

Icebergs in the Southern Ocean.

If we may judge from reports from many vessels plying around Cape Horn, and between Europe and Australia, the Antarctic regions furnish a most extraordinary supply of icebergs.

A recent number of the *Nautical Magazine* gives accounts from the masters of nearly 200 ships sailing during the last year and a half, in which they report having met with ice, ice floes and icebergs extending over an area of apparently several millions of square miles, say from 40° to 60° south latitude and from 158° west longitude to 50° east longitude. The icebergs were of astonishing dimensions, some not higher than the sea level, others rising to a height of 1,500 feet, and in bulk from 1,000 feet square to 25 miles or more square. Many of the ships were exposed to great danger. Some of them, indeed, collided with icebergs and were lost; others were greatly damaged from the same cause. Ships would be sailing along, and being overtaken by a fog, would run into the bergs. Sometimes great bergs would be seen to capsize and the under part then became the top, appearing to be covered with earth and rocks, so that they looked like dry land. We will cite particulars of a single example of many equally narrow escapes:

After a voyage extending over 11 months, the full-rigged ship *Wellington*, Captain E. B. Broomhead, belonging to the Shaw, Savill & Albion Company, arrived at Plymouth Sound first week in April with 12,000 carcasses of mutton and a quantity of wool and grain from Picton, New Zealand. The *Wellington* left Picton on May 12, last year, and all went well until she was 1,000 miles from Cape Horn, when several terrible hurricanes were encountered. The seas which washed over the vessel were of tremendous force and caused considerable damage. One of them washed the wheel and the man steering across the deck, the sailor having his arm broken. The same sea dashed Captain Cowan, who was then in charge of the ship, to the deck, and his head was badly cut. The mate was thrown with such force against the side of the vessel that one of his legs was broken; it has since been amputated. Eleven days later, when the *Wellington* was 250 miles east of Cape Horn, a terrible and fatal accident occurred. At four a. m., in thick and stormy weather, the ship struck with terrific force a huge iceberg. The stem was carried away to within three feet of the water's edge, as well as the whole of the starboard bow and a part of the port bow. The bowsprit, foretopgallant mast, royal yards, freezing and galley funnels, and many other spars were also carried away, leaving the vessel almost a wreck. A good many of the crew were in their bunks, and two seamen, named Flemming and Wilson, were killed. At first it was feared that the ship would sink, and the crew prepared to launch the boats. When they got clear of the iceberg, however, it was found, much to the surprise of all, that the vessel was not leaking to any great extent, and the captain decided to make for Rio de Janeiro in order to effect temporary repairs. On arrival at Rio, 41 days after the accident, Captain Cowan returned to England and Captain Broomhead took charge of the vessel, the repairs to which were at once commenced. This was in the month of July, and on September 5 the revolution broke out. Work was at once stopped, owing to the fact that the workmen were pressed into active service. From that time until January last the repairs could be effected only at intervals, the men having to work in the midst of great danger, owing to the continual fighting between the opposing forces. In order to get out of the line of fire, the *Wellington* had to shift her berth in the harbor five times, and even then she had several narrow escapes. Three Nordenfolt shots passed through the ventilators of the ship, but fortunately very little damage was done. One of the crew who had deserted was drowned in trying to rejoin his vessel. Two apprentices were invalided home, but otherwise the crew maintained excellent health. On January 24 the *Wellington* set sail for England. Exceptionally fine weather prevailed until the English Channel was reached, 56 days from Rio, when strong easterly winds set in, and during the night Captain Broomhead put back from the Start for Plymouth to obtain the services of a tug to tow the ship to London. Although the cargo had been on board nearly 12 months, the mutton was in good condition, as the refrigerating apparatus was not seriously damaged.

