

grass and that the tusks slid along the surface in front of them as they moved. The mammoth remains shown in the photograph were found in the bottom of a mining shaft, 55 feet deep, on the Hunter Creek.

During the winter, when the river is closed to navigation, the native dogs of Alaska and the Northwest Territories furnish the principal means of travel. By the aid of teams of dogs harnessed to sleds, prospectors, mail-carriers, and others have accomplished long journeys that would have been impossible without them. In the fall, when the frost has begun to bind land and water in its icy grip, the gold seekers start in to carry their winter supplies up to the mines, and for this work dogs are indispensable. Teams of five, six, or more dogs are attached to sleds and draw heavy loads over the snow or the frozen surface of the rivers. During the summer the dogs generally have an idle time, but occasionally the miners, finding themselves short of some supplies, fasten pieces of sacking on the dogs' backs and load small packs on them. The weight of the pack varies according to the size and strength of the dog and may be as little as ten pounds or as great as forty to fifty pounds. The dogs pick their way through the swamps and among the rocks, showing by their carefulness that they are quite aware of the damage a bad fall might do to their packs. During the working season the dogs are fed on dried fish, the Indians near the mines doing quite a good business in summer catching salmon and drying it for use during the following winter. The price of salmon varies from about ten cents to a dollar per fish. A dog under ordinary circumstances eats two pounds of salmon per day, but if the fish cannot be obtained, is fed on bacon and rice cooked together, of which three to four pounds are required to feed him each day. It is the custom to feed the dogs only once during the twenty-four hours, and at night, as a dog, after he has been fed, becomes disinclined to work. Some few miners, kinder than the rest, give each dog a small piece of fish at noon, but most men feed them only at night, giving them all they can eat at that time.

Specially-constructed instruments are necessary to register the extremely low temperatures of winter in the Far North, the ordinary mercurial thermometer becoming useless at 40 deg. below zero, as the mercury freezes at that temperature. In the early days of Dawson the only trustworthy thermometers in the camp were the property of the captain of the Northwest Mounted Police at the barracks. They were manufactured especially for recording very low temperatures. The minimum temperature registered during the winter of 1897-8 was 72 deg. below zero in a rather exposed place on the Klondike River, where the cold is some degrees greater than in the city of Dawson. Only one of the two thermometers shown in the accompanying photograph is capable of registering the temperature of 68 deg. below zero shown by it. In the other the spirit, disgusted at the extremely low temperature, has retired into its bulb, not to emerge for business again until the temperature shall have had the decency to rise to 60 deg. or 55 deg. below zero. The photograph was taken in Dawson on January 15, 1901.

Clearing Out Space.

BY EDGAR L. LARKIN.

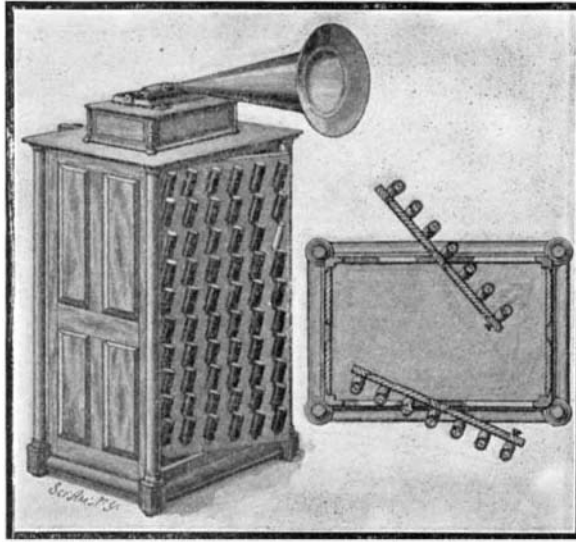
With a parallax of 0.021 sec. for the star Antares, as given by Sir David Gill, its distance in round numbers is one quadrillion miles. From photometric considerations, J. E. Gore, SCIENTIFIC AMERICAN SUPPLEMENT, No. 1474, page 23622, computes the mass to be 88,000 times that of our sun. An incredible quantity of matter must therefore have been drawn in from all adjacent space to build up its giant mass. This space should be, in the nature of the case, comparatively clear of matter. The fact is, that a wide region north of Antares, extending from northeast to northwest, for quite a distance, is about as void of stars as any known to the telescopist. With the 16-inch glass in this observatory, focal length 22 feet, and with a power of 200, many starless fields are encountered, and several with a wide eye-piece of power 132. These blackened and waste areas show no stars; or if any, they are at the extreme limit of vision in this splendid and pure mountain air. And in these dark expanses no trace of the delicate, pearl-white, shimmering background of the sidereal structure can be seen. Space is swept clean. The inference may be made that all the matter once in this wide area has been drawn in to build up the colossal sun Antares. And as that star is now in a region where there are others, a further deduction is possible, namely, that since formation, Antares has drifted southward. Sagittarius and Scorpio present many black fields without either star or the nebulous background which lies beyond the entire visible universe except in these dark openings, deeps, or caverns. There are at least one hundred starless fields in these constellations. One typical and most beautiful example is in right ascension, 18 h., and south declination 27 deg. 54 min. It is jet-black as seen here. The edges of the sidereal cistern are clear-cut,

