



MODERN TELEGRAPHY.

SOME ERRORS

OF DATES OF EVENTS AND OF STATEMENT

IN THE

HISTORY OF TELEGRAPHY EXPOSED AND RECTIFIED.

INDEX TO THE APPENDIX.

	PAGE
DOCUMENT I.—The Deposition of J. Francis Fisher, Esq., Counsellor of Law, Philadelphia. [Mr. Fisher is a gentleman of the highest social position and character, who, in 1832, after completing a course of studies and travels in various parts of Europe, returned to the United States in the same ship, the <i>Sully</i> , a fellow passenger with Professor Morse.].....	7
Doc. II.—The Deposition of Sidney E. Morse, Esq., and.....	8
Doc. III.—The Deposition of Richard C. Morse, Esq., and	9
Doc. IV.—The Deposition of Sarah Louisa Morse : these three being the brothers and sister-in-law of Professor Morse. [All the Depositions are taken from the Records of the Circuit Court of the United States, Massachusetts District.]	11
Doc. V.—Letter of Dr. James Bliss. [Dr. Bliss, now deceased, was one of the most upright and benevolent, as well as skilful physicians of New York. He was the family physician of the Morse brothers.].....	11
Doc. VI.—The Deposition of Professor Leonard D. Gale, from the Records of the Supreme Court of the United States. [Professor Gale is distinguished as a scientific man in the departments of Chemistry, Mineralogy, and Geology ; and after resigning his Chair in the New York City University, partly on account of ill health, removed to the South, and held the same position in the University of Mississippi, until the employment of his talents and acquirements was called for in the Patent Office Bureau at Washington, where he was for many years one of the chief Examiners.].....	13
Doc. VII.—The Depositions of Daniel Huntington, Esq., and Osbert Loomis, Esq., from the Records of the Circuit Court of the United States Eighth Circuit District, Ohio. Messrs. Huntington and Loomis were the pupils of Professor Morse in 1835. The former is now the distinguished President of the National Academy of Design in New York, and the latter a well-known and honoured painter in Havanna. Were their many fellow pupils living, they could and doubtless would testify to the same facts.]	20
Doc. VIII.—Extract from the Preface of Mr. Huntington's Catalogue of 1850	23
Doc. IX.—Remarks of the Honourable Hamilton Fish, late Governor of the State of New York, and a Senator of New York, in the United States Senate, made at the Banquet given to Professor Morse in Paris, August 17, 1858	24
Doc. X.—Remarks of the Rev. Mr. Seely, Pastor of the American Chapel in Paris, on the same occasion.....	24
Doc. XI.—Letter of Rear-Admiral Shubrick, of the United States Navy. [Admiral Shubrick is an accomplished and brave officer of the United States Navy, and was the intimate friend of Professor Morse's esteemed and lamented friend, the celebrated Fenimore Cooper, of world-wide celebrity. The Admiral and Mr. Cooper were both frequent visitors to the studio of Professor Morse, and believers in the future success of the Telegraph, at the time when most persons were sceptical.]	26

	PAGE
Doc. XII.—Extracts from Professor James Renwick's Deposition	27
Doc. XIII.—Extracts from Dr. J. R. Chilton's testimony before the Supreme Court.....	29
Doc. XIV.—Extracts from Robert Rankin's, Esq., testimony before the same Court.....	29
Doc. XV.—Professor Silliman's Deposition	29
Doc. XVI.—President Day's Deposition	30
Doc. XVII.—Mrs. Dana's Deposition	31
Doc. XVIII.—President Tappan's recollections, &c.....	33
Doc. XIX.—Extract from the <i>Caveat</i> of September and October of 1837	37
Doc. XX.—Deposition of Francis Alger.....	37

APPENDIX.

THAT the first *recording telegraph* (in fact the *first real telegraph*) was invented by Professor S. F. B. Morse, while crossing the Ocean from Havre to New York, in 1832; that the *signs* specially proposed and adapted to *telegraphic recording* were, in principle, invented by him, at that date, before landing from the ship; that a quantity of the *type* embodying these *signs* were cast before the close of the year 1832; and that a *telegraphic instrument* was constructed in conformity with his designs in 1835, which marked or recorded these signs (by the power of an *electro-magnet*, influenced at a distance by *voltatic electricity*) upon a *ribbon of paper*, moved and regulated by *clock machinery*, and through a *single circuit* of electrical conductors, are facts to which there is such ample testimony that, were it not that many historical notices of the telegraph which have been published either make no mention of these essential facts, or if mentioned, are even questioned, or are slurred over as of little importance, it would be wholly unnecessary to repeat the evidence by which they are substantiated. But, certainly, no true history of the telegraph can be written by any author who ignores these primitive facts and refuses to them their proper place in his history.

It is true the evidence here adduced is, for the most part, not new, but exists buried in voluminous documents, in the archives of courts of law, and some are in publications of circumscribed or ephemeral circulation. Hence, it has been thought advisable to collate and to publish some of the most important testimony to the existence and operation of the earliest telegraph, at least sufficient in character as well as in quantity to verify the fundamental facts of the history of modern telegraphy.

I have accordingly put into this Appendix certain documents which contain important testimony bearing upon the question of inventorship of the first telegraph. They will be referred to also in the exposure of the groundless claim of Dr. C. T. Jackson, who, having been a fellow-passenger with me on the voyage in which I devised my telegraph, was tempted to make the bold and reckless claim to having suggested to me the invention, and even to being himself the inventor. This groundless claim of his was eagerly seized upon by opposing counsel, in the several Telegraph Suits, to serve the purpose of those desirous of invalidating my Letters Patent. His claim was promptly met and refuted by me in the United States, and there, long since, put to rest; but a *duplicate* of his claim, sent by him at the same time to the Academy of Sciences, and printed in the *comptes rendus* of March, 1839 (unknown to me for many years), has remained to this day as the basis of the disparaging remarks made in many of the histories of the telegraph. Hence I have deemed it proper to give a full and complete exposure of this atrocious imposition.

SAMUEL F. B. MORSE.

DOCUMENT I.

Deposition of J. FRANCIS FISHER, Esq., Counsellor at Law, of Philadelphia. United States Circuit Court, District of Massachusetts. In Equity, etc.

I, J. Francis Fisher, of the city of Philadelphia, State of Pennsylvania, on oath depose: That I am a resident of Philadelphia; am a Counsellor at Law; that I am acquainted personally with Samuel F. B. Morse, of the State of New York; that, in the fall of the year 1832, I returned from Europe as a passenger with the said Morse, in the ship *Sully*, Captain Pell, master; that during the said voyage the subject of an electric telegraph was one of frequent conversation; that the said Morse was most constant in pursuing, and *alone* the one who seemed disposed to reduce it to a practical test; and I recollect that for this purpose he devised *a system of signs for letters*, to be indicated and marked by a quick succession of *strokes*, or shocks of the galvanic current; and I am sure of the fact that it was deemed by said Morse perfectly competent to effect the result stated; I did not suppose that any other person on board the ship claimed any merit in the invention, or was in fact interested to pursue it to maturity, as said Morse then seemed to be; nor have I been able since that time to recall any fact or circumstance to justify the claim of any person, other than the said Morse, to the invention; besides, the means he devised, consisting of a *system of signs*, I recollect that *the object was to be effected by a single wire*. I further testify that, in 1837, said Morse addressed me a letter on the subject of the said invention, to which I answered him under date of Sept. 19th, 1837.

(Signed) J. FRANCIS FISHER.

J. Francis Fisher, being duly sworn, deposes and says, that the contents of the foregoing deposition are true, to the best of his knowledge and belief.

(Signed) CHARLES F. HEAZLITT,
United States Commissioner.

DOCUMENT II.

SIDNEY E. MORSE'S *Affidavit*.

City of London, to wit: I, Sidney E. Morse, of the city and county, and State of New York, at present residing in London, do solemnly, sincerely, and truly swear—

1. That I am the author of the article in the *New York Observer* of April 15th, 1837, headed "Newly-invented Telegraph."

2. That, by the "gentleman of our acquaintance," spoken of in that article, I intended my brother Saml. F. B. Morse, then of New York city, and now of Poughkeepsie, in the State of New York.

