

necessary, making a total of \$300,000. To this force it is proposed to add one hundred stations, at \$1,000 per annum; two supply vessels at \$40,000; interest on capital at $7\frac{1}{2}$ per cent. per annum, \$210,000; contingencies, \$100,000. Total, \$750,000. It is calculated that 300,000 messages, at \$5 each, would be received, making a total of \$1,500,000 revenue.

THE DELETERIOUS EFFECT OF LIGHT ON POTATOES.

The influence of light on vegetation is now regarded as a matter of the utmost importance, and although the precise mode of action may not be always understood, yet powerful effects of it are everywhere perceptible. In its absence leaves become blanched that would otherwise be green. Roots that are white underground become green when exposed. Turnips, white beneath, are green or perhaps red above, and many kinds of fruit, naturally pale, color under bright sunlight. By the action of light on leaves, the different secretions peculiar to plants are formed, such as gum, sugar, starch, oils, and even, in certain kinds of plants, deadly poisons. In some plants, too, the secretions due to the action of light are in certain portions harmless and nutritious, whilst in other parts of the same plant, through the same agency, highly deleterious principles are formed. The potato offers an example. Everybody knows that its tubers contain wholesome food, and it is also generally known that the stems, and especially the apples or seed vessels, are deleterious. But the treatment to which the potato is sometimes subjected is calculated to develop the poisonous quality in the tubes themselves, a change which can only take place during exposure to light. The poison found in the green parts of potatoes is called "solanine." This exists in several species of *Solanum*, and is found in considerable quantity in the shoots of potatoes. To obtain it the shoots are bruised and acted on by water acidulated with sulphuric acid. It is very poisonous. (Turner's "Elements of Chemistry.") Liebig says it is a powerful poison.

Although the stems of potatoes, according to the authorities just quoted, contain in notable quantity the noxious and easily-extracted principle, so dangerous in its concentrated form, yet the tubers grown underground and kept in the dark are floury and white when cooked, if the variety of potato is good, and quite free from acrid taste, which is one of the characteristics of solanine, and a sure indication of its presence. But the potato tuber is in reality a sort of stem; for it is furnished with buds, which, under favourable circumstances, push into shoots, as buds do on stems above ground. It is therefore, highly susceptible of the influence of light; for although both its skin and flesh are white, they soon become green by exposure; and the continued presence of light renders them as green as stems above ground. It is said that pigs have been killed by giving them potatoes greened to this extent. Such, of course could not be sold for human food. For this purpose potatoes exposed to light must be housed or otherwise shaded before the green tinge is apparent, at least to the naked eye. But under the impression that the tubers keep better after having well basked in

the sun, many cultivators are in the habit of turning them up, and spreading them out on the surface of the ground in bright sunny weather. This has the effect of greatly deteriorating their quality. Notwithstanding disease, really good potatoes can be found; but even slightly diseased ones, with the infected portions cut away, are infinitely better than quantities of others which, though they have a goodly appearance, have been greened. Instead of being white and floury when cooked, they are yellow, and have a disagreeable acrid taste, which can scarcely be disguised, or, if it should, there is no proof that the deleterious effects of the acrid principle are counteracted. At all events, it would certainly be very desirable that such means should be adopted as would prevent that principle being generated, or in other words, the tubers should be kept as much as possible in the dark instead of exposing them to light. The advantage of exposure as regards better keeping is doubtful, whereas the deterioration it occasions in the quality of the tubers as an article of food is certain. I have thus endeavoured to draw attention to the subject, and it is the duty of every one who is aware of the deleterious effects of light on the potato to explain it to those who are not; for a knowledge of it, if acted upon, would prove beneficial to both rich and poor.—*The Gardener's Chronicle and Agricultural Gazette.*

THE GOLD MINES OF NOVA SCOTIA.

A paper was lately read on the above subject by Principal J. W. Dawson, of McGill College, before the Natural History Society of Montreal. He says, "There is little room to doubt that gold will be found throughout the entire coast metamorphic district of Nova Scotia. Careful examination may show that the gold occurs chiefly or entirely in the veins traversing certain bands of the thick beds of slate and quartz rock in these districts; and these may be recognized by their mineral character, especially if defined in their relation to the other beds by a detailed survey of the productive localities."

In the last number of *Silliman's Journal* there is an article on this subject by O. C. Marsh, A.B., of the Scientific School, Yale College. He states that there is a belt of metamorphic rocks extending the whole length of the province of Nova Scotia, varying in width from ten to fifty miles, and that it is composed mainly of clay slate and quartzite, replaced by mica slate, gneiss and granite in some sections. This coast range, according to Prof. Dawson, probably belongs to the old Silurian. Mr. Marsh has visited the Tangier mines, situated sixty-seven miles east of Halifax. The strata which contain the gold consist of clay slate, traversed with compact veins of quartz.

The strata is much disturbed, and an examination for fossils was unsuccessful, the igneous action so evident in this region had probably obliterated all traces of such. Perfect fossils, however, have lately been discovered near St. John, New Brunswick, in clay slate. The gold at Tangier occurs mainly in the quartz veins, which are about one foot in width. Gold, in no small quantity, has also been found in the soil and in the bed of a small stream near the mines.