

SCIENTIFIC AND SANITARY.

THE northern limits of thunderstorms are Cape Ogle, northern part of North America, Iceland, Novaja Semelja and the coast of the Siberian ice sea.

AN invalid suffering with lung trouble may derive much benefit from sleeping upon a mattress made from pine shavings. The material is cheap, and the *Christian at Work* says it makes a very pleasant and comfortable mattress, the odour of the pine permeating the entire room and absorbing or dispelling all unpleasant odours.

It is an interesting fact that arc lamps run by continuous currents require no reflectors, while those run by alternating currents do. The reason is, that, with continuous currents, the upper carbon forms a crater, which reflects the light, while with the alternating currents both carbons become pointed and throw the light in all directions, thus necessitating the reflectors.

PROBABLY the most ambitious scientific project of our generation, that of making a complete photographic atlas of the firmament, may at last be said to be under way. The first negative from the Cape of Good Hope has reached the Royal Astronomical Society. Another is believed to be *en route*. This negative takes in a portion of sky less than a fourth of the apparent diameter of the moon, a portion of which can be covered by a quarter dollar held at arm's length. Yet it contains 50,000 stars. Machinery for the imperceptible movement of the camera perfectly to fit the shifting of objects during a three hour exposure is described as a triumph of ingenuity, and astronomers are greatly excited over the marvellous addition to the field of their knowledge which this completed atlas promises.—*Philadelphia Ledger*.

THAT there is nothing new under the sun is exemplified in the employment of the old-fashioned hourglass in the making of a new watchman's time detector. While the hourglass is old, the application of it is made in a new and interesting manner. The idea is that the sand in the glass will run out in exactly one hour, at the end of which time the machine registers one on the dial. It is then the watchman's duty to reverse the glass, which is done by turning a handle. At the end of another hour the glass runs out again and the dial registers two. If the watchman is on duty twelve hours, twelve must stand on the dial when he goes off duty. If he neglects his work, the extent of the neglect will be shown on the dial. As the handle of the machine is always locked, save at the end of the hours, it is impossible for him to turn it at any other time or to make two turns at one time. The machinery of the detector is worked by electro-magnets actuated by an ordinary battery.

"August Flower"

Mr. Lorenzo F. Sleeper is very well known to the citizens of Appleton, Me., and neighborhood. He says: "Eight years ago I was taken sick, and suffered as no one but a dyspeptic can. I then began taking August Flower. At that time I was a great sufferer. Everything I ate distressed me so that I had to throw it up. Then in a few moments that horrid distress would come on and I would have

to eat and suffer again. I took a little of your medicine, and felt much better, and after taking a little more August Flower my Dyspepsia disappeared, and since that time I have never had the first sign of it. I can eat anything without the least fear of distress. I wish all that are afflicted with that terrible disease or the troubles caused by it would try August Flower, as I am satisfied there is no medicine equal to it."

WHEN Professor Thomson speaks of transmitting 130,000 horse-power 240 miles at 500,000 volts through three wires of about No. 12 B. and S., or about as large as a good-sized knitting needle, and to send this underground, too, through a small pipe, using only cotton and cheap oil as the insulator, and then adds to his opinion that it would be "practically safe"—we cannot help admiring his courage. With such propositions made in earnest by a reliable party, we may certainly look upon the transmission of power as at present the most important of the numerous developments of electrical engineering.—*Electrical World*.

AN example of the cunning of gulls was observed at Tacoma, when several alighted on a bunch of logs that had been in the water for a long time, with the submerged sides thick with barnacles. One was a big, grey fellow, who seemed to be the captain. He walked to a particular log, stood on one side of it close to the water, and then uttered peculiar cries. The other gulls came and perched on the same side of the log, which, under their combined weight, rolled over several inches. The gulls, step by step, kept the log rolling until the barnacles showed above the water. The birds picked eagerly at this food, and the log was not abandoned until every barnacle had been picked.—*Chicago Herald*.

THE *St. Petersburg Medicinische Wochenschrift* gives a résumé of a paper by A. S. Ignatovski on the cause of death by hanging. He refers the rapid loss of consciousness after suspension to the retarded or arrested circulation in the brain brought about by the increased intra-cranial blood pressure. The effect of this impediment to the circulation is the same as in cerebral anemia, for in both the nutrition of the brain suffers. It is therefore not, as Leofman teaches, an insufficient supply of blood to the brain, due to compression of the carotids, which interferes with the functional activity of the brain, but compression of the capillaries by increase of the intra-cranial pressure, which has this effect, and which occurs whilst the supply of blood remains the same, or even increases.—*Science*.