3. That, although I gave a general plan of a telegraph of "twenty-four wires, each representing a letter of the alphabet," this was my own idea, and not my brother's, for I was well acquainted at the time with his plan of using but a *single circuit* of wire, and of using a *conventional system of signs*, composed of dots and spaces for numerals.

4. That my brother communicated to me his plan of an electrical telegraph in November, 1832, while I was walking with him from the ship *Sully* (in which he had just arrived from Havre, and which was then lying at the Rector Street Wharf, in the city of New York) to the house of my brother, Richard C. Morse, in the eastern part of the city, where my brother, the said Saml. F. B. Morse, remained for some time after his arrival. He was full of the subject of the telegraph during the walk from the ship, and for some days afterwards could scarcely speak about anything else. He expressed himself anxious to make apparatus and try experiments, for which he had had no materials or facilities on ship board. In the course of a *few days* after his arrival he made a kind of cogged or saw-toothed type, the object of which, I understood, was to regulate the interruptions of the electric current, so as to enable him to *make dots*, and *regulate the length of marks or spaces* on the paper upon which the information transmitted by his telegraph was to be recorded. He proposed at that time a *single circuit* of wire, and only a *single circuit*, and letters, words, and phrases were to be indicated by numerals, and these numerals were to be indicated by dots and other marks and spaces on paper. It seemed to me that, as wire was cheap, it would be better to have twenty-four wires, each wire representing a letter of the alphabet, but my brother always insisted upon the superior advantages of his *single circuit*. From the time that he communicated to me his plan of electrical telegraphs, in November, 1832, I was deeply impressed with the feasibility and vast importance of this mode of transmitting information,

and often made it the subject of conversation with my friends, but as the whole matter of electric telegraphs was then entirely new, I generally spoke of an electric telegraph of twenty-four wires because it was easy to make everybody comprehend the operation of such a telegraph, while it required some effort of attention and imagination to comprehend the operation of my brother's, and because too I thought that there were important advantages, constituting on the whole a superiority, in the use of twenty-four wires. In this last opinion, however, I was always opposed by my brother, the inventor of the telegraph, whose plan from the beginning was only a *single circuit*.

Sworn before me in the Consulate of the United States of America, at London, this 20th day of April, A.D. 1845.

(Signed) SIDNEY E. MORSE.

(Signed) THOS. ASPINWALL,

Consul of the United States.

DOCUMENT III.

*Deposition of R. C. MORSE. United States Circuit Court,
District of Massachusetts. In Equity.*

I, Richard C. Morse, of the city of New York, testify and say, that I am an editor of the *New York Observer*; am a brother of Sam. F. B. Morse; and on the 15th of November, 1832, in company with Sidney E. Morse, another brother, went to the North River, where the packet ship *Sully*, Captain William Pell, master, had just moored on her arrival from Havre, France, having on board the said Samuel, then returning home from a three years' residence in Europe. Hardly had the usual greetings passed between us three brothers, and while on our way to my house, *the said Samuel informed us that he had made, during his voyage, an important invention, which had occupied almost all his attention on ship board—one that would astonish the world, and of the success of which he was perfectly sanguine; that this invention was a means of communicating intelligence by electricity, so that a message could be written down in a permanent manner, by characters, at a distance from the writer.* He, the said Samuel, took from his pocket and showed from his sketch book, in which he had drawn them, the kind of characters he proposed to use. These characters were dots and spaces, representing the ten digits or numerals; and in the book were sketched *other parts of his electro-magnetic machinery, and apparatus, theretofore, actually drawn out in the said sketch book.*

My said brother, having taken up his residence at my house, there began immediately the construction of his telegraph. He used a mould, in which he cast the type for the characters, or dots and spaces, which he had invented, and which he had shown me in his said sketch book. (The mould is then described.) *These type* were thin slips of type metal, about the thickness of a dollar, having cogs or teeth, arranged in a particular manner. The mould was used at my house aforesaid by said Samuel *previous to January, 1833*. He melted his type metal at my front parlor grate, and cast a considerable number of said type of each of the numerals; and one of my chairs, and a piece of drugget before the grate, were injured by the dropping of the melted lead upon them in his process of casting said type. The plan and operation of said invention consisted in imprinting or marking signs of intelligence at a distance.

In the cross-examining of Richard C. Morse, the Question 3 was put to him: "State when, to your knowledge, said Samuel F. B. Morse cast the first of what you call *types*?"

Answer: "I saw my brother cast the *type* above spoken of at my house, *before the 1st of January, 1833*, previous indeed to a lameness which confined him within doors for some two or three weeks. The type which I had seen him cast at my house in 1832, or some like them, were used by my brother to break and close the circuit of electricity. Not being particularly retentive of the mechanical details, I cannot describe minutely the apparatus. I remember, however, that the conductors were copper wire, extended back and forth in the long room of the University; and afterwards I saw wire upon two reels; galvanic electricity was used, and the result was the marking on paper of the dots and spaces, which I had seen planned in 1832, in my brother's sketch book." And again in answer to Question 6: "Do you know of your own knowledge that Samuel F. B. Morse, as early as 1837, had constructed an instrument for telegraphing? If yea, state the means of such knowledge; and if he had an instrument in use then; and from your own present memory if you can describe what it consisted of, and what it did, or what signs it made; please do so particularly, and state where it was," etc.

Answer to 6th.—He says: "Yes, I saw him *cast the type* in 1832, I saw him *use the type* in 1837, and *produce the result* which he proposed in 1832, namely, *dots and spaces*. It was at the New York City University. The machinery consisted of clock-work, moving forward paper at a regular rate, dots and spaces were marked on this paper by a style or pencil, actuated by the temporary magnetizing and demagnetizing of a soft-iron magnet, according to the breaking and closing of a galvanic circuit. The signs or characters thus marked re-

presented by convention, numbers, letters, words, and sentences."

(Signed) RICHARD C. MORSE.

Sworn before me, this 15th day of May, 1850.

(Signed) CHARLES NEWTON,

United States Commissioner for the Southern District of New York.

DOCUMENT IV.

Mrs. S. L. MORSE's Deposition. Extract from the Deposition of Mrs. SARAH LOUISA MORSE, in the Circuit Court of U.S., Eastern District, Pennsylvania.

I well remember the arrival of my brother-in-law, Saml. F. B. Morse, from France, in November, 1832, and he resided several months thereafter at my house and in my family; and I remember he was engaged immediately after his said return in *casting with lead, or other metal, certain pieces which he called type*, and which he represented as designed to be used in some way, not then comprehended by me, for an electric or galvanic telegraph, which, he, said Samuel, had invented on board the ship during his passage home. He melted the metal which he used over the fire in the grate of my front parlour; and I distinctly recollect that, in his operation of casting the type, he accidentally spilled some of the heated metal upon the drugget or loose carpeting before the fire-place, and also upon a flag-bottomed chair, upon which his mould was placed. And I distinctly remember having seen the mould * used by him at that time for casting said type. This plan was for imprinting signs at a distance for communicating intelligence.

He described his invention at my house in the autumn of 1832, and it was the frequent subject of conversation in the family.

DOCUMENT V.

Letter of Dr. JAMES BLISS.

[In July, 1848, I published a card in the *New York Observer*, requesting any person to whom I had imparted facts in rela-

* A portion of this mould, made in 1832, is preserved in the Cabinet of the Historical Society of New York.

tion to the electric telegraph from 1832 to 1837 to communicate the same to me with as little delay as possible. In consequence of this request I received the following letter from Dr. James C. Bliss, a well-known distinguished physician and philanthropist (since deceased), who was the family physician of my brother, to whose house I went on my landing from the ship, in November, 1832.]

New York, July 3, 1848.

Saml. F. B. Morse, Esq.,

Dear Sir—I have just noticed in the *New York Observer* of the 1st inst. a card requesting persons to whom you had imparted facts in relation to the electric telegraph, from the year 1832 to 1837, to communicate the same to you with as little delay as possible.

