SUGAR BEET INDUSTRY.

Some Valuable Information Concerning the Cultivation of Sugar Bests

Mr. Joseph Callihan, a farmer in Washington county, near Hillsboro, was in the city yesterday on his way home from an extended trip through California. For several years prior to coming to Oregon, Mr. Callihan was the owner of a farm near Alvarada, Cal., and was a considerable producer of sugar beets for the factory located at that place. During his recent trip Mr. Callihan visited the sugar-beet industries in the different parts of the state, and learned also that two new factories are contemplated in the near future, one at Silinas and one at Alamitas, in the vicinity of Anaheim. This will make five factories for California, one of which is proposed to have a capacity of 3,000 a day. A particular instance of the success attending the introduction of beet-growing into a community is afforded by the experience of the Ventura country, near the Chino factory. In speaking of this place, Mr. Callihan said:

"In Ventura county there is a beautiful valley, extending from the sea to the mountains, populated by thrifty farmers, whose present comfort has come