

A paper *On a New System of Warming and Ventilation* by Mr. J. D. Morrison, was read. The main features of the system consist in so circulating fresh air through a warming chamber into the room, and foul air through the fire into the chimney, that all local currents are resolved into one, which forms an upper warmer current from the fire to the opposite wall, and an under colder current from the wall back again to the fire, when, after supporting combustion, the products escape up the chimney. The vacuum thus produced by the warmer current through the chimney creates the now colder current from the atmosphere, which, passing through the heating chamber, supports the respiration of any number of persons.

On Friday, August 8, Mr. A. E. Fletcher, F.C.S., read a paper *On the Rhysimeter*, an instrument for indicating the velocity of flowing liquids, and for measuring the speed of ships through the water. The principle on which it is constructed resembles that of the anemometer, recently brought into notice by Mr. Fletcher, by which he is able to measure the speed of hot air, flame, and smoke, contaminated with dust or corrosive vapours, as met with in furnace flues and factory chimneys. Both in the anemometer and in the rhysimeter, the impact force of the current, and also its tendency to induce a current parallel with itself, are measured and made to become indicators of the force and velocity of the stream. The apparatus is very simple. A compound tube with two orifices at the bottom, one of which faces the source of the current, while the other faces the opposite direction, is held in the stream, and communicates by tubes with the indicator where the pressure is measured by columns of ether, water, or mercury, according to the circumstances of the case. When used to measure the velocity of a brook or open stream of water, the speed at any depth or at any portion of its surface can be separately estimated. For taking the speed of water in pipes it is only necessary that there should be suitable cocks screwed into the pipes at the required places; through these the "speed-tube" of the rhysimeter passes without allowing any escape of water, whatever may be the pressure. A still more important application of the instrument is to measuring the speed of ships. Here the speed-tube pierces the bottom or side of the ship, and projects a few inches into the water outside. The indicator may be in the captain's cabin. It resembles in size and appearance a barometer. In it a column of mercury indicates continually the speed of the ship. The full effect of the velocity is imparted to the mercury, without loss by friction or otherwise, so that the indication must always be absolutely correct. The instrument may be made self-registering, showing by a dial the total number of knots the ship has run since she left port, and marking on a sheet of paper the speed attained at every portion of the time. This permanent register may, in many cases, be of the greatest value. The paper was illustrated by diagrams, and by tables showing the velocities in knots per hour, or in feet per second, for the various heights of the columns of water or mercury.

Admiral Sir Edward Belcher said the principle was very valuable, but he did not see the necessity of passing the tube down so far below the water. He thought one or two inches would suffice.

Prof. Rankine said the principle of the instrument was an old one, and the author, he believed, admitted this. Mr. Fletcher had overcome a series of inconvenient and difficult details, and had produced an instrument which had actually been applied to practice with satisfactory results. He believed that the instrument would be a good substitute for the old log system of ascertaining the speed of a ship.

This section did not sit on Saturday.

SCIENTIFIC SERIALS

THE article in the *Quarterly Journal of Science* for July which will be most read, is by the editor, Mr. Crookes, "Experimental Investigation of a New Force," on which we have already commented. "The Dawn of Light Printing" gives a sketch of the early discoveries in photography of Niepce, Fox Talbot, and Daguerre. Mr. F. C. Danvers gives an account of the present condition of inventions for Pneumatic Transmission, with mathematical formulæ for the power obtained. Under the title "Where are the bones of the Men who made the unpolished Flint Implements?" Mr. Pengelly argues that we know so little about the effect of various climatic and atmospheric conditions on the bones of man and the lower animals, that it is rash to con-

clude, because human remains are not, as a rule, found associated with flint implements and animal remains in the bone caves, that therefore they cannot have been originally deposited along with them. He also cites a number of unquestioned instances in which the bones of man have been found in such situations, to all appearance contemporaneous with the animal remains. Even were such evidence entirely wanting, Mr. Pengelly considers the flint implements themselves absolutely conclusive proof of the contemporaneity of man with the mammoth and the extinct cave-animals. One of the most valuable and interesting articles in the number, though a short one, is entitled "A New Mechanical Agent: A Jet of Sand." Mr. B. C. Tilghman, of Philadelphia, appears to have solved the problem of cutting or carving, mechanically, hard substances, such as stone, glass, or hard metals, in an expeditious, accurate, and economical manner. He has shown that a jet of quartz sand thrown against a block of solid corundum will bore a hole through it one and a half inches in diameter and one and a half inches deep in twenty-five minutes, and this with a velocity obtainable by the use of steam as a propelling power at a pressure of 300 lbs. per square inch. The apparatus used for grinding or cutting glass or stone is described in detail. By covering parts of the glass surface by a stencil or pattern of any tough or elastic material, such as paper, lace, caoutchouc, or oil paint, designs of any kind may be engraved upon it. In his abstracts of the Progress of Science, the editor now confines himself entirely to the physical branches.

THE *American Naturalist* for August contains no one very striking paper, though several of considerable interest. Dr. J. S. Billins contributes a mycological paper on the "Study of Minute Fungi," and Mr. A. S. Ritchie one, entitled "The Toad as an Entomologist," showing the very large number of insects which that animal destroys. On one occasion the writer found thirteen perfect insects in the stomach of a toad belonging to nine species, besides one clytron each of two others, and other vestiges of legs and wings. He concludes that the toad is of great service to agriculturists.—Prof. Lesquereux has an article on the "Mode of Preservation of Vegetable Remains in the American Coal Measures," an important article on vegetable palæontology; and Alexander Agassiz a short paper on "Systematic Zoology and Nomenclature," indicating the great importance of a correct system of nomenclature as an item in the history of zoology.

THE *Western Chronicle of Science* for July 1871. Edited by J. H. Collins, F.G.S. Nos. 1—7. Falmouth, W. Tregaskis.—We have much pleasure in noticing the first seven numbers of this local scientific periodical, and sincerely hope it will not be allowed to drop from want of subscribers, of which the editor complains. It should be encouraged by all lovers of scientific inquiry, not only in the western district but throughout the country. Its low price, only twopenny, puts it within the reach of all, while at the same time a large circulation is required to make it pay. The seventh number contains an interesting paper, valuable both to architects and geologists, on the ornamental rocks of Devon and Cornwall, counties abounding in beds of vari-coloured limestone sufficiently hard to receive the polish of marble. The second is a most sensible and judicious paper on the duties of local societies. If the suggestions here made were carried out in all societies, an interest in physical science would soon become universal. Besides other matters, the number contains the results of the May examinations in science, so far as these concern the classes in the West of Cornwall. A large proportion seem to have passed in the various subjects, the total number of successful candidates being 69.

SINCE the commencement of the *Revue Scientifique*, it has continued much the same course as its predecessor the *Revue des Cours Scientifiques*. Seven numbers are now before us, containing among others, the following articles, besides reports of lectures or extracts from the proceedings of various learned societies at home and abroad:—Van Beneden on Commensalism in the animal kingdom, Ancient Churches by M. Ch. Contejean, Geographical distribution of the Balæneæ by Van Beneden, Physico-chemical researches or Aquatic Articulates by M. Felix Plateau, M. Chauveau's Report on Science and Legislation in relation to the Cattle-plague in France, M. Claude Bernard on the Influence of External Heat on Animals, Accounts of the Life and Writings of M. Claparède and Prof. Payen, M. Pasteur's address, "Why France did not find superior men in the moment of peril," the addresses delivered at the Liverpool meetings of the British Association by Huxley, Tyndall, and Rankine, and reports of some of the sectional proceedings.