Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL AND OTHER IMPROVEMENTS.

VOL. XIII. NEW YORK, MAY 8, 1858. NO. 35.

THE
SCIENTIFIC AMERICAN,
PUBLISHED WEEKLY
At No. 128 Fulton street, (Sun Buildings,) New York,
BY MUNN & CO.

O. D. MUNN, S. H. WALES, A. E. BEACH.

Responsible Agents may also be found in all the principal cities and towns in the United States.

Sampson Low, Son & Co., the American Booksellers, 47 Ludgate Hill, London, Eng., are the British Agents to receive subscriptions for the SCIENTIFIC AMERICAN.

Single copies of the paper are on sale at the office of publication and at all the periodical stores in this city, Brooklyn and Jersey City.

TERMS—Two Dollars per annum.—One Dollar in advance, and the remainder in six months.

☞ See Prospectus on last page. No Traveling Agents employed.

American-built Russian Steamers.

Two steamers of a partially warlike character have just been built in our country for a Russian company, and are designed for trading between the Amoor river in Russian Asia, China and California. One named the *Manjoor* was built at Boston; the other, named the *Japanese*, at New York. The latter is 1,400 tuns burden, the former 1,000 tuns. Their engines are strong, plain and compact, and designed for effective service, not show. They are both propellers, and have made their trial trips, running at the rate of from eight to ten knots an hour easily. Their model is good, and under sail alone they have the speed of clipper ships. Their draft of water is comparatively light, as there are many shoals in the Amoor river. A great quantity of machinery, such as saw mills, are to be taken out in these vessels for the Russian settlements, as it is believed that a considerable trade in lumber can be carried on between those regions and California. The Russians by this movement have exhibited a great amount of enterprise and sagacity. We have no doubt but their trade on the Pacific coast will soon become very lucrative, if well conducted; and the good sense which induced them to come among us to get these steamers built, affords very good grounds for their future success.

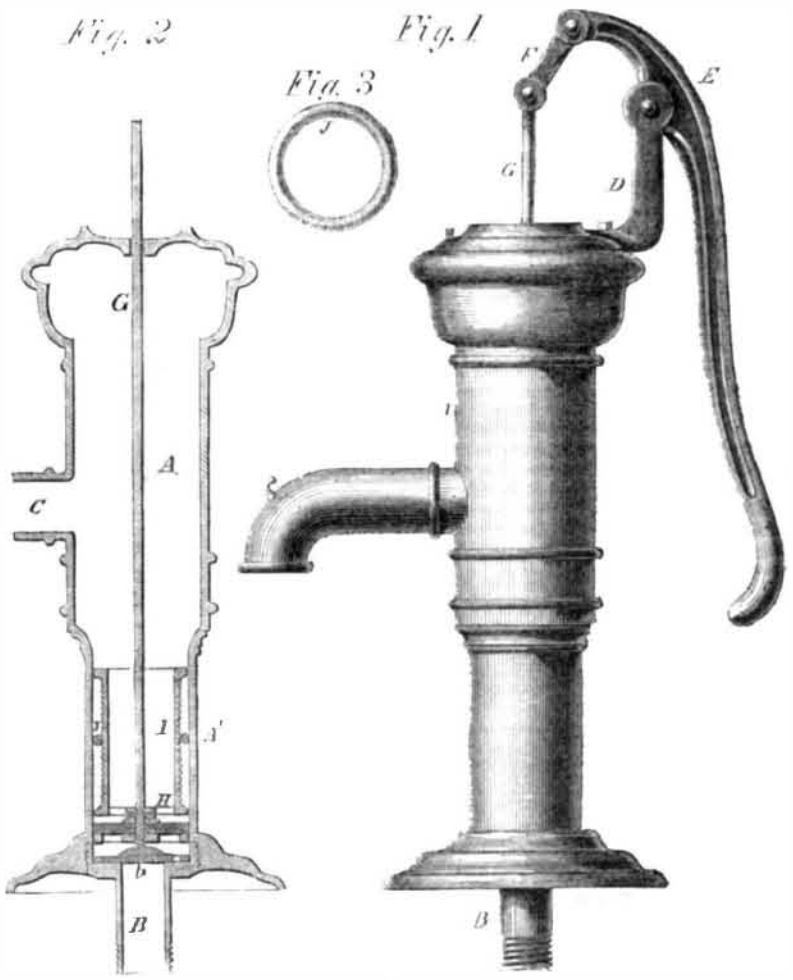
Stalactites.

At a recent meeting of the Boston Natural History Society, Professor Wm. B. Rogers stated that, a number of years since, he had made some experiments in the stalactite caverns of Virginia, for the purpose of obtaining data in regard to the age of these deposits. He placed vessels in an unfrequented part of the cave, beneath drippings of various dimensions, where they remained for a period of from five to seven years. He arrives at the conclusion, as the result of his observations, that the rate of accretion is one-tenth of an inch in five years, or an inch in fifty years. As there are several feet of accumulated deposit in some places, he thinks that the process must have been going on for at least five thousand years.

Polytechnic School in New York.

The directors of the Mechanics' Institute, in the Fourth avenue, New York, having met with such success in their endeavors to provide a means of obtaining a good, sound and practical education for the young mechanics of this city, have now determined to extend their usefulness by founding a school under the above title. In this school will be taught *practical* truths and useful facts; the pedantry of science is to be avoided, and simple knowledge placed before the learner in an interesting and attractive way. Professor Mapes, the agriculturalist, seems to be the life and soul of this scheme, and we wish him success.