I have repeatedly mentioned to my friends that you informed me immediately after your return from Europe, in 1832, of your invention, and that you were at that time engaged in experimenting and maturing the conception which you have subsequently so brilliantly and successfully completed. I have supposed I was probably the first person to whom you mentioned the project of the electric telegraph after your arrival, with the exception of your brothers Sidney E. Morse and Richard C. Morse. I have supposed this might be so from the fact of your being confined with a cutaneous affection (boils) of your lower limbs, which prevented your walking out, and which, I think, occurred immediately after you landed. On that occasion I was your medical attendant, and it was during this period that you spoke to me repeatedly of the invention you had conceived and was then engaged in perfecting, and in relation to which you entertained the belief that intelligence could be instantaneously communicated thousands of miles. In one instance your brother, Sidney E. Morse, was present, and took part in the conversation, and seemed to concur in the probable success of the invention. There was one other circumstance that I learned at one of my visits, which is distinctly impressed upon my recollection, and that is that you had severely burned your finger in preparing or casting metallic types which you were endeavouring to make available in your apparatus.

In recurring to my books to ascertain the precise period of my attendance on you in which those conversations were had, I find it to have been from the 4th to the 13th of December, 1832 (both dates included).

It may be proper for me to remark in this connection that although I was to some extent acquainted with the agent which you have in such a wonderful manner brought under control, and made subservient to the high interests and well-being of

mankind, yet, when your scheme was first made known to me, I looked upon it with the same distrust as the friends of Fulton on his project of applying steam to navigation.

In conclusion, it gives me great pleasure to testify to you (after a long interruption of our intimacy) my great regard for you personally, my high respect for your character, and the esteem I entertain for you as a benefactor of the human race.

With these sentiments,

I am, etc.,

(Signed)

JAMES C. BLISS.

DOCUMENT VI.

Deposition of Prof. LEONARD D. GALE, from the Records of the United States Supreme Court.

I, Leonard D. Gale, of Washington city, in the district of Columbia, on oath depose and say that in the month of January, in the year one thousand eight hundred and thirty-six (1836), I was a colleague professor in the University of the City of New York with Prof. Samuel F. B. Morse, who had rooms in the University building on Washington Square in said city. That during the said month of January, of the year aforesaid, the said Prof. Morse invited me into his private room in the said University, where I saw for the first time certain apparatus constituting his electro-magnetic telegraph.

The invention at that time consisted of the following pieces of apparatus:

First. A train of clock wheels, being part of a common wooden clock, adapted by the said Morse to regulate the motion of a strip of paper, or ribbon formed of strips of paper pasted together, end to end, about one and a half inches wide.

Second. Three cylinders or drums of wood arranged as in the accompanying drawings of the apparatus [see pages 14 and 15], which drawings represent the apparatus essentially as then constructed, to wit: A, B, C, are the cylinders; A is the paper cylinder from which the paper is unrolled, passing over cylinder B to cylinder C, which is connected with and moved by the clock machinery of D, which is the wooden clock of which I spoke, and which was moved by the weight E. A wooden pendulum F, of the shape delineated, was suspended over the centre of cylinder B having its pivot at *f*. This pendulum had its motion at right angles or across the paper, when the paper was in motion. In the lower part of the pendulum,

through two cross pieces, was fixed a pencil case, in which a pencil moved easily up and down, and was kept in constant contact with the paper by a light weight *g*. At *h* was a projecting shelf from the frame XX upon which shelf was an electro-magnet fixed, while the armature to be attracted by

Sheet.I.

FIG.1.

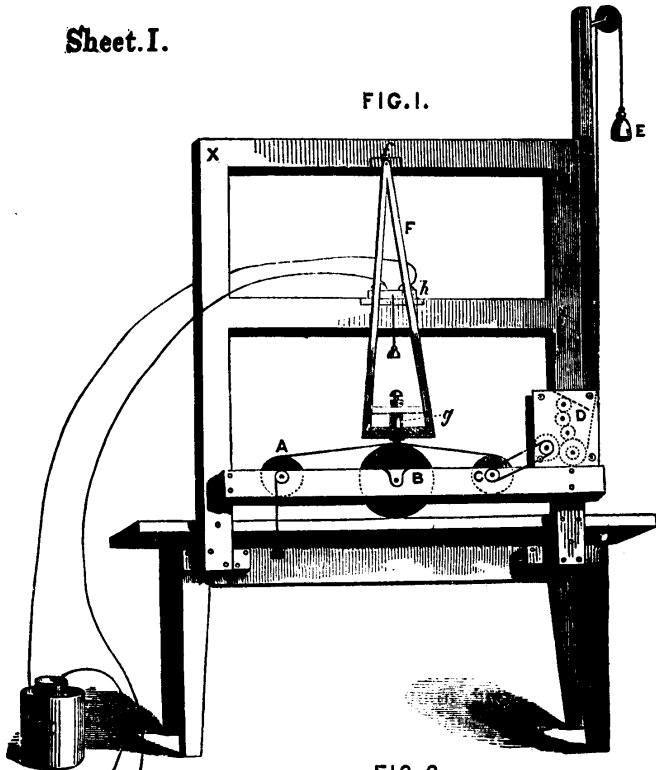
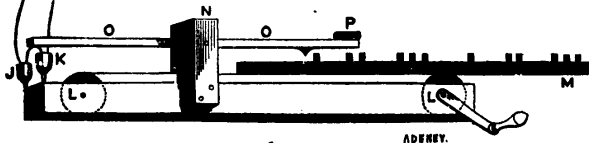
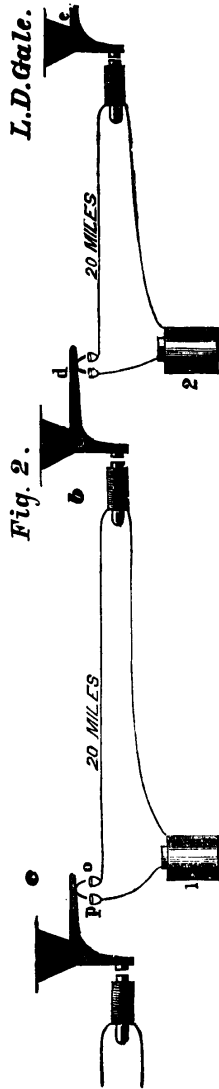
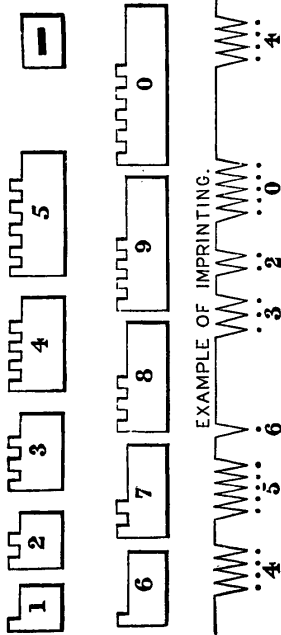


FIG. 2.



Sheet. II.

Fig. 1.
TYPE.



D. HUNTINGTON and O. B. LOOMIS. Nov. 23, 1849.

the said magnet was fixed upon the pendulum. The wires or conductors from the helices of the magnet passed, one to one pole of a single-pair galvanic battery *I*, while the other wire passed to a cup of mercury *k*, at the portrule. The other pole of the battery was connected by a wire to the other cup of mercury *l*.

Third. The portrule, represented below the table. (Sheet I.) This portrule was a rude frame, containing two cylinders LL about two inches diameter and two inches long; one of them was turned by a crank, and they were connected by a band of green worsted binding about one and a half inches in diameter; M was the rule or composing-stick; it was made by two small thin rules about two feet long, side by side, but separated about the eighth of an inch from each other, forming a sort of trough in which were set up the type hereafter to be described, the cogs of which type are seen projecting on the top of the rule M. At N two standards were raised from the sides of the long frame of the portrule and united at the top, in which standards was suspended a lever OO. At one end of this lever was a fork of copper wire, to be plunged, when the lever was depressed into the two cups of mercury *k* and *l*; the other end of the lever bore a weight to keep that end down, and beneath the weight was a tooth like those upon the keys of a hand organ.

