

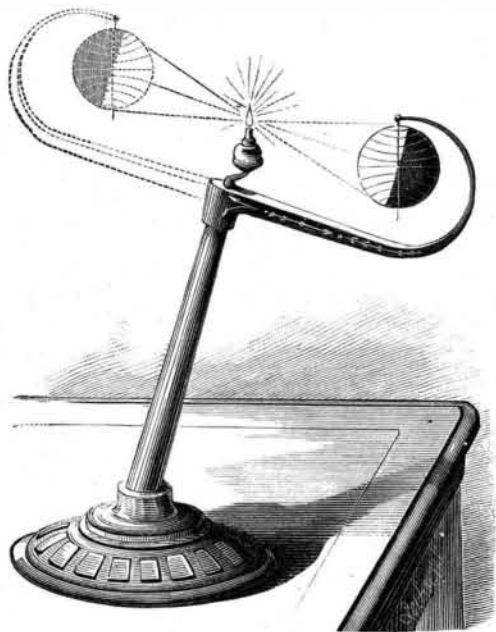
Easy Deception of the Senses.

The ease with which persons fall under hallucinations of special sense is illustrated as follows by M. Yung (in a recent communication to the Helvetic Society of Sciences): The operator places eight cards on a table, in positions corresponding to forehead, eyes, ears, nose, mouth, and chin; he pretends to "magnetize" them, and also some person in the company, and then goes out, while the magnetized person is required to touch any one card. The operator, having returned, notes the action of a confederate, who scratches a part of his head corresponding to the card touched. Then he commences an innocent comedy, passing his hand carefully over the cards, and on reaching the touched card, seeming to experience a strong shock. The observers are surprised, of course. One of them is asked to go out and repeat the experiment. It is assumed that a certain card has been touched. Passing his hand over the cards, he indicates, in nine cases out of ten (M. Yung says), a particular card as giving him a shock, and if the company be instructed to support his idea of that being the "correct card," he is confirmed in his illusion, which may be successfully repeated. Of 85 persons tried, M. Yung found only 9 who refused to indicate a card, not having experienced any sensation; 53 said they had exactly the sensation announced, and 23 described some different sensation.

NOVEL TELLURIAN.

We give an engraving of a very simple instrument for illustrating the causes of day and night and of the seasons, which is free from defects common to tellurians generally. As tellurians are made, ordinarily, the earth is represented as moving in an orbit the plane of which is at right angles to the sun's axis. Consequently the earth has to be tipped or tilted toward and away from the sun in order to show the changes of the seasons. In this improved instrument this difficulty is avoided by causing the earth to move in an orbit the plane of which is at an angle of twenty-three and one-half degrees to the axis of the sun, which is about the angle that the "equator" and the "ecliptic" make with each other, the globe which represents the earth being suspended at a point that corresponds with the north pole, and depends upon its gravity for keeping its axis vertical or parallel with that of the sun during its entire revolution around the sun. By this mode of suspension and by the inclination of the plane of the earth's orbit, no manipulation to tip or tilt the earth in different directions in order to show the changes of the seasons is necessary, and the globe representing the earth may be readily turned on its own axis to indicate its diurnal motion.

Thus the figure in the engraving indicates, on its right hand side, the rays of light as falling twenty-three and one-half degrees beyond the north pole or point of the earth's suspension. This represents the position of the earth in summer. On the other hand, when, by the motion of the earth in its orbit, the rotating arm, with its suspended globe, reaches the position indicated by dotted lines at the left hand of the figure in the drawing, the rays of light as falling on the earth will indicate summer in the southern hemisphere. In this way, as the arm carrying the suspended earth is revolved, the light will fall upon the earth in such

**SPICER'S TELLURIAN.**

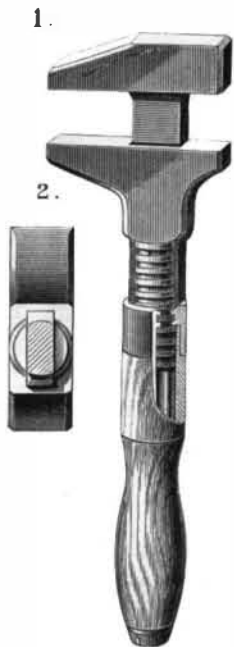
manner as to show the different seasons and their intermediate changes.

Of course, in an instrument of this simple construction all the natural or true conditions of the earth and sun relatively to each other are not shown, and the earth should be made to move in an elliptic instead of a circular orbit; nor is there any special provision for rotating the earth on its own axis three hundred and sixty-five times and a fraction each revolution it makes around the sun; but the manner in which the earth is carried admits of its being turned at intervals to illustrate its diurnal motion and the changes of day and night, as the rays of the sun fall upon a constant varying half of its surface, leaving its varying remaining half in the shade.

This simple scientific instrument has been patented by Mr. Jeremiah Spicer, of Taylor's Island, Md.

IMPROVED WRENCH.

The engraving represents a very simple, strong, and inexpensive monkey wrench recently patented by Mr. W. A. Bradford, of Goshen, Ind. It is composed of but three parts: the main jaw having a squared shank rounded at the end; a movable jaw having a squared bearing fitted to the shank of the main jaw, and provided with a split screw a portion of which lies on each side of the shank of the main jaw; and a handle fitted to the rounded part of the shank of the main jaw, and provided with a nut that engages the screw of the movable jaw. By turning the handle the movable jaw is moved quickly out or in, and may be clamped tightly on a nut, so as to hold it with a vise like grip if desirable.

**BRADFORD'S WRENCH.**

The simplicity of this wrench, the facility with which it may be manufactured, the quickness and convenience of its adjustment, as well as strength and durability, will recommend it to both manufacturers and users.

