

Another New Atlantic Cable.

When the excitement in this country and Europe which attended the laying of the first Atlantic cable, and the doubt, delays, and misfortunes of that great enterprise, are contrasted with similar operations at the present time, we are enabled to realize the progress which has been made in telegraphy within less than a quarter of a century. The Anglo-American Telegraph Company has just completed the work of laying a new cable from Valentia to Heart's Content, and so much a matter of course has it become, and so certain and comparatively easy an operation, that it attracts scarcely any public attention. The newspapers record the fact in a news paragraph of a dozen lines, and scarcely an allusion is made to it in editorial columns.

These slender cords buried in the depth of the sea now connect every country of the earth, and the history of the preceding day at the Antipodes appears in the morning papers as regularly as the incidents occurring in the immediate vicinity of their publication. The electric telegraph has bound together the most widely separated sections of the earth, and has revolutionized the business and social systems of the world.

The Atlantic cable telegraph business has developed so enormously and is so rapidly and constantly increasing as to continually demand additional facilities, and these the Anglo-American Company promptly furnish. A few years ago one cable more than sufficed for all the business offered. The business was then an experiment, and the necessarily high rates charged for the service restricted the patronage to very limited proportions. From time to time, as experience enabled it to be done with safety, these charges have been reduced until, at the present time, messages are transmitted between this country and Europe at rates which would have speedily ruined any company a few years ago. It is true that the charges for cable telegraph service across the Atlantic are at present abnormally low (12½ cents per word) in consequence of bitter competition of rival companies, but even without such competition the service will hereafter be profitably performed at a cost to the public which, not many years since, would have been regarded as absurd and ridiculous to propose. This is made possible by improvements in the construction and operation of the cables. By duplexing the cables their capacity for the transmission of business has been practically doubled, and it is not regarded as impossible that their capacity may yet be still further largely developed.

The Anglo-American Company has now in operation four cables, and the Direct United States one, which by the successful application of the duplex system in working them afford facilities equal to what would have been realized with ten worked in the ordinary way. It is expected that these will adequately meet the demands of the public for some time to come. Should more be required, however, the managers of the Anglo-American and Direct Companies are prepared to supply them promptly, each company having wisely accumulated a large reserve fund for maintenance of existing cables, and providing new ones as required.

The efforts of the cable companies are liberally seconded by the Western Union Company, which is now engaged in building an entirely new line of the largest wire used for telegraphic purposes, which is to be quadruplexed and used exclusively for cable business.—*Journal of the Telegraph.*

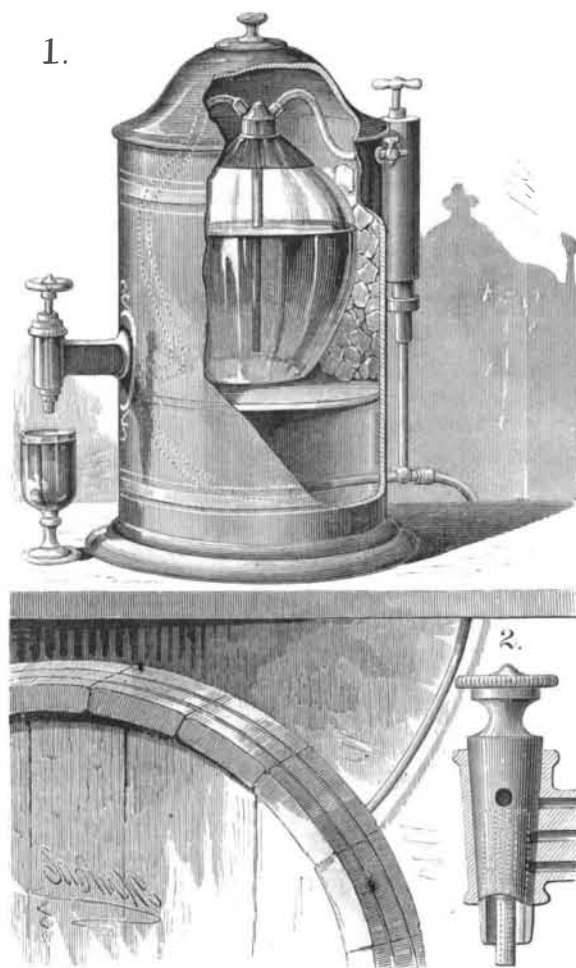
A Chemical Lung.

