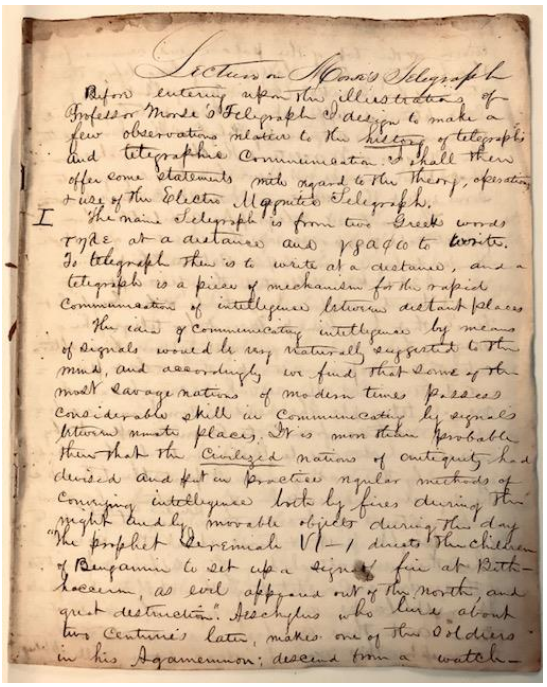
Alexander Winchell's "Lecture on Morse's Telegraph"

[Transcribed; 10/2022. First of Two Lectures, Dated 1848]

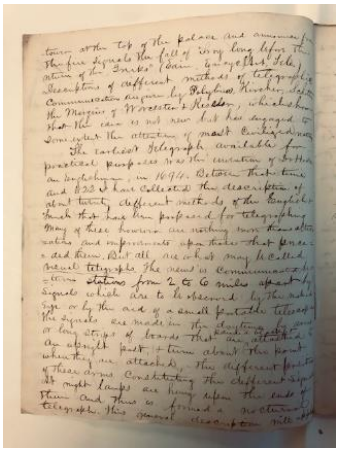


(Pg. 1) Before entering upon the illustrations of Professor Morse's Telegraph I design to make a few observations relative to the history of telegraphy and telegraphic communication. I shall then offer some statements with regard to the theory, operations and use of the Electro Magnetic Telegraph.

I. The name Telegraph is from two Greek words τζδε (Tau Eta Lambda Epsilon) "a distance" and γδαΦω (Gamma Delta Alpha Phi Omega) "to write". To telegraph then is to write at a distance, and a telegraph is a piece of mechanism for the rapid communication of intelligence between distant places.

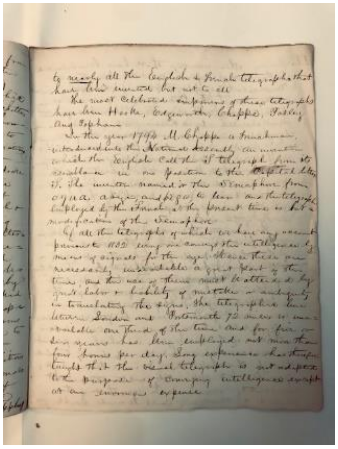
The idea of communicating intelligence by means of signals would be very naturally suggested to the mind, and accordingly we find that some of most savage nations of modern times possess considerable skill in communicating by signals between remote places. It is more than probable then that the Civilized nations of antiquity had devised and put in practice regular methods of conveying intelligence both by fires during the night and by movable objects during the day. "The Prophet Jeremiah VI-1 directs the children of Benjamin to set up a sign of fire at Beth-haccerem, as evil appeared out of the north, and great destruction". Aeschylus who lived about two centuries later, makes one of the soldiers in his Agamemnon; descend from a watch-

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tower at the top of the palace and announce from the fire signals the fall of Troy long before the return of the Greeks (Edin, Encycxxx, Tele). Descriptions of different methods of telegraphic communication are given by Polybius, Kircher, Schottus, the Margius of Worchester and Resden, which show that the idea is not new but has engaged to some extent the attention of most Civilized nations.

The earliest telegraph available from practical purposes was the invention of Dr. Hooke, an Englishman, in 1694. Between that time and 1822 I have collected the description of about twenty different methods of the English and French that have been proposed for telegraphing. Many of these however are nothing more than alterations and improvements upon those that proceeded them. But all are what may be called visual telegraphs. The news is communicated between stations from 2 to 6 miles apart by signals which are to be observed by the naked eye or by the aid of a small portable telescope. The signals are made in the daytime by arms or long strips of boards that are painted black and are attached to an upright post, and turn about this point where they are attached, -- the different positions of these arms constituting the different signals. If night lamps are hung upon the ends of them and thus is formed a nocturnal telegraph. This general description will apply



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to nearly all the English and French telegraphs that have been invented but not to all.

