

An arrangement was next made with Judge Selden and Mr. Edson to extend the invention to all the principal cities of the United States, and to build 600 miles each year, or to forfeit \$10,000 to liquidate annual damages. Under that contract a line was built from New York to Buffalo, with an iron wire having 600 pounds to the mile, for which the patentees received \$100,000 in stock. About that time the Morse company filed a bill for an injunction to stop the House line from New York to Boston. Up to that date all suits had gone in Morse's favor, and it was confidently expected that the injunction would be granted. The counsel employed on the House side were George Gifford, Rufus Choate, and Charles L. Woodbury. After hearing very exhaustive testimony, the judge decided that the House telegraph was no infringement. The favorable termination of that suit (which was never appealed) gave value to the invention.

A new era was introduced in telegraphy when the messages came to be received by *sound only*, the operator writing them off rapidly in a suitable form for delivery. Professor House saw the need of more sensitive apparatus for the transmission of sound waves. Taking up the subject where Boursal and Reiss had discontinued their researches, he made and had patented an "electro-phonetic telegraph," June 27, 1865, and in order to improve the workings of certain parts took out another patent, May 12, 1868. The invention consisted in placing at each station of the line a hollow ear piece for receiving sound waves, this being closed at one end by a thin flat plate, or diaphragm, having a spring force to counterbalance the magnetic force of the armature, and thus hold the sounding head in a state of magnetic equilibrium when the circuit is closed. There was also a device for adjusting the loudness of sounds.

The inventor's idea was simply that of making an instrument of great sensitiveness for receiving the sound signals of letters used in telegraphing. But the instrument is really a *telephone*, doing as good work as can be done by the more recent Bell telephone. The Supreme Court has decided that "a patentee is entitled to all the benefits which result from his invention, whether he has specified all the benefits in his patent or not." Hence Professor House justly regards the Bell telephone as an infringement on his patent, and has called the attention of the American Bell Telephone Company to his claims. It is not my intention here to argue the case, but merely to state the facts as given to me. I may add that, in company with others, I have experimented with the original "electro-phonetic telegraph," made exactly according to the patent drawings, and with the modern House telephone, and also with the Bell telephone put in connection with the House, and found no difficulty in transmitting and receiving vocal messages with entire and uniform clearness. The inventor specified in his patent of 1868 that diaphragms as large as eight inches might be used. To test this Professor House produced a pair, of the size stated, made of pine wood, and the result was most remarkable. The messages were distinctly audible when the speaker and hearer each stood five feet away from the instrument; and when several persons carried on a conversation in the room, it was all transmitted perfectly to the other end of the line. Let the reader note the fact that every detail of the mechanism of these extraordinary telephones was covered by the House patent of 1868, granted eight years prior to the Bell patent of 1876, and observe the remarkable fact also that neither House nor Bell specially claimed that their instruments could "talk."

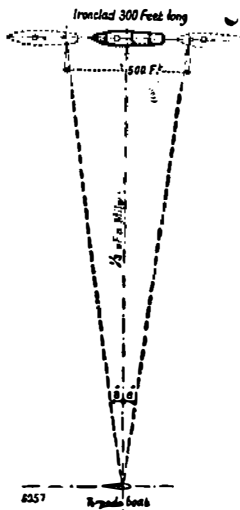
The "automatic telegraph" remains to be described in recounting the services of this eminent inventor. When business increased so that many million messages went over the wires every year, it became evident that there must be a wasteful multiplication of poles, wires, instruments, and operators, or else that in some other way the cost of sending a telegraphic message must be reduced to a minimum. House undertook to meet this demand by a system of his own. He invented a new, time-saving alphabet, in which a message may be prepared for transmission. When thus prepared it is sent over the wire with greatly augmented rapidity, and is transferred from line to line without having to be repeated. "Untouched by an operator, the message is automatically received and translated into ordinary printed typography ready for delivery, while automatic machinery, without the aid of an operator, takes care of and files away the paper of the transmitted message." So ingenious is this device that a series of messages on a single line may be sent as one message, and each be automatically dropped at its destination, and the capacity of a single wire will exceed the ability of six operators to prepare messages, each of which in its turn may be started by a slight movement of the hand. And this system does not interfere with the use of the wires, on occasion, in the ordinary way. This improved system, so far as it may be adopted, must give us one of the great demands of the age—rapid and cheap telegraphing.