Fourth. There was a series of pieces of thin type metal, which Prof. Morse called type, and which he showed me also in drawings in a sketch book, which drawings he informed me he had made on board the ship. These are accurately represented in the subjoined drawing. They consisted of eleven pieces, having from one (1) to five (5) cogs each, except one which was used as a space; the first five numbers consisted of cogs from 1 to 5 respectively with a *short* space after; the second five numbers consisted also of cogs from 1 to 5 respectively, with a *long* space after, a space double the length of the first.

The operation of the apparatus when used was this: Suppose that the numbers 456, 320, and 4 were to be the numbers desired to be sent, the type 4, 5, 6, were set up in the rule M; after which a space was put to separate the whole number from the next, and so on. The rule M was then placed on the band of the portrule, and by turning the crank the rule was sent gradually forward; the cogs of the type operating the lever OO to break and close the circuit of the battery J. When the circuit was closed the magnet *h* attracted the pendulum F causing a movement of the pencil *g* of about a fourth of an inch. The pencil being in contact with the paper, if the paper moved in the direction of the arrow, or *vice versa*, a continuous straight line was marked upon the paper,

while the pendulum was stationary either at one or the other limit of its motion, but when attracted by the magnet from one limit to the other, and suddenly released by the cessation of the magnetic force, it marked a V shaped point, as in the "example of imprinting" in the drawing, and the successive breakings and closings of the circuit by the cogs of the type caused the points to be impressed or marked upon the moving paper in the manner there shown. By reading the extremities of the V shaped point or points the figures intended were readily recognised.

I further depose and say that, during the year eighteen hundred and thirty-six (1836) and beginning of the year eighteen hundred and thirty-seven (1837), the studies of Prof. Morse on his telegraph I found much interrupted by his attention to his professional duties, so that for several months the instruments remained as they have been above described. I understood that want of pecuniary means prevented Prof. Morse from procuring to be made such mechanical improvements, and such substantial workmanship, as would make the operation of his invention more exact.

I further depose and say that, in the months of March and April, eighteen hundred and thirty-seven (1837), the announcement of an extraordinary telegraph on the visual plan (as it afterwards proved to be), the invention of two French gentlemen of the names of Gouon and Servell, was going the rounds of the papers. From its wonderful and very pompous, as well as mysterious pretensions, it was supposed that it could be no other than an electric telegraph; and the thought occurred to me, as well as to Prof. Morse and some others of his friends, that the invention of his electro-magnetic telegraph had some how become known, and was the origin of the new telegraph thus conspicuously announced. This announcement at once aroused Prof. Morse to renewed exertions to bring the new invention creditably before the public, and to consent to a public announcement of the existence of his invention. This was done in the *New York Observer* of April 15, 1837. From April to September, 1837, Prof. Morse and myself were engaged together in the work of preparing magnets, winding wire, constructing batteries, etc., in the University, for an experiment on a larger but still very limited scale, in the little leisure that each had to spare, and being at the same time much cramped for funds.

The labors of Prof. Morse at this period were mostly directed to modifications of his instruments for marking, contriving the best modes of marking, varying the pencil, the pen, using plumbago, and ink, and varying also the form of the paper, from a slip of paper to a sheet.

The latter part of August, 1837, the operation of the in-

struments was shown to numerous visitors at the University. It was early a question between Prof. Morse and myself, where was the limit of the magnetic power to move a lever? I expressed a doubt whether a lever could be moved by this power at a distance of twenty (20) miles, and my settled conviction was that it could not be done with sufficient force to mark characters on paper at 100 miles distance. To this Prof. Morse was accustomed to reply, "*If I can succeed in working a magnet ten miles, I can go round the globe.*" The chief anxiety, at this stage of the invention, was to ascertain the utmost limits of distance at which he (Morse) could work or move a lever by magnetic power. He often said to me, "*It matters not how delicate the movement may be, if I can obtain it at all, it is all I want.*" Prof. Morse often referred to the number of stations which might be required, and which, he observed, would add to the complication and expense. The said Morse always expressed his confidence of success in propagating magnetic power through any distance of electric conductors which circumstances might render desirable. This plan was thus often explained to me: "Suppose," said Prof. Morse, "that in experimenting on twenty miles of wire we should find that the power of magnetism is so feeble that it will but move a lever with certainty a hair's breadth, that would be insufficient, it may be, to write or print, yet it would be sufficient to close and break another or a second circuit twenty miles further, and this second circuit could be made, in the same manner, to break and close a third circuit twenty miles further; and so on around the globe."

This general statement of the means to be resorted to, now embraced in what is called the *Receiving magnet* (relais), to render practical writing or printing by telegraph, through long distances, was shown to me more in detail early in the spring of the year (1837) one thousand eight hundred and thirty-seven, and I am enabled to approximate the date very nearly from an accident that occurred to me from falling on the ice formed of late snow in the spring of that year. The accident happened on the occasion of removing to Prof. Morse's rooms in the New York University some pieces of apparatus to prepare a temporary *Receiving magnet*.

The apparatus was arranged on a plan substantially as indicated in the drawings on Sheet II., accompanying this affidavit. *A* is a battery at one terminus of a line of conductors representing 20 miles in length, from one pole of which the conductor proceeds to the helix of an electro-magnet at the other terminus (the helix forming part of the conductor), from thence it returns to the battery end, terminating in a mercury cup, *o*. From the contiguous mercury cup, *p*, a wire proceeds to the other pole of the battery; when the fork of the lever *c* unites

the two cups of mercury the circuit is complete, and the magnet *b* is charged, and attracts the armature of the lever *d*, which connects the circuit of battery 2 in the same manner, which again operates in turn the lever *e*, twenty miles further, and so on.

This I depose and say was the plan then and there revealed and shown to me by the said Prof. Morse, and which, so far as I know, has constituted an essential part of his electro-magnetic telegraph, from that date to the present time.

It was on Saturday, the 2nd day of Sept., 1837, that Professor Daubeny, of the English Oxford University, being on a visit to this country, was invited with a few friends to see the operation of the telegraph in its then rude form in the cabinet of the New York University, where it then had been put up with a circuit of 1,700 feet of copper wire stretched back and forth in that long room. I well remember that Prof. Daubeny, Professor Torrey, and Mr. Alfred Vail were present, among others. This exhibition of the telegraph, although of very rude and imperfectly constructed machinery, demonstrated to all present the practicability of the invention, and it resulted in enlisting the means, the skill, and the zeal of Mr. Alfred Vail, who, early the next week called at the rooms and had a more perfect explanation from Prof. Morse of the character of the invention. The doubt to be dispelled in Mr. Vail's mind, as he then stated, and has since frequently stated, was whether the power by magnetism could be propelled to such a distance as to be practically effective.

This doubt was dissipated in a few moments conversation with Prof. Morse, and I have ever been under the full conviction that it was the means then disclosed by Prof. Morse to Mr. Vail, to wit, the plan of *repeating the power* of magnetism at any distance required, which I have stated, that induced Mr. Alfred Vail, and his brother Mr. George Vail, at once to interest themselves in the invention, and to furnish Prof. Morse with the means, material, and labor, for an experiment on a larger scale.

From this time commenced the operations at the iron works at Speedwell, near Morristown, New Jersey, where was made the instrument which showed to Congress in the commencement of the year 1838 the operation of the electro-magnetic telegraph of Prof. Morse.

LEONARD D. GALE.

City of Washington. District of Columbia (Sct.) On the 1st day of April, 1848, before the subscriber, Mayor of the city of Washington, personally appeared before me Leonard D. Gale, and signed and made oath to the preceding deposition, and to the accuracy of the annexed illustrative diagrams.

Witness my hand and the seal of the corporation of Washington, the day and year above written.

Attest : C. H. WILTBERGER, Register.

W. W. SEATON, Mayor.

[In regard to the facts to which Dr. Gale deposed, he was subjected to a rigid cross-examination by opposing counsel. A question asked and answered by him to the court is here recorded which in certain exigencies may be of importance. In complainant's evidence, *French v. Rogers*, Question 7, is: "Could said Morse successfully operate his said telegraph prior to your communicating to him scientific intelligence?" Answer: "Said Morse could have successfully operated his telegraph, and did so operate it, prior to my communicating to him scientific intelligence." Dr. Gale's introduction to the telegraph was in January, 1836.]

