# Thomas A. Edison and the Founding of *Science*: 1880

DOCUMENTS RECENTLY UNCOVERED in the Thomas A. Edison library at West Orange, New Jersey, show clearly for the first time the relationship between a journal, *Science*, published in New York in 1880 and 1881, and the present *Science*.

Volume 1, Number 1, of the present *Science* begins with the issue of February 9, 1883, and continues in unbroken sequence, although under different ownership and with some lapses in publication, until the present time.

It has long been known that the first decade of this series was under the sponsorship of the Alexander Graham Bell family and that after 1895 and until 1944 under the ownership of the Cattell family.

In 1926 J. McKeen Cattell, then editor of *Science*, wrote that in 1881 and 1882 there had been published in New York "a weekly journal devoted mainly to physical science and invention, entitled *Science*, and Mr. [A. Graham] Bell purchased from Mr. John Michels for $5,000 the title and good will of this journal. Continuity of the publication was not, however, maintained, and the present journal [*Science*] dates from 1883. Mr. Thomas A. Edison had been responsible for the foundation of the earlier *Science*" (*Science*, 1926, **64**, 343).

Dr. Cattell continues, presumably quoting from a letter written to him by Thomas Edison in 1925: "If you will look back at your earliest records, you will find that *Science* was originally started and financed by me and was published for about a year, when I withdrew . . . [ellipsis Dr. Cattell's]. When I could not finance the publication further, I paid the editor's salary in full and told him he could have the paper and do what he pleased with it."

Whether Dr. Cattell had ever seen the early *Science* we do not know, but he places its publication in 1881–82 rather than 1880–81 and describes its contents incorrectly.

Norman R. Speiden, curator of the Laboratory of Thomas A. Edison at West Orange, has during the past few years slowly been making available to qualified students materials in the Edison collection. The letters written by Edison or his secretaries were handwritten during this period and copies of them preserved by the old-fashioned copybook method. Letters received by Edison are usually folded and so brittle they have to be specially treated before they can be unfolded and inspected. Most of these also are handwritten, so that deciphering them is a somewhat laborious process. Mr. Speiden has made this material available to the editorial staff of *Science*, and it has been studied during the past few months in an attempt to piece out the early history of the magazine.

Thomas Edison never was the editor of *Science*, as has sometimes been said. From 1879 through 1881 he was much too busy with the development of the electric lamp and its attendant problems to concern himself with the active editorial direction of the new magazine. Mr. Speiden's article in the preceding pages gives the background of Edison's life at this time, pointing out that he had known J. Norman Lockyer, founder of *Nature*, during the Draper eclipse expedition of 1878 and that possibly they had talked about an American *Nature*. It is clear, however, from the records that, aside from paying the bills, he took an active interest in the journal, received weekly reports from the editor and advance issues of the magazine, on one occasion spoke his mind about an item of editorial content, and asked whether he could see manuscripts or proofs of them before they went to press when these touched on matters of electrical engineering, with which he was most conversant.

The first letter in the collection is dated April 17, 1880, and is written to Thomas Edison at Menlo Park, New Jersey, by John Michels of Room 10, 767 Broadway, New York. It begins:

> I am thinking of taking action about the establishment of a strong Scientific Journal, and intended to have made you a visit to renew my conversation with you on the subject, but having been confined to my room this week have not had the opportunity.
>
> I think you said that when you were further advanced you would cooperate with me. I notice you will shortly make another move forward, and I now suggest that something be done.
>
> There could not be a better time for literally the field is open for with the exception of Patent office organs, and journals limited to particular to particular [*sic*] interests, there is nothing in the market, and English Journals are establishing good subscription lists here in consequence.

The letter goes on to outline the editorial content of the journal Michels had in mind and mentions that he had been in correspondence with Prof. Burt Wilder of Cornell about such a magazine and had received from Prof. Wilder a possible subscription list. The letter ends with the hope that the writer would be able to see Edison within the next few days about financial backing for the proposed magazine.

