THE DATE OF FRANKLIN'S KITE EXPERIMENT

BY ALEXANDER McADIE

WHEN Benjamin Franklin entered the hall of the French Academy, the members rose as a mark of their high appreciation. Indeed no one in France was accorded a more gracious recognition than the Quaker philosopher and statesman from the British colonies then in revolt. Turgot's oft quoted line "*Eripuit fulmen coelo sceptrumque tyrannis,*" sounding like a line from Virgil, was considered eminently appropriate. Yet the philosopher did not tear the lightning from high heaven; nor as a statesman did he tear scepters from the heads of the King of England, the King of France and the King of Prussia; for all of these wore their crowns many years after Franklin left Europe. Balzac's characterization of Franklin that "he invented the lightning rod, the hoax, and the republic" is partly appropriate and partly inaccurate, for canards and republics antedate any Philadelphia printer. True the man who originated and circulated the Edict of the King of Prussia; also a fictitious supplement to the Boston Chronicle telling of 945 scalps of men, women and children taken by the Indians; this man *was* something of a genius in inventive imagination, even if the pleasant practice of fooling the people was in vogue before his time.

As early as November 7, 1749, or about three years after he had first seen a Leyden jar, Franklin reached the conclusion that lightning was a manifestation of electricity. He was then forty-three years old. In Letter V of his Experiments, he gives at length his

conclusions. In sections 9, 10 and 11, he confuses phosphorescence with electricity while advancing views as to the electrical origin of clouds. In paragraph 33 of the same letter, Franklin advances the concussion theory of rain and may be regarded as the first of a long line of would-be rainmakers, who seek to connect explosive waves with precipitation. I mention this matter here because he unquestionably had noticed the rain gushes after near lightning flashes. He says,

"The concussion or jerk given to the air, contributes also to shake down the water not only from those clouds, but from others near them. Hence the sudden fall of rain immediately after flashes of lightning."

In paragraph 40, he also explains the aurora as "electrical fire." Furthermore in Franklin's Additional Papers to Peter Collinson, dated Philadelphia, July 29, 1750, he says (p. 64, 5th Edition, London, 1774),

"Now if the fire of electricity and that of lightning be the same, as I have endeavored to show at large, in a former paper, this pasteboard tube and these scales may represent electrified clouds."

Estimating what an electrical cloud of 10,000 acres would do he is led to the conception of a lightning rod.

"I say, if these things are so, may not the knowledge of this power of points be of use to mankind, in preserving houses, churches, ships, etc. from the stroke of lightning, by directing us to fix on the highest part of those edifices upright rods of iron, made sharp as a needle and gilt to prevent rusting . . . . Would not these pointed rods probably draw the electrical fire silently out of a cloud before it came nigh enough to strike and thereby secure us from that most sudden and terrible mischief?'

This precedes the letter about the kite, two years.

In a letter to C. C. Esq. (Cadwallader Colder) at New York, 1751, Franklin says,

"The greatest known effects of common lightning may I think without much difficulty be exceeded in this way [he means by increasing the number of Leyden jars] which a few years since could not have been believed and even now may

seem to many a little extravagant to suppose. So we are got beyond the skill of Rabelais's devils of two years old, who he humorously says had only learnt to thunder and lighten a little round the head of a cabbage."

On May 20, 1752, the Abbé Mazeas wrote to Franklin an account of certain experiments made at St. Germain and Marly to test the conjectures of Mr. Franklin upon the analogy of thunder and electricity.

This confirmation of his views probably did not reach Franklin until the end of June, 1752. These were the first experiments which actually demonstrated that thunder clouds acted as electrified bodies. The tests do not seem, however, to have been carried out during *severe* thunderstorms. The storms of 10th May 2:20 p. m. and 18th May between 2 and 3 p. m., appear to have been feeble showers. The matter seems to have rested there. In England, although the necessary apparatus was installed, the weather was uncommonly cool and damp; and at London during the whole summer there was but one thunderstorm, and then the rain wet the apparatus and no sparks could be obtained. But a Mr. Canton at Spital-square about 5 p. m. July 21, 1752, got some feeble sparks, four or five per minute; but they soon ceased. A Dr. Bevis at St.Johns Gate, observed nearly the same phenomena as Mr. Canton.