In 1884 Professor House and his wife removed to Bridgeport, Conn., where two of his nephews reside, who are also known as successful inventors. The fact

that he was brought up amid the rugged fields of a mountain farm, while having some disadvantages, enabled him to start in life with strong physical powers, as well as a healthy and vigorous mind. The result is that now, at the age of seventy-four years, Professor House enjoys uniform health, and his memory holds tenaciously the diversified facts of his eventful career.

DIVERGING TORPEDO GUNS.

We give a perspective view of a pair of torpedo tubes which are arranged in a manner introduced by Messrs. Yarrow & Co., of Poplar. It will be seen that the two tubes, or guns as they are generally called, are set at an angle to each other, so that if a torpedo is ejected from each one simultaneously, the two missiles will travel in diverging courses. The object of this is to afford a better chance of the enemy's vessel being struck. Below we give a diagram of a 3-gun arrangement which is an extension of the same principle. In illustration of the effect of this arrangement, we will suppose the ship attacked to be 300 ft. long. At about one-third of a mile, which is approximately the effective range of the torpedo, the line of attack covered by the three torpedoes would be 900 ft., as opposed to 300 ft. to only one of these weapons discharged; that is to say, the ship would not escape were she at any point on a line of steaming 900 ft. in length measured normal to the axis of the center gun or parallel to the attacking vessel's keel. There would also be a chance of two



of the weapons striking the ship simultaneously.

It may be objected that this arrangement entails an extra expenditure of torpedoes for each discharge. No doubt this is true, but after all the question to be settled is whether in an engagement more torpedoes would be effective with a given force of torpedo-firing vessels than if the old system of single discharge were adhered to. The recent naval maneuvers have shown the value of torpedo attack—in spite of a popular belief to the contrary—but still there were not many hits scored out of a comparatively large number of tries. Mr. Yarrow claims that with his system there is an additional chance to strike an effective blow when the opportunity arises, but in any case the officer would have the option of only firing one torpedo, and so be on the same footing as if his ejecting tubes were arranged on the old plan. But three torpedoes are a small price to pay for the destruction of almost any vessel, and the diverging fire gives so immeasurably a greater chance of success, that it would be seldom that the risk of extra expenditure would not be warranted.

It is of the essence of successful torpedo attack that it should be sudden, and that the blow, when struck, should be overwhelming. In times of excitement and danger an officer, be he ever so brave, is not likely to make very good practice with so uncertain a weapon as the fish torpedo. It is a difficult thing to aim even under favorable conditions, but here a fair approximation to accuracy may afford success.

The torpedo is ejected by a small charge of gunpowder in the way that is now usual. The officer in command settles the angle at which his tubes are to be set before going into action, and the pointing is then done by maneuvering the boat. The elevation is also decided beforehand, and the guns pivoted on their trunnions by the horizontal wheels shown. For instance, it is determined beforehand whether the torpedoes shall be fired while the attacking vessel is approaching or leaving the enemy, and the guns are then trained before or abaft the beam, or of course a beam attack may be made, as shown in the diagram. The officer has, therefore, nothing to attend to but the steering of his vessel, and fires his weapons when the propitious moment arrives.

The arrangement is intended both for torpedo boats proper and for any larger vessels. Applied to the former, it has an additional advantage over the old plan adopted with the first-class English boat. By reference to our engraving of one of these vessels, shown in our issue of April 29, 1887, it will be seen that the two guns are placed one on each side of the conning tower. This has been found in practice very inconvenient, as the deck room is obstructed in a serious manner. With the diverging guns this difficulty is got over.

In our illustration the mechanism by which the necessary operations are performed is partly shown. The torpedoes are fired electrically by a "make-and-break" contact. The magnet is contained in a box, and this withdraws the bolt which allows the weight to fall, thus making electrical communication with the fuse in the discharging cartridge. The switch by which these operations are set in motion is placed in the conning tower. The tubes are traversed by hand, but steam gear can be fitted if required.

