

Liberty—Small grains are looking fine; lucern is 6 inches high. Frost injured strawberries. Potato planting is in progress.

Plain City—Field and garden crops are in excellent condition and the farmers are in "full bloom" and look good-natured since we have had the best rain in 20 years.

Utah—Crops on high land are now assured. Killing frost on the 20th damaged strawberries and tender vines; mostly all the fruit has been injured.

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SCIENTIFIC MISCELLANY.

Tests on a 3-inch line shaft 80 feet long, running at 200 revolutions a minute, are reported to have shown a power consumption of 6.21 horse power with habitted boxes, and of only 3.01 horse power after change to roller bearings.

A singular accident has been reported from a chemical factory, where a workman's clothes became saturated with dust from the grinding of chlorate of potassium. A spark from the workman's pipe fell on the clothes, when the entire suit instantly flashed into flame, producing fatal burns.

Floors are made in France from a mixture of six parts of good plaster with one part of freshly-slacked lime. This is hardened, when very dry, by thorough saturation with sulphate of iron or zinc—the former giving a surface twenty times as strong as ordinary plaster, while the latter is chosen for its whiteness. Linseed oil boiled with litharge turns the rust color given by the iron to a beautiful mahogany, which is further improved by a coat of copal varnish.

Electrical machinery operated by one man is applied to the ringing of the three great bells of the church of St. George, Berlin. A motor of ten horse-power gives 160 revolutions per minute to a shaft, on which are three loose drums, each having at its side a friction wheel fixed to the shaft. Pressure of the wheel against the drum causes both to revolve. A rope on the drum acts on the bell-lever, and as the bell reaches the middle of its swing, an eccentric releases the drum and allows the bell to ring back.

A Paris ice company now obtains its supplies from the glacier du Casset, near Briançon. The foot of the glacier is 6,600 feet above sea-level, and the 300-ft blocks of ice are carried to a station 1,400 feet lower by a telfer line 7,000 feet long. The loaded cars or boxes on this line pull up the empty ones, no engines being required. The cars bring down hourly about ten tons of ice, which is carried in carts from the lower station to a railway about eleven miles away.

Unexplained photographic reversal occasionally shows lightning in camera pictures as a dark track instead of a light one. Experimenting with electric discharges, Mr. W. A. Clayden, an English meteorologist, has imitated the effect by having a strong white background and giving the plate extra exposure to diffused light after the electric discharge. The most curious result is that the reversal does not take place if the exposure to diffused light is given before the electric spark discharge.

The scientific development of the potato as a food seems to have been strangely neglected, according to M. Railland, a French chemist, who has made known some interesting facts. Thin slices held toward the light or photographed with Roentgen rays show that the potato, aside from the skin, consists of three layers, diminishing in thickness toward the center, the outermost layer containing the

greatest proportion of starch and least of nitrogenous matter, while the innermost layer is richest in nitrogenous substance and poorest in starch. The outside layer is driest, the inside marrow having considerably more water. On the average, 75 per cent of the potato's weight is water, 20 per cent is starch and 2 per cent is nitrogenous matter, but the proportions vary so greatly that the food value of the best table potatoes may be three times that of the poorest. Chemical analysis, however, is not necessary for a relative estimate of different varieties. Potatoes crack open in hot water because they are deficient in albumen—not, as has been supposed, on account of the swelling of the starch—and those remaining whole on boiling are the ones that contain most albumen, or nitrogenous matter, and are the most nutritious.

Two kinds of ill effects are produced on the eyes by the electric arc, according to Prof. A. J. Rowland. When one's field of vision takes in such an arc as the ordinary arc lamp, an accidental short circuit, or the break of a large current at high potential, the eyes suffer a sort of paralysis, and on looking away one sees as through a fog. The effect is transient, at the worst being cured by a day or two in a dark room. On working near arcs taking large currents, especially if one electrode is metal, more serious harm may be done, an external burn—like a sunburn—being produced on the conjunctiva or outer membrane covering the front of the eyeball. This is less likely to occur at night than in the daytime, when the glare of the arc gives less conspicuous warning. The effect may not be noticed for hours, and is first perceptible as a slight scratching, followed by a sensation of dryness on the eyeball, shedding of tears, and in bad attacks an intense aching and blindness. Protection against the eye-burns can only be secured by a mask covering the entire face, with glasses of special design.