And now we come to Franklin's first definite pronouncement of the kite experiment. It is letter XI in the Observations, from Benjamin Franklin, Esq., of Philadelphia to Peter Collinson, Esq. F. R. S., London. The date is October 19, 1752, but given in the Phil. Trans. 1672, p. 565, as Philadelphia, October 1, 1752. Professor A. Lawrence Rotch has shown ("Science," September 21, 1906, and Proc. Am. Antiquarian Soc., Vol. 18 pp. 118-123) that a lightning rod was erected on Franklin's house, in September 1752; and that Franklin had prepared material for Poor Richard's Almanac for 1753, probably not later than October 1752.

The letter XI referring to the kite is as follows: A copy of the letter obtained by Professor Rotch differs in several important points and these differences are in brackets.

"As frequent mention is made in (the) public papers from Europe of the success of the Philadelphia experiment for drawing the electric fire from clouds by means of pointed rods of iron erected on high buildings &c. it may be agreeable to the curious to be informed that the same experiment has succeeded in Philadelphia though made in a different and more easy manner which is (any one may try) as follows:

Make a small cross of two light strips of cedar, the arms so long as to reach to the four corners of a large thin silk handkerchief when extended; tie the corners of the handkerchief to the extremities of the cross, so you have the body of a kite; which being properly accomodated with a tail, loop and string, will rise in the air like those made of paper; but this being of silk is fitter to bear the wet and wind of a thunder-gust without tearing. To the top of the upright stick of the cross is to be fixed a very sharp pointed wire rising a foot or more above the wood. To the end of the twine, next the hand, is to be tied a silk ribbon (riband) and where the silk and twine join, a key may be fastened. This kite is to be raised when a thunder-gust appears to be coming on (which is very frequent in this country) and the person who holds the string must stand within a door or window or under some cover so that the silk ribbon (riband) may not be wet; and care must be taken that the twine does not touch the frame of the door or window. As soon as any of the thunder clouds come over the kite, the pointed wire will draw the electric fire from them and the kite with all the twine will be electrified, and the loose filaments of the twine will stand out every way and be attracted by an approaching finger. (And[1]) when the rain has wet the kite and twine so that it can conduct the electric fire freely you will find it stream out plentifully from the key on the approach to your knuckle. At this key the phial may be charged; and from electric fire thus obtained spirits may be kindled and all the other electric experiments be performed which are usually done by the help of a rubbed glass globe or tube, and thereby the sameness of the electric matter with that of lightning completely demonstrated. (I was pleased to hear of the success of my experiments in France and that they begin to erect points upon their buildings. We had before placed them upon our academy and state-house spires).

[1]Not in Professor Rotch's Copy.

In nearly all the biographies the letter appears in the abridged form. The closing paragraph so generally omitted is important, for while it throws no light on the actual date of the kite experiment, it does claim a priority in the erection of lightning rods.

Now the impression is general that the kite was flown in June 1752.[2] Most biographers say that experiments were made by Franklin on June 6, 1752. Priestly, who followed closely Franklin's experiments, is probably the chief authority for placing the kite flights in June or early summer of 1752. But I do not find a definite date in Priestly's "History of Electricity." In the "Life of Franklin" by Dr. Stuber, we are told of the experiment but without date other than "summer of 1752." Mr. William S. Mason of Evanston, Ill., has been kind enough to quote for me from "The Complete Works of Benjamin Franklin" in 3 volumes, London 1806, that portion given by Dr. Stuber; but as will be seen the account is in general terms; and what is rather surprising, explanatory and apologetic. While Franklin was waiting for the erection of a spire it occurred to him that he might have more ready access to the region of the clouds by means of a common kite.

Then follows a description evidently based on letter XI given above.

"With this apparatus on the appearance of a thunder gust approaching, he went out into the commons accompanied by his son, to whom alone, he communicated his intentions, well knowing the ridicule which too generally for the interest of science, awaits unsuccessful experiments in philosophy. He placed himself under a shade to avoid the rain—his kite was raised—a thunder cloud passed over it, no sign of electricity appeared. He almost despaired of success, when suddenly he observed the loose fibres of his string to move toward an erect position. He now presented his knuckle to the key and received a strong spark. How exquisite must his sensations have been at this moment. On this experiment depended the fate of his theory, etc."