The occasion upon which these early conversations took place is not indicated, but John Michels describes himself as an editorial writer for *The New York Times* and a contributor to Appleton's *Popular Science Monthly*. He was probably at this time a free-lance writer with a

newspaper background; and in an unsigned article in the March 4, 1882 issue, the last under his supervision, he says that he lived for many years in London. He tells of a visit to Menlo Park in the spring of 1878, when Edison was testing the tasimeter prior to the Draper eclipse expedition (*Science*, 1880, September 4), and from the correspondence we can infer that he either had been to Menlo Park or had seen Edison in New York on other occasions prior to April 17, 1880.

In any event, the record next shows that Michels was directed by Edison to draw up a prospectus of the new journal. Several copies of this prospectus in Michels' handwriting, duplicated by a gelatin method, are in the Edison files together with a letter from Michels dated April 27, 1880. The prospectus announces the desirability of forming a small company to publish an "American Scientific Journal" directed toward a large circulation. The interest of the public in scientific subjects is mentioned and the hope expressed that the magazine will be "sold on every newsstand in the United States, indispensable to every man of intelligence who would be posted on human progress."

If we can reconstruct the situation, it would appear that the public interest in "scientific" events in 1880 closely paralleled the public interest in "scientific" events of our time; and where we have seen the introduction of several new scientific publications directed toward mass consumption, in 1879 and 1880 the field was relatively clear; where today there are several attempts to exploit this market, in 1880 only one new journal that we know about was proposed.

Among names advanced for the new journal were *Nature* (*American*), *Popular Science Weekly*, and the *Intellectual Observer*. Who finally chose the name *Science* for the new magazine is not explicitly stated, but the first mention of the name occurs in an unsigned "Memorandum Agreement" in Edison's handwriting between Thomas A. Edison and John Michels, dated June 1880, but with the day left blank. This agreement will be treated in more detail later in this text, because, while unexecuted, it briefs the actual events of the next 18 months as they are documented in the correspondence.

The prospectus fixes the size of the journal at approximately 9 x 13 inches and provides for an index but does not state how many volumes there would be each year or how many pages each number would contain.

The content is specified in detail, particular weight being given to "two Editorials on current matters of interest, as often as possible by men of known ability on that particular subject." Provision was made for the appearance of current scientific information under specific headings such as "Electricity, Mechanics, Chemistry"—in the language of the prospectus, "not mixed up as in most Journals." It was also planned to appoint correspondents in foreign countries whose dispatches to the magazine would be headed "Germany, France, Italy, etc." "Proceedings of societies at home and abroad, government surveys and expeditions," are given explicit mention. It is said that current social subjects connected with science, such as "public health, sanitary science, etc.," would be printed in the interest of the general public, and it is specified that "no attempt will be made for pictorial effects" but that illustrations would be used where necessary.

It predicts that the new magazine will command "special patronage as an advertising medium for books, scientific instruments, foreign manufacturers and for all goods used by the best classes of Society." The prospectus estimates that such a journal could be produced for a capital of $12,000, or 120 shares at $100 each. It suggests that if five persons should take 20 shares apiece, the editor should be given his 20 shares in addition to a reasonable weekly salary. No estimate was made of either income or expenses.

Edison acknowledged receipt of the prospectus in a letter dated April 29, 1880, and signed by S. L. Griffin, his secretary at Menlo Park. "Mr. Edison requests me to say," the letter says, "that if satisfactory arrangements can be made, he will take the 20 shares. He wishes to consult some friends in New York and endeavor to get them interested also."

There is no record of Edison's attempts to interest his "friends in New York." On May 6, however, Michels wrote to Edison telling of some conversations he had had with a Mr. Shonnard, described as "a gentleman of large property and considerable influence," who recommended that $10,000 would hardly be enough capital to start the venture and suggested $25,000, and who wanted to take advantage of the Edison name to insure success of the venture. The conversation with Shonnard resulted in a conference between Shonnard, Michels, and a Mr. Jewett, described as publisher of, among other items, *Uncle Tom's Cabin*. The publisher's interest in the venture seems to have been to secure publishing rights to any book that might develop as a result of the manuscripts published in the new journal. The closing paragraphs of the May 6 letter follow:

> Mr. Shonnard feels the power of your name and influence and wishes to know from you clearly, that it is to be considered your organ, as he considers that fact will insure its sale largely—
>
> If you consent to this, please state when you can spare an hour to talk the matter over with Mr. Jewett either on Saturday next or early next week.