DOCUMENT VII.

Depositions of DANIEL HUNTINGTON, Esq., and OSBERT B. LOOMIS, Esq., from the records of the Circuit Court of the United States; Eight Circuit District, Ohio.

I, Daniel Huntington, one of said deponents, depose and say as follows: I am a resident of the city of New York and am by profession an historical and portrait painter. I studied my profession with Professor Samuel F. B. Morse, and was his pupil from the month of May, 1835, to the 1st of May, 1836, occupying rooms with him first in Greenwich Lane and afterwards at the New York City University, where he removed, early in the autumn of 1835, into his newly prepared rooms in that building on Washington Square. At the time Professor Morse removed into his new rooms, which were in the third story front, of the North wing, that part of the building was not finished, the tower rooms particularly, and the stairway into the third story was unfinished. While Professor Morse was in Greenwich Lane he seemed particularly impatient to get into his new rooms in order to put into operation his plan for an electric telegraph, allusions to which he occasionally made.

He had no sooner removed into the rooms in the University than he constructed an instrument which showed how he intended marking characters for letters at a distance, I distinctly remember the general appearance of said instrument and the

kind of characters which it marked. The drawing annexed recalls to my mind as a familiar acquaintance the appearance of said instrument. I have seen a model of said rude instrument and examined its various parts and mode of operation; and I can now state that the drawing hereunto annexed and upon which I have written my name, and the date of the taking of this deposition, correctly delineates the said instrument. The following is a description of said instrument seen by me and the mode of operating the same, to wit: * XX is a portion of a stretching frame for canvass erected and nailed against the side of a table to serve as the support of the machinery. A, B, and C are wooden drums or cylinders about two and a half inches wide; A is the paper cylinder upon which a slip of paper about one inch wide is wound; C is a cylinder connected with clock-work and upon which the strip of paper from A is rolled slowly and regularly, passing over and in contact with B; *h* is a shelf or projection from the cross-piece of the frame upon which rests the electro-magnet; D is a wooden clock with its train of wheels only, having a band passing from the second wheel in the train to the drum C; E is the weight moving the clock-work; F is an A shaped pendulum constructed of wooden rules, having its suspension point at *f* and two cross pieces at the bottom for the purpose of sustaining the pencil and pencil-case *g*, the point of the pencil being kept in contact, by a small weight, with the surface of the strip of paper as it passes over B. Upon the pendulum at *h*, directly opposite and near to the poles of the electro-magnet, is attached an armature of soft iron. Beneath the table is an instrument called at that time the portrule; LL are two drums or cylinders, upon one of which is a hand crank, and having a worsted endless band about one and a half inches in diameter passing over them; M is a rule or composing stick for setting up the cogged type for said Morse's telegraphic instrument. This rule was a narrow trough made by two thin rules so that the body of the type should be within the rules, and the cogs projecting above it as in the drawing. On the bottom of the rule are small points to catch in the endless band; OO is a light lever having, beneath it a tooth and above it a weight, P, at one end, and at the other a fork of copper, whose ends are just above J and K, two small cups of mercury. The wire of the conductor which makes part of the helix or coils of the electro-magnet is prolonged and one extremity is affixed to one pole of a galvanic battery I, while the other enters the mercury cup K. A wire then connects the other

* As the drawing illustrating Professor Gale's deposition is essentially like the one appended to Mr. Huntington's, it was not thought necessary to duplicate the drawing.

pole of the battery I with the other mercury cup J. The operation of this machinery was thus: When the clock was set in motion, the paper on the drum A was gradually and regularly drawn from A over the drum B, and beneath the point of the pencil *g*, which, by a small weight, is kept in constant contact with the surface of the paper, so that while the pendulum F is stationary a continuous unvaried straight line would be drawn upon the paper, the circuit of conductors connected with battery I is broken only at the cups of mercury J and K. Let now the crank L be turned, the rule M containing the type will move forward, the first cog will lift the lever and bring the fork at the other end into the two cups, thus closing the circuit; the electricity from the battery now circulates through the helices of the electro-magnet *h* which becomes charged and attracts the armature attached to the pendulum F, drawing the pencil at right angles to the continuous lines, that is, marking upon the paper. After the first cog of the type has passed and momentarily lifted the lever, the weight P depresses the tooth on the lever into the space between the first and second cogs and by lifting out the fork from the mercury cup breaks the circuit of conductors; the current of electricity from the battery consequently ceases, the electro-magnet gives up its magnetism, no longer attracts the armature, and a small weight at that time (for which a spring has now been substituted) brings back the pendulum and the pencil to their original position. The line upon the paper is thus varied according to time at pleasure, the variations have the following appearance in representing the numbers 456,320,4 (see sheet II); and these markings were the results upon the paper of the operation of said Morse's telegraph as then constructed. The points only of the V shaped signs were to be counted in the reading. The dots and spaces in the present system of Morse's electric telegraph produce the same results, and the two instruments are in principle the same. I am quite sure that I saw said instrument in operation some months previous to the time of my leaving Professor Morse. On the 15th day of November, 1835, I took a room at the University by myself, which I hired, and my recollection is that I saw that instrument in operation at or about the time I took that room. I cannot state the precise date.

(Signed) DANIEL HUNTINGTON.

Sworn and subscribed this 23rd day of November, 1849, before me,

C. S. WOODHULL,
Mayor of the city of New York.

Deposition of OSBERT B. LOOMIS, Esq.

Osbert B. Loomis deposes as follows: I reside at Havanah, Cuba; am thirty-six years of age; am by profession a portrait painter; I studied my profession with Professor Samuel F. B. Morse, then of the city of New York, resident near Poughkeepsie, New York. I commenced my studies with said Morse about the 1st of October, A.D. 1835, and remained with him until some time in June, 1836. I was with him at the time when he removed from Greenwich Lane to the University buildings in the city of New York, which was in the fall of 1835. Soon after said Morse had removed to the University buildings I observed an apparatus in his room of which the annexed drawing seems a good representation. I believe that I must have seen said apparatus constructed some time in November, 1835, very soon after said Morse removed to the University. The drawing hereunto annexed, and upon which I have written my name and the date of the taking of this deposition, according to my recollection, delineates the apparatus I then saw in Morse's rooms. I have read the preceding deposition of Mr. Daniel Huntington. My recollection of the construction of said apparatus is not sufficiently vivid to enable me to enter into all the details of its construction, while it appears to me substantially correct in said Huntington's deposition. The said Huntington was also a pupil with said Morse at that time. I recollect that said Huntington occupied a room by himself shortly after the removal to the University building, and that while he was there I saw said apparatus, probably at or about the time stated in said Huntington's deposition. Although I cannot state the precise date when I saw said apparatus, I know it was some time before the great fire, on December the 16th, 1835.

OSBERT. B. LOOMIS.

Sworn and subscribed before me this 23rd day of November, 1849.

C. S. WOODHULL,

Mayor of the city of New York.

DOCUMENT VIII.

Extract from Preface of D. HUNTINGTON'S Catalogue.

[In 1850 Daniel Huntington, Esq., made an exhibition of his paintings at the request of some of the most distinguished

friends of Art in New York. In the preface of his catalogue he has this allusion to his acquaintance with the telegraph.]

“Of the five pupils who, in 1835, were pursuing their studies in Art in the studio of Prof. Morse (then presiding over the National Academy of Design) two only are living, though many afterwards enjoyed those advantages. Prof. Morse was then in the daily practice of painting, though his mind was much absorbed with those philosophic experiments which have since resulted in the *Magnetic Telegraph*. Soon after moving from Greenwich Lane to his chambers in the University, he constructed a *rude instrument*, the basis of the telegraphic system now in use, contrived indeed upon the same principles in all respects, and the operation of this *rude machine* I well remember being called in by our master to witness.”

[The general fact of the existence of the telegraph in 1835, and in a condition to operate, is here clearly, though incidentally announced.]

DOCUMENT IX.

Remarks of Ex-GOVERNOR HAMILTON FISH; in Paris.