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[2]The "Britannica," for example gives this date.

Franklin himself would have been the first to criticise the above. Why should one go to the common if he desired to fly a kite where none could see and comment; and why should one who had made an estimate of what we may call the killing power of lightning, wish to expose his own son to probable death or at any rate intense shock. And again, "he placed himself under a shade"—if this means that Franklin stood under a tree to escape rain, it contraverts Franklin's own previously published warning that it was very dangerous to stand under trees during a thunder storm. Dr. Stuber knew Franklin intimately and it is said got the story of the kite from him. Concerning this I append an interesting letter from Mr. George Simpson Eddy of New York City.

Now as we have seen, Franklin clearly had in mind the identification of lighting and electricity as early as November 1749. He reasoned from the general similarity, from the noise, from the melting of metal, and even entertained the idea that with a sufficient number of Leyden jars in circuit, he could produce a spark rivalling the lightning flash.[3]

Dr. I. Minis Hays writes (See Appendix) that he has always been under the impression the kite experiments were made in June 1752; but so far as he knows, there is no definite information on this point. The American Antiquarian Society has a complete file of the Pennsylvania Gazette and Mr. C. S. Brigham has been good enough to have search made for some reference to the experiment (See Appendix). There is none in the summer of 1752, and not until the issue of October 19, 1752, is there a news item, worded exactly as Franklin's letter to Collinson of same date. It seems to the writer quite improbable that a man so astute as Franklin and so keenly aware of the importance of this

[3] I may say that there is now (1924) at Pittsfield, Mass., a laboratory building, in which imitation lightning is produced. I refer to the General Electric Company and Mr. F. W. Peek's experiments. A generator giving a voltage of two million volts charges a condenser. The current is of the order of ten thousand amperes.

particular experiment, would have failed to publish a note, however, brief, and preliminary, in the Gazette. What is perhaps still more significant, E. Kinnersley, who was the chief expositor of the newly-discovered electric fire, and who was in close correspondence with Franklin (Franklin borrowed his "brimstone globe" March 2, 1752, and used it in making experiments in the spring of 1752) gave several public lectures, in which there is no mention of the kite experiment. In the Pennsylvania Gazette of September 14, 1752, there is an account of Kinnersley's lecture at the State House. And again in the issue of September 21, September 28, and October 19. It would also seem that, once assured of the results, Franklin would have wasted no time in communicating with Peter Collinson to have the paper laid before the Royal Society. It is significant that the letter to Collinson and the same letter in the Gazette, bear the dates October 1 and October 19.

Now for the experiment itself, or rather the description. What internal evidence is there as to the authenticity of it?

First: We may say without being challenged, the kite was not flown during a *severe* thunderstorm, or even during a moderate thunderstorm. There would have been no Franklin, Senior or Junior, left to describe what took place. It is an extremely hazardous, one may say, foolhardy thing to do. He who flies a kite in a thunderstorm may survive; but he will always remember certain occurrences. There are numerous cases of boys being killed. Even where kites are flown professionally, with every precaution, fatalities occur. It happens that the writer has several times tried to repeat the kite experiment. The results which Franklin describes are not those occurring during a thunderstorm; but do agree with results which one may get with a kite flown to a moderate elevation, on almost any day, even in clear weather.

Second: It is equally certain that the kite was not flown on a clear day, for here would have been a capital discovery, namely that electricity could be drawn (to use the popular term) from the sky on a clear day. Franklin would have made much of that; for it is the more important though less dramatic discovery.

Third: The kite experiment apparently was not repeated. Franklin's conception, or perhaps the interpretation put upon the experiment and generally accepted, was that a cloud was a reservoir of electricity and the kite string a conductor. On the contrary, it appears to have been purely induction, not conduction. Had the kite string been wet enough to act as a conductor, the fibres would not have stood out.

