

Scientific Museum.

Deep Sea Soundings by American Vessels.

[Concluded from page 253.]

"One of the conclusions," says Lieut. Maury, in his report on this subject to the Secretary of the Navy, "which we seem authorized to draw from the various soundings thus far obtained in the Atlantic, is this, viz, that if there be any part of the ocean, between the banks of Newfoundland and the Equator, more than 4,000 fathoms deep, (24,000 feet) it is probably not great in comparison with the whole. Another feature exhibited as to the shape of the steppes, or plains of the great oceanic basin is worthy of notice. There seems to be, as we travel south from the Grand Banks of Newfoundland, a precipitous ledge, or what sailors call a 'jumping-off place,' right under the Gulf Stream. The Hatteras Shoals are formed by a cold current which runs along the shores of the United States, counter to the Gulf Stream. They are shelving from the North, that is, as you approach from the North, you gradually lessen your water until you reach the shoalest part, and then there is a sudden jump-off into deep water." From Newfoundland to Ireland, the distance between the nearest points is about 1600 miles, and the bottom of the sea between the two places is a plateau. The depth of water on the plateau is quite regular, gradually increasing from the shores of Newfoundland to the depth of from 1,500 to 2,000 fathoms, as you approach the other side. Specimens brought from the bottom of this submarine plain, by means of the deep sea-sounding apparatus, are composed of minute microscopic shells, without a particle of sand or gravel. These shells suggest the fact that there are no currents at the bottom of the sea whence they came—that the lead found them where they were deposited in their burial-place after they had lived and died on the surface, and by gradually sinking they were lodged on the bottom. Had there been currents at the bottom there would have been swept and abraded, and mingled up with these microscopic remains, the debris of the bottom of the sea, such as ooze, sand, gravel, and other matter. Hence the inference, as none of these foreign substances were found among them, that these depths of the sea are not disturbed either by waves or currents.

The deepest sea soundings yet effected was made on the 30th October last, by H. M. Ship "Herald," in the course of a passage from Rio de Janeiro to the Cape of Good Hope, 36° 49' S. Lat., and 37° 6' W. Lon. The sounding line was 1-10th of an inch in diameter, laid in one length, and weighing, when dry, one pound per every hundred fathoms. 15,000 fathoms of this line belonged to the U. S. Ship "Congress," Capt. McKeever, and was manufactured at the request of Lieut. Maury, expressly for the purpose. The plummet weighed 9 pounds, and was 11.5 inches in length, and 1.7 inch in diameter. When 7706 fathoms had run off the reel the sea-bottom was reached. The captain of the "Herald" states that himself and other officers in separate boats, with their own hands drew the plummet up 50 fathoms several times, and after it had renewed its descent it stopped, on each occasion, abruptly, at the original mark to a fathom, and would not take another, turn off the reel. The velocity with which the line run out was as follows:—

	h.	m.	s.
The first 1000 fathoms in	0,	27,	15.
1000 to 2000 " "	0,	39,	40.
2000 to 3000 " "	0,	48,	10.
3000 to 4000 " "	1,	13,	39.
4000 to 5000 " "	1,	27,	06.
5000 to 6000 " "	1,	45,	25.
6000 to 7000 " "	1,	49,	15.
7000 to 7706 " "	1,	14,	15.

Total, 9, 24, 45.

The distance through which the plummet descended in the above time, was 7.7 geographical miles of 60 to the degree. The highest summit of the Himalaya, viz. Dhawalagiri, and Kinchinging, are little more than 28,000 feet, or 4.7 geographical miles above the sea. The

sea bottom is therefore proved to have depths greatly exceeding the elevation of the highest pinnacle above the surface.

The strength of the line used in the above instance, tried before sounding, was found to be equal to bear 72 pounds in air. The 7706 fathoms which ran out, weighed when dry 77 lbs., exclusive of the plummet, 9 lbs. Great care was taken in the endeavor to bring the plummet again to the surface to show the nature of the bottom, but whilst carefully reeling in, the line broke at 140 fathoms below the water line, carrying away a self-registering thermometer, which had been bent on at 3000 fathoms.