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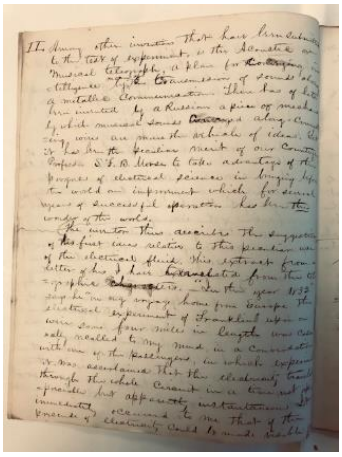
The most celebrated imponens of these telegraphs have been Hooke, Edgeworth, Chappe, Pasley and Popham.

In the year 1794 M. Chappe a Frenchman, introduced into the National Assembly an invention which the English call the T. Telegraph from its resemblance in one position to the Capitol letter T. The inventor named it the Semaphore from δΥυα, "a sign", and φεδα, "to lean" and then the telegraph employed by the French at the present time is but a modification of the Semaphore.

Of all the telegraphs of which we have any account previous to 1832 everyone conveys the intelligence by means of signals for the eye. Hence these are necessarily unavailable a great part of the time, and the use of them must be attended by great labor and liability of mistake or ambiguity in translating the signs. The telegraph line between London and Portsmouth 72 miles is unavailable one third of the time and for five or six years has been employed not more than four hours per day. Long experience has therefore taught that the visual telegraph is not adapted to the purpose of conveying intelligence except at an enormous expense.

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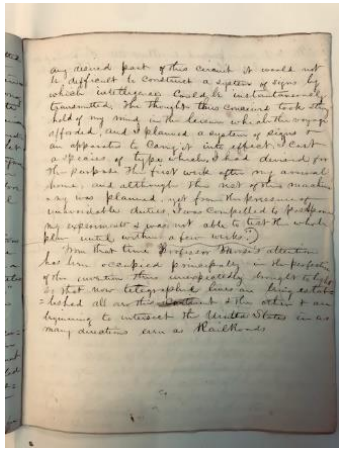
II. Among the inventions that have been submitted of experiment, is the Acoustic or Musical telegraph, a plan for conveying intelligence by means of the transmission of sounds along a metallic communication. There has of late been invented by a Russian a piece of mechanism by which musical sounds conveyed along connecting wires are more the vehicle of ideas. Yet it has been the peculiar merit of our Countrymen Professor S. F. B. Morse to take advantage of the progress of electrical science in bringing before the world an improvement which for several years of successful operation has been <u>the</u> wonder of the world.



The invention thus describes the suggestion of his first ideas relative to this peculiar use of the electrical fluid. This extract from a letter of his I have accumulated from the telegraphic characters. -- "In the year 1832 says hi" on my voyage home from Europe the electrical experiment of Franklin upon a wire some four miles in length was casually recalled to my mind, in a conversation with one of the passengers, in which experiment it was acclaimed that the electricity transmitted through the whole circuit in a time not appreciable but apparently instantaneous. It immediately occurred to me that if the presence of electricity could be made visible

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any desired part of this circuit it would not be difficult to construct a system of signs by which intelligence could be instantaneously transmitted. The thought thus conceived took strong hold of my mind in the leisure which the voyage afforded, and I planned a system of signs and an apparatus to carry it into effect. I cast a species of type which I had devised for the purpose. The first week after my arrival home, and although the rest of the machinery was planned, yet from the pressure of unavoidable duties, I was compelled to postpone my experiment and was not able to test the whole plan until within a few weeks".



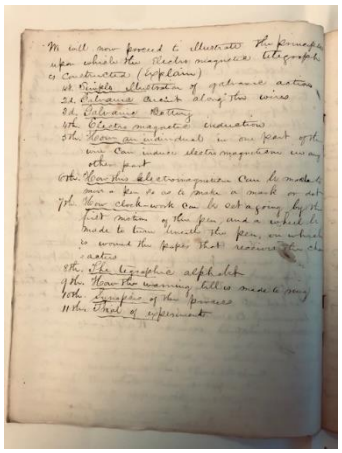
From that time Professor Morse's attention has been occupied principally in the perfection of the invention thus unexpectedly brought to light so that now telegraphic lines are being established all over this Continent and the other and are beginning to intersect the United States in as many directions even as Railroads.