It may have been frictional electricity; and throughout this period, Franklin always speaks of gusts; and certain electrical manifestations occur only with these gusts. Again Franklin *conceived* experiments, described them and tried them out later, as in his experiment in 1753 when he found clouds to be negatively electrified; and then later found they were sometimes positively electrified. He did not, however, in these subsequent experiments make use of a kite. He used the insulated lightning rod. It is a curious thing that he makes no mention of a kite after October 1752. In September 1752, he erected an iron rod on his house; and found many contradictory phenomena during thunderstorms, but in his letter to Peter Collinson, dated September 1753, he does not refer to the kite among all these. His pointed rod was out of order in the winter of 1752; so that it was not until April 1753 that he got results. He does specifically mention on *June 6* a gust that continued from 5 to 7 p. m. But note this is June 6, *1753* and possibly this date has been wrongly thought to be the date of the kite flight.

The conclusions are then

1: Franklin himself does not give a definite date when a kite was flown.

2: It seems doubtful that the kite was flown in June or early summer 1752.

3: If flown, the date was probably not far in advance of the end of September 1753.

4: The whole tenor of the letter of October 1 (19) 1752, indicates not so much an experiment actually performed as one projected and the results anticipated. For actually the phenomena are quite different. Franklin does not say in the concluding paragraph that he actually charged a phial, etc. Only that it may be charged.

APPENDIX

From Joseph Priestley, "The history and present state of electricity." 3d ed. London, 1775, vol. I, p. 216-217.

The Doctor, after having published his method of verifying his hypothesis concerning the sameness of electricity with the matter lightning, was waiting for the erection of a spire in Philadelphia to carry his views into execution; not imagining that a pointed rod of a moderate height, could answer the purpose; when it occurred to him, that, by means of a common kite, he could have a readier and better access to the regions of thunder than by any spire whatever. Preparing, therefore, a large silk handkerchief, and two cross sticks, of a proper length, on which to extend it, he took the opportunity of the first approaching thunderstorm to take a walk into a field, in which there was a shed convenient for his purpose. But dreading the ridicule which too commonly attends unsuccessful attempts in science, he communicated his intended experiment to nobody but his son, who assisted him in raising the kite.

The kite being raised, a considerable time elapsed before there was any appearance of its being electrified. One very promising cloud had passed over it without any effect; when, at

length, just as he was beginning to despair of his contrivance, he observed some lose threads of the hempen string to stand erect, and to avoid one another, just as if they had been suspended on a common conductor. Struck with this promising appearance, he immediately presented his knuckle to the key, and (let the reader judge of the exquisite pleasure he must have felt at that moment) the discovery was complete. He perceived a very evident electric spark. Others succeeded, even before the string was wet, so as to put the matter past all dispute, and when the rain had wetted the string, he collected electric fire very copiously. This happened in June 1752, a month after the electricians in France had verified the same theory, but before he had heard of anything that they had done.

In the Journal of the Franklin Institute of the State of Pennsylvania for the Promotion of the Mechanic Arts for April, 1906, there is an article by Dr. Edwin J. Houston, "Franklin as a Man of Science and an Inventor," which contains a discussion of the electrical kite.

From the Complete Works of Benjamin Franklin. In three volumes. (Life by Dr. Stuber. London, 1806, vol. 1, ff. 108.

It was not until the summer of 1752, that he was enabled to complete his grand and unparalleled discovery by experiment. The plan which he had originally proposed, was, to erect on some high tower, or other elevated place, a sentry-box, from which should rise a pointed iron rod, insulated by being fixed in a cake of resin. Electrified clouds passing over this, would, he conceived, impart to it a portion of their electricity, which would be rendered evident to the senses by sparks being emitted, when a key, the kunckle, or other conductor was presented to it. Philadelphia, at this time afforded no opportunity of trying an experiment of this kind. While Franklin was waiting for the erection of a spire, it occurred to him that he might have more ready access to the region of clouds by means of a common kite. He prepared one by fastening two cross sticks to a silk handkerchief, which would not suffer so much from the rain as paper. To the upright stick was affixed an iron point. The string was, as usual, of

hemp, except the lower end which was silk. Where the hempen string terminated, a key was fastened. With this apparatus, on the appearance of a thunder-gust approaching, he went out into the commons, accompanied by his son, to whom alone he communicated his intentions, well knowing the ridicule which, too generally for the interest of science, awaits unsuccessful experiments in philosophy. He placed himself under a shade, to avoid the rain—his kite was raised—a thunder-cloud passed over it—no sign of electricity appeared. He almost despaired of success, when, suddenly, he observed the loose fibres of his string to move towards an erect position. He now presented his knuckle to the key, and received a strong spark. How exquisite must his sensations have been at this moment. On this experiment depended the fate of his theory. If he succeeded, his name would rank high among those who had improved science; if he failed, he must inevitably be subjected to the derision of mankind, or, what is worse, their pity, as a well-meaning man, but a weak, silly projector. The anxiety with which he looked for the result of his experiment, may be easily conceived. Doubts and despair had begun to prevail, when the fact was ascertained in so clear a manner that even the most incredulous could no longer withold their assent. Repeated sparks were drawn from the key, a phial was charged, a shock given, and all the experiments made which are usually performed with electricity.