Presumably, Edison did not react favorably to the Shonnard proposal.

The next item in the record is the unsigned memorandum of agreement between Edison and Michels, mentioned previously. Essentially, this agreement made Michels an employee of Edison at a salary of $30 a week for one year, empowered him to pay for an assistant at a

salary of not more than $15 a week, and charged him with the responsibility of placing the enterprise on a paying basis within the year. Edison agreed to pay all of the bills, but required that no debts be entered into without consent in writing. Except for the fact that the unsigned agreement was in force for 18 months rather than one year, the terms of the agreement closely parallel the actual happenings. For the first six months payments from Edison averaged a little more than $100 a week, and in the next year were nearer $150. Throughout the period the expenses were detailed to the last postage stamp. The method of accounting was a simple one—office receipts were balanced off against expenses, and Edison sent a weekly check for the deficit.

The next document of interest is a lease for Room No. 53 on the fifth floor of the Hamilton Building at 229 Broadway, New York, which was rented to Thomas A. Edison from June 7, 1880, to May 1, 1881, at $20 a month in advance. The provisions of the standard lease allowing a charge for heating and janitor service were stricken out of the agreement and a notation made that there should be no charge for these services. The lease was signed on June 3 by an attorney for the owner of the building and by Thomas A. Edison personally. Edison's name does not appear in connection with the printing bills or other items of expenditure, all of which were conducted by Michels in the name of the journal. At the end of the lease period, Michels refused to pay an additional $5.00 per month rent which the lessor wanted and moved the office to Room 17 of the Tribune Building, where it remained until the journal suspended publication.

The first issue of the magazine, *Science: A Weekly Journal of Scientific Progress*, consisting of 12 pages and cover, appeared July 3, 1880. This format continued for the whole period of the first volume, which ended with the December 31 issue. In each issue advertising displays occupied the front cover. At first these were of the small type we now call classified advertising, but beginning in September the front page was devoted to the Stylografic Pen, "a pencil that writes ink, never needs sharpening and never wears out," while the classified advertising was relegated to the back cover, a position previously devoted to advertising *Science*.

The first issue contained an account of the accomplishments of the U. S. Naval Observatory at Washington and two other articles preceding the editorial page. One of these, on page 5, was an article on "Electricity as Power," by Francis P. [R. is correct] Upton, Edison's mathematician at Menlo Park and a former student of Helmholtz. The forepart of the article is theoretical, and the latter describes the electric railroad at the Park. The latter part of the magazine was devoted to the divisions of science noted before—natural history, microscopy, physical notes, chemical notes, etc.—changing from issue to issue. No mention of Edison's support was published anywhere during the first 18 months, but in the editorials Edison is defended on half a dozen different occasions. In the issue of July 10, 1880, the editor writes:

> A gas lighting and sanitary journal published in London asserts that Mr. Edison has thrown up his electric light researches and left for California, and suggests that there is now a fair field for those disposed to try their hand in this direction.
>
> Possibly the "*wish*" was father to the "*thought*" with the promoters of this journal, when they printed this atrocious statement, which is not only false but malicious.
>
> In this country a contradiction of such a "*canard*" is, of course, unnecessary. Mr. Edison has ceased to notice attacks of this nature, and possibly in his retirement at Menlo Park, and with every moment occupied on his important work, he may not even know of them. Warned by the experience of the misinterpretation placed upon his willingness to permit the public to witness the progress he was making with his carbon-electric lamp, he has of late discouraged the continued reporting of his movements, but within a very few weeks a whole section of Menlo Park will be illuminated by means of his carbon-electric lights, equal in extent to one of those districts which will afterwards be established in New York City if success is achieved. . . .
>
> This will be Edison's answer to all the meretricious arguments and scientific hair-splitting which has been of late, with little generosity, carefully disseminated to his disadvantage. Taking the view that it is a waste of time to argue theoretically, on that which can be demonstrated practically, Edison, through all this wrangle has been silent, but not idle; while others *talked*, he has *worked*, and in a few short weeks all will be ready, when those who are competent can see and judge for themselves.