Further information in regard to this invention may be obtained by addressing the inventor as above.

The Harvesting of Ice.

The season has again come round when large quantities of ice are collected and stored with a view to its being used during the summer months in connection with our food supplies. Some of it is actually mixed with foods and drinks, more still is brought into close contact with such articles of diet as fish, poultry, butcher's meat, etc., in order that it may act as a preservative. Unfortunately, however, but little regard is had to the sources whence the supply is derived, and after every frost carts laden with ice which has been collected from the surface of ponds, canals, and streams which would be studiously avoided as water supplies, may be seen passing along our streets to the shops of tradesmen dealing in articles of food and drink. That the use of such ice for the purposes to which it is put is not without risk has been shown both in this country, says the London *Lancet*, and more especially in America, where, in the warm weather, ice enters largely into the list of table requisites; indeed, it has been further proved that ice has acted as the vehicle of disease germs capable of conveying enteric and scarlet fever, and its use has also been associated with conditions of ill health which have much resembled these and other specific fevers. The carelessness which has obtained in selecting sources for the collection and storage of ice has been largely due to the fact that there is a very general opinion that in the act of crystallization water practically rids itself of all its injurious qualities, however offensive it may be in its liquid state, and acting on this view, it is notorious that ice for domestic use has been, and still is, collected from streams receiving sewage, ponds that are offensive in summer time with decomposing vegetable growth, and similar sources.

There is also a sufficient amount of truth in the general opinion as to the process by which noxious and foreign matters are eliminated from water during the act of freezing to lead to some lack of caution on the part of the uneducated, but recent experience has clearly shown that the process of purification is only a partial one. In connection with this subject, the *Lancet* copies from Dr. Wight's "First Annual Report to the Board of Health of Detroit," which includes a copious reference to certain recent experiments by Mr. C. P. Pengra, an analytical chemist. In the first instance, urea, as a representative of the crystalloids, was mingled with water, which was then frozen; and it was found that whereas 100 cubic centimeters contained 0.83 gramme before freezing, they still retained 0.50 gramme when in the form of ice. Very similar results followed in experiments made with urea as found in urine, and with other substances, such as grape sugar.

The next experiment was with the colloids; albumen, both from the egg and from a case of albuminuria, being taken as a sample, and it was shown that the amount retained in the frozen mass was greatest at its under and least at its upper surface. Thus 50 cubic centimeters from the lower third contained 6.87 grammes, the same quantity from the middle

and upper thirds containing 4.19 grammes and 3.0 grammes respectively.

Other experiments with the same material showed that the purification which did take place amounted to about twenty per cent of the total admixture. The results would, doubtless, vary according to such circumstances as the rapidity of freezing, but since in all the instances recorded the specimens were frozen naturally, they amply suffice to show, as the author contends, that pure ice can only be procured from water free from impurities, and that ice for domestic purposes should never be collected from ponds or streams which contain animal or vegetable refuse or stagnant and muddy contents.

Station Building on the C. P. Railroad.

When the building superintendent of the Canadian Pacific commenced the work of erecting stations on July 1, the track layers were over 100 miles in advance of him, but at the close of the year the last station will be built at the end of the track. During the season he has constructed twelve stations, twelve section houses, eleven permanent water tanks, and sixteen temporary ones. He has had a force of 250 men in his employ, and his pay roll has amounted to \$16,000 per month. His plan of operations has been similar to that employed in track laying. One gang of men would be detailed to erect the frame of a station house, and then sent on to the next point, while their places would be filled by the next carpenters, roofing in the building, putting in the floors, etc., who would in turn be superseded by the joiners and plasterers. This course was followed throughout the season, four or five buildings being in process of construction at the same time, thus avoiding delay.

IMPROVEMENT IN PARASOLS AND UMBRELLAS.

The great item of expense in parasols and umbrellas is the frame, and, as every one knows, a good frame always outlasts the cover. For this and another reason to which we shall refer, it is desirable to have the cover of an umbrella removable. The engraving shows an improvement in umbrellas which accomplishes this very desirable end.

The ribs of this umbrella are of U-form in cross section, except at the points when they are round.

Fig. 1 shows the invention complete; Fig. 2 shows the method of fastening the cover to the ribs; and Fig. 3 shows the notch plate in which the upper end of the ribs are secured; Figs. 4 and 5 show the fastening rings and the ties. Fig. 6 is a sectional view of the cover, rib, and tie, showing the fastening at the middle of the rib. Fig. 7 is a transverse section through the end of the rib at the lower edge of the cover, and Fig. 8 shows a modification of this fastening.

One of the interchangeable covers adapted to fit a single frame is slipped over the top of the stick of the frame, the aperture in the cover passing over the end of the stick being re-enforced with a ring of leather. This ring fits down upon the notch plate and is held in place by means of a rubber ring, which is sprung into place and confined under a metallic collar upon the stick, so as to bear firmly upon the ring of the cover, as shown in Fig. 2 in the engraving. The ring of the cover it kept from turning upon the handle by

**LOCKLING'S IMPROVED UMBRELLA.**

means of short points projecting up from the notch plate. When the cover is thus secured upon the stick, it is secured to the ribs either by means of cad strings or of split rings sewed to its under side to spring into eyes or loops upon the ribs, about midway of their length and at the ends thereof.

A lady provided with one of these umbrellas will be able to have at a small expense a cover corresponding with each change of suit. The time required to make the change of covers is very little. The importance of this improvement will be appreciated by such as are obliged to purchase expensive parasols for each style or color of dress, and also by those who are accustomed to throw away sound frames when the cover is spoiled.

This invention has been patented in this and foreign countries by Mr. Theodore D. Lockling, of Panama, United States of Colombia.