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We will now proceed to illustrate the principles upon which the Electro magnetic telegraph is constructed (Explain)

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1st Simple Illustration if galvanic action

2nd Galvanic circuit along the wires

3rd Galvanic Battery

4th Electro magnetic induction

5th How an individual in one part of the wire can induce electro magnetism in any other part

6th How this electromagnetism can be made to move a pen so as to make a mark of dot

7th a going by the first motion of the pen, and a wheel be made to turn beneath the pen, on which is wound the paper that receives the characters

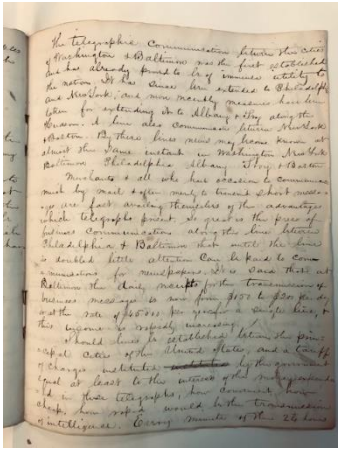
8th The telegraphic alphabet

9th How the warning bell is made to ring

10th Synopsis of the process

11th Trial of experiments

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The telegraphic communication between the cities of Washington & Baltimore was the first established and has already proved to be of immense utility to the nation. It has since been extended to Philadelphia and New York, and more recently measures have been taken for extending it to Albany and Troy along the Hudson. A line also communicates between New York and Boston. By these lines news may become known at almost the same instant in Washington, New York, Baltimore, Philadelphia, Albany, Troy and Boston.

Merchants and all who have occasion to communicate much by mail and often merely to transmit short messages are fast availing themselves of the advantages which telegraphs present. So great is the press of business communications along the line between Philadelphia and Baltimore that until the line is doubled little attention can be paid to communications for newspapers. It is said that at Baltimore the daily receipts for the transmission of business messages is now from $150 to $200 per day or at the rate of $45,000 per year for a single line, and this income is rapidly increasing.

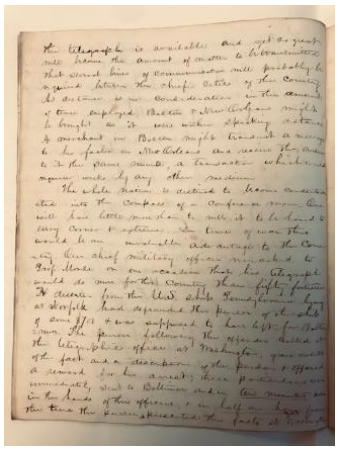
Should lines be established between the principal cities of the United States, and a tariff or charges instituted by the government equal at least to the interest of the money expended in these telegraphs, how convenient, how cheap, how rapid would be the transmission of intelligence. Every minute of these 24 hours

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the telegraph is available and yet so great will become the amount of matter to be transmitted that several lines of communications will be required between the chief cities of the country. As distance is no consideration in the

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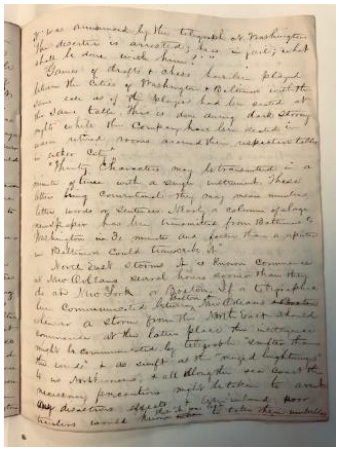


amount of time employed, Boston and New Orleans might be brought as it were within speaking distance. A merchant in Boston might transmit a message to his factory in New Orleans and receive the answer to it the same minute, a transaction which would require weeks by any other medium.

The whole nation is destined to become concentrated into the compass of a conference room. One will hear little more than to will it to be heard to every corner and extreme. In time of war this would be an invaluable advantage to the Country. Our chief military officer remarked to Professor Morse on one occasion that his telegraph would do more for the county than fifty fortresses.

A deserter from the U. S. ship Pennsylvania lying at Norfolk had defrauded the purser of the ship of some $700 and was supposed to have left for Baltimore. The purser following the offender called at the telegraphic office at Washington, gave notice of the fact and a description of the person and offered a reward for his arrest; these particulars were immediately sent to Baltimore and in <u>ten minutes</u> were in the hands of the officers, and in <u>half and hour</u> from the time this purser presented the facts at Washington

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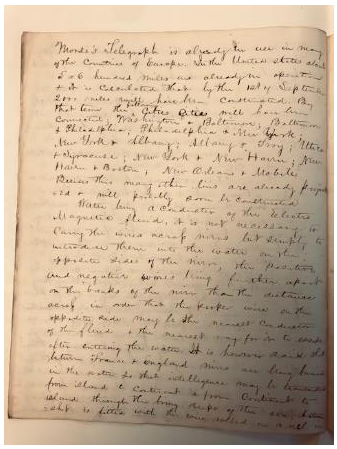
it was announced by the telegraph at Washington "The deserter is arrested; he is in jail; what shall be done with him?"

Games of drafts and chess have been played between the cities of Washington and Baltimore with the same case as if the player had been seated at the same table. This is done during dark stormy nights while the Company has been seated in warm retired rooms around their respective tables in either city.