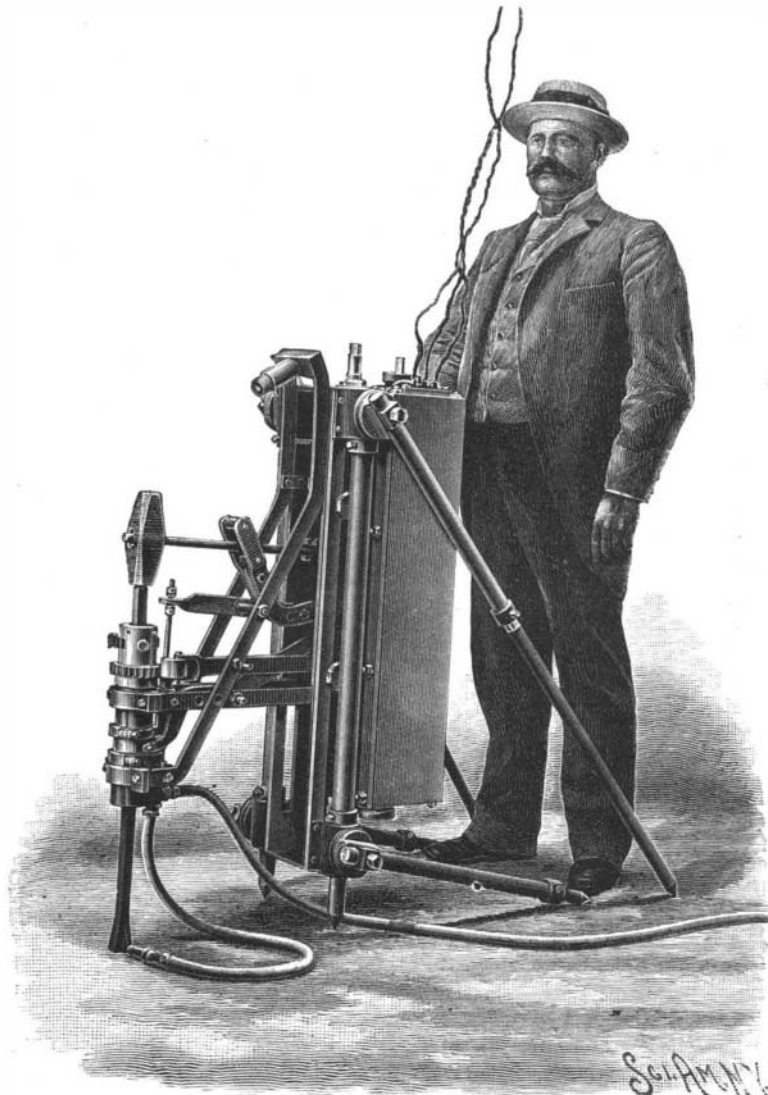
THE Mormon Tabernacle in Salt Lake City is the most perfect whispering gallery in the world. The dropping of a pin into a silk hat at one end of the huge structure is distinctly heard at the other end.

NOVEL ELECTRIC ROCK DRILL.

For conveying power into remote corners no more convenient means can be conceived than is afforded by electricity. As the current may readily be conveyed anywhere through a small and comparatively inexpensive cable, it is especially adapted for operating machinery for mining and quarrying. It is the invention of Mr. G. W. Pickett.

We illustrate a new rock drill operated by electricity, which seems to embody all the desirable points found in other drills, besides possessing the advantage of having greater portability on account of the use of electric cables in lieu of pipe or hose.

This machine, as will be seen by reference to the engraving, is very compact. It is arranged to deliver blows upon the drill rod in much the same manner as hand drills are operated by means of hammer; but in this case the motive power never tires. The hammer is operated by means of armatures or plungers drawn alternately into two oppositely arranged solenoids. The frame which carries the hammer is mounted upon a guide frame attached to the casing of the solenoid. The machine is adjustable, so that the drill can be operated either vertically or horizontally, or at any desired angle. The drill holder, which is carried by the adjustable frame, is arranged to rotate, and is furnished with a ratchet acted on by a pawl reciprocated by



NEW ELECTRIC ROCK DRILL.

means of the hammer-operating lever. The same movement operates a pawl which turns a nut on the feed screw and feeds the drill forward.

In the ends of the solenoids are buffers to prevent too great shock to the machine should the resistance prove too light to absorb all the energy developed by the blow of the hammer, or should it be accidentally set in operation when not in position for doing work. The connection between the hammer-operating lever and the hammer arm is not positive, but permits of a certain amount of play between the hammer arm and the lever, and a buffer is provided for arresting the upward motion of the hammer. The current is automatically shifted from one solenoid to the other, so that the drill after being started operates continuously and automatically until a new adjustment is required. In this drill there are no small, easily disarranged, delicate parts. There is no chance for undue wear, and its construction is such that should any part give out, it can be replaced by such mechanics as are found in mining and quarrying districts.

