SELF-REGISTERING BAROMETER.

Meteorology is a science yet in its infancy. To make it of general utility, its experiments and their records should extend over a per od and a territory sufficient to give the basis for a theory, the deductions of which should be reliable. The taking and recording of observations, in different places and for long periods, would entail a vast expense and necessitate the employment of a large number of persons. Mechanical means have been resorted to for the purpose of removing this difficulty, but hitherto their employment has not been attended with much success. Photography has been used as a means of recording the variations in the barometer, but the process is complicated, delicate, and difficult.

Professor Hough, director of the Dudley Observatory, has succeeded in attaching to the common siphon barometer, a system of mechanism, by which the variations of the mercury are noted and also printed. The apparatus may be seen in operation in the rooms of the New York Chamber of Commerce. We have not space for a detailed description, which could not be clearly understood without engravings, but will allude briefly to the principle and the manner of its application.

An ivory float is introduced into the shorter leg of the siphon, and is sustained by the surface of the mercury. It is smaller in area than the inside of the tube, and is kept from friction against the sides by wire guides passing through a disk secured above it. A wire rising from the float sustains a small brass disk in a horizontal position, both faces of which are plated with platinum. The ends of platinum wires are brought into close juxtaposition with the two faces of the disk. These wires are connected at the other end with electro magnets operated by a battery of sulphate of copper. In connection with these electro magnets is a one-toothed wheel, or a vibrating pallet, acting upon a larger wheel which elevates or depresses a fine screw. Whenever, by the rising or falling of the mercury, the float and disk are raised or lowered, the current is closed by the contact of the disk and one of the wires, causing the single cogged wheel to revolve, or the pallet to vibrate, thus moving the gear to the right or left as the mercury rises or falls. The wheel has forty teeth and the screw a pitch of fifty to the inch, thus registering a change on the surface of the mercury of 1-2000th of an inch.

The appliances for permanently recording the variations of the mercury, although somewhat intricate to the eye, are simply those in use in all clocks for recording time. The clock-work is driven by weights and connected to the elevating screw before mentioned. Two arms are provided with pencils, which are placed in contact with graduated paper on vertical cylinders, and record the fluctuations of the mercury in a manner similar to the indicator of a steam engine. The printing is done by a hammer, which is released by clock work when the mercury has raised or fallen to a certain extent, and strikes upon a cushion, between which and type set in a cylinder, a strip of white paper, backed by black impression paper, passes.

This apparatus, though far from perfect mechanically, seems to answer the design of the inventor, and establishes the fact that a cheap and reliable means of recording permanently the variations in the weight of the atmosphere is secured.

Chimogene---A New Anesthetic.

Prof. Vanderweyde, in the *Dental Cosmos* says :—"In experimenting with the highly volatile and gaseous products of distillation, I succeeded in producing a liquid boiling at any desired degree of temperature, say at 60 deg., 50 deg., 40 deg., or even at 30 deg. Fah., causing, by its evaporation, the most intense cold. I propose therefore to call it *Chimogene* (cold generator).

"The desired degree of its boiling point depends only on a slight modification in its preparation; in fact, it may be made so volatile that it requires very strong bottles and careful stoppering to hold it, as by lifting the stopper it foams like champagne, boiling at the common temperature; pouring it from the bottle in drops or in a small stream, it will be evaporated before reaching the floor.

"Having just read, on page 601, of the last number of the *Dental Cosmos*, the remarks about the want of such a liquid for anesthetic purposes, it struck me that this was the very thing needed, and I hasten, therefore, to bring this discovery to the knowledge of the profession."

CHAPPELL'S ADJUSTABLE TOILET GLASS.

The distortion of the image, when a person endeavors to obtain a view of the back of the head by the use of a hand mirror, and the lack of satisfaction in being compelled to depend upon the opinions of another for information as to one's appearance, have induced the inventor of this device to contrive something to render the person independent of outside assistance.

It consists of a hanging glass to be used in combination with a mirror on the wall, or dressing case, so as to give a double reflection, the face and rear view being seen together. It is suspended from the ceiling by a telescopic tube, the weight of the glass being equipoised by a weight, which, acting by cord and pulley, can be screened behind any article of furniture. The hanging glass, by the telescopic tube and weight, can be elevated or depressed to suit the hight of the person.

The device seems to be simple and effectual. It was patented through the Scientific American Patent Agency, Feb. 13, 1866, by Chappell & Codden, to whom all orders or letters for information should be addressed.

THE PROPOSED METRIC SYSTEM.