The sanitary stamping out of yellow fever, which has its source in Cuba and is often brought thence to the Southern States, is suggested as a possible result of the Americanizing of the Pearl of the Antilles. Whether the hope is justified or not, the disease may be expected to give the invading army trouble during the coming summer. Interesting in this connection are Dr. Sanarelli's efforts in Brazil to find a specific treatment, and his latest report gives much encouragement, showing a mortality under his immunized serum injections of 5 in 22 cases, whereas the usual mortality in average epidemics at the Brazilian capital is about 50 per cent. With further experience and an abundant supply of more active serum than is now available, he looks for better results. As animals do not readily tolerate strong doses of the virus, difficulty is experienced in supplying a trustworthy curative and preventive serum, but this has been usually obtained by intensive treatment of horses for 12 to 14 months. The serum acts only against microbes, not against their toxins. It is therefore effective only at an early stage of the disease, and is useless when the poison formed in the body of the patient has reached a fatal quantity.

In an investigation described by Melander, a French meteorologist, 3,000 observations with an Altken dust counter were made in Finland, the Sahara, and elsewhere. It was found that the dust particles in the air increase in number with the dryness, being usually at a minimum in the afternoon. Winds from land carry more dust than those over water, and those blowing from an area of high baromet-

ter, or down high mountains, are very dusty. Products of combustion furnish part of the dust causing fog and rain. Dust particles are effective in causing rainfall, but whether there can be rain without them is an important problem yet to be solved.

THE PHILIPPINES.

The movement upon the Philippines threatens directly Spanish sovereignty on the other side of the world, and may result in depriving Spain of the last remnants of an eastern empire. The Spanish dominions in the Pacific consist of the Philippine group, the Caroline Islands and a few scattered clusters lying in the vicinity of both. Designated by various names, none of these groups of islands are of any importance politically or commercially, save the Philippines, but the value of these to the Spanish crown is so great as to make all the more remarkable the foolhardiness of Spain in rushing unprepared into a struggle with a power which is able in a few days to sweep the Spanish navy from the seas.

The Philippine islands have belonged to Spain ever since their conquest in 1565, which was effected by a fleet bearing an armed force from the western coast of Mexico. The Spaniards did not accomplish their conquest without difficulty, for, although the natives were poorly armed, having only the weapons common to savage peoples throughout the world, they made a stout resistance, and all the military strength and strategy of the Spaniards were needed in order to subdue them. The islanders have since shown, by oft-repeated—indeed, almost continuous—insurrections, their objection to Spanish rule, and between 1565 and the insurrection of the present year it is said there has hardly been a decade in which Spanish troops have not been called upon to pacify. In Cuban fashion, one or another of the disturbed provinces.

The Philippine group lies so completely off the usual line of travel that, save in a general way, little is known of it or its people. Boys and girls at school learn the name of the cluster of islands, and, because these appear on the maps as mere dots, regard them as of no importance, and soon forget them and their location, so that among men and women of the present the question, Where are the Philippine islands? is often heard, but not often answered. The last remaining Spanish possession in the East Indies comprises over 1,200 islands in the Philippine group alone, the greater number, however, being mere dots or islets, inhabited by only a few families.

The most southern of the Philippines lies 4 degrees north of the equator, the most northern 21 degrees, so that the islands cover a very considerable portion of territory, nearly 1,200 miles from north to south, and half this distance from east to west. Insignificant as most are in point of size, the leading islands have an area of 9,000 square miles: Palawan, 5,500; Samar, 5,000; Panay, 4,500; Negros, 4,300; Leyte, 3,000; Cebu and Bohi, each 1,500; Masbat, 1,200—the total area of the entire group being 116,000 square miles, or about equal in extent to that of Missouri and Arkansas combined.

The islands, like most others in that quarter of the world, are all of volcanic origin and each has a mountain range as a backbone, generally terminating with a volcano at each end of the island, with two or three in the middle for good measure. Most of the volcanoes are lofty, but situated as they are, almost under the equator, snow seldom appears on the summits of the highest mountains, although the uplands of all of the islands have a temperate climate, and during the summer are much fre-