusetts Bay, together with the bill for establishing popery and arbitrary power in Quebec, having alarmed the whole of the American colonies, the members of the Philosophical Society, partaking with their countrymen in the distress and labours brought upon their country, were obliged to discontinue their meetings for some months, until a mode of opposition to the said acts of parliament was established, which they hope will restore the former harmony, and maintain a perpetual union between Great Britain and the American colonies.”

It will be remembered, that in little more than eighteen months after this hope of harmony and perpetual union was expressed, the writer became himself one of the signers of that memorable instrument which declared the eternal separation of these American colonies from the mother country.

Indeed the impossibility of a reconciliation soon became apparent. In April, 1775, the first blood was spilt at Lexington; in May, Congress assembled at Philadelphia; and in June was fought the battle of Bun-

ker's Hill. During such times as these, a Philosophical Society, bearing and meriting the name of American, could not be expected to go forward. There were accordingly very few meetings in 1775; but there were two of these worthy of notice. At the meeting in February, Rittenhouse delivered an oration on astronomy. It is one of a series given successively by Dr. Smith, Dr. Rush, Mr. Rittenhouse, Mr. Matlack, Mr. Owen Biddle, Dr. Bond, and several other distinguished members. It is full of ingenious and original thought, and in some parts even reaches the sublime. Another event of this year was the attendance of the president, Dr. Franklin. He returned to America on the 5th of May, and presided at the Society, for the first time, on the 15th of September following; nor did he again take the chair until after his return from France in 1785.

In 1776, the annual meeting in January for the election of officers was the only one held, and from that time the Society did not again come together, until after an interval of more than three years. How, indeed, could it have been otherwise? During part of this time, Philadelphia was occupied by the enemy, and during the whole of it war was raging over the land.

But at this pause my narrative must cease; for I cannot, in compassion, allow myself to tax your patience so much further, as would be required to give even a sketch of what remains untold. On the 5th of March, 1779, the Society reassembled, never again to be dispersed or to be interrupted in its scientific pursuits. Here, then, begins a new era in its history, and what remains must be narrated by a new historian.

Among the prominent subjects that will require the notice of this historian, one of the first will be the charter obtained by the Society in 1780, from the General Assembly. It was granted in a very flattering manner, is of the most liberal character, and gave to the Society, for the first time, a legal position, which it still occupies. Another point will be the generous donation of John Hyacinth de Magellan, for establishing a premium to be awarded to the authors of discoveries and improvements,—and the rules adopted with regard to these premiums. Another will be the grant by the Legislature, of a lot in the State-house square, for the erection of a hall, the measures taken for putting up the building, the debts and difficulties brought on by this great undertaking, and the final relief from them by the united and liberal efforts of the members, bringing, as they always will, confidence and assistance from the community around-

The historian will also have to speak of the distinguished men of the Society, such as Rittenhouse, Jefferson, Wistar, Patterson, (who succeeded Franklin in the President's chair,) the two Hopkinsons, the two Vaughans, and so many others, to whose memory we owe a tribute of respect and affection.

But the most exact and appropriate measure of the task that remains, compared with that which has been so imperfectly performed, is presented by the amount of the Society's scientific labours. Up to the time at which my narrative ceases, that is, when the meetings were interrupted by the war of the revolution, there had been but one volume of Transactions printed. Since the reassembling in 1779, there have been published thirteen quarto volumes of Scientific Transactions; besides several octavo volumes of Transactions of the Historical and Literary Committee, and of the Society's Proceedings, as reported by the Secretaries.

What treasures are laid up in this great store-house of thought and observation! The best eulogy that could be pronounced on the Society in this day of its jubilee, would be an analysis of these products of its scientific labours; but I have neither the time, the ability, nor the courage to undertake it. Let us hope, however, that it will not be neglected; and that this great occasion will be taken by the Society, for requiring from such of its members as are fitted for the task, methodical reports of what it has accomplished in the several departments of science.

What is the present condition of the Society! This question is a most important one, and would require, for its satisfactory answer, far more time than is left to us. I will boldly assert, however, that so far as its scientific pursuits are concerned, the Society was never more active, or more successful, and never had more talent, learning, and zeal engaged in its service. There are always to be found, in every community, individuals who mourn over the degeneracy of the times; and such persons may be surprised that I should dare to compare the present days of the Society with those of Franklin and Rittenhouse. I do so, however, with confidence, and I appeal to our recent publications and our present labours to support my position.

