Scientific American.

NEW YORK, MARCH 13, 1858.

Heating Buildings and Ventilation.

The Fire Marshal of this city, in his semi-annual report, just published, presents a considerable amount of information of very general interest which deserves special notice, on account of the facts and fallacies set forth. He condemns the use of hot air furnaces, now so common, because of their dangerous character in respect to fires, but more so on sanitary considerations. When imperfectly constructed and arranged, they are frequently the cause of fires; yet it is admitted they may be so built as to avoid this danger, but they are always prejudicial to health. It is stated that in the public schools in which they are employed, they produce injury to the health of the scholars, the teachers having to allow numbers of them to go home frequently before the hour of dismissal, on account of severe headaches. For this reason they are condemned, and the abjuration of their use recommended, and as a substitute for them, regarding both health and safety, the heating with hot water by pipes is advocated.

We know that the *abuse* of hot air furnaces in heating apartments is the frequent cause of fires, of nervous fevers, and lung diseases. In very cold weather the plates of these furnaces are generally heated red hot, and as a consequence the air which comes in contact with them is decomposed, and rendered unfit to be inhaled. But will the use of hot water pipes, distributed through a schoolroom or any other apartment, remedy the evil of headaches complained of in the Fire Marshal's report, without the use of other agencies? We are confident they will not. He has overlooked the main cause of the health evils in schoolrooms, namely, the absence of arrangements for proper ventilation. Unless means are employed for a constant supply of pure fresh air to rooms heated by the hot water pipes, it is evident this system must be more hurtful to the health of children in overcrowded schools than the present hot air furnaces. These latter do take in a constant stream of fresh air, and throw it into the rooms, and if some of it is deteriorated in passing over too highly heated surfaces, yet a portion of pure warm air is also supplied, and thus the foul air has not to be ruminated by the lungs as in rooms heated by stoves, and steam, and water pipes unprovided with the means of furnishing fresh air.

The correct method of heating rooms is to throw a constant stream of fresh warm air into them. By keeping hot air furnaces at a moderate temperature, so as not to *burn* the air, they afford the means of properly heating and partially ventilating rooms, but they are too liable of abuse in being easily overheated. Hot water is undoubtedly the most safe and pleasant means of heating air for rooms, but it must be so employed as to meet the conditions requisite for health, by sending a constant supply of warm fresh air into the apartments to be heated.

On page 51, Vol. XI, SCIENTIFIC AMERICAN, there is an illustrated description of a hot water heating furnace, which appears to meet all the conditions necessary for heating rooms, both as it relates to safety and health; and were it combined (as it no doubt can be) with means for removing the foul air, it would, in our opinion, be a very perfect system.

As many deplorable accidents have occurred in public schools from defective hot air furnaces, the attention of the Boards of Education is specially invited to this subject. It is fraught with consequences of the highest importance, and deserves early and rigid investigation, as most of the public schools seem to have been erected and arranged in violation of the plainest rules for heating and ventilating them properly.

Mode of Connecting Telegraph Cables.

The accompanying figures represent a new method of connecting the ends of the sections of submarine telegraph cables, invented and patented in England by W. B. de Blaquiere, of London. It has been supposed that the former methods of joining the ends of telegraph cables have been defective, and that when any of them have been broken, it was at the joints, also that other methods did not allow of their being connected quickly, hence the present improvement.

Fig. 1 is a longitudinal section; *a* is a metal tube having at each end a portion, *b*, with a thread upon it attached to the other part by a hinge. The central portion of the tube is filled with gutta percha, and has wires passing through it to connect with the conducting wires of the cables. There is a nut

Fig. 1

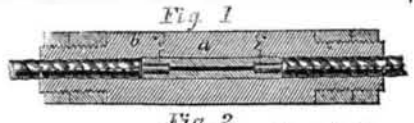
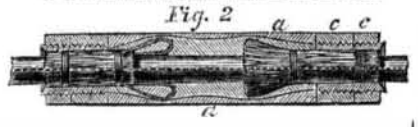


Fig. 2



screwed on to each end of the tube to press and secure the ends of the cable. The junction is made between the sections of the cables by bringing them together in the tube when nuts are slipped over the ends of section cables, thus allowing the jointed parts, *b*, of the tube to be opened so as to permit plastic gutta percha to be filled around the cable. The jointed parts, *b*, are then shut down, the nuts pushed off the cables upon the tubes, then screwed up, and the junction is complete.