Considering the position that Edison held in the engineering world in 1880, subsequent to announcement of the successful electric lamp in December 1879, no undue amount of space was devoted to his defense. As a matter of fact, more space was given editorially to the AAAS Boston meeting of August 25, 1880, than was devoted at any time to Edison. The editor promised that abstracts of all the papers would be printed in *Science* and that a large number of the papers would be given prominent lead positions. The editor attended the meeting in Boston and in the issue of August 28 stated in a short note that his next issue would contain the complete address of the retiring president of the Association, George F. Barker. Almost exactly two-thirds of the issue of September 4 was actually devoted to the Boston meeting. Among the events scheduled for that meeting was a reception at the home of Mr. and Mrs. Alexander Graham Bell in Cambridge. It is perhaps no accident, then, that the next issue contained an editorial on the photophone and an illustrated abstract of a paper which Bell had presented at the Boston meetings. There is some evidence that Bell and Michels had been in correspondence about this abstract even before the meeting.

As Mr. Speiden's article shows, Edison's life was a busy one at this time, when preparations were being made for

the Paris Exposition, so that whether he was really aware of the journal is questionable. The weekly checks were signed by his bookkeeper, and most of the correspondence was actually produced by either one or the other of two secretaries. There is evidence in the correspondence, however, that Edison was keeping close watch on the editorial content. Near the latter part of September 1880, Edison complained that he had not been getting his advance copy. A letter from Michels addressed to S. L. Griffin at Menlo Park and dated September 27 says: "I will in the future duplicate Mr. Edison's early copy. I have always sent him six copies following the first early one and 25 to you for general use."

Additional evidence is found in a letter signed by Edison personally and apparently dictated by him which speaks for itself and is reproduced here in its entirety:

John Michels, Esq.
N. Y.

Dear Sir:

In the last issue of Science (Oct. 2d) I notice a great deal of space given to Weisendanger. Now I don't suppose you are aware of it but in Europe Weisendanger is looked upon as little less than an idiot and such stuff as the article referred to is nothing more nor less than a disgrace to a scientific paper. If such a thing is possible I would like to see the proofs of what is to appear in Science before the paper is published and thereby avoid as much as possible that which would be detrimental to its interests.

Very truly
T. A. Edison

The paper referred to, "An Improved Electro-motor," was an illustrated article printed in *Science*, 1880, October 2, pages 170–172, and the editor mentions that it was one of the papers read before the British Association which had met at Swansea on September 4. Aside from the Weisendanger paper, two additional pages in the same issue were given over to a summary of the British Association meeting, the remainder of the issue being made up of abstracts of papers presented at the Boston meeting of the AAAS.

Michels' defensive reply to Edison on October 6 (Fig. 1) was filed by Edison with a notation of *no answer*.

The Mr. Moses referred to was Otto Moses, one of Edison's engineers, who had furnished several columns of abstracts from physical and engineering literature in earlier issues of *Science*. These are signed either Otto Moses or O.A.M. None was printed after the issue of August 28.

Michels had been in touch with other institutions and laboratories aside from Menlo Park during all of this period. The second issue of *Science*, dated July 10, devoted approximately half a column to a plea from Spencer F. Baird, then secretary of the Smithsonian Institution, for information about James Smithson. The plea outlined what little was known of Smithson's life at that time and requested owners of letters from Smithson and his associates to contact Prof. Baird at the Smithsonian.

On October 13 Michels wrote that he had the day before seen Prof. Baird in New York and taken up with him a weekly report from the Institution. He reported to Edison that Baird was waiting to see how stable the journal was going to be. Although occasional reports from the Smithsonian Institution appeared in the later numbers, apparently the weekly report never materialized. Prof. Baird was to "consult with his chief clerk and endeavor to come to some arrangement." It was probably here that the arrangement broke down. As a matter of fact, the next paragraph in the letter of October 13 reveals a difficulty which has faced editors everywhere:

Mr. LeDuc also said he would do the same with the Agricultural Dept. if someone would call every week and collect the information and remind them.

