Scientific and Useful

A NEW VOLCANIC ISLAND.

Some weeks after the Californian earthquake the United States Fish Commission steamer Albatross, passing the Bogoslof group, found a third island there. Professor Gilbert gives an interesting narrative of the event. The oldest of these islands arose rather more than a century ago, in 1796. The second is only about 24 years old, having first appeared in 1883. In 1890 these two were about a mile and a half apart, the one still steaming and the other cooling off. The new island has sprung up about midway between them, a jagged, rugged mass of lava with innumerable little craters, around most of which is an incrustation of sulphur. Some 120 miles south are the Seal Islands, which had a similar origin. Curiously enough, the appearance of the new island had been predicted by Gilbert. It is recorded that the uprising in all three cases was accompanied by earthquakes. If the great rift left by the Californian quake were extended northward it would pass close to the islands. The rift, however, is only 200 miles long, and the Behring Sea is some 2000 miles away. It is of course impossible to say that there was no connection between the two events, but Professor Gilbert's opinion is that purely local causes were responsible for the birth of the new island.

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NEW INCANDESCENT LAMPS.

Addressing the Institute of Electrical Engineers, Mr. J. Swinburne discussed the future of the incandescent lamp. He considers that the future belongs to the metallic filament, although the difficulties in the way of its universal adoption have as yet by no means been overcome. It is hard to make a metal filament suited for use with high voltage or alternating currents and at the same time giving a low candle-power. The present normal light gives about 16 candle-power, and one of the effects of the newer systems will be to accustom us to a normal light of 50 candle-power. The very high efficiency of the metallic filament has, of course, already been proved. One result of these efforts to improve on the old carbon filament which has held the field so long, is a ransacking of the more rare chemical elements, some of which, it seems probable, will combine the required properties. If this proves to be so, evidently a new and great field for their use will open up. One essential is a high fusing point, and the extreme difficulty of melting them happens to be a characteristic of many of the rare metals. Titanium has a high melting point, and is found in some abundance, especially in Scandinavia. Zirconium, which occurs as a silicate in zircon, is promising. It has been stated to fuse too easily, but probably an alloy was being dealt with. Thorium, brought into prominence by the evolution of the gas mantle, could be readily obtained. Some attempts have been made to coat carbon with boron, and in the early days of the industry persistent efforts were made to apply silicon in the same way. Silicon forms a volatile liquid tetrachloride, with which it was thought a carbon filament might be coated with silicon, but the experiment did not succeed. Vanadium and niobium are being experimented with, and something is expected from didymium, which Welsbach has separated from two closely allied substances into which it occurs. Tantalum represents one of the present successes. It is hard and ductile, with high tensile strength. The tantalum lamps have a filament about 25 inches long, but one pound of tantalum would make 20,000 of them. Chromium has a melting point considerably higher than that of platinum, and may prove useful. It is said that molybdenum lamps will soon be in use. Osmium has given another success, but it is crystalline and cannot be drawn into wire. The Welsbach process for making their osmium lamp is understood to get over the difficulty by making the osmium into a paste with an organic binding material, which is subsequently burned off. Finally the application of iridum to lamps is now being investigated by Gulcher. Recent advances in metallurgy have brought the production of all these elements into the region of commercial possibility, and though labelled rare ample supplies of raw material will, no doubt, be forthcoming, if wanted.

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THE OPEN WINDOW.

We are glad to find that the great majority of people have at last realised the benefits of fresh air. Still there are a few who are afraid of the open window. They think an open window means colds and coughs, but it does not, as a matter of fact. The open window does not mean that it shall be open only so wide as to cause a draught, but wide enough to admit a large volume of air.

What, then, is the real benefit of the open window? It is well known that fresh air soon kills the germs of consumption, so that, by admitting fresh air to our dwellings we kill off any germs which may perchance be lurking there. Some people keep their windows open by day and shut them up at night, but this is a great mistake. In fact, it is just then that the windows most require to be kept open. No one who has tried to sleep with an open window will ever attempt to sleep with it closed, as the gain in health is enormous. Headaches, colds, and many other troubles soon disappear when the windows are kept wide open in the sleeping apartment by day and night.

The open-air treatment of consumption is based on the fact that the germs are readily killed off by fresh air, but it should be remembered that not every patient is able to sleep out of doors in weather such as we experience in this country. This is the great error which has been made by the open-air enthusiast in Great Britain. Claims have been made for sanatorium treatment which do not really have any foundation. In fact, it has been carried almost to the point of madness, no doubt from over-zeal on the part of certain members of the public who were ignorant as to the real facts of the case.

Sanatorium treatment is not the solution of the consumption problem. This treatment is only of service in certain selected cases, but by no means in all. Hence we must look for the solution in another direction, and that is in the prevention of consumption. Its cure will probably never be discovered, but what of that if we know how to prevent the disease altogether. And, surely, after all, this is of infinitely greater importance. We do know how to prevent it. Let us, therefore, one and all do our little part in aiding those who are labouring to bring about a widespread knowledge of the means of prevention to which we have briefly referred.

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THE LAND OF DUCKS.

There are more ducks in China than in all the rest of the world. China, literally, is white with these birds, and day and night the country resounds with their metallic voices. Children herd ducks on every road, on every pond, on every farm, on every lake, on every river. There is no backyard without its duckhouse. There is no boat, little or great, without its duck quarters. Even in the cities of China ducks abound. They dodge between the coolies' legs. They flit squawking out of the way of the horses. Their indignant quack will not unseldom drown the roar of urban commerce. All over the land there are great duck hatching establishments, many of them of a capacity huge enough to produce 50,000 young ducks every year. The Chinese duck is extremely tender and delicate—the best tame duck for eating in the world. Duck, among the Chinese, is the staple delicacy. It is salted and smoked like ham or beef.