[On the 17th of August, 1858, a complimentary banquet was given to me in Paris at the “Trois Frères-Provençaux,” by the Americans in Paris, to the number of eighty, presided over by Col. John S. Preston, of South Carolina, supported by Hon. Ex-Governor Fish, as Vice-President, at which banquet were present also, His Excellency John Y. Mason, the American Minister to France, and His Excellency J. R. Chandler, the American Minister to Naples; and also the Minister of the American Chapel in Paris, the Rev. Mr. Seely. Each of these gentlemen, with several others, made a speech on the occasion. I quote from two of them passages giving incidentally the date of their witnessing the operation of the telegraph in 1835 and 1836. And the fact that these allusions were not studied, but unpremeditated and incidental, adds to their force] :

Ex-Governor Fish remarked :

“It was in early boyhood, under my father’s roof, that I made the acquaintance of our guest, then eminent in his profession as an artist, and at the head of the National Academy of Design. I soon learnt to appreciate and admire his intelligence, his amiability, and his worth.

“To a friendly intercourse thus established and much cher-

“ished on my part, I was indebted for *an early explanation* of his discovery, soon after his return from Europe, in 1832.

“Some time afterward, in the early part of 1836, in a room in the New York University, I witnessed the telegraph in operation, recording messages, transmitted through some mile or more of wire, suspended in successive turns around the walls; there was a small battery in one corner of the room, and a sort of clock-work machinery in another, and the mysterious little click, click, click of the former produced a simultaneous record on the other. Theory was reduced to practice, and the telegraph demonstrated its efficiency.”

“During the winter of 1844-45 Prof. Morse was a frequent, as he was ever a welcome, visitor in my apartment, in Washington. The practicability of transmitting signs by submerged wires had been then demonstrated; but the distance to which they might be transmitted was of course still a problem. *Mr. Morse, however, unhesitatingly predicted the direct communication between Europe and America; he told me that I would probably live to witness it. While bearing testimony to his prediction, let me also express my gratification on the privilege of uniting with this company in congratulations to him upon the realisation of that prediction.*”

DOCUMENT X.

Remarks of Rev. Mr. SEELY.

It seems but yesterday that I was a Freshman in the New York City University, and our honored guest Professor of the Fine Arts in the institution, and President of the National Academy of Design in the same city.

At that time the Professor was reported to be engaged in labors which pertained to science rather than to art; and there was many an ominous shake of the head, accompanied by expressions of apprehension that one of the best artists of our country was sacrificing his genius to a chimera.

He persisted, however, and *one afternoon in the spring, or early summer of 1836*, I had the privilege of witnessing an experiment made by him in a large room of the University building. There were present the Professor, with one or two assistants, and several leading gentlemen of the city. A line of slender wire, one mile in length, was stretched around the room in a remarkable manner. . . . To one end of the

wire was attached a pen or pencil, which was held over a strip of white paper. . . . The Professor proposed to demonstrate the possibility of transmitting and recording messages, *verbatim et literatim*, over any length of wire. Some one whispered a sentence in his ear, and in a few seconds the white paper at the opposite end of the line was covered with broken lines. . . .

Time passed over and the electric telegraph was rapidly pushing its way in the world, when one day in 1842 I entered one of the upper lofts of the building in which the *New York Observer* was published, and found our Professor of the Fine Arts superintending experiments in the manufacture of *submarine cables*. *For he had already projected the extension of telegraphic lines under water.*

DOCUMENT XI.

Correspondence with REAR-ADMIRAL SHUBRICK.

[Being casually in Boston in Sept., 1860, I met at the Revere House, the United States Naval Light House Board, Brigadier General Totten, Rear-Admiral Shubrick and others, and in casual conversation in the evening the latter asked me if I remembered the visit to the University in 1835 with our mutual friend the late Fenimore Cooper, to witness the operation of my telegraph. I did not immediately recollect the individual visit, but as it disclosed to me a new witness of the existence and operation of my telegraph at that period, I thought it important to secure his testimony in a permanent form, and, therefore, I wrote him the following letter]:

Boston, Revere House,
Sept. 17th, 1860.

My dear Sir—It occurred to me this morning, in reflecting on the fact brought to my recollection in conversation with you yesterday, when you remarked *that you and our distinguished friend Fenimore Cooper witnessed the operation of my first telegraphic instrument in the New York City University, in the year 1835*, that I should like to have that evidence in a written form, simply stating that you have that recollection.

To make the opportunity for a written reply I will ask you to answer this question:

Do you remember seeing my first telegraph instrument in operation, and if so, please state to me where, and in what year, and whether any friends were with you at the time?

.

Excuse my troubling you, but the point to be determined is of historic as well as national interest.

With sincere respect and esteem,
Your obedient servant,

SAMUEL F. B. MORSE.

To Commodore Shubrick.

Washington, (D.C.) Oct., 5th, 1860.

My dear Sir—I received your letter of the 17th inst., just as I was leaving Boston, and have been moving about so much since that I have not had time to answer it sooner. It gives me pleasure to do so now.

I have a distinct recollection that in the winter of 1835, being in the city of New York, I was walking with our lamented friend the late Fenimore Cooper, when we met you, and you invited us to your room in the University, and that you then and there showed us the operation of your telegraphic instrument. The fact is impressed on my mind by the remarks made by Mr. Cooper on the wonderful effects which would grow out of the discovery, if successful (of which he seemed to have no doubt), on the intercommunication of the world.

I have frequently seen Mr. Paul F. Cooper, son of our late friend, who recollects having seen the operation of your instrument during the same winter, though he was then a small boy.

It was to be expected that so wonderful an application of the great power of electricity would raise up powerful competitors for the honor of its first discovery, but I trust that what I am sure is your due cannot be withheld from you.

I am, with great respect,

Your friend and servant,
(Signed) W. B. SHUBRICK.

To Prof. S. F. B. Morse, Poughkeepsie, New York.

DOCUMENT XII.

From Professor JAMES RENWICK's deposition, and answer to the 60th interrogatory, in the telegraph case before the Supreme Court of the United States. (p. 278); 7th September, 1859.

Prof. Renwick says: He has been acquainted with Prof. Morse for more than thirty years; was on terms of familiar and constant

intercourse while Prof. Morse was curious and interested in the sciences; he knows that Prof. Morse had before his visit to Europe, about the year 1830 (autumn of 1829), paid much attention to the subjects of electricity and magnetism, and he was aware before he departed that he was studying these subjects in reference to the plan of a telegraph; that deponent, in consequence, sought and obtained from Prof. Morse, on his return from Europe the third time (in 1839), the latest intelligence in relation to electro-magnetism, and in particular in relation to the constant battery of Prof. Daniel, which was at that time a novelty; that Prof. Morse in reply stated that he had procured and brought with him one of Daniel's batteries. That in addition to the intimacy growing out of membership in the clubs aforesaid, deponent and Morse were original associates of the New York Athenæum, established in 1825 or 1826, and both delivered courses of lectures before that association; that Dr. James Freeman Dana was also a lecturer before the same association, and that his subject was electricity and its relations; that he well recollects Dr. Dana's lecture on common electricity, having aided him in setting up his apparatus; that he knows that one of Dr. Dana's lectures was upon magnetism; that he believes Prof. Morse was present at the lectures of Dr. Dana, inasmuch as it was the custom of the lecturers to attend each others courses, and any absence would have been matter of remark; that when the interrogatories were put into his hands by Prof. Morse, he was not positively certain that one of Dr. Dana's four lectures were devoted to the subject of *electro-magnetism*; but that in the course of conversation Prof. Morse spoke of a permanent magnet caused to revolve upon its own axis by an electric current, as one of the experiments exhibited by Dr. Dana; that this deponent thereupon recollected the said apparatus, and that he had had one made for the apparatus of Columbia College, which was a copy of the apparatus of Prof. Dana; that this recollection has established in the mind of this deponent the certainty both that Dr. Dana did lecture on electro-magnetism, and that Prof. Morse was present at that particular lecture; that the apparatus in question is rare, and was the invention of Dr. Dana, and that he believes no others have ever been made than the original one of Dr. Dana, and the copy now in the collection of Columbia College; that the lectures of Prof. Dana before the Athenæum were delivered, to the best of this deponent's recollection, in February or March, 1827, and before Prof. Morse made the visit to Europe which has been spoken of in the answers to this interrogatory.