A correspondent from Pennsylvania desires that the adoption of the French metric system of weights and measures should be first prefaced by being adapted to the requirements of trade and commerce by graduating degrees. He thinks that the proposed system is too great and sudden a departure from the present plan to recommend itself to the people generally, and fears that the names of the different denominations in the proposed system bear such a similarity that confusion and trouble will inevitably result. He doubts if the French system, for common wants, is practically perfect. The proposed system, he thinks, should be, in a manner, adapted to the plan in general use, or that the nomenclature of measures should conform somewhat to that now in vogue.

The fact that the adoption of the new system in France is not universal nor popular, should, in his opinion, call for some compromise in regard to so radical and sudden a change. He proposes a system of nomenclature uniting the old and proposed new systems.

The proposed change is a radical one. No compromise with previous custom is provided for. The object is to provide a new, simple, and unchangeable scale for measures, whether of superfices or capacity. Any compromise between the proposed plan and the present custom would destroy all the advantages of the improvement, without advantaging those, whose indolence or unwillingness to learn, clings to the old standards. If a change is to be made, we, like our correspondent, desire it shall be as nearly perfect as it can be; but we cannot imagine how the new system can be improved by ingrafting upon it a portion of the defects of the old system.

The example of the people of France is no suitable one for us to follow. That they are slow to adopt a marked improvement need be no reason for us to reject it. There may be some inconveniences in the metric system—we think there are—but it is certain they are of less consequence than those which attach to our popular system. We have, to be sure, the qualifying fact that we have used them all our lives; on the other hand is the fact that scientists in all parts of the world have adopted the French system for their calculations.

We think it is better to adopt what has been so successful for many years, needing no improvement at the hand of even astute French Academicians than to propose alterations to *un fait accompli*.

CAUSE OF THE FAILURES OF THE ATLANTIC CABLE.

A correspondent—D. McD., Ohio—believes that the principal cause of the failures to successfully lay a telegraphic cable across the Atlanic, is the untwisting of the external casing, thereby weakening its tensile strain and bringing the suspended weight of the cable on its inner core and conducting strands. He assumes that the outer covering is twisted "against the sun"—to the left—while in coiling it on board it is coiled "with the sun," in the usual way. This coiling being twice performed, once on the tender and again on the *Great Eastern*, contributes still more to a weakening of the cable, and tends to cause kinks.

We do not know whether our correspondent is correct in his statement as to the direction of the spiral. If the cuts we have seen professing to represent the present cable are not reversed, the outer wires are laid around the core "with the sun." The Manilla yarn which covers these wires, however, is twisted the other way. Our correspondent says :—

"The iron wire forming only a casing over the other part, by untwisting, would become loose and separate from the core, and would stretch more than the conducting strand, which being but little affected by the untwisting, would have to sustain the whole weight of the cable or break—it is evident the conducting strand of the old is broken, for in no other way can they account for its not working: it is a principle of philosophy that the same cause will produce the same effect; upon that principle I predicted the last cable would be a greater failure than the one before it. My prediction has been verified and another cable lost. My reason for that prediction was, the cable was first coiled on board the *Amethyst*, and then on board the *Great Eastern*, thus having a second untwisting, and, in paying out the untwisting still continued.

"Now, it is evident that the same cause has produced the failure of the last cable, as the loose and untwisted state of that cable is shown by two pieces of iron wire, two inches long, being pressed into the strand between the wires forming the outer covering of the cable, which would have been impossible had the cable been coiled the way it was twisted."

D McD. is, however, in error in his supposition that the pressure upon the submerged cable, in the act of paying out, is greater than in air, if by pressure he means weight, as he must when referring to the breaking strain. The weight of the present cable is, in air, 31 cwt. per nautical mile; in water only 14¾ cwt. If his data are correct his deductions are worthy consideration, although it seems hardly possible that the managers of the enterprise should have overlooked the important matter of retaining the twist. He says :—

"If the cable is coiled the way it is twisted, that will twist it tighter, will shorten and make it stronger, while the conducting strand, being but little affected by the twisting, will be relieved from all strain and will not break, the outer part being made shorter by the twisting will have to sustain the whole strain. This will remove all cause for stopping, the point of suspension being constantly changing, the danger of breaking will be removed, the steamer enabled to hold on her course continually, landing the cable in good working order."

He believes that, with attention to this important matter of keeping the twist, the laying of a cable from Ireland to New York could be made a certain success, and he strongly invites the projectors of submarine lines of telegraph to the subject.

It is said that a plan is in contemplation to supply Buffalo from natural gas wells at Amherst, ten miles distant. A well now sunk flows 40,000 feet of pure gas every day, and five more are proposed.