The greatest depth of sounding obtained previous to the instance above referred to, was by Lieut. Walsh, in the U. S. schooner "Taney," on the 15th of November, 1849, Lat. 31° 59' north, Lon. 58° 43' west. A wire used in this case descended to the depth of 5,700 fathoms, (34,200 feet, or more than six statute miles) when it broke at the reel and was lost.

During the summer of 1853, the brig "Dolphin," U. S. N., was engaged in these investigations with great success, sailing from Chesapeake Bay, a line of soundings was first run from that point to the west coast of Scotland, at Rockule. Soundings being made at intervals of about 100 miles. From Rockule a second line was run to the Azores, a little to the north of which a ridge 6,000 feet in height from the ocean-bed, was discovered, the soil of which was of a chalky character, mixed with fine sand. From the Azores the explorers steered westerly, every where finding bottom at no great depth. The deepest sounding made at any time during this cruise was 3,130 fathoms, in Lat. 41° to 43° North, Lon. 51° to 56° West. The Dolphin is at the present time employed in continuing these investigations.

Experiments made by Wilkes during the U. S. Exploring Expedition, indicate that light penetrates the ocean to the depth of 80 fathoms (480 feet.) This may be considered also as about the limit of permanent animal and vegetable life. The depth at which objects cease to be visible to the eye is much less. A pot painted white was let down into the water, and the point of invisibility marked; upon taking it out the point of visibility was marked, and the two were found to vary but a fathom or two. In water of 36° Fah., the pot disappeared at 6 fathoms; in water at 76° Fah. at 30 fathoms; in the Gulf Stream at 27 fathoms; just outside of it at 23 fathoms.

"There is something," says Lieut. Maury, "peculiarly attractive and interesting about the mysteries of the sea. There is a longing desire to know more of them.

Man can never see, he can only touch the bottom of the deep sea, and then only with the plummet. Whatever it reveals, or brings up, is to the philosopher a matter of powerful interest, for by such information alone as he may gather from a most careful examination of such matter, the amount of human knowledge concerning nearly all that portion of our planet which is covered by the sea, must depend."

Fine Cotton.

The Montgomery (Ala.) "Journal" states, that Mr. Vanderveer, a planter in that place, has cultivated a kind of cotton for three years, which sells for 4½ cents more per pound than that of the same class of cotton. The seed came from South America, and it yields 25 per cent more to the acre than the common kinds.

A Dark Day Coming.

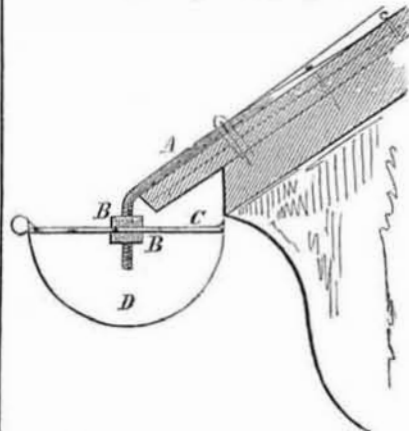
On Friday, the 26th of May next, the annular eclipse of the sun will continue about two hours and fifteen minutes, and obscure about eleven-twelfths of the sun. This extraordinary eclipse will be similar to that of 1806.

Geological Survey of Ohio.

The Legislature of Ohio, says the "Cincinnati Columbian," has made provisions for a geological survey of that State. The law provides that the State shall be divided into six districts, and the work be done by one principal geologist and a sufficient number of assistants. A map at least seven feet by six, engravings to illustrate the final report, the topography of every

square mile of territory, assays, and so on, are all provided for in the bill, and taxation to the amount of one dollar per square mile—\$40,000 per year for the State—to pay the expenses.