DOCUMENT XIII.

Deposition of Dr. J. R. CHILTON.

In the testimony before the Supreme Court of the United States, Dr. J. R. Chilton, the celebrated chemist of New York, testifies: "I know that Professor Morse was engaged in constructing a telegraph as early as 1835."

DOCUMENT XIV.

Deposition of ROBERT RANKIN, Esq.

Robert Rankin, Esq., of New York, another witness in the same Court, testifies: "I am somewhat acquainted with Morse's magnetic telegraph; I became acquainted with it in the latter part of the year 1835, as near as I can recollect. I visited the rooms of Professor Morse on his invitation, in the north wing of the University building, in the city of New York, which part of the building was not entirely finished," etc.

To question: "Did or not Professor Morse describe to you any apparatus or parts of apparatus of a telegraph? If yea, when and where did he do so?"

He replies: "He did at the time and place stated" (that is 1835, at the University).

And again: "Please exhibit and annex to your description a drawing or drawings delineating the said apparatus or machine so shown to you, and describe the operation of the said machine."

He replies: "I now exhibit and annex to this, my deposition, a drawing or sketch of said apparatus or machine, then shown to me, as near as I can recollect," etc.

[And here follows the sketch, substantially the same as is testified to by Gale, Huntington, and Loomis. (Diagram 4.)]

DOCUMENT XV.

Prof. B. SILLIMAN's Deposition.

I am seventy years old; reside in New Haven; am the Senior Professor in Yale College, and give instruction in the various departments of Physical Science. I was Professor of

Chemistry in Yale College in 1808, 1809, and 1810, and in those years I did deliver lectures on chemistry, and *galvanic electricity*. The batteries then in use were the *pile of Volta*, the battery of *Cruikshanks*, and the *Couronne des tasses*, well known to the cultivators of that branch of science. *I always exhibited these batteries to my classes; they were dissected before them, and their members and the arrangement of the parts, and the mode of exciting them, were always shown.*

Mr. S. F. B. Morse was a student in Yale College and an attendant on my lectures in the years 1808, 1809, and 1810. It is my recollection and belief that during those years *each student attended two of the courses delivered by me*. Mr. Morse resided near me for several years, from 1821-22 onward. The families were on terms of intimacy, and Mr. Morse was in the habit of frequent communication with me. About this time Dr. Hare's splendid galvanic caliomoter, and his galvanic deflagrator, were invented, and were in my possession, and many interesting and beautiful results were exhibited by them, as, for example, the fusion of charcoal, and the combustion of metals. Mr. Morse was often present in my laboratory during my preparatory arrangements and experiments, and was thus made acquainted with them.

(Signed) BENJAMIN SILLIMAN, Sen.

Sworn and subscribed before me, 11th June, 1850.

E. K. FOSTER,

Judge of the Probate Court for the District of New Haven.

DOCUMENT XVI.

President DAY'S *Deposition*.

I was Professor of Natural Philosophy in Yale College in the years 1808, 1809, and 1810. I delivered lectures in that department. Samuel F. B. Morse was a student at said College during said years. To the best of my knowledge and belief said Morse did attend these lectures on Natural Philosophy, and that the subject of electricity was specially illustrated and experimented upon in said lectures. Enfield's work on Natural Philosophy was the text book of the classes attending on said Lectures during the years above named.

The terms of the 21st Proposition of Book V. of *Enfield's Philosophy* are these: "If the circuit be interrupted the fluid

will become visible, and when it passes it will leave an impression upon any intermediate body."

I lectured upon, and illustrated the first two experiments propounded by said 21st Proposition, and I recollect the fact with certainty by memoranda now in my possession. The experiments referred to are in terms as follows :

Experiment 1st. Let the fluid pass through a chain, or through any metallic bodies placed at small distances from each other, the fluid in a dark room will be visible between the links of the chain, or between the metallic bodies.

Experiment 2d. If the circuit be interrupted by several folds of paper, a perforation will be made through it, and each of the leaves will be protruded by the stroke from the middle to the outward leaves.

(Signed) JEREMIAH DAY.

Sworn and subscribed before me the 11th June, 1850,

(Signed) E. K. FOSTER,

Judge of the Probate Court for the District of New Haven.

DOCUMENT XVII.

Deposition of MATILDA W. DANA, of Boston, in the State of Massachusetts, taken at the office of George S. Hillard.

I am the widow of Professor James Freeman Dana; my husband and myself resided in the city of New York, in the years 1826-27; my husband died on the 15th day of April, 1827, in the city of New York.

In the year 1827 he delivered a course of lectures upon the subject of electro-magnetism, and also upon the subject of electricity, before the New York Athenæum, in the chapel of Columbia College.

I attended several of these lectures; his mind was most intensely interested in the subject of electro-magnetism, so much so, indeed, that I frequently heard him talk of it in his sleep. I know that my husband, in the years 1826-27, and up to the time of his death, was on terms of intimacy with Professor Samuel F. B. Morse, and was in the habit of frequently visiting Professor Morse's painting room, which, at that time, was at the corner of Broadway and Pine Street, in the city of New York; I have a distinct recollection of visiting Professor Morse's paintings.

My husband had a very keen perception of the beautiful, and was a great admirer of the fine arts, and took particular

delight and interest in the art in which Professor Morse was at that time engaged. I have no doubt that this circumstance led him to cultivate an intimacy and friendship with Professor Morse, and I know that such intimacy and friendship did exist up to the time of my husband's death; I frequently heard my husband speak of his having been on visits to Professor Morse's rooms, and he frequently told me he had been on such visits. From what he said to me and from what I saw, I know that he must have spent much time at Professor Morse's rooms.

I frequently heard him speak of Professor Morse's pictures; there was one I know he much admired; that was the picture entitled "Una, the dwarf, and Arthur," from Spencer's *Fairy Queen*. My husband took me with him to Professor Morse's room to see that picture, and I recollect seeing it at his room, and it was much admired by me and by my husband; and my husband was so much interested at that time with electro-magnetism that it was a favorite theme in his conversations with all his associates and friends. He was in the habit of dwelling much upon it, and of explaining to his friends the results of his experiments in that science. From the terms of intimacy existing between him and Professor Morse, I can scarcely conceive it possible that he and Professor Morse should not have had frequent and repeated conversations on the subject of electro-magnetism.

I knew that my husband, at that time, was in the constant habit of stating to his friends and associates his views of that wonderful science which then was regarded as, in a great measure, new in this country, and little understood. He was unusually frank and communicative in his social intercourse with his friends; that was a distinguishing trait in his character. He seemed anxious to induce, in the minds of others, an interest in the science of electro-magnetism, as he entertained the idea that, ultimately, it would be an instrument of wonderful and highly beneficial results to the world, when it should be more fully understood, its principles developed and applied to practical purposes.

On the death of my husband, I received from Professor Morse a very kind note of condolence, to which I have often recurred with grateful remembrances, as a token of kind regard from an intimate friend and associate of my deceased husband; I have often spoken of it, and shown it to my daughter, as coming from an intimate friend of her father.

I cannot now state positively that I saw Professor Morse at these lectures before the Athenæum; but from the intimacy that existed between them, and the professional relations to each other. I have no doubt that he did attend those lectures. I should have thought it very singular if he had not, and

presume that his absence would have been a subject of remark if he were absent.

I recollect Professor Morse at that time delivered lectures before the Athenæum upon the fine arts, and that my husband and myself attended them. I am very sure that Professor Morse in his letter of condolence expressed the pleasure he had had in attending my husband's lectures; and I further depose and say that the two papers now produced, and made an exhibit in this cause, and upon the first page of which I have written my name and the date of taking of this deposition—one headed "1st, 2d, on electro-magnetism before New York Athenæum," the other headed "2d, 3d, 4th, on electro-magnetism, before New York Athenæum," are the original lectures delivered by my husband James Freeman Dana, before the New York Athenæum, in the year 1827; that said original lectures and the drawings therein, as well as the heading to each, above quoted, are in the handwriting of my said husband, and the same have been in my possession since the death of my said husband; and that my husband, at the time of the delivery, *exhibited to his audience various experiments with an electro-magnet, illustrative of the subject-matter of the said lectures, and then had exhibited to his audience an electro-magnet in a horse-shoe form. After his death that identical magnet was sold to his successor Professor John Torrey.*

Since the funeral of my husband I have not seen Professor Morse until the 19th of September instant. He then, before seeing said lectures, or before I told him what they contained, stated to me several of the experiments which were exhibited by my husband at the time he delivered the same before the Athenæum.

