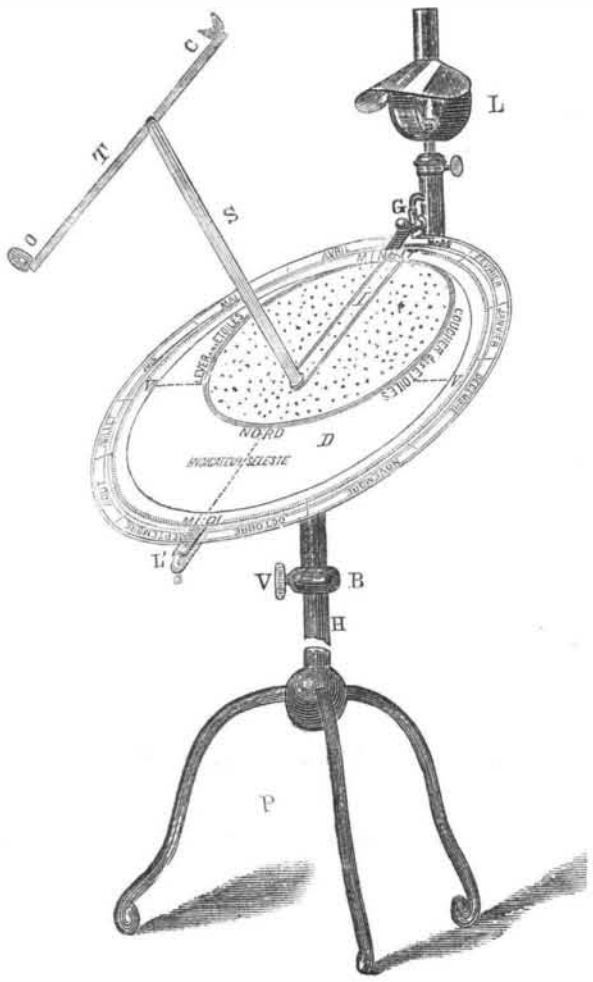
A NEW STELLAR INDICATOR.

The annexed engraving represents a new and simple device for distinguishing the stars, which has lately been introduced in France. It consists of a suitable pedestal on which is placed a celestial chart, the latter being a projection of



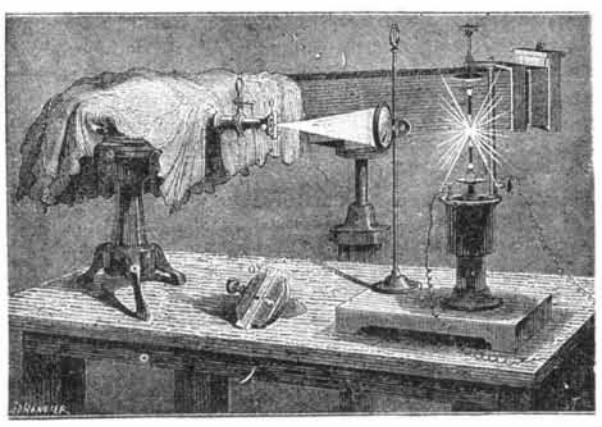
the heavens of the observer. It differs from ordinary charts in that the student is not obliged to hold it over his head and look up, in order to clearly define the positions of the stars; in other words, it is very much as if the sky were all reflected into a mirror, were such possible. Beneath the chart is an apparatus by which it may be oriented, the pole star serving as a guide.

When properly placed it suffices to regard the star, the name of which it is required to know, through the eye piece, O C, when it will be found on the chart between the branches of the alidade indicator, I. In the same way, inversely, by first settling the indicator, any star desired may be found in the heavens. The supporting card is marked around its circumference with the names of the months, and on an inner ring with the hours, midnight being above and noon below. From the portion devoted to the star map included between the branches of the indicator may be seen the aspect of the heavens at any day and hour, and also the hours of rising and setting of stars, of their passing the meridian, etc.

A small lantern gives sufficient light to illuminate the device without distracting the eyes of the observer.

SPECTROSCOPIC QUANTITATIVE ANALYSIS.

The spectroscope, through the discoveries of Mr. Norman Lockyer, is now successfully used as an instrument, not merely for qualitative but also for quantitative analysis. It has been found that the breadth and length of the spectroscopic



bands vary in proportion to the abundance of the simple bodies entering into the composition of any alloy. The variations being previously studied in alloys of known composition, a means of comparison is obtained whereby ingredients of a metallic compound can be determined instantly, thus saving the time and labor necessary to reaching a like result through ordinary chemical analysis, and at the same time with as great a degree of exactness. The appearance of the lines or bands used as standards, as well as of those to be examined, is permanently fixed by photography, so that careful study can be made of them by the observer at his leisure.