"Thirty characters may be transmitted in a minute of time with a single instrument. These letters bring conventional they may mean numbers, letters, words, or sentences. Nearly a column of a large newspaper has been transmitted from Baltimore to Washington in 30 minutes and faster than a reporter in Baltimore could transcribe it".

North East storms it is known commence at New Orleans several hours sooner than they do at New York or Boston. If a telegraphic line communicated between Boston and New Orleans whenever a storm from the North East should commence at the latter place the intelligence might be communicated by telegraph "swifter than the winds" and as swift as the "merged brightening's" to us Northerners, and all along the sea coast the necessary precautions might be taken to avert any disastrous effects, and even inland, poor travelers would know that it was best to <u>take their umbrellas.</u>

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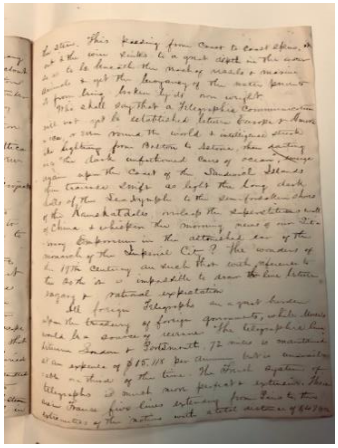
Morse's Telegraph is already in use in many of the countries of Europe. In the United States about 5 or 6 hundred miles are already in operation and it is calculated that by the 1st of September 2000 miles will be have been connected. By that time, the following cities will have been connected; Washington and Baltimore; Baltimore and Philadelphia; Philadelphia and New York; New York and Albany; Albany and Troy; Utica and Syracuse; New York and New Haven; New Haven and Boston; New Orleans and Mobile. Besides this many other lines are already projected and will probably soon be constructed.

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Water being a conductor of the Electro Magnetic fluid, it is not necessary to carry the wires across rivers but simply to introduce them into the water on the opposite sides of the river, the positive and negative wires being farther apart on the banks of the river than the distances across in order that the proper wire on the opposite side may be the nearest conductor of the fluid and the nearest way for it to escape after entering the water. It is however said that between France and England wires are being buried in the e water so that intelligence may be transmitted from island to Continent and from Continent to island through the deeps of the sea. A steamship is fitted with the wire rolled on a reel in

(Pg. 11)

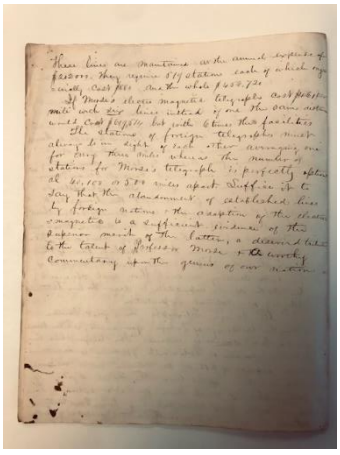


the stern. This passing from coast to coast spins out and the wire sinks to a great depth in the water so as to be beneath the reach of vessels and marine animals and yet the buoyancy of the water prevents it from being broken by its own weight.

Who shall say that a Telegraphic Communication will not be established between Europe and America or even round the world and intelligence streak like lightning from Boston to Estonia, then darting into "the dark unfathomed cavers of ocean", emerge again upon the coast of the Sandwich Islands after traverse swift as light the long dark halls of the Sea Nymph to the semi-forsaken shores of the Kamchadal's overleap the superstitious wall of China and whisper the morning news of our Sit-xxx. Emporium in the astonished ear of the monarch of the Imperial City? The wonders of the 19th Century an such that with reference to the 20th it is impossible to draw the line between vagary and rational expectation.

All foreign Telegraphs are a great burden upon the treasury of foreign governments, while Morse's would be a source of revenue. The telegraphic line between London and Portsmouth, 72 miles is maintained at an expense of $15,118 per annum but is unavailable one third of the time. The French system of telegraphs is much more perfect and extensive. There are in France five lines extending from Paris to the extremities of the nation with a total distance of 1,474 miles.

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These lines are maintained at the arrived expense of $202000. They require 519 station each of which originally cost $880 and the whole $456,720.

If Morse's electro magnetic telegraph cost $461 per mile with <u>six</u> lines instead of one the same distance would cost $619,514 but with 6 times the facilities.

The stations of foreign telegraphs must always be in sight of each other averaging one for every three miles where as the number of stations for Morse's telegraph is perfectly optional 40,100 or 500 miles apart. Suffice it to say that the abandonment of established lines by foreign nations and the adoption of the electro-magnetic is a sufficient evidence of the superior merit of the latter, a deserved tribute to the talent of Professor Morse and worthy commentary upon the genius of our nation.

John Palmisano, KB8OIS
The University of Michigan Amateur Radio Club and the W8UM / W8AXZ History Project. 2022