From Benjamin Franklin, "New Experiments and Observations on Electricity made at Philadelphia in America." 2d ed., London: Printed and sold by D. Henry, and R. Cave, 1754, p. 108.

LETTER XI. From Benjamin Franklin, Esq., at Philadelphia.

As you tell me our friend *Cave* is about to add some later experiments to my pamphlet, with the *Errata*, I send a copy of a letter from Dr. *Colden* which may help to fill a few pages; also my kite experiment in the *Pennsylvania Gazette:* to which I have nothing new to add, except the following experiment towards discovering more of the qualities of the electric fluid.

OTHER TITLES CONSULTED:

Benjamin Franklin, New Experiments and Observations on Electricity . . . 3d ed., London, 1760.

Benjamin Franklin, Experiments and Observations on Electricity . . . London, 1759. (Letter to Franklin from Mr. Kinnersley, March 12, 1761) p. 387.

Ueber Luftelekricität, 1746-1753. No. 11 of Neudriucke von Schriften und Karten über meteorologie und erdmagnetismus, ed. by Dr. G. Hellmann.

Benjamin Wilson, Further Observations upon Lightning . . . London, 1774.

Giuseppe Toaldo, Dell' Uso de Conduttori Metallici . . . Vencie, 1774.

Della maniera di preservare gli edificj dal fulmine . . . Venice, 1772.

l'Abbé Nollet, Lettres sur l'Electricité . . . 3 vols. Paris, 1774. Vol. 1, p. 148

l'Abbé Nollet, Essai sur l'Electricité des Corps . . . Paris, 1754.

The Pictorial Life of Benjamin Franklin, Printer . . . Dill and Collins, Philadelphia, 1923. "Franklin making his kite experiment." Picture.

Richard Anderson, The Lightning Rod. London, 1882.

Royal Society of London—Transactions. Vol. 47.

Abbott Lawrence Rotch, Did Benjamin Franklin fly his electrical kite before he invented the lightning rod? American Antiquarian Society Proceedings, vol. 18, pp. 118-123, Worcester, 1906.

The Gentleman's Magazine, 1756, p. 378n., Vol. 26

LETTER FROM WILLIAM S. MASON, EVANSTON, ILL.

December 22, 1923.

Alexander McAdie, Director,
Blue Hill Observatory,
Readville, Massachusetts.

DEAR SIR:

Your inquiry relative to Dr. Franklin's kite experiments has given us an interesting problem to locate the Doctor's own description of his experiments with the kite.

The general opinion seems to hold that these experiments were made in June, 1752; and in a note of Dr. Franklin's to Collinson he says "I send a copy of a letter from Dr. Colden which may help to fill a few pages; also my kite experiments in the Pennsylvania Gazette." We have no numbers of the year 1752 of the Pennsylvania Gazette here in our library, and our Miss Lapham visited the Wisconsin State Historical Society library expecting to find a complete file. However, we were disappointed in this as their file was only about one-half complete for the year 1752. I believe the Antiquarian Society has a complete file.

It may be interesting to read Franklin's Autobiography beginning at page 183 et seq., Everyman's Edition. This relates entertainingly although only in general, of his electrical experiments.

In a letter to Cadwallader Colden, Dr. Franklin speaks of experiments made on June 6, 1752. Dr. Colden to Benjamin Franklin on October 29, 1752 in a postscript says, "This having lain by me some days for an opportunity to send it I have in that time seen in the News papers the Account of the Electrical Kite. I hope a more perfect & particular account will be published in a manner to preserve it better & give it more credit than it can obtain from a common News paper, etc."