On Wednesday, August 18, Dr. Richard Neale, in the presence of a number of engineers, including the manager of the underground railway, and other scientific men, gave an interesting and, as far as it went, successful demonstration of a scheme to purify the foul air of tunnels, mines, cabins, churches, theaters, hospitals, and other buildings. The proposal is, we believe, a novel one, and promises to create a new era in ventilation. Nearly all attempts hitherto made to purify the air in crowded buildings have been mechanical, and have consisted of driving out the foul air by currents of fresh air. Dr. Neale's proposal, on the other hand, is a chemical one, and is designed to destroy the poisonous gases. It is not, of course, intended to supersede ordinary ventilation by currents, but rather to act as an auxiliary. The essence of the scheme is the adoption of some simple chemical facts. As the lungs of living beings appropriate oxygen and give off carbonic acid gas, Dr. Neale proposes to make a "chemical lung" which will appropriate carbonic acid and sulphurous gases from the air containing them, without yielding any products in exchange. The air in the tunnels of the underground railway was referred to as a conspicuous and well known example of impurity irremediable by mechanical means. The principal deleterious gases in this instance are carbonic acid and sulphurous gases and carbonic oxide. All these, but especially the two former, may, Dr. Neale maintains, be easily got rid of by chemical means. By mixing a solution of sulphurous acid and water in a flask Dr. Neale made an excellent imitation of the air at the Baker street or Portland road station. He then added a small quantity of solution of caustic soda, and agitated the flask briskly for a few seconds, and immediately the sulphurous smell was abolished. Into the same flask a current of carbonic acid gas was next passed, so that a lighted taper introduced into the flask was at once extinguished. After a few shakings a lighted taper was again introduced and burnt with a bright, steady flame, showing that the soda had taken up the acid. Similar experiments were made with solutions of caustic lime. Dr. Neale said the facts illus-

trated in these simple experiments formed the basis of his scheme for purifying ordinarily impure air. As regards the Metropolitan and other underground railways, the locomotive engines might, he said, be supplied with a tank containing a strong solution of caustic soda or lime, through which the smoke should be made to pass before being discharged into the outer air. By this means the carbonic acid gas and the sulphur would be eliminated. The carbonic oxide would require to be dealt with in another way, which need not now be explained. In order to attain further purification of the air in the tunnel, each train might be furnished with a truck open at both ends, and appropriately fitted with trays or other contrivances for holding solutions of lime or soda. As the train progressed air would rush through the tanks or trays, and be robbed of its carbonic acid and sulphur in its course. The proposal is as happy as it is ingenious. It further commends itself on the grounds of simplicity and cheapness. It only remains for those concerned, and we would especially indicate the directors of the underground railway and the managers of theaters, to manifest a proper public spirit, and fairly test its practicability. There should be no insuperable difficulty in putting it to a practical test. Meanwhile, we shall watch with interest any attempts that may be made to carry out the idea in detail.—*London Lancet.*

NEW BEER FAUCET.

Beer making and selling have attained an importance both in extent and pecuniary interest all over the world that ranks it among the greatest industries of the age. Malt

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liquors constitute the beverage of the multitude, and it is essential that these liquors be dealt out in a sweet and wholesome condition. All kinds of malt liquors that are beginning to sour, or have become sharp pricked or stale, are unwholesome, since these terms express the several stages through which all malt liquors pass by exposure to the atmosphere, from a palatable article to that of an offensive and dangerous one; hence various and often expensive devices have been resorted to, both to force beer from a cask without permitting its gas to escape, and to bring it from below up to a counter, none of which have hitherto answered a satisfactory purpose.

The improved beer faucet shown in the engraving is secured by three United States patents, and is patented in England, France, and Germany. Beer and other malt liquors, to be wholesome and properly preserved, must either contain or be capable of generating an amount of gas sufficient to empty the cask by its expansive force. Proceeding upon this proposition, which was found by numerous trials to be correct, it seemed manifest that to preserve such liquor from becoming stale and unwholesome it was only necessary to prevent the air from entering the cask and the gas from escaping from it, and apparatus, by which a glass of beer can be readily drawn from a fresh keg without waiting for the excess of froth to subside, is desirable.

The patentees of the faucet illustrated claim that they have succeeded in making such an apparatus, which, if adopted, would afford a great pecuniary benefit to the brewer in saving great numbers of long brass faucets, short and less expensive ones being as good, and largely avoiding the liability of empty beer kegs becoming sour and musty by exposure to

the air before they are refilled; and it will secure to the retailer a great saving of time, and also the labor attendant upon the insertion and removal of vent valves, to say nothing of the great waste from the beer becoming stale.