UNDERWOOD'S IMPROVED PUMP.



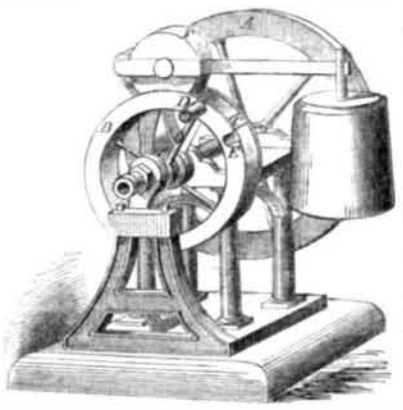
The great and common nuisance of pumps' packings wearing out, and the consequent stoppage of the pump, is by this invention almost entirely avoided, and that by a most simple and cheap contrivance. A ring of india rubber forms the piston packing, and as this as it wears is almost entirely self-repairing, it will last for a great length of time; and when it is actually worn out, another can be cheaply obtained and fitted in a few minutes.

In our engravings, Fig. 1 represents a side elevation of the pump, Fig. 2 is a section of the same, and Fig. 3 is a view of the packing ring detached.

A is the body of the pump, narrowed at A′, to admit of the accurate working of the piston. B is the induction pipe, and C is the spout or eduction pipe. From the top of A there rises a short standard, D, which forms a fulcrum for the handle, E, that is connected by a link, F, with the piston rod, G. This piston rod supports and moves the suction valve, H, at the bottom of the hollow piston, I, between the outer edge of which and the inner side of the case, A′, the ring, J, works up and down as the piston is elevated or depressed. The outer edge of I being serrated, prevents the ring dropping down, and always keeps it in its proper place. There is also, as is usual, a valve, *b*, at the top of the induction pipe, to prevent the water running back. This method of packing can be attached to any and every kind of pump whose piston has an up-and-down or horizontal motion.

This valuable and simple contrivance, which must recommend itself by its cheapness and perfection, is the invention of John Underwood, of Lowell, Mass., and was patented by him December 9, 1856. Any further particulars can be obtained by addressing B. F. Dean & Co., agents and manufacturers, 208 Broadway, New York.

Novel Rotary Steam Engine.



The accompanying illustration represents an ingenious rotary engine, which we have copied, and translated the description from Dingler's *Polytechnic Journal*, published at Augsburg, Germany.

The cylinder of this engine requires no boring out, there is no piston, no slide or exhaust valve, and, in fact, no sliding friction—the friction of the journals excepted.

On the shaft which carries the fly wheel, A, a pulley, B, with two projecting flanges, is rigidly fastened, and between the two flanges an india rubber tube is placed all round the pulley, B; one end of the tube is closed by a plate, C, while the other end communicates with an opening, E, in the side of the pulley. A roller, F, presses the tube down, so that no steam can escape between the roller and the pulley. If steam is admitted between the roller, F, and the plate, C, the pulley, B, begins to revolve, and the plate, C, recedes from the roller, F, until the whole tube is filled with steam. As soon as the roller comes on the top of the plate, C, the steam from the tube escapes through the exhaust port, E, and so enables the wheel to keep on rotating. Steam is admitted through an arm, D, and it is hardly necessary to state that the shaft is hollow, except that part on which the pulley, B, is fastened; and one end connects with the steam pipe, while the other serves to exhaust. In order to lessen the friction, the roller, F, can be made to press from below.

We illustrated a pump which worked on this same principle on page 324, Volume XI, SCIENTIFIC AMERICAN.

Yellow Metal Ship Fastenings.

R. Armstrong, directs the attention of the public, through the London *Mechanics' Magazine* of April 10th, to the unreliable character of the above-named fastenings for ships. He mentions the articles which appeared in the SCIENTIFIC AMERICAN (Vol. X) on this subject. In the repairing of vessels bolted with yellow metal, he has observed that in every instance where it has been in a vessel for five years, it had lost its ductility, and was, therefore, totally unfit for ship bolts. At various times he has personally called the attention of Lloyds' surveyors to this, but they have still classed vessels "A 1, 13 years," while he can safely assert, from experience, that four years are amply sufficiently to destroy the ductility of their bolts. He gives the British Admiralty credit for standing above the mercantile marine on this question—nothing but pure copper bolting being employed in the navy. He hopes the public will now demand that something positive be done to prevent the use of such ship fastenings. We hope that neither bolts nor sheathing of yellow metal are now employed by our shipbuilders—this metal being totally unfit for use in shipbuilding.

A Bridge Broken.

Not very long ago, a bridge crossing the river Severn, in North Wales, fell in, and one man lost his life. At the inquest the jury gave the following excellent and practical verdict:—

"We find that the death of Richard Grist was caused by the falling of the Caerhowell suspension bridge on the river Severn, that bridge not having been constructed or maintained in such a manner as to afford security to life and safety to property passing over in the ordinary way of traffic; that some of the defects consisted in the inferior quality of the iron, and workmanship badly performed—circumstances which might have been avoided had there been proper supervision by a person acquainted with the original plan and mode of construction. We feel it a duty not to separate without expressing our opinion that the present fatal catastrophe shows the necessity of greater vigilance on the part of the county authorities, and that safety and durability, rather than economy, should in future guide them in all public works."

Might not our American jurors and engineers learn from this?

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.—The twelfth annual meeting of this association met at Baltimore on the 28th ult. We shall be able to give an epitome of their proceedings next week.