

to distrust the Challenger observations. The apparatus there used could not furnish proof as to the point whether the animals were really caught at the depth of 1000 fathoms or near the surface. The fruits of the towing net may have been gathered anywhere in its course.

In the course of this expedition the temperatures of the Gulf Stream were ascertained throughout, from top to bottom, and through the whole area. The fact had been first noticed by Dr. Carpenter that an inclosed sea, such as the Mediterranean, may have a higher temperature for its depths than corresponding depths of the ocean. The difference in that instance is  $35^{\circ}$ . It is caused by the fact that the ocean water flowing into the Mediterranean has to cross a barrier at Gibraltar; the depth there is about 500 fathoms, and the temperature at that depth is that of the sea to the east of it, the cold water at the bottom of the Atlantic either never rising so as to float over that barrier, or, if it does, being warmed to the higher temperature while in transit. The Caribbean Sea is similarly inclosed by barriers, and its waters at their greatest depth are only as cold as that of the lowest soundings on the barrier. Similar observations are on record about the Soloo Sea and other bodies of water thus marked off by submarine or surface elevations surrounding them.

### EXAMINATION OF PLUMBERS AND THEIR WORK.

(See page 169.)

Considering the growing conviction that in large cities possessing systems of sewerage, the cause of zymotic diseases, such as typhus and typhoid fevers, cholera, diphtheria, scarlet fever, etc., is mostly to be looked for in sewer gas penetrating into the houses, and that this can be effectively prevented if plumbers only possessed the proper knowledge and common sense, it would be desirable to institute a Board for the examination and licensing of plumbers, the same as we have for steam engineers; next to this we ought to have a Board of Inspection into the sewerage arrangement of every newly built house, and of every other house in which large plumbers' repairs have been made, the same as we have inspections of steam-boilers.

We maintain that by the ignorance and carelessness of plumbers far more people lose their lives than by the ignorance and carelessness of steam-engineers, even if we count all stationary, steamboat, and locomotive engines together. And this is a natural consequence of the status of the class of people who belong to the two professions. Steam engineers (notwithstanding there are some stupid ones, and that the profession is not as yet by no means up to the desirable standard of intelligence and refinement) are as a class intelligent and careful, while on the other hand plumbers (notwithstanding there are some intelligent men among them who have clear heads and understand their business) are as a class stupid and careless. We say this frankly, without fear of collision with them, as only the better class of plumbers do read, while the stupid and careless class do not read our journal.

MR. STANLEY, says the *Echo*, insists on calling the Congo the Livingstone, and will use that name in his forthcoming book. When Lord Houghton hinted that, notwithstanding the Stanley dictum, it would be still called Congo, he was rudely interrupted by the parent of the new name shouting, "The Continental geographers are willing to call it so; why shouldn't you?" Simply for this reason. The countrymen of David Livingstone desired to spare him no distinction, but they also wish him to be honoured in a legitimate fashion, and not by appearing in stolen plumes. It is a law of all scientific nomenclature that a name once given must remain, unless some other similar point of land or geographical feature in the same country had previously obtained the same designation. In that case it must be altered to avoid confusion. If the "Continental geographers" do not know this, it is time they made themselves acquainted with such an elementary fact in the science which they are supposed to cultivate. Were geographical names allowed to be altered to gratify the whim or the vanity of every new explorer, the map of the world would soon become an inextricable mass of confusion.

ANOTHER new use of the telephone is in the Norwegian herring fisheries. The fishing season takes place when the herrings come into the shoals to deposit their eggs; but it often happens that the fish accomplish their purpose and go back into deep water before all the fishermen can be warned. Some 120 miles of submarine cable have been laid and telephones connected with it, so that all the fishermen on the coast can be immediately notified.

THE rubies recently made in Paris by MM. Fell and Frey are described as being so like the natural gems that they cannot be distinguished from the latter by any test. They are hard enough

to scratch topaz; they have precisely the same density as natural rubies; they crystallize in the same six-sided system; and their color is similarly lessened by heating them and restored upon cooling. The chemical and physical properties of the artificial gem appear to be exactly the same as those of the gem as it occurs in nature. This success of the French chemists is the more interesting from the immense comparative value of rubies. A true Oriental ruby of medium size is stated by a writer in the *Nineteenth Century* magazine to be worth ten times as much as a diamond of equal weight. One of thirty-seven carats, brought from Burmah in 1875, was sold on the Continent of Europe for fifty thousand dollars.

A RECENT discovery in telegraphy is likely, according to the *Student's Journal*, to cause a revolution in medical practice. Hitherto it has been necessary for country patients who wish to consult a London physician either to come to town or to send for their physician to visit their country homes. But it is not improbable that before long physicians will be able to remain in their consulting rooms and be kept advised by telegraph as to the exact state of their patients without regard to distance. It is reported that a physician, Dr. Upham, of Salem, Mass., recently demonstrated to an audience to which he was lecturing the variations of the pulse in certain diseases by causing the lecture-room to be placed in telegraphic communication with the City Hospital at Boston, fifteen miles distant; and then, by means of a special apparatus and a vibrating ray of magnesium light, the pulse-beats were exhibited upon the wall. By a judicious combination of Dr. Upham's apparatus and the telephone, a patient may possibly be subjected to a physical examination sufficient to diagnose heart and lung disease without going near the physician.

IT was long supposed that the brackishness of Salt river, Arizona, was caused by the stream running over a bed of salt somewhere along its course. Its water are pure and fresh from where it heads in the White mountains to within 50 miles where it empties into the Gila. Fifty miles from its junction with the Gila there comes into it a stream of water that is intensely salt. This stream pours out of the side of a large mountain, and is from 20 to 30 feet deep. It is very rapid, and pours into the Salt river a great volume of water. Here could be easily manufactured sufficient salt to supply the markets of the world. All that would be necessary would be to dig ditches and lead the brine to basins in the nearest deserts. The heat of the sun would make the salt. Were there a railroad near the stream its waters would doubtless soon be turned and led to immense evaporating ponds. It is supposed that the interior of the mountain, out of which the stream flows, is largely composed of rock salt.

IT is well known that errors are apt to be caused in astronomical instruments by the movements of contraction or expansion to which the foundations on which they rest or the buildings which contain them are subject. The observatory at Armagh, in Ireland, stands on a hill. In wet weather the instruments undergo a certain displacement which Mr. Nelson has lately endeavored to explain. At the base of the hill is a layer of clay, which expands when moist, and thereby lifts up all the mass of soil above it. Thus the true relation between the instrumental errors and the wet weather has been ascertained; but it is not always so easy to trace any connection between such observed errors and external changes. At Cape Town, in South Africa, Mr. Stone, the well-known astronomer, has noticed that certain errors in his transit instrument correspond closely with the variations in the volume of a stream near by; while similar errors are of such regular occurrence at the Greenwich Observatory, in England, that Mr. Dunkin, one of the assistants, suggests the possibility of a periodical shifting of Greenwich Hill.

THE process for using the clippings and refuse leather from saddlers' and shoemakers' shops is as follows: The leather shavings are washed clean, cut up fine and soaked in water and sulphuric acid, one per cent. of the acid being sufficient. The immersion must continue until the shavings become plastic, and the leather can then be pressed into moulds with only moderate amount of pressure. It can be rolled into thin sheets, and, though useful for many purposes, will not resist moisture. A little glycerine rubbed in will prevent its cracking.

ORDINARY brick-dust made from hard-burned, finely-pulverized bricks and mixed with common lime and sand, is a good substitute for hydraulic cement. The proportions used in general practice are one part brick-dust, with one lime to two of sand, mixed together dry, and tempered with water in the usual way.