This device may be either cheap or ornamental, and it is capable of preventing beer from becoming stale at any age, and it will bring beer that is fit to drink from the cellar without the use of a pump. It will also cool it without extra expense, since the ice that is used to cool drinking water also cools the beer. It can be readily applied to any faucet in a cask by means of a hose and coupling.

The engraving shows a sealed beer receptacle placed in the ice chamber of an ordinary water cooler. The faucet of the cooler, however, performs three separate functions: it will draw ice water from the cooler, it will take beer directly from the cask, or from the glass receptacle, as may be desired. The internal construction of the faucet is shown in Fig. 2. A model of this apparatus is on exhibition at the Inventors' Institute, No. 733 Broadway, New York.

Further information may be obtained by addressing Dr. A. J. Spencer, No. 115 W. 126th street, New York, or the Inventors' Institute as above.

THE AMERICAN SCIENCE ASSOCIATION.

The proceedings of the first two days of the Boston meeting of the American Association for the Advancement of Science were noticed last week. The early promise of a large and, in the fullest sense of the word, popular meeting was amply fulfilled. Nearly a thousand members were registered; 595 new members and 45 fellows were elected, among them Mrs. E. A. Smith, of Jersey City, the first lady thus honored. The number of papers entered was 280. A very active interest was manifested in the proceedings throughout, and the hospitality of the people of Boston and the surrounding towns was unbounded. Boston and its vicinity are rich in institutions, manufactories, pleasure resorts, and points of historic interest, and not a few of the members found these sources of pleasure and profit unsurpassed even by the regular proceedings of the association.

Comparatively few papers were read before the general sessions, the attendance being so large and the number of papers so great that most of the work was done in the sections and subsections. In view of the increasing size of the annual gatherings the committee on membership reported in favor of extending the scope of the association, recommending that instead of two sections with subsections, as at present, the association should have eight, as follows:

A—Physics. B—Astronomy and Pure Mathematics. C—Chemistry, including its applications to agriculture and the arts. D—Mechanical Science. E—Geology and Geography. F—Biology. G—Anthropology. H—Economic Science and Statistics. It was also recommended that there may be a permanent subsection of microscopy, which shall elect its own officers, and be responsible directly to the Standing Committee, and that the Sectional Committee of any section may, at its pleasure, form one or more temporary subsections, and may designate the officer thereof. The report will be acted upon at the next meeting.

Among the other reports of special committees two were of general interest. The report of the Committee on Science-teaching in the Public Schools has been noticed elsewhere. The committee to memorialize Congress and State legislatures regarding the cultivation of timber and the preservation of forests recommended a law to protect trees planted along highways, and to encourage such planting by deductions from highway taxes; also the passage of a law that shall exempt from taxation the increased value of land arising from the planting of trees where none were growing to such period as may appear proper, or until some profit may be realized from plantations; by appropriations of money to agricultural and horticultural societies, to be applied as premiums for tree-planting, and for prizes for the best essays and reports upon subjects of practical forest culture; by encouraging educational institutions to introduce courses of instruction having reference to practical silviculture; by laws tending to prevent forest fires; by imposing penalties against willful or careless setting of such fires, and enlarging and defining the powers of local officers in calling for assistance and in adopting measures for suppressing them; by establishing under favorable circumstances model plantations; by the appointment of a Commission of Forestry under State authority analogous to the Commission of Fisheries.

The cable message to the British Association, previously referred to, received a cordial answer returning thanks therefor. A message of congratulation was also sent to the venerable M. de Chevreul, senior member of the French Academy, on his 95th birthday.

The officers elected for the next meeting, in Cincinnati, to begin August 17, 1881, are: President, Professor G. J. Brush, of New Haven; Secretary, Professor C. V. Riley, of Washington; Treasurer, Professor W. S. Vaux, of Philadelphia; President of Section A, Professor A. M. Mayer, of Hoboken; Secretary, Professor John Trowbridge, of Cambridge; Vice-President of Section B, Dr. George Englemann, of St. Louis; Secretary, Professor William Saunders, of Canada; Auditing Committee, Professor Henry Wheatland, of Salem, and Professor Thomas Meehan, of Philadelphia.

In the permanent subsection of Chemistry, Professor William Ripley Nichols, of Boston, was elected Vice-President, and Professor H. W. Wiley, of Lafayette, Ind., Secretary. In the permanent subsection of Anthropology, Colonel Derrick Mallory, of Washington, was elected Vice-President,