The last paragraph of the letter of October 13 says that Michels intended to visit Washington to see members of the Smithsonian staff and other government bureaus and requests that Edison get him a pass on the railroad for the purpose. Apparently Edison never did this, because in the accounts of a few weeks later there is a modest item for a railroad ticket from New York to Washington and return.

During this period the expenses of the operation had been slowly mounting so that they now ran about $135 a week; the subscriptions to the journal had not come up to expectations, and it had not been sold on "every newsstand in the United States" or on any newsstand, so far as the accounts show. A significant letter dated January 26, 1881 appears in the files. Addressed to J. Michels, it says:

In regard to *Science* Mr. Edison thinks that there is not sufficient progress to warrant of an ultimate success—please write me your views in this matter so as I can show Mr. Edison. It is now nearly a year since it began and should show larger receipts he thinks than have been—probably it would be better to run out and see him and then you can talk more understandingly in the matter—this is merely a suggestion of mine as I think you could do better than in writing to him.

Very truly
Wm Carman

This letter was answered by Michels on February 10 but could not be located in the files. On February 12 William Carman again wrote Michels as follows:

Yours of the tenth received by Mr. Edison who has requested me to say that if you can get any party to take hold and put money in science you are at perfect liberty to do so. he is to [*sic*] busy to give it any attention.

Very truly
Wm Carman

At this time Edison was planning the Pearl Street station in New York, was training electricians to wire

Oct 6-1880
J. Michels

"SCIENCE."

Address all Communications, P. O. Box 3838, New York.

No. 229 BROADWAY, (Room 58).

New York, Oct 6th 1880

To T. A. Edison Esq
Menlo Park. N.J.

Dear Sir,

I was certainly not aware of the reputation you accord to Wiesendanger. I treated it as paper read before the British Association at its last meeting, and republished by the English Journals, and as such worth reproduction. In such a case I do not see that the Journal is answerable for his views, and it is open for any reader to expose his errors in a future number.—

Just now the Journal is well advised on all subjects except Physics, the chief assistant of Professor Barker called about three weeks ago and offered to help me in any way, but Mr Moses having kindly undertaken that department, and was then sending valuable matter, I declined his help.— Since then Mr Moses has suddenly stopped his communications, and not having answered a polite letter of mine to him, expressing my regret and trusting he would continue his contributions which I considered of great use to the Journal, I naturally thought he had no time to attend to the matter, or was tiffed on some point.— I was submitting all new papers on Physics to him, and should have done so with Wiesendangers.— I would like to know if Mr Moses is still advising the Journal on these points, and will forward papers on Physics to him as before if such is the case..

The Journal appears to give satisfaction to the Public, as I am receiving very satisfactory letters from prospectus scientific men, and am adding to the permanent annual Subscribers and making up a good list, so far this week five have been added.—

I am about to get a man to attend to the pushing this circulation, but the difficulty of obtaining the right sort of man without paying a heavy salary is very great, I am however about to send out a number of sample copies.—

The Popular Science Monthly published Bell's paper without drawings, three weeks after ours,— and the American Journal of Science is equally late; and has in the last issue published a part of ours, adding, publishing in full in "Science" Sept 12.— They will complete it in November.—

If Mr Moses is still with you and can send by return a criticism on Wiesendangers papers it will be in time for this week.—

Yours Truly
John Michels.—

FIG. 1. A letter from John Michels to Thomas Edison defending the editorial policy of *Science*, October 6, 1880.

houses, and had the thousand and one details of the installation of the first electric lighting system on his hands, and on January 31 opened a New York office at 65 Fifth Avenue. Shortly after, Michels was instructed to send his weekly accounts to the new city office which, after March 1, 1881, was in charge of the young Samuel Insull, who had by that time arrived from London to become Edison's New York secretary and office manager. After this time the correspondence is completely between Insull and Michels. It was during this period that the lease on the office space at 229 Broadway ran out, and when the rent was increased $5.00 a month, Michels requested space in the Fifth Avenue Edison office, saying that he could find no suitable office space for less than $300 a year. Edison told him, however, that there was not room to take on the *Science* operation at the Fifth Avenue address, so a room was ultimately secured in the Tribune Building, this time without a lease.