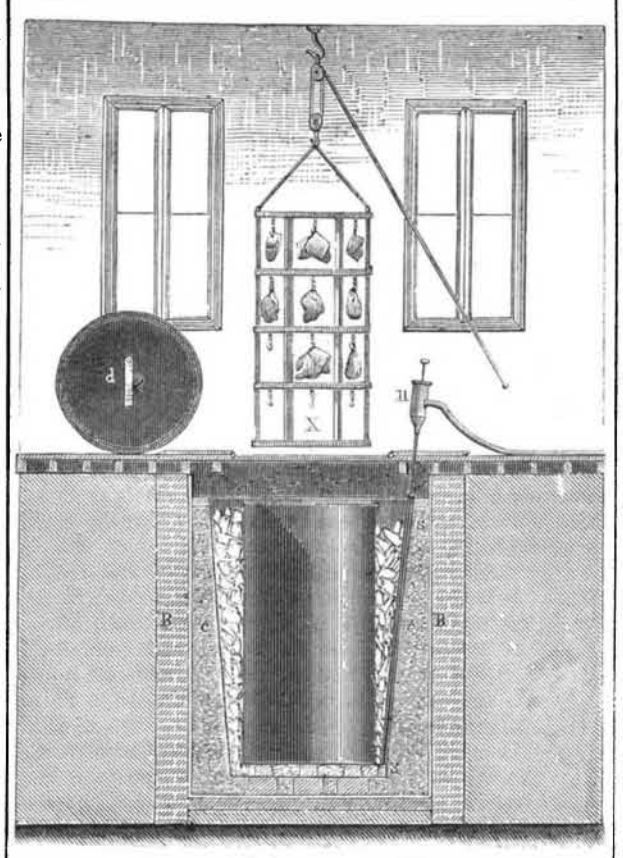
Mr. Lockyer has employed this method in testing alloys of gold and silver in the English Mint, in London, and the apparatus used by him is represented in the annexed illustration. It consists of an electric lamp, in the lower carbon of which a recess is made to form a little crucible in which to vaporize the alloy to be examined. This takes place very soon after the current is established, when the spectrum of the substance is thrown on a screen in a closed box, from which a photographic picture is at once taken. The slit in the spectroscope through which the light, after traversing a condensing lens, is admitted to the instrument is provided (0') with a movable cover which may be adjusted very accurately by means of a delicate scale. Three, four, or five spectral images may thus be photographed one under the other, so that the coincidence of corresponding lines may be rigorously compared. During day time sunlight is used instead of that of the electric lamp. The latter, at night, is operated by thirty Grove elements.

An Improved Poultice.

At a recent meeting of the *Académie de Médecine*, Paris, M. Le Fort read his report on a substitute for the ordinary linseed meal poultice, invented by M. Lelievre. It is prepared by saturating two superimposed layers of wadding with a solution of *fucus crispus*, or Carragheen lichen, and drying them in a stove after they had been submitted to strong pressure. In this way a sheet of the consistence of cardboard is produced, a portion of which is cut off when wanted, and soaked in hot water for fifteen or twenty minutes; this swells it out and fills its tissue with a mucilaginous fluid. It has been tried in several of the hospitals, to the great satisfaction of both patients and attendants. It can be prepared in large quantities beforehand, and will keep for a long time without undergoing any alteration. MM. Demarquay, Gosselin, and Verneuil pronounce it to be far superior to the linseed poultice; it keeps moist for more than sixteen or eighteen hours; it does not slip, is inodorous, does not readily ferment, nor does it soil the linen or bed of the patient. The new poultice is destined to render great service in hospitals and ambulances, and above all on board ship, where it is difficult to keep the linseed in a good state of preservation.

UNDERGROUND REFRIGERATOR FOR BUTCHERS.

The novel arrangement of a refrigerator for butchers' use, represented in our illustration, will perhaps be found convenient in that it admits of economizing space in a shop, and also of saving ice which would be preserved longer owing to the uniformly cool temperature of the soil. The de-



vice consists of a bricked cistern, B, lined with isolating material, C, and containing an iron tank between which and the isolating substance ice is packed. The meat is hung on a rack which is lifted in or out of the vessel by a suitable tackle. A small hand pump, *n*, serves to remove the water due to the melting ice, and *d* is a cover to the tank.

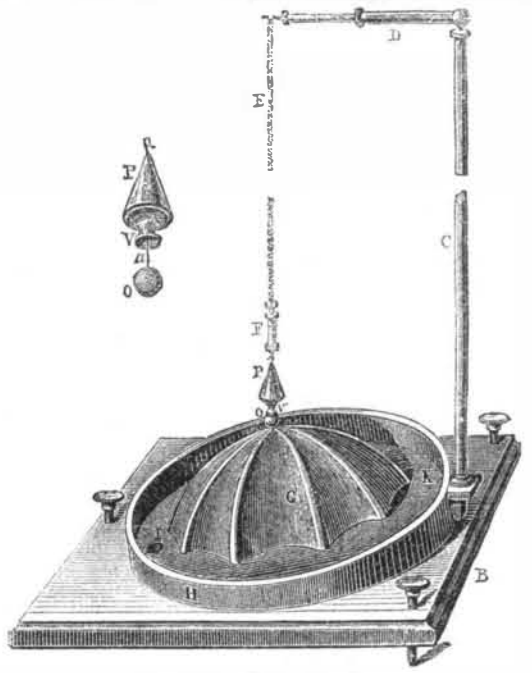
A Bear under Chloroform.