Patents covering this machine have been issued in the United States and various foreign countries to Mr. Samuel Lesem, whose offices are in the Mining and Exchange building, Denver, Colorado.

CANON Wilberforce, in a recent interview published in the *Westminster Gazette*, contends that the lower animals are immortal, and uses his belief as an argument against the establishment of a Pasteur institute in England.

Large Scale Photographic Maps of the Moon.

In 1890 Dr. Langley sent out a circular relative to the making of a photographic map of the moon. Very successful experiments in enlarging the negatives made at the Lick Observatory have shown that it is perfectly practicable to produce such a map on a large scale, by directly enlarging the focal negatives made at Mount Hamilton. Some of the features of the moon, as crater pits, are better seen in enlargements than in any other way. An atlas on the scale of 3 feet to the diameter of the moon would be the best for ordinary use, while one with a diameter of 10 feet would be on the largest scale, which presents a distinct advantage. "It is hoped," says Prof. E. S. Holden, "that the 3 foot and 10 foot atlases will be made in the near future. At any rate, the scientific problem is now solved, and only the financial one remains."

Improved Hospitals.

A lecture was recently given before the Society of Architects in Berlin, by Herr Boettger, on the present state of the science of hospital planning, which has much interest. Says the *The American Architect*:

As nearly every summer sees some important congress of sanitarians or physicians, at which hospital construction is discussed, it is not strange that ideas on the subject are brought forward, tested, and abandoned, or developed further, in rapid succession, and the hospitals of this year differ materially from those of even three or four years ago. According to Herr Boettger, while there is very far from being unanimity among experts on many points of hospital design, it is generally agreed that, for large establishments, with more than one hundred beds, the system of wards connected by corridors is to be condemned, and that isolated pavilions should be exclusively employed. It has usually been considered that, with isolated pavilions, the cost of supervision and service is much greater than where the wards are connected by corridors, but Herr Boettger says that, if the buildings are carefully grouped around the administration offices, this is not the case. The theory once prevalent, that hospitals for cities must be at or near the center of population, is also becoming obsolete. Great improvements have been made in the rapidity and comfort of ambulance service, and the most recent hospitals are built far enough outside the cities to secure fresh air. The immense new establishment at Hamburg, which comprises eighty-one separate buildings, is about five miles from the city, and so careful are hospital directors to avoid what Herr Boettger calls the defiled air of the great towns, that the direction of the prevailing wind is studied, so that, even at five miles distance, the city air may have little chance as possible of reaching the patients.

Cellars are now abandoned for the pavilions of large hospitals, as they have long been for small ones. No use can or should be made of them, and it is much better to allow the air to blow freely through under the first floor. The best number of patients for a ward in general hospitals is generally agreed to be thirty, with twenty as the maximum for wards containing certain classes of patients. To secure the best effects of sun and air, the long axis of the wards should run north and south, instead of east and west, as in many of the older Continental hospitals. This gives sun on both sides of the room during some part of the day, and allows the "day room," or "sunning room," which is now an indispensable part of every large hospital ward, to be placed at the south end, where it does not shade any windows. Roofs should be flat, without air spaces between the rafters and ceiling, and covered with "wood cement," or similar material. Opinions still vary as to the best flooring. Some still prefer wood, but Herr Boettger considers that a pavement of smooth concrete, or Mettlach tiles, is much better, if suitable provision can be made for keeping it warm. The best material for walls is now agreed to be brick. Probably it is intended that they should be built hollow, for Herr Boettger continues that the inside face should be laid as smoothly as possible, with very close joints, and painted in oil to a height of seven feet above the floor, or else covered to that height with tiles. For hospitals for infectious diseases, the newest idea, which is certainly a good one, is to provide, in the hospital grounds, a number of monolith platforms of concrete, of suitable size, on which temporary structures can be erected at any time, either in winter or summer, in a few days, or even in a few hours, and cleared away as quickly after the exigency is past.

THE United States produce annually forty-six million tons of hay.