

knocking pieces off them, perhaps weakening them so that they go into fragments. The debris of a large berg may cover a square mile, but even if mingled with other ice, the eye of the skilled observer can usually detect it by its darker color. But there is the sure test of the tongue, for glacial ice is almost invariably "fresh," containing but a slight percentage of saline matter in its composition. Still another method of discovery is to take a chunk and try to break it, at the same time putting a piece of pack ice to the same test. A blow which shatters the pack ice may only knock a little powder from the surface of the other. During the hundreds, perhaps thousands, of years it has existed, its particles have been so constantly subject to pressure from the glacial movement that the ice has solidified to a wonderful degree. It not only resists the sharp edge of the cutting tool but will remain a much greater length of time without melting than any other variety found in the ocean. This accounts for the dimensions of some of the bergs which have floated a year or more before they reach the Grand Banks. Although the temperature rises rapidly as they go southward from these shoals it is known that some have gone 200 miles farther south before they have melted or separated into fragments.

If an iceberg moving down with the Labrador current is swayed by an eastern storm or eddy too near shore owing to its "draft," as the sailors would say, it is liable to ground. Thus an opportunity to study the changes which occur is given. It has been discovered that while the summer temperature of Newfoundland is high enough to reduce the surface considerably by melting, it goes to pieces much more rapidly by the weakening of the lower portions. The action of the waves and tides tends to undermine it, so to speak, holes appear at the water line, a piece of the upper portion "caves in," then another and another, until the berg disappears in a remarkably short time considering its dimensions. There have been instances where parts of these stranded bergs remained in sight throughout the summer and were preserved by the winter temperature until the next year, but usually after striking bottom they disappear entirely before the warm season in this latitude has closed.

The novice might often mistake a piece of floe ice for a small berg not noting the difference in color and formation. Some of the hummocks formed by rafting or overlapping of pan and floe ice are fifty and sixty feet in height. Torn from the edge of the field by a gale or unusually high waves, they fall into the procession of bergs and some are of such size that they drift to the south of the great island before they disintegrate.

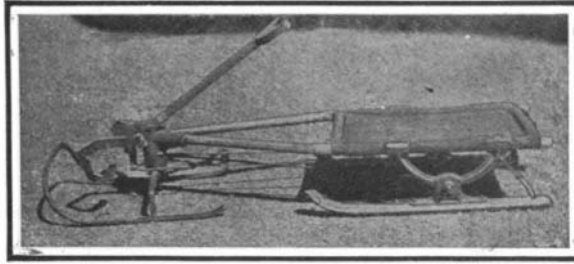
There is a continual movement of ice from the vast pack in the upper Baffin's Bay, the quantity of course varying according to the season. The field which comes southward on the Labrador current in February of each year sometimes extends outward a hundred miles from the shore line and five hundred miles to the north. Great sections of it may present a solidly frozen surface without a rift of water while another portion may be of floes and individual cakes separated by lanes of open sea. It is on this field that the hair seal is born and here is the scene of the annual seal hunt. The field is often broken by violent storms and the cakes piled into the hummocks are solidly frozen together, but this ice is soft in contrast with the "Arctic pack." Masses of this fifteen and twenty feet in thickness are sometimes broken from the pack in the Arctic basin and come south with the new ice, gradually melting until the surface is just awash. The Islanders and sailors call such pieces "growlers" because they are so hard that they will pierce an iron as well as a wooden hull, and lying almost entirely below the surface they may not be seen until the vessel strikes their sharp edges. Next to the bergs the Arctic pack is the oldest ice which is brought into the Atlantic by the Labrador current. A study of its composition leads investigators to believe that some of it may have been formed a century before it was detached from the main body which lies miles to the northward of Newfoundland.