(Signed) MATILDA W. DANA.

Sworn to before me, the 24th day of September, A.D. 1849,

GEORGE S. HILLIARD,

Commissioner, etc., etc., etc.

DOCUMENT XVIII.

President TAPPAN's Evidence.

[The following correspondence bearing upon the early history of the telegraph discloses additional, wholly unexpected evidence of the existence and effective operation of the *first telegraphic instrument* in 1835. Professor Tappan was for some years a colleague professor with Professor Morse in the

same University. When the former resigned his chair, he was appointed to the Presidency of the Michigan University, a position which he held until within a few years, and has recently been residing in Europe. The meeting of Professor Tappan and Professor Morse at the United States Embassy in Berlin after so many years of separation was as gratifying as it was unexpected. The correspondence explains the occasion and the character of their meeting] :

Berlin February 10, 1868.

My dear Sir—In the pleasant interview I had with you last evening, at our worthy Minister's, Mr. Bancroft, you casually mentioned an incident in our early intercourse as colleague professors in the New York City University, which incident if you can give to me in writing is one of considerable importance to me, to be stated in a small work I am preparing for publication on the telegraph.

You stated that you were a witness to *the first telegraphic despatch, written by the telegraphic instrument, in the University*. Will you oblige me by stating that fact in a letter to me, and the *time*, as near as may be, when you saw the instrument in operation? And if you can describe the appearance of the instrument, or its general characteristics; or any incidents connected with it, I should be pleased to have your recollections to add to many of the like character which I propose to put in an Appendix.

My object is to gather as far as possible the evidence of the time when the invention was first witnessed in operation. Most of the *eye-witnesses* to the *early instrument* are now deceased, or dispersed throughout the world, and it is only now and then, by accident, as in your case, that I find a living witness. Hence my desire to secure your testimony.

A few years ago on a casual visit to Boston I found an unexpected witness in Rear-Admiral Shubrick, who, with Fenimore Cooper, saw it in 1835, and who promptly gave me his evidence to the fact in a letter which will be inserted in my work.

With sincere respect and esteem,

Your friend and servant,

SAML. F. B. MORSE.

President Tappan, late Chancellor of the University of Michigan and Corresponding Member of the Imperial Institute of France.

Berlin, Feb. 14th, 1868.

My dear Sir—I have received your note in which you request me to write down what I casually mentioned in our conversation a few evenings since at the house and in the presence of the American Minister, Mr. Bancroft.

Our conversation led us back to our former relations as professors in the University of the City of New York. I remarked that meeting you at this time was in singular coincidence with the fact that while perusing, a day or two before, the *Emilien Galotti* of Lessing, certain passages had recalled to me the lectures on art which I had heard you deliver in that institution. In the course of the conversation I referred also to what I had witnessed of your earliest experiments with the electro-magnetic telegraph of which you are the inventor.

The University was opened in the autumn of 1832. I was one of the first professors elected. In the same year you returned from Europe. Some time after your return and when you yourself had been elected a professor, you related to me, in a free, familiar, and extended conversation, how your mind had been occupied during your last voyage with the idea of transmitting and recording words through distance by means of an electro-magnetic arrangement. The idea, you said, had haunted you whether you lay in your berth or walked the deck, and that you had, at length, arrived at a definite conception of the required arrangement. I cannot recall all the details of this explanation; I well recollect that it contained the germ of what you afterwards so successfully accomplished.

In 1835 you had advanced so far that you were prepared to give, on a small scale, a practical demonstration of the possibility of transmitting and recording words through distance, by means of an electro-magnetic arrangement.

I was one of the limited circle whom you invited to witness the first experiments.

In a long room of the University you had wires extended from end to end where the magnetic apparatus was arranged. It is not necessary for me to describe particulars which have now become so familiar to every one. The fact which I now recall with the liveliest interest, and which I mentioned in conversation at Mr. Bancroft's as one of the choicest recollections of my life was that of the first transmission and recording of a telegraphic despatch. I suppose, of course, that you had already made these experiments before the company arrived whom you had invited. But I may claim to have witnessed *the first transmission and recording of words* by lightning ever made public. All who were present were invited to write and send off despatches from one end of the room to be recorded

at the other. I recollect full well my delight at hearing the words which I silently gave in at one end, accurately read off from the strip of paper at the other. The fact was established that words—that the thoughts, of course, expressed by words, could be communicated and recorded with lightning speed from one place to another.

It was one of those startling facts which open to us immeasurable consequences; and justify the imagination in its pictures of the future, and make our dreams but struggles to anticipate surpassing realities.

Permit me, also, to say that I most sincerely sympathised in the triumph you had won; and that to me it was a reflection full of satisfaction that you, a friend of the philosophic dreamer and poet Coleridge, and the early associate of Leslie and Alston had, while wandering among the forms of ideal beauty, found a most stupendous practical fact; thus repeating what men are so slow to believe and yet which so frequently appears as in Michael Angelo, Milton, and Fulton, that he who pursues the Beautiful, may also think the True, and accomplish the Good.

The arrangement which you exhibited, on the above-mentioned occasion, as well as the mode of receiving the despatches, were substantially the same as that which you now employ. I feel certain that you had then already grasped the whole invention, however you may have since perfected the details.

I met you, afterwards, when you were engaged in making a larger experiment by laying the wires underground between Washington and Baltimore—an experiment whose failure led to a most important result—that of putting into practice your early mode of the elevation of the wires upon poles in the open air; thus escaping the disturbing influences of the earth, and achieving the most economic and rapid execution of the work.

I cannot close without congratulating you that Divine Providence has awarded you what so few attain—the satisfaction, in a green old age, of seeing your work completed, of reaping the rewards and honors which justly belong to you, and of beholding the benefits which your invention has bestowed upon mankind.

Believe me, my dear sir, with profound respect and sincere esteem, your friend and obedient servant,

HENRY. P. TAPPAN.

To Professor Samuel F. B. Morse.

DOCUMENT XIX.

(From the Caveat in the Patent Office.)

Extract from the Caveat of Prof. MORSE, on file in the Patent Office, Washington, October 6th, 1837, but applied for September 28th, 1837:—

Under the *Fourth head* (THE REGISTER) is the following:—

“The Register. . . is thus constructed:

“ 1st. An *Electro-Magnet*, etc. . . . is applied:

“ 2nd. To a *Lever*, etc. . . . to the lever is attached:

“ 3rd. A *pencil*, or *fountain pen*, or a SMALL PRINTING WHEEL,
“ or any other marking material, etc. . . .

“ When the *printing wheel* is used, the *wheel* is brought into
“ contact with the paper by the magnet when required to
“ mark.”

DOCUMENT XX.

(From Supreme Court Record, page 481.)

Deposition of FRANCIS ALGER, of Boston, in the State of Massachusetts, manufacturer.

The said Alger having been previously sworn, deposes as follows: I am acquainted with Dr. Charles T. Jackson, of Boston, and have known him upwards of twenty years. Upon his return from Europe, in 1832 or 1833, I heard him speak of what he called talking from one place to another by means of electricity, or electro-magnetism, communicated by wires. He said that Prof. Morse was a passenger with him on board the *Sully*, and that they often had scientific meetings and discussions on deck, in pleasant weather, and that in one of these the subject of electricity and electro-magnetism was introduced, and that he (Dr. Jackson) had explained to Prof. Morse and to the other passengers, a plan of communicating intelligence from one place to another by means of electricity and electro-magnetism. He said THAT HE DREW OUT THE PLAN ON THE DECK

OF THE VESSEL WITH CHALK. He said that Prof. Morse THEN became very much interested in the subject, and asked a great many questions, *which showed that before that, he had been unacquainted with the elementary principles of those sciences.*

(Signed)

FRANCIS ALGER.