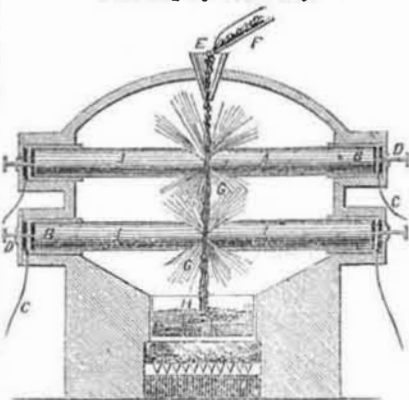
Suspending Eaves-Troughs.



This figure is a transverse section of an improved method of suspending and fastening eaves-troughs, for which a patent was granted to Chauncey D. Woodruff, of Toledo, Ohio, on the 7th of last month (March, 1854). The eaves-trough, D, is made of the usual form, with a cross bar, C, soldered to it, of sufficient strength to keep the trough in shape and sustain its weight. From this cross bar there extends an iron rod, A, with screw and nuts, B, B, at its lower end. This rod is bent to conform to the roof of the building, and it is flattened at its upper end and nailed to the roof, as shown. The screw and nuts on this rod allow of the trough being elevated and lowered on the said rod.

The nature of the improvement consists in the mode of suspending and securing eaves-troughs to roofs, so as to allow of their being elevated or depressed at pleasure, as represented. This is what is claimed in the patent.—This improvement is simple and appears to be a good one, for the house and cornices will not be disfigured by straps and rails, as by the common method of suspending an eaves-trough. More information may be obtained by letter addressed to the patentee at Toledo.

Smelting by Electricity.



The annexed engraving is a vertical section of an apparatus invented by M. Pichon, of France, for smelting ores.

A A are electrodes which are made of metal arms, each tapering towards the center, leaving a small space between each pair. These form the center of two galvanic circuits, and they are connected by wires, C, C, at the metal caps, B B, to the battery. The metallic ore to be smelted is mixed with charcoal or coke, and fed by the spout, F, through the hopper, E, and falls between the electrodes where it is ignited by the strong electric spark, as shown at G G, generating a most intense heat, and from thence in a molten current flows into a receiver furnace, H, which has a fire underneath, where the slag is separated from the molten metal. The electrodes are enclosed in an oven so as to retain all the heat. The inventor proposes to generate enough of electricity for smelting in this manner by a magneto-electric machine, instead of a powerful battery. To do so, it would require a very powerful one, and a steam engine to drive it, and he might gain as much by applying the coals required to generate the steam, direct to smelting the ore, and thus save both the expense of the steam engine, and the magneto electric machine. As the termini of the electrodes must soon fuse away, when made of iron, they are pushed forward gradually by

the head screws, D D. Platina is the best substance for the cathodes and anodes. This system of smelting ores, although novel, must be far more expensive than the use of fuel applied to produce the fusion by the blast and simple combustion.

Fast Sailing.

The famous ship "Marco Polo," Captain McDonnell, made the passage from Liverpool to Melbourne, in 84½ days, mean time, the shortest passage ever performed by a sailing vessel; but, unfortunately, while in charge of a pilot, inside of the Heads, was run ashore, and at last accounts, remained hard and fast, although two steam-tugs had attempted to tow her afloat. Her greatest run was 428 miles in 24 consecutive hours.

LITERARY NOTICES.

BIBLIOTHECA SACRA—This learned and able Review of the New England Congregationalists, for April, contains one of the most profound and interesting articles we ever read, on Historical Geography and Ethnography (a translation from the French.) There are four other able original essays in this number. In noticing the last number of this Review, we stated that Dr. Alexander, of Scotland, (one of the Editors) had been numbered, like Dr. Wardlaw, with the 'clouds of the valley.' In this we were mistaken: we had seen a notice—we now think in the "Scottish Guardian,"—of the death of a Dr. Alexander, but we are glad to know that it was not the learned Associate Editor of the "Bibliotheca Sacra," some of whose sermons we have read and greatly admired, for their devotional spirit, logical precision, and elegant diction. Published by W. F. Draper & Bro., Andover, Mass.