PROFESSOR ELIHU THOMSON, the well-known electrician, has been for some time experimenting with electrical currents at high pressure and frequency. In a communication to the *Electrical World*, he gives an account of his investigations and explains how he obtained an electrical discharge at 500,000 volts. It takes less than 1,500 volts to kill a man, and it will at once be perceived that when Professor Thomson obtained his current of a half million volts he was really juggling with thunderbolts. The manner in which the professor obtained this tremendous current is interesting. Stripped of all details, he immersed a primary and a secondary coil in a barrel of paraffine, one of the best insulating oils known. The primary coil was connected with a condenser consisting of 16 Leyden jars of unusual size, the whole apparatus producing the current of the intensity noted, and 31 inches in length. Special precautions were taken to confine the current by employing the best oil insulation, for the electricity was constantly seeking to escape into the air. The stream of fire that came from the terminals when a discharge took place was about one inch in diameter, the spark being bluish white, and accompanied with a loud rattle and roar. The awful power of the discharge is exemplified by the ease with which glass plates were punctured. Heavy pine and oak boards were perforated and set on fire. A stick of wood placed between the terminals and joining them was splintered and torn into a fine fur by the discharge.—*Philadelphia Record*.

THE discovery reported from Berlin that the ejections from the mouths and nostrils of consumptive persons are less effective agencies for the spread of consumption than had been supposed, is somewhat reassuring. It has been found on thorough investigation that many of the tubercle bacilli that affect the sputum of persons suffering with pulmonary disease are dead. This increases the chance of escape for those who may be brought into contact with tuberculous contagion, but it gives no assurance of absolute exemption. Recent examination of milk and viscera from tuberculous cattle, made in the pathological department of the University of Pennsylvania, by Dr. Formad, at

the instance of the State Board of Health of New Jersey, have shown that the danger arising from the use of milk from infected animals has been overdrawn. It would appear from Dr. Formad's observations that unless the udder of the cow be infected with the bacilli (which seldom happens), the milk, though an impoverished and imperfect food, is not contaminated. The same thing is to a large extent true of the flesh of tuberculous animals whose lungs may have been in a state of advanced degeneration. Evidently, we have only reached the stage of half-knowledge in respect to the germs of consumption; but we have so far advanced as to be sure of the necessity for caution. Too much painstaking is better than too little. The example set by Mr. Joseph E. Gillingham in dooming a part of his fine Jersey herd to slaughter in the interest of public safety, is worthy of all emulation. The price of health, like the price of liberty, is eternal vigilance.—*Philadelphia Record*.

WHILE it is very reasonable to trust the verdict of our consciousness, yet it is equally desirable that this confidence should be accompanied by an understanding of the conditions under which the evidence is presumably valid and when likely to mislead. Sense deceptions, faulty observation, exaggeration, neglect, fallacy, illusion and error abound on all sides, and emphasize the need of a calm judgment, a well-equipped intellect, freedom from haste and prejudice, an appreciation of details and nice distinctions in the determination of truth and the maintenance of mental health. For these and other reasons it is important to demonstrate experimentally the readiness with which normal individuals may be made to yield evidence of unconscious and involuntary processes. When, some years ago, the American public was confronted with the striking phenomena of muscle-reading, the wildest speculations were indulged in regarding its true *modus operandi*; and the suggestion that it was due to unconscious indications skilfully interpreted was ridiculed, mainly for the reasons that this explanation was hardly applicable to certain extreme instances involving considerable good fortune, other and subtler modes of interpretation, as well as some exaggeration in the accounts, and that so many worthy and learned persons were absolutely certain that they had given no indications whatever. For a time the view that mind-reading was muscle-reading rested upon rather indirect evidence, and upon modes of reasoning that do not carry great conviction to the ordinary mind. To supplement this evidence by a clear exposition of the naturalness and regularity of these involuntary movements is our present task.—*Professor Joseph Jastrow, in the Popular Science Monthly*.

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WHILE repairing the ancient mines of Cass Grande, near the town of Cass Grande, Ariz., recently, there was unearthed seven stone axes, one serpent urn, carved stone mountain sheep, three pieces of cloth, four large unknown devices of stone, a lot of shells, three ollas (painted), a lot of shell loops, carved shell devices, decorated and painted shells.

In a discussion on diphtheria, published in the *British Medical Journal*, Dr. Russell cited several instances in which steam had seemed to be an active factor in the propagation of the disease. Hot water and steam from a brewery were introduced into some old cesspools, and evidently awakened into activity germs which, if undisturbed, would have remained dormant. An epidemic of diphtheria soon developed in the vicinity, and was not checked until the steam was turned into other channels, when it quickly ceased. If, as we now believe, the bacillus of diphtheria develops with special rapidity in the presence of warmth and moisture and absence of light, it is not unreasonable to suppose that the introduction of hot water or steam into cesspools or sewers may be a most dangerous procedure.—*Scientific American*.

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