One of our Colorado exchanges gives a graphic account of an attempt to transfer a large cinnamon bear from a cage to an enclosure outside, that he might have greater scope for exercise; but a kindness he did not appreciate. The work of removing him from the cage was undertaken. It was first necessary to secure the bear so that a collar, with chain attached, could be put on him. Ropes were finally got around his legs, but he resisted violently, and it became a serious matter whether he could be secured at all. Once or twice he came near breaking away from his captors, and the surrounding crowd fled, panic-stricken, in all directions. Finally a happy thought struck some one, and a bottle of chloroform was sent for. To an application of this kind, the bear soon succumbed, and was secured in good shape.

It is not uncommon for beasts in cages to become wild with rage at times; and this incident suggests that possibly chloroform may be effectually used in producing quietude in all such cases.

THE EARTHQUAKE INDICATOR.

Count Malvaria, of Bologna, Italy, has recently devised an ingenious instrument for giving warning of earthquakes, and also for registering the direction of vibrations of the same. The construction will be understood from the annexed engraving. The table is adjusted level by the set screws, which serve as feet. Upon it is a circular inclined plane, K, surrounded by a rim, H, and carrying in its center a reversed hemispherical cup, G, the surface of which is divided into eight channels which are placed so as to correspond with the eight principal points of the compass. The summit of the cup is provided with a metal point which enters a shallow indentation in a ball, O. The ball is maintained in place by the concave lower portion, V, of a weight, P, resting upon it. The weight is sustained by the chain, E,



THE EARTHQUAKE INDICATOR.

which is supported by the standard, D C, and adjusted by the screw, F.

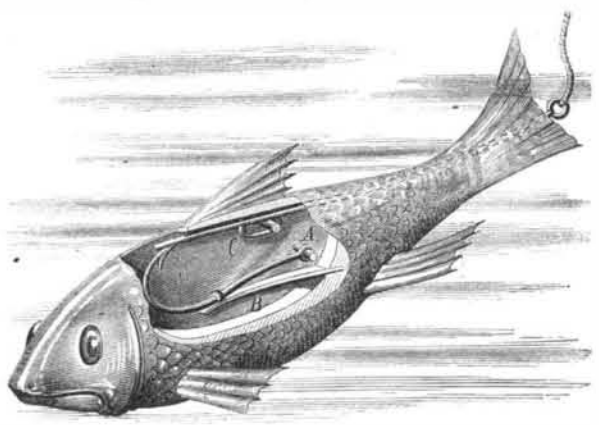
To set the apparatus, it is arranged as depicted in the engraving, the weight pressing upon the ball just sufficiently to hold it on the apex of G. The instant, however, a trembling of the earth occurs, the ball rolls from under the weight, down a channel in G, and thence to the inclined plane, K, through an aperture, L, in which it falls, striking spring mechanism, and so firing a gun, or else acting upon a clock so that the latter is caused to stop, thus registering the exact moment of the shock.

In order to determine the direction of the vibrations, a fine hole is made, from bottom up, in the weight, P. In this a needle, *a*, is placed so that its end rests upon the ball, although its body is then pushed up into the weight aperture. When the ball falls, the needle drops also, but is held by its enlarged head, so that it cannot escape from the weight. It rests, however, in the groove on the cup, G, down which the ball has rolled; and as this groove must be opposite in direction to that pointing to the course of the impulse of the soil, the true bearing of the vibration is at once determined.

The instrument is said to possess great accuracy, and, doubtless, will serve important ends in localities subject to earthquakes.

A NOVEL DECOY FISH.

Messrs. David Huard and Charles M. Dunbar, of Ashland, Wis., are the inventors of an ingenious device for trolling or still water fishing, which is quite certain to become a favorite with anglers. It is a decoy fish, made of wood or other



suitable material, and constructed with a cavity just back of the head. Inside of this is pivoted, at A, an ordinary fish hook, and beneath the latter is a spring, B, which tends to draw its barbed end up through a slot in the back of the fish. C is a piece of wire, pivoted as shown, but bent so as to slide longitudinally on its pin. This, when pushed forward, catches over the point of the hook, and therefore holds it down against the spring. The wire extends clear through the fish, and terminates with a little rubber plug which closes the rear aperture. An eye on the end of the wire serves for the attachment of the line.

The device in the illustration is represented as set, and the plug then tightly closes the rear opening. When a fish seizes the decoy, the jerk given causes the line to pull out the plug and, at the same time, to carry the wire, C, to the rear The hook, then freed, springs up through the slot and holds the fish. This was patented May 26, 1874.