Edison had expressed some annoyance at the lack of income to *Science*, so, beginning June 11 and continuing to September 24, Robert Johnson was hired at $25 a week as business manager to sell advertising space. The accounts show that Mr. Johnson's activities brought in $50 during the period.

In 1881 the 30th meeting of the AAAS was held in Cincinnati, from August 17 to 23. Michels attended the meeting, printed in the issue of August 27 a complete list of the 182 papers read, and devoted about one-third of the issue to a paper on "The Great Primordial Force," by Henry Raymond Rogers, of Dunkirk, New York. In the following issues for the remainder of 1881 frequent use was made of the papers presented at the Association's meeting. Among the features of the Cincinnati meeting in 1881 was an apparatus exhibit at which Beck, Bausch & Lomb, Bullock, Queen and Company, and Gundlach exhibited instruments. Thus, apparatus exhibits seem to have been one of the early attractions of the annual AAAS meetings, although they did not become an official part of the program until 1925. In 1881 the exhibits were held over for the meeting of the Ohio Mechanics Association, which was scheduled several days after the AAAS meeting.

Bell did not attend the Cincinnati meeting, but Michels must have written to him in Cambridge about this time because the Edison file contains the following letter, addressed to Saml. Insull and dated August 27:

> I placed the Journal before more than a thousand persons at Cincinnati and received the highest encouragement from all quarters.
>
> Professor Alex. Graham Bell has just sent me a very handsome(ly) letter expressing his high appreciation of "Science" and stating his belief that it will take the place of "Nature." He says he will be glad to enter into any plan for its advancement by giving it his personal help and attention, if I will state my plans and state what he can do.

Bell states he wishes "Science" to be on a strong basis, and presently when people return I think we can arrange it so.

On October 25 a letter was directed to John Michels and signed by Thomas A. Edison personally. This letter says:

> I hereby give you notice that I will at the expiration of sixty (60) days from this date stop the further publication of "Science" if in my opinion there has not been in the meantime a great improvement in the valuation of the property.
>
> Unless you receive further notice from me you will please prepare to close up your accounts on that date when I will dispense with the further services of yourself and your staff.
>
> Yours truly,
> Thos A Edison

This letter was enclosed with another from Samuel Insull and a check for $329.14 (two weeks) covering the accounts to October 15. The Insull letter says in part:

> I also enclose you notice from Mr. Edison as to closing up the publication of Science.
>
> Mr. Edison feels that it is a very poor investment, see[s] no prospect of a return and therefore thinks it advisable to close the matter up before incurring a much greater loss.
>
> Yours truly,
> Saml Insull

On November 28 Michels wrote to Samuel Insull as follows:

> I received your report of Mr. Edison's decision with much regret, but as you state it is final. I will [do] my best to carry out his wishes in the most effective manner.
>
> Of course it is very difficult to get anybody to take the matter up at such a time and under the circumstances, but I shall make the attempt as it would save all explanations and settlements with subscribers, rent of offices, & ec. and prevent the reproach of the publication being a fiasco.
>
> The volume will be completed on the 31st of December. If I can get any one to take the matter up in the future on January 1st and assume all responsibilities from that date, will Mr. Edison authorize me to say that he will turn over all his interests on their doing so. I have only a month to make all arrangements so please let me know at once, as I cannot approach any one without making a proposition and this seems the only one I can make under the circumstances. There is some office furniture, back numbers of journal and electros. These would be useless to Mr. E. when the journal is stopped but would be an inducement for any one who would find capital to continue the publication.
>
> Yours truly,
> John Michels

The remainder of the correspondence relates to Edison's concern that there should be no outstanding debts after the printing of the December 31 issue. Michels assured him that all of the operations had been on a cash basis and that $100 would certainly clear up all minor bills. Michels also volunteered the information that he had approached the houses of Appleton, Harper, and

Scribner but does not detail their reaction. Mr. Shonnard is finally mentioned in the last letter as being willing to undertake the publication. Here the Edison laboratory record closes!