Will any one ask me to bring a parallel for the labours of Franklin in electricity? He puts me to a most severe test. Nothing so brilliant will perhaps ever again occur in this science, as the proof of identity of lightning and electricity, or that beautiful effort of genius, the Franklinian theory. But to those who are acquainted

with the immense advances which the science has made since Franklin's time, it will be seen how much more difficult it is now, than it was then, to make any additional steps in it, or to explain and generalize the obscure relations found between electricity and magnetism. Yet in three of our latest volumes, there will be found a series of contributions on these united sciences, filled with the most curious and interesting discoveries, and the most sagacious theories; the results of great and continued personal labour and patient thought; and the investigations are still going forward. I cannot, therefore, acknowledge that any evidence of degeneracy is shown in such labours as these of Professor Joseph Henry.

But I am next asked if successors are found to Rittenhouse in the science of Astronomy, and my interrogator points to the transit of Venus. I answer that such a celestial phenomenon as this will not come at our command, and that none perhaps of the same importance has been since observed any where. But that the science in which our Society first distinguished itself, is cultivated with as much zeal and success now, as it was in the days of Rittenhouse, Smith, and Ewing, is fully evidenced in our recent Transactions, which are filled with interesting papers on the subject. But instead of referring you to these, I will call your attention to an astronomical phenomenon fresh in your recollections,—the remarkable comet which has just disappeared from the heavens. How very different is the character of the observations and calculations made on this comet, and on those reported in our early volumes. They are carried to a degree of accuracy, not attainable with the instruments and methods of former times. Our fellow-members, Messrs. Walker and Kendall, who made the observations at the High School Observatory, have been indefatigable in their calculations to determine the orbit of this comet, and have been obliged to repeat their work, and even change their methods, in consequence of the strange peculiarities which the orbit presents; and the amount of labour which has thus been performed, for the satisfaction of scientific curiosity, is hardly credible. I will add, that the calculations of this orbit were also made by our fellow-members, Alexander, of Princeton; Anderson, of New York; Peirce, of Harvard University; Loomis, of Ohio, and several others. I cannot then acknowledge any degeneracy among us in the science of astronomy.

I shall conclude this defence of times present, by one more example of scientific enterprisc. It is known that the magnetic needle, whether moving in a horizontal or vertical plane, is subject to frequent

irregular changes in its position, indicating corresponding changes in the magnetism of the earth. Similar changes are also indicated by suitable instruments, in the intensity of the earth's magnetic power. Observations made by Arago and Kupffer, in 1818, at distant stations, showed that these small variations were not confined within moderate limits, but took place nearly at the same time, at places very distant from each other. This proved that their cause was more widely extended than had been supposed, and excited the greatest curiosity and interest as to its nature and real limits. To determine these points, it was necessary that observations should be made, at the same time, in different places, spread over as large an extent of the earth's surface as possible. The first arrangement for this purpose was organized by Humboldt in 1826, at eleven different stations, chiefly in the Russian empire. Gauss, having greatly improved the instruments, induced the philosophers of Germany, in 1825, to form a Magnetic Association, which numbered eighteen observatories under its direction. The simultaneous observations, at places widely separated in the continent of Europe, showed that the movements of the needle were affected by causes, not limited to a narrow locality, but as extensive as the chain of observatories itself. In 1837, the British Association, aided by the Royal Society, and patronized by the Government, succeeded in greatly extending the plan and means of observing; and finally a system was organized for making simultaneous observations, at as many stations as possible, in the four quarters of the globe. This great enterprise is known by the name of the *Magnetic Crusade*.

Of the observatories, there are three in the United States; one in Philadelphia, one at Cambridge, (Mass.,) and one at Washington. The first of these is attached to the Girard College, and went into operation in June, 1839; but the observations were made under the direction of one of our most active officers, and their expense was borne by subscriptions of the Philosophical Society, its members, and their friends, until December last, when support from this quarter became no longer possible, and the observatory was closed. I am happy, however, to be able to say, that it is now again in full operation, under means supplied by the intelligent liberality of the present Secretary of War, upon the recommendation of the Chief of the Corps of Topographical Engineers, our fellow-member, Col. Abert.

Now, I could not have selected a better example of the zeal and industry, with which scientific researches are at present pursued among us, than is presented in this great undertaking. It had

continued, before the interruption in December last, three and a half years in operation; and during the whole of that time, day and night, bi-hourly observations were made of all the instruments, including a complete set for meteorology; and in the *term-days*, as they are called, magnetic observations are made every two minutes. Besides this, on particular occasions, and for particular objects, the number of observations is frequently increased. But, excluding these extraordinary occasions and the *term-days*, there are four hundred and seventy-two regular observations made every day, of which two hundred and six are of the magnetic, and two hundred and sixty-six of the meteorological instruments. This is an immense amount of labour; yet the superintendence of the whole of it, the arrangement and collation of the reports, and the thousand cares and duties devolving upon the chief of such an observatory, are performed without remuneration, though not without personal expense. I cannot think that all this is consistent with the empty cry of a decline of scientific zeal among us in modern days; nor can I think that any degeneracy is shown from the character of Franklin in the Director of this observatory, his great-grand-son Alexander Dallas Bache.