It may be of interest to you to read some of Dr. Franklin's letters to E. Kinnersley and the replies thereto during the years 1752 to 1754. No mention is made in the bibliography of Dr. Edwin J. Houston's work on "Franklin as A Man of Science and An Inventor." This is a rather technical and very thorough piece of work. We have an extra copy and shall be glad to send it on if you would care for it.

Were not some experiments made at the Blue Hill Observatory in 1891 or 1892 relating to atmospheric disturbances? I recollect reading something to that effect only recently.

I am enclosing some brief excerpts from Priestley and Dr. Stuber's work on Franklin. Stuber seems to have copied largely from Priestley. You will also find a brief bibliography on works relating to Dr. Franklin and electricity.

To sum up briefly, I believe Dr. Franklin made the experiment in the spring of 1752, and that his own description of it

may be found in the Pennsylvania Gazette and probably in the proceedings of the Royal Society of London.

Yours very truly,
WM. MASON

LETTER FROM GEORGE SIMPSON EDDY, NEW YORK CITY

December 15, 1923.

Prof. Alexander McAdie, Director,
Harvard University,
Blue Hill Observatory,
Readville, Mass.

MY DEAR PROFESSOR MCADIE:

Since writing you last I have examined Parton's Life of Franklin. In Vol. I of that work you will find considerable information about Franklin's electrical experiments. On page 295 Parton says, with regard to the kite flying experiment, "We owe our knowledge of what occurred on that memorable afternoon, to two persons who heard Franklin tell the story, namely, Dr. Stuber of Philadelphia and the English Dr. Priestley." As I told you in my last letter, I do not possess Dr. Priestley's History of Electricity, but I have an edition of the Life and Essays of Dr. Franklin published in the Republic of Letters, a journal which was published in New York in the year 1834. This Life begins in No. 2 of that journal, page 171. On page 180 begins the continuation of Franklin's Life written by Stuber, who is described as "one of the Doctor's intimate friends." On page 181 is to be found Stuber's description of the kite flying experiment. He does not give the exact date, simply stating that it took place in the summer of 1752. Stuber's description seems to imply that rain fell during the period of the experiment but is not explicit upon that point. Possibly Dr. Priestley's account of the experiment may be fuller.

Stuber's life of Franklin was first printed in the Columbian Magazine published at Philadelphia 1790-1791 (see Smyth, Vol. I, page 25). A part of Stuber's Biography which fitted on to the Autobiography was first printed in the Works of Franklin edited by Benjamin Vaughan and published at London in 1793, and "this continuation by Stuber has been

that used in most of the popular editions of the autobiography" (see P. L. Ford's Bibliography of Benjamin Franklin, page 181). Parton, Vol. 1, page 289, says (referring to the spring of 1752), "nearly three years have rolled away since he had suggested *in his private diary* a mode of ascertaining whether lightning and electricity were really the same." I do not know what Parton meant by "private diary." I think that he must have been referring to the paper written by Franklin in 1749 entitled "Opinions and Conjectures, concerning the Properties and Effects of the Electrical Matter, arising from Experiments and Observations, made at Philadelphia, 1749."

With my kindest regards, I am,

Very sincerely yours,

GEO. SIMPSON EDDY

P. S. In Spark's edition of the Works of Franklin, V. 173, you will find that part of Stuber's continuation relating to the electrical experiments. On p. 179 of same Volume, Sparks says, "Dr. Priestley in his History of Electricity, published in the year 1767, gives a full account of Franklin's experiments and discoveries."

LETTER FROM I. MINIS HAYS, PHILADELPHIA

December 14th, 1923.

Mr. Alexander McAdie, Director,
Blue Hill Observatory,
Readville, Massachusetts.

DEAR MR. MCADIE

I am in receipt of yours of the 12th inst. and I am sorry that I cannot give you the definite information you desire. I have always been under the impression that Franklin's kite experiments were made in the month of June, 1752, and tradition is that he flew it on a vacant lot about 10th and Chestnut Streets, but then again, so far as I know, there is no definite information on this point.

Regretting that I can give you nothing more satisfactory, I remain

Very sincerely yours,

I. MINIS HAYS

Letter from Clarence S. Brigham, Worcester, Mass.

December 11, 1923

Mr. Alexander G. McAdie,
Readville, Mass.