THE PRACTICAL DRAUGHTSMAN—Part 9, of this excellent work on mechanical engineering and architecture, is just published by Stringer & Townsend, this city. It is an excellent work in every respect.

LESLIE'S LADIES' GAZETTE—This publication occupies a field which has never been attempted in this country before—at least to anything like so creditable an extent. It is devoted exclusively to the ladies—furnishing fashion plates of every description in copious numbers. French and English, as well as American styles of children's dresses, hats, etc., are illustrated in its pages, and rules and instructions for netting, weaving purses, etc., form part of each month's contents. The April number is published. Office No. 6 John st. Price \$3 per annum.

MASSACHUSETTS AGRICULTURAL REPORT—We are indebted to Chas. L. Flint, Secretary of the Massachusetts Board of Agriculture, for the first Annual Report of the Board. It contains a great deal of very useful information for our agriculturists.

NATIONAL MAGAZINE—The May number of this valuable magazine has just made its appearance. It is profusely embellished with engravings, and in point of literary merit ranks among the first in the country.—Published by Carlton & Phillips, 200 Mulberry street.

CALIFORNIA CHRONICLE—We are indebted to the publishers (Frank Soule & Co., of the "California Chronicle," for a file of that young but able and neatly printed daily paper. It is published in San Francisco, and does credit to all connected with it.

L'INVENTION—We are indebted to M. Gardissal, of Paris, for a copy of "L'Invention" for 1854 and 1855, neatly bound in one volume. This French magazine of new inventions is a very able and useful publication.

MECHANICS

Manufacturers and Inventors

A NEW VOLUME OF THE

SCIENTIFIC AMERICAN

Is commenced about the 20th September, each year, and is the BEST PAPER for Mechanics and Inventors published in the world.

Each Volume contains 416 pages of most valuable reading matter, and is illustrated with over

500 MECHANICAL ENGRAVINGS

of NEW INVENTIONS.

The SCIENTIFIC AMERICAN is a WEEKLY JOURNAL of the

ARTS, SCIENCES, AND MECHANICS,

having for its object the advancement of the

INTERESTS OF MECHANICS, MANUFACTURERS

AND INVENTORS.

Each Number is illustrated with from FIVE TO TEN

ORIGINAL ENGRAVINGS

of NEW MECHANICAL INVENTIONS, nearly all of the best inventions which are patented at Washington being illustrated in the Scientific American. It also contains a WEEKLY LIST of AMERICAN PATENTS;—notices of the progress of all MECHANICAL AND SCIENTIFIC IMPROVEMENTS; practical directions on the CONSTRUCTION, MANAGEMENT, and USE of all kinds of MACHINERY, TOOLS, &c. &c.

It is printed with new type on beautiful paper, and being adapted to binding, the subscriber's possession, at the end of the year, of a LARGE VOLUME of 416 PAGES illustrated with upwards of 500 MECHANICAL ENGRAVINGS.

The Scientific American is the Repository of Patent Inventions; a volume, each complete in itself, forms an Encyclopedia of the useful and entertaining. The Patent Claims alone are worth ten times the subscription price to every inventor.

TERMS! TERMS!! TERMS!!!

One Copy, for One Year	\$3
Six Months	\$1
Five copies, for Six Months	\$4
Ten Copies, for Six Months	\$8
Ten Copies, for Twelve Months	\$15
Fifteen Copies for Twelve Months	\$23
Twenty Copies for Twelve Months	\$28

Southern and Western Money taken at par for Subscriptions, or Post Office Stamps taken at their Par Value. Letters should be directed (post-paid) to

MUNN & CO.,
128 Fulton street, New York.