How many other proofs could I not readily present that the true spirit of philosophy is not wanting among our members! It would be an easy and a grateful task to mention names and works; but I know not which I could omit. On the whole, it is impossible for any candid person to look upon the present scientific feeling of our Society, without complacency and approbation.

But is there no dark side to this picture? Have I, in this view of the present condition of the Society, to speak only of successful labours and prosperous enterprises? Would that such were the case! Would that it were in my power to close this address, without the necessity of announcing that misfortune has found its way into our quiet halls! Unhappily our institution has not escaped its share of the troubles that have affected the whole community. An opportunity presented itself, full of tempting plausibility, by which it was believed that the Society could greatly better its condition, could secure ample space and a convenient arrangement for its overflowing and still rapidly increasing library, better accommodation for its members, and an increase of income; while, at the same time, it might save another institution, in which it had always taken much interest, from the destruction which threatened it. The Society yielded to the temptation, and became the purchaser of the Museum property. The step proved to be a most unfortunate one. A fall in the value

of property, which no sagacity could have foreseen, has by an indirect operation, which it would be out of place to explain here, deprived the Society of its purchase, and left it involved in debt. We are now in the midst of the difficulty. How is it to end? What account is our future historian to give of it? It will be such,—we dare not doubt that it will be such,—as is worthy of the Society, and of the community in which it is placed. He will say that the members disdained to receive the blow in listless and cowardly submission; that they did but rouse themselves under it to still greater activity, like men worthy of their social descent; that they united themselves together, as with one heart, to meet the crisis; that they did not hesitate to submit to personal sacrifices in order to save their institution; that they then gathered their friends around them, appealed to their fellow-citizens for aid, and had their call generously answered; that they succeeded, as such a course always must succeed; that the city, the state, the country, would not allow the most ancient and the most active of its learned societies to fall; but that it recovered from its losses, resumed its wonted position, and went on prospering and to prosper.

The Society having determined further to celebrate its hundredth anniversary by a special and public meeting of its members and correspondents; such a meeting was held at the Hall of the Society, on Friday 26th of May, which was extended, by adjournments, through eight sessions. It was attended by

Dr. Chapman, Dr. Patterson, and Dr. Bache, *Vice-Presidents*; Mr. Kane, Prof. Bache, Dr. Duglison and Mr. Fisher, *Secretaries*; Dr. Hays, Mr. F. Peale, and Mr. Wetherill, *Curators*; Mr. Ord, *Treasurer and Librarian*; Mr. Steen Billé, *Chargé d'Affaires* of Denmark, Mr. Peter, H. B. M.'s Consul, Dr. Warren and Mr. Borden, of Boston, Gov. Dickerson, Professors Henry, and S. Alexander, of New Jersey, Dr. Ducatel, of Maryland, Mr. Nicollet, of Washington, Lieut. Wilkes, U. S. N., Major Bache, U. S. A., Mr. Baldwin, Mr. Bancker, Dr. Bell, Rev. Dr. Bethune, Col. Biddle, Mr. T. Biddle, Prof. Booth, Mr. Boyé, Mr. Breck, Mr. Campbell, Mr. Carey, Dr. B. H. Coates, Dr. Condie, Mr. Cope, Prof. Cresson, Mr. Dobson, Rev. Dr. Dorr, Mr. Ellett, Dr. Emerson, Mr. Fraley, Prof. Frazer, Mr. H. D. Gilpin, Mr. T. Gilpin, Dr. Goddard, Prof. Griscom, Dr. Hare, Dr. W. Harris, Mr. Hembel, Dr. Horner, Mr. Justice, Prof. Kendall, Mr. Kuhn, Dr. La Roche, Mr. Lea, Rev. Dr. Ludlow, Mr. Lukens, Dr. M'Euen, Mr. C. M'Euen, Dr. Mease, Dr. Meigs, Mr. Merrick, Dr. Mitchell, Mr. Morris, Dr. Morton, Prof. Nulty, Mr. T. R. Peale, Mr. Rawle, Prof. Reed, Mr. Richards, Mr. Roberts, Prof. H. D. Rogers, Prof. Sanderson, Mr. Saxton, Mr. Seybert, Mr. G. W. Smith, Mr. R. C. Taylor, Mr. Trego, Mr. Tyson, Mr. Vanderkemp, Prof. Vanuxem, Prof. Vethake, Mr. Wagner, Mr. Walker, Mr. T. I. Wharton, and Dr. Wood, of Philadelphia, *members*; by delegates and correspondents from various learned societies, and by numerous strangers and citizens, as visitors.