The issue of *Science* for December 31, 1881 contained an editorial which says in part: "Arrangements are in progress to increase the number of pages of *Science* from 12 to 16, the four extra pages being devoted to applied and practical science; in this division the most recent application of scientific principles to the arts and manufactures will find a place and novel inventions of real scientific merit will be fully described."

The issue of December 31 was Number 79. Number 80, which should have appeared on January 7, 1882, did not appear until January 14. It was still 12 pages in length and did not contain the promised description of practical discoveries and inventions. Number 81 appeared on January 21 and contained a long editorial on Standard Time, by C. A. Young, of Princeton, New Jersey, an account of the New York Academy of Science meeting on December 19, the meeting of the American Chemical Society on December 16, and that of the Microscopical Society of Illinois on December 9, together with two long reviews of Appleton books. Although there had been occasional book reviews in the magazine before this time, they had never before taken up as large a part of a single issue.

Number 82, which appeared on March 4, consisted of 12 pages, two of which were full-page maps of the Croton water shed, which presumably had been an interest of Michels for some time. Aside from the maps, three of six cuts used to illustrate an unsigned article on the contamination of the Croton water supply to New York are attributed to Michels in the legends. F. E. [R. is correct] Upton, who wrote for Volume 1, Number 1, also has in this number a theoretical paper on "Electric Conduction and Discharge."

Number 82, the last issue of the early *Science*, contains the obituary of Prof. John William Draper, professor of chemistry and physiology at New York University, who had died on January 4, 1881, at the age of 70 years; and by strange coincidence, the first issue of the new *Science*, published on February 9, 1883, and called Volume 1, Number 1, contains the obituary of Prof. Henry Draper, John Draper's son, who in the summer of 1878 organized the party that viewed the eclipse of the sun at Rawlins, Wyoming Territory, on July 29.

# Thomas A. Edison and the Naval Research Laboratory

**A. Hoyt Taylor,** *Chief Consultant for Electronics, Naval Research Laboratory, Washington, D. C.*

ON JULY 7, 1915, SECRETARY OF THE Navy Daniels wrote to Thomas A. Edison, stating that one of the most important needs of the Navy was machinery and facilities for utilizing the natural inventive genius of Americans to meet new conditions of warfare, and that the Secretary intended to establish a department of invention and development to which all ideas and suggestions from either the service or civilian inventors could be referred for determination as to whether they contained practical suggestions for the Navy to take up and perfect. The Navy, he stated, had no present means of handling inventions received from the public except to send them to the various bureaus of the Navy, which were overcrowded with routine work and could not always give them the attention they deserved. The Secretary felt that the Naval officers on sea duty were in a position to note improvements but that they had neither the time, space, ability, nor, in many cases, the natural inventive mind needed to put ideas into definite shape. The Secretary had in mind a general plan of organizing a department for the Navy which met with the ideas of Edison as set forth in an interview by Edward Marshall and published in *The New York Times*. He therefore asked Edison if he would be willing, as a service to his country, to act as chairman of such a board.

On July 13, 1915, M. R. Hutchison, personal representative of Edison, visited the Secretary in Washington and advised him that Edison had consented to head such a board. The Secretary and his aide afterward visited West Orange and discussed the salient features of this board. The Secretary then wrote to the presidents of the 11 largest engineering societies of the United States and asked them to nominate two members each, to serve on this "Naval Advisory Board," a title which was afterward changed to "Naval Consulting Board of the United States." The original members of the Naval Consulting Board were: Thomas A. Edison and M. R. Hutchison, selected by the Secretary; L. H. Baekeland and W. Whitney, by the American Chemical Society; Frank J. Sprague and B. G. Lamme, by the American Institute of Electrical Engineers; R. S. Woodward and Arthur G. Webster, by the American Mathematical Society; A. M. Hunt and Alfred Craven, by the American Society of Civil Engineers; B. M. Sellers and Hudson Maxim, by the American Aeronautic Society; Thomas Robins and Peter Cooper Hewitt, by the Inventors' Guild; Howard