Fig. 2 is a section showing a somewhat different method of forming such joints. The coupling tube, *a*, is made in two halves, and the conducting wires of the two sections of the cable are brought together and united directly. The nuts, *c c*, are slipped off the tube over the ends of the cable, the tube opened, the sections brought together, united, the interstices filled with plastic gutta percha, the tube closed around the cables, the nuts passed back over their ends, screwed up, and the coupling is completed.

In Fig. 1 the inside of the tube is grooved to receive the special covering of the cable, and hold it fast like a screw bolt in a nut; but in Fig. 2 the covering wires of the cable are turned back over a metal ring and the form of the tube corresponds to this, so that the cable is locked firm in the tube, and cannot be drawn out of place. A quick and strong method of jointing the sections of marine cables is absolutely necessary in cases of emergency which often occur at sea.

At a recent meeting of the Transatlantic Telegraph Company, held in London, the capital was increased to meet additional expenses especially for seven hundred miles of extra cable to be provided for the next attempt. This enterprise meets with the sympathy and good wishes of all men, because, if successful, it will be of world-wide benefit; but we are fearful, from the difficulty of working lines not one-fourth the length of the Atlantic cable, that communication through it is more than doubtful, even if the cable should be laid successfully. The steam frigate *Niagara* has been completely repaired, and is now on her second voyage to England, to engage in laying the cable in conjunction with the frigates provided from the British fleet. The next attempt to lay the cable will take place, it is presumed, in the early part of May, when we hope all will result well in the issue.

THE GREAT MYTH.—We are glad to announce that the mighty humbug which has so often made us gape with wonder is at last caught. A gentleman of Newcastle-on-Tyne, England, informs the London *Times* that he caught the sea-serpent some time ago in lat. 26 S., lon. 6 E., and it proved to be nothing but a gigantic sea-weed, the root of which formed the head, and the leaves the flowing mane so often described.

Gas Meters.

We have received a communication from John Watson, of Louisville, Ky., in reference to the article on page 186, referring to the charge of R. Prince, of Brooklyn, N. Y., against gas companies employing meters constructed to register a greater amount of gas than that consumed by customers. Our correspondent states that there are over 3,000 gas meters in use in Louisville, made by different manufacturers in Philadelphia, New York, and in London, England; that they are all carefully tested before they are used; that they register correctly; and that gas consumers are not deceived by them. The gas works in Louisville have apparatuses for testing the quality of the gas and the correctness of the meters, and these are at the service of customers at all times. He states that a public inspector may do very well in large cities, but the expense of such an office would be too great for small towns and villages. He is undoubtedly correct in this opinion.

A bill has been brought into the Legislature of New York to appoint a public inspector of gas meters for this city; and perhaps it will become a law, thus creating a new office, which would be very satisfactory to the public if proper persons could be appointed for the purpose. But in a city like this, where appointments are made on political grounds, without regard to the fitness of the appointees, we question if a Board of Inspectors would be of much benefit to the gas consumer.

One thing, however, the gas companies should be compelled to do, and that is, to permit every householder to *own* the meter, if he should wish to purchase it, subject to the control of the company, or else to reduce the rent of meters to a reasonable charge. At the present rent charged by our companies for meters, they must realize at least 40 per cent per annum on their cost, which is at least 30 per cent too much.

Mr. Samuel Down, who manufactures all the meters for the gas companies of New York city and Brooklyn, has called upon us since the above was in type, and contradicts every allegation made by Mr. Prince relative to the incorrectness of the gas meters made by him; and he states that he has supplied, in various sizes of meters from his manufactory, during the past ten years, the enormous number of 80,000 meters! He also states that it will give him pleasure to see any consumer of gas at his factory at 22d street, near 10th Ave., New York, and to prove any gas meter made by him and in use, and invites all such to call. It will give him pleasure to see any scientific gentlemen who may feel an interest in the question, and to have them examine and test, to their own satisfaction, the accuracy of the instruments used in proving the gas meters. The process is very simple, and easily explained and understood; and if those who have doubts on the subject will call, he will cheerfully give them such evidence as will satisfy them that there is no article of commerce more accurately measured than the gas which is habitually dealt out to them by the companies so unjustly abused.