The arrangement has been adopted by the Admiralty for the new Sharpshooter torpedo gunboats. A number of sets have also been supplied to the Italian government, while there appears a probability that it will be fitted in other directions.—*Engineering.*

Mr. James S. T. Stranahan.

A dinner was given by the Hamilton Club of Brooklyn, N. Y., on December 13, in honor of one of her oldest and most distinguished citizens, Mr. James S. T. Stranahan. He has long been a representative of all that was best in the advancement of his city and time, and now at the age of eighty looks back upon a residence of nearly fifty years in the city of his choice. Some of his remarks made at the banquet have a peculiar interest. In the course of his address he said:

"I came to this city in 1844 and have since continued to reside here. There is no spot on earth to which I am so strongly attached as to the city of Brooklyn. The first enterprise in which I engaged on coming to Brooklyn was the Atlantic dock. In 1870 the first dividend was paid, twenty-six years after I engaged in the work. The second enterprise in which I was interested was Prospect Park. All the members of the original park commission, with the exception of myself, are sleeping in Greenwood.

"The third project that interested me in Brooklyn was the Brooklyn bridge. No one can but acknowledge what the great structure owes to Henry C. Murphy and William C. Kingsley, both of whom sleep in their graves. There are two others, the Roebings, father and son. The first lost his life, the second his health, in the building of the structure.]

"Brooklyn and New York are two municipalities. Is this an advantage? I think not. Would the consolidation involve any harm to either? I think not. The people in both cities are alike in sentiment and feeling and have about the same interests. One municipal government could be carried on at less cost to taxpayers. I may be mistaken, but I think that the people of both cities should consolidate under the name of New York. (Applause.) London is London on both sides of the Thames, and Paris is Paris on both sides of the Seine. The East River bridge, added to the ferry system, will so affiliate the two cities that both will alike ask the legislature of the State to enact a municipal marriage."

The dinner was attended by a company of 167 leading citizens, representing the bar, the pulpit, and other professions, as well as the business side of life.

Anthrarobin.

At the recent meeting of the American Dermatological Association, Washington, Dr. Bronson read a paper on a new remedy which he said was manufactured by Liebermann, a Berlin chemist, and was first employed on theoretical grounds, on account of its resemblance to other remedies of known value. Alizarine belonged to the same class, and from this anthrarobin was formed by a simple process of reduction. It was a powerful oxidizing agent, one gramme taking up 120 c. c. of oxygen. It was a yellowish white, granular powder, sparingly soluble in chloroform and ether, readily soluble in alcohol and weak alkaline solutions. It mixed readily with fats in the formation of salves. The presence of an alkali increased the reducing effect. The author had treated cases of psoriasis at the Charity Hospital, applying anthrarobin on the right side of the body and chrysarobin on the left side. It was used in a ten per cent mixture with vaseline, and once a day an alkaline bath was given before the application. Out of the eight cases treated, the first five had been somewhat surprising. Improvement had begun sooner and gone on more rapidly on the right side, but after the applications had been stopped there had been more recurrences on the right side.

In the three other cases the alkaline baths had been omitted, and the improvement had been more marked on the left side; but as soon as the baths had been commenced, the right side had begun to improve more rapidly. The staining was of a dark brown and deeper than with chrysarobin, but it was limited to the area to which it was applied. In only one case, and when a twenty per cent application had been made, had it been irritating. In a very marked case of eczema seborrhoeicum the effect had been very marked. It had no antipruritic effect. In diseases in which the indication was for a purely keratoplastic agent, or in such conditions as obtained in the old stages of eczema, there was reason to hope that the new remedy might render considerable service.

Railway People Must Carry Good Watches.

The Rock Island road has notified its employes that, commencing December 1, 1888, each conductor, engineer, yard master, train dispatcher, section or bridge foreman, and officer connected with the operating department, and all employes in responsible positions as to the running of trains, will be required to carry a watch of a certain standard excellence, and shall have their watches examined by the company's examiner for certificate as to condition and quality, and once every three months thereafter.