as though dug in glittering sand. To the east is a circle of small stars, in an intensely rich region. A theory is possible that the cluster of stars formed where the cavity now is, and then moved toward the east. Whether the shining base, or substratum of the entire sidereal structure is made up of quadrillions of stars, or whether the whole universe is immersed in nebulous matter, may never be decided. But the marvelous object is always visible in its majestic splendor, when the moon is absent. All nature is enshrouded in a cloth of pearl, except where these rents appear.

Lowe Observatory, Echo Mountain, California.

CABINET FOR STORING PHONOGRAPH RECORDS.

Phonograph records being ordinarily made of wax, are very fragile and must be preserved with consider-

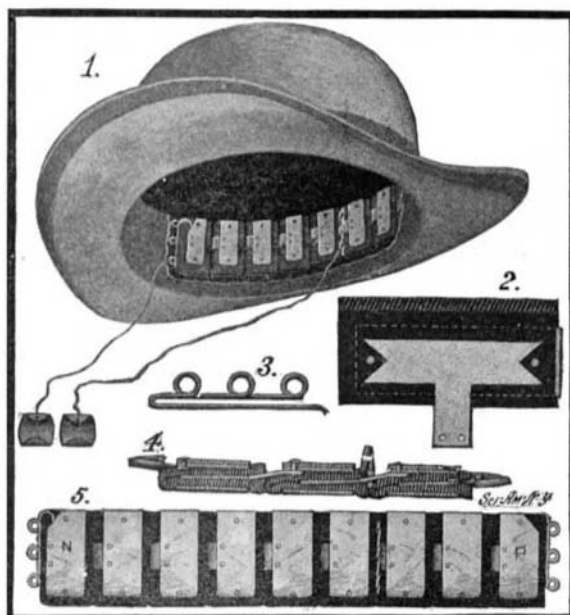


CABINET FOR STORING PHONOGRAPH RECORDS.

able care, and when many are to be provided for it becomes a matter of difficulty to do this and at the same time have them accessible for ready selection. We show herewith a cabinet invented by Mr. Edgar Krom, of 538 West 159th Street, New York city, which provides for the safe keeping of a large number of records. The cabinet is formed with two swinging doors pivoted centrally at the top and bottom. The inner face of each door is provided with a number of pins upwardly inclined, on which the records are supported. On the upper end of each pin is printed or written the name of the particular record thereon supported. The cabinet is preferably of such height as to furnish a convenient support for the phonograph. In use the cabinet will be preferably placed at sufficient distance from the walls of the room to permit swinging of either door upon its central pivots. When the doors are thus opened, all the pins and supported records may be seen, and any of the latter desired may be removed without disturbing the others. It will be seen that this cabinet provides for the storing of a great number of records in a comparatively small space, renders each freely accessible, and does away with any danger of injuring the one removed or those about it. At the same time it is comparatively inexpensive to construct, and furnishes an ornamental and convenient support for the instrument in connection with which the record is to be used.

MEDICAL BATTERY.