Dr. Livingstone's New African Expedition.

It has been announced, that the vessel which has recently sailed with the now celebrated Dr. Livingstone for the southeast coast of Africa, has on board a peculiar steamboat, provided by the British Government, to enable the veteran traveler to prosecute his investigation of the Zambesi River. This small steamer or launch, has been built at Birkenhead, opposite Liverpool, by John Laird, and the material of which it is principally constructed is the "homogeneous metal," noticed on page 149, this volume SCIENTIFIC AMERICAN. The plates for the hull of this steamer will be as strong as those of common iron double the thickness. For convenience of transport, it has been built in three sections. The center section contains the boiler and a single horizontal high-pressure engine of 12-horse power, and the two end sections are fitted up for the accomodation of the persons engaged in the expedition. Each compartment is made secure with water-tight bulkheads. In the aft section is a neat deck-house, which will be comfortably furnished, and will have every necessary appliance for securing ventilation. The vessel is a paddle steamer, her dimensions being—length, 75 feet; breadth, 8 feet; and depth, 3 feet. She will not draw more than 12 or 14 inches, so that she is expected to be able to navigate the shallowest parts of the river. The boiler, as well as the hull of the launch, is made of the homogeneous metal plates, which are only three-tenths of an inch thick. The sections will be joined together and launched when the ship reaches her destination. Great results are expected from this expedition.

Explosion of an Air Chest.

We have received from one of our correspondents—S. M. Parsons, of Waukau, Wis.—the account of a peculiar explosion of an air chest which took place a few weeks ago at the Vermilion Blast Furnace of that place. Dr. Tilden, one of the proprietors, informed him that the furnace and hearth were of the common form with one tweer, using charcoal for fuel with hot blast smelting a mixture of bog and other iron ore. The furnace had run over thirty days, and was stopped half an hour to draw off the metal. The instant it was started again, the air chest exploded with a most violent report, and doing considerable damage. It was situated one hundred feet from the furnace between two cylinder bellows, with which it was connected by swing valves. The pipe connecting it with the furnace passed back and forth under the boilers where it leaked a little air, and the tweer also leaked some water at its mouth.

Various cases of explosions are on record as having been caused by leaky tweers, and in all likelihood this was the cause of this explosion. Water falling upon red-hot charcoal, or iron will be decomposed, and the hydrogen gas set free. In this case, water from the tweer may have been decomposed, and the hydrogen may have passed into the leaky air-pipe, thence into the air chest, and mixed with the oxygen of the air, thus forming a violently explosive compound gas easily ignited by the most minute spark.

Business Prospects.

We are happy to chronicle a gradual and healthy resumption of business. We learn from an exchange that all the large iron manufacturing establishments at Troy, N. Y., have resumed operations. The Burden Troy Iron and Nail Factory, Rensselaer Iron Works, and the Albany Iron Works are in full operation, but at a reduced rate of wages. Wm. Mason & Co.'s Locomotive Works, Taunton, Mass., also Rogers' Locomotive Works, Paterson, N. J., are beginning to feel the effects of the favoring gale.

Death of Commodore Perry.

This distinguished naval officer died at his residence, in New York, on the 4th inst., in the 64th year of his age. He entered the service in 1809, and was best known in the scientific world as having commanded the famous expedition to Japan, which extended from 1852 to 1855. The immediate cause of his decease was chronic rheumatism, from which he had been suffering for about ten days.

Death of an Editor.

Freeman Hunt, the publisher and editor of the *Merchants' Magazine*, died on the 3d inst., at his residence in Brooklyn, N. Y. In early days he was a practical printer, and during his lifetime was the editor of several works, but was chiefly distinguished as the founder and conductor of the above able periodical.

APOLOGY.—The SCIENTIFIC AMERICAN was printed last week on an inferior quality of paper, which we regret very much. We will endeavor to keep a sharp look out in future, so as not to impose upon its numerous readers again in like manner.