Dear Mr. McAdie:

We have a full file of Franklin's paper, "The Pennsylvania Gazette," and there is no reference in the summer and fall of 1752 to the kite-flying incident except in the issue of Oct. 19, 1752, where there is a news item with reference to the recent experiment in Philadelphia. This is exactly alike in wording to Franklin's letter to Collinson, printed in his "Experiments." I suppose that the files of the Philadelphia newspapers have been gone over dozens of times for references to Franklin's experiments, but nothing has been found regarding them.

You probably know that under date of Sept. 14, 1752 (Pennsylvania Gazette), there is an elaborate description of Ebenezer Kinnersley's experiments on the "newly discovered electrical fire," which he performed at the State House several times in the fall of 1752. There are references to this also in the issue of Sept. 21, Sept. 28 and Oct. 19, but none of them refer to Franklin, nor do any of them mention the experiment of kite-flying.

It would seem as if that in some of the Philadelphia manuscript diaries of the 18th century, preserved in Philadelphia, there might be references to the kite-flying, and perhaps also in some of the printed correspondence of the period, but so many people are interested in this problem that one would think that such citations would have been brought to light.

You probably have seen the pamphlet by Kinnersley entitled "A Course of experiments in electricity," Philadelphia 1764, a copy of which is in the Library Company of Philadelphia.

Yours very truly,

Clarence S. Brigham,
Librarian

LETTER FROM WILLIAM DUANE, BOSTON, MASS.

Dr. Alexander McAdie,
Harvard University,
Readville, Mass.
MY DEAR MCADIE:

In reply to your letter in regard to Franklin's experiment with the kite, I do not know the exact date. As the men whom you mention know a great deal more about history than I do, I probably could make no valuable suggestions.

From my twenty years experience with the Philadelphia climate, it seems to me unlikely that a thunder storm would occur about October 19th. Would not a summer date be more probable on this account? You know much more about weather than I do.

I have an autograph letter of Franklin's in which he states some of his ideas about storms. Perhaps you would like to see it some time.

Yours sincerely,

WILLIAM DUANE

ADDENDA

Mr. George Simpson Eddy has been kind enough to trace the history of the newspaper account of which Cadwallader Colden spoke in his letter to Franklin of October 29, 1752. He writes:

"I have discovered one such account in the New York Gazette review in the Weekly Post Boy, October 23, 1752. This account was copied word for word from that in the Pennsylvania Gazette, October 19, 1752, altho the latter journal is given no credit."

"The New York Historical Society has the following issues of the New York Mercury (published by Hugh Gaine) but in none of these have I found any mention of the kite experiment—Aug. 31; Oct. 2; Nov. 6, 13, 20, 27; Dec. 4, 11, 18, 25; all 1752. I have examined the Pennsylvania Gazette from May 7 to Dec. 26, 1752, and have found no reference to the famous experiment except the account in the issue of Oct. 19. Of the

issues of the Post Boy, the N. Y. Historical Society has all save those of Sept. 7 and 10, I have looked through all the others numbers from June 1 to Dec. 25, 1752, without results; except that I found some interesting "ads" of Kinnersley's lectures in New York, and, in the issue of Oct. 2, 1752, a long account of the experiment by Dalibard, Le Monnier, and De Lor, copied from the Gentleman's Magazine of June, 1752."

Mr. Eddy comments further on Dr. Stuber, particularly concerning the age of Dr. Stuber. This will be the subject of later investigation.

Dr. Fred E. Brasch, Washington, D. C., has kindly sent a copy of an article by Professor John Winthrop in the Boston Chronicle, Monday, July 11, 1768. This is in defense of the erection of lightning rods. The kite experiment is not mentioned, but detailed description of the damage done to Hollis Hall in the severe storm of July 2, is given.

A letter has been received from Mrs. James Southard Ellis of Philadelphia with a long extract from the Universal Asylum and Columbian Magazine for June, 1790. In this extract is an account of Franklin's letter to M. Duborg on the Art of Swimming in which Franklin states that when he was a boy he amused himself one day by flying a paper kite:

"I found that lying on my back and holding the stick in my hand I was drawn along the surface of the water in a very agreeable manner. * * * I have never since that time practiced this singular mode of swimming tho I think it not impossible to cross in this manner from Dover to Calais. The Packet boat however is still preferable."