The examination of some photographs taken at the observatory of Arequipa (Peru) has revealed what appears to be a new star. According to Prof. Pickering, of Harvard University, this star was of less than eleventh magnitude June 1st, 1906. It rose to a magnitude of 8.9 from June 14th to July 2nd, and then diminished in brightness. At the present time it has again fallen below the eleventh magnitude. This star is probably not new in the strict sense of the word, but is a variable star of long period, or perhaps rather of irregular period. The Arequipa photographs happen to have caught one of the maxima of brightness. It is a matter of the greatest scientific interest to make a close study of such new stars which continue to remain visible, for there is always the possibility that they may manifest some unforeseen phenomena of great importance.

### TOBOGGANING AT CAUX, SWITZERLAND.

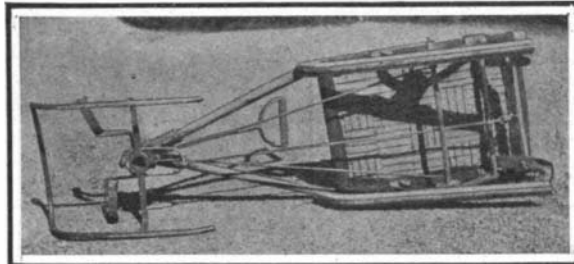
BY DESHLER WELCH.

The winter sports in tobogganing, or "lugeing," at Caux, Switzerland, reach a point of almost scientific diversion. The situation of Caux, some 3,000 feet high on the great acclivity back of Montreux, on Lake Lehman (or Geneva) is full of charm and stupendous grandeur. It has become the most fashionable winter



Swiss iron-frame bob sled.

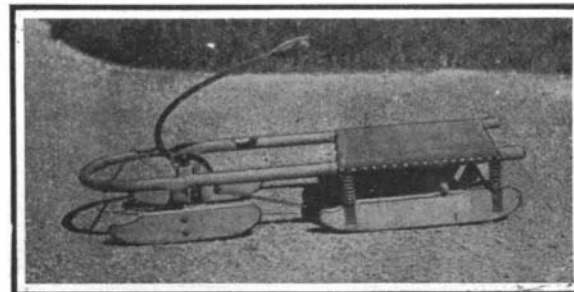
resort in Europe. The famous places of Danos and St. Moritz, where winter sports are carried on with almost professional records, are, more or less, winter residences for people suffering with weak lungs or tuberculosis. But Caux, which is called the Ermine King, is an all-the-year-around resort that is patronized by the most distinguished people in the world as a place of healthful rest and luxury. In the winter the great hotels, the Palace and the Grand, are mainly filled by Englishmen who spend all their time in ski-



Arrangement of brake on the iron-frame sled.

ing, lugeing, and skating, and a Caux "record" is now considered sufficient to establish one's standing in any one of the sports.

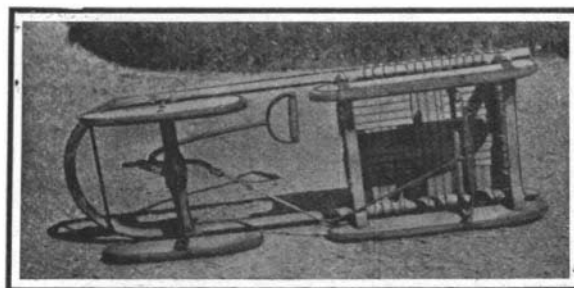
The toboggan slide is the "Cret d'y Bau" run which extends a distance of five miles, from a point between Caux and the mountain of Rocher de Naye, down to Territet—a fine, hard roadway, which is kept in perfect and safe condition by a force of men all through the winter. It curves, snake-like, around the mountain sides, through patches of pine woods and along



The wooden-frame bob sled or "luge."

the edges of great declivities that are safely guarded. All the curves are banked so as to throw the sled into a proper equilibrium.

It is here that the "luge" itself has been notably developed on scientific principles. Mr. Hugo Eulenstein, director of both the hotels, has been an active participant in all the winter sports and has accomplished some remarkable feats with the luge. He owns one called "Bob-Phoenix," manufactured in Couvet, Switzerland, that cost 1,200 francs, on which he has



The "luge" turned over to show the brake.

### TOBOGGANING AT CAUX.

sped down the run at the rate of 120 kilometers an hour. It has a double truck and carries four or five people, with a wheel steering gear. An American make of "skeleton" has also been popular and was first exploited here three seasons ago by Mr. Henry Harrison, a guest from Chicago.