A convenient form of medical battery has recently been invented by George Francis Webb, M. D., of Geneva, Ohio, which may be conveniently carried about one's person. As an example of its convenient form we have shown the battery as carried within the sweat-band of a hat. The battery cells are each made up of a



MEDICAL BATTERY.

strip of felt or flannel folded over on itself and enveloping a copper plate which forms the negative element of the battery; the positive element consists of a U-shaped zinc band which is slipped over the felt strip. A strengthening plate, also of zinc, is fitted under the upper arm of the U-shaped band, and together the two zinc strips are securely riveted to the felt strip. The copper plate is formed with a projecting stem as shown in Fig. 2, and in connecting up the cells of the battery this is bent up and riveted to the upper arm of the next cell of the series. Instead of binding-posts at each end of the battery, the inventor uses wire clips such as that shown in Fig. 3. The wire is bent to a U-shape with loops formed on one of the arms. The straight arm is fitted between the felt and the copper or zinc plate as the case may be, and wires are attached to the loops which also serve as handles for readily manipulating the device. Electrodes of the form shown are secured to the ends of the wires. They are made of aluminium, the metal being frosted so as to distribute the effect and also to present a neat appearance. In use the felt strips are saturated with a corrosive solution such, for instance, as salt water or water containing a small proportion of sulphuric acid. The current set up by the chemical action of the corrosive solution on the metal plates may then be conducted by means of the electrodes through the diseased organ or part. To increase or diminish the electromotive force it is not necessary to disengage the wire, for the wire clip may be moved into engagement with any one of the stems of the copper plate, as indicated by Figs. 1 and 4.

Calcareous Bricks in Germany.

There are as yet no factories for the production of sand-lime bricks within the limits of this district, though many have been erected in Germany within the past few years. There does not seem to have been uniform success in the production of sand-lime bricks in Germany. In a recent number of the *Thonindustrie-Zeitung* reasons for this non-success are freely discussed, and may be summarized as follows:

So many plants have been suddenly erected that bad results have grown out of the lack of proper experience in handling, rather than out of defective equipment. The main causes for defective products are inexperience in slacking lime and in mixing the mortar. Good white lime and clean, sharp sand are necessary for good results. The product is rarely spoiled in the mere pressing and drying. Naturally that brick will be best which is pressed the hardest, but the customary presses are entirely adequate; hence, the two reasons above assigned alone remain. In handling sand-lime bricks one frequently finds in them clods of clay the size of a filbert that naturally destroy their value, which depends upon so perfect a mixture that no lumps remain and every grain of sand has its coating of lime. Imperfectly slacked lime is even more detrimental. The process of slacking greatly increases the volume of the article, and if insufficient water be added in the process, absorption of moisture from the atmosphere takes place after the brick is made, expanding it and causing seams or cracks in it. Such cracks may be too small for ordinary detection, yet the defect is nevertheless a serious one. It is best to use in slacking, sufficient water to produce a soft, mushy powder, damp enough to admit of balling, but the plan of allowing the mixture to rest in the bed for at least twenty-four hours, instead of at once feeding it to the press, is the safest. Little differences in composition are thus equalized and the mixture becomes more pliable and plastic.—Hugo Muench, Consul at Plauen, Germany.

The Current Supplement.

The current SUPPLEMENT, No. 1493, opens with the conclusion of Emile Guarini's article on the electro-metallurgy of iron and steel. Many illustrations of plants actually in operation accompany the text. Mr. William R. Hill, formerly engineer of the Aqueduct Commission of New York, tells something of the modifications of the plans in the new Croton Dam. Dr. Wiley's exhaustive paper on the results of his borax experiments is concluded. Mr. E. A. S. Whitford describes a new design of reinforcement for concrete steel girders. The St. Louis Exposition is represented in the number by two articles of widely different nature, the one on the Tyrolean Alps, the other on the Curtis steam turbine. Both articles were prepared by a representative of the SCIENTIFIC AMERICAN at the fair. "The Chemistry of Cottage Cheese" is the title which Mr. F. H. Hall has selected for a very instructive article. Mr. Charles H. Stevenson, whose articles on the aquatic industries have doubtless attracted no little attention, writes on oil from the livers of sharks and related species, and on beaver furs. T. H. Blakesley, M.A., in an article on direct-vision spectroscopes, writes in a scientific vein. His article will doubtless be appreciated at its true worth by students of chemical physics. The succession of changes in radio-active bodies is made the subject of some comment.