Mr. Eulenstein has now patented a "dirigible-brake

luge" that is splendidly adapted for long runs. It is for one person, who has absolutely full control over it, no matter how steep the run. The brake is quickly adjusted and the steering mechanism is exceedingly sensitive. The "bobs" are so arranged on an axle that ruts or bumps are glided over with hardly a jolt. He is willing to dispose of the patent for American manufacture.

Lugers on the "Cret d'y Bau" have a great convenience in the inclined railway that runs between Territet (Montreux) and Rocher de Naye. A car is run at frequent intervals to carry back people and sleds, and affords a merry opportunity for social contact. During the days of special races the scenes at the roadway where the lugers "slide" through Caux, and where many of them start, are brilliant in color and interesting activity. On carnival days the lugers are decorated very handsomely and ingeniously.

### Collection of Small Fossil Bones.

Paleontological members of the United States Geological Survey have hit on a unique scheme for the collection of small fossil bones in certain parts of the West. The mammals from which the bones are derived are pretty generally distributed but are never abundant, and on account of their small size are seen with difficulty. They may be more frequently found in what are locally known as "blow-outs," and are almost always associated with garpike scales and teeth, and teeth and bones of other fish, crocodiles, lizards, and small dinosaurs. These remains are frequently so abundant in "blow-outs" as to attract attention easily. When such a place is found, careful search is almost always rewarded by the discovery of a few jaws and teeth of mammals. This has been known for a long time, but it was only more recently that it was discovered that a certain species of ant, in excavating its burrows and in collecting material from and beneath the surface, brings together great numbers of small stones with which to build the small hemispherical hillocks from one to two feet in diameter in and beneath which it constructs its subterranean chambers. Anywhere in the region at a favorable locality among this aggregation of pebbles, a considerable number of small fossil teeth and jaws, fish scales, small vertebræ, etc., will always be found, and all the paleontologist had to do was to sift an ant hill through an ordinary flour sifter to supply himself with abundant material. The next step came when some enterprising sluggard, wishing to sample an antless region with little effort, followed Scripture, and went literally to the ant. He deliberately "sowed" the place with ants which he brought from several miles away. The ants established colonies, built hills, and when the paleontologist went back the next year, he found that they had collected thirty or forty teeth, etc., to each hill. This particular locality, which is in Wyoming, has proved almost inexhaustible, having yielded several thousand isolated teeth and jaws of the diminutive mammals. Paleontologists generally, therefore, owe a debt of no inconsiderable gratitude to the ant in making known the wealth of small mammals and other diminutive vertebrates that inhabited the region in ancient times, and the Biblical injunction takes on a new significance.

### Fibrous Plastic Masses.

In Reif and Gonnermann's process (patented in Germany) for the production of plastic compositions of fibers of all sorts with oil, fats, and tar, the fibrous material is impregnated with alkalis and is then sprayed simultaneously with the tar, oil, etc., and with sulphur chloride, in order to secure uniformity of the mass, effect vulcanization and neutralize the hydrochloric acid set free in that process. In previous methods of combining fiber with tar and the like these binders were not chemically altered, so that it was necessary to knead the mass and also to subject it to a process of drying and hardening. In the new method the fibers are connected by thin layers of vulcanized material which require no further treatment. The alkali required to neutralize the acid formed in vulcanizing is applied to the fiber, because it would interfere with the spraying if it were mixed with the oil or the sulphur chloride, while neutralization of the composite mass, even if it could be effected, would come too late, as the fiber would already have been injured or destroyed by the acid.

A writer in a recent number of *l'Industrie Electrique* describes a method of using the wires of a power transmission line for establishing telegraphic communication between the generating plant and the sub-stations. By using an induction coil, which obtains its power from the transmission line, a local high-frequency current is generated, which may be superposed on the current in the power line, and thus affect instruments at the receiving station. It is not necessary to use two lines for a system of this sort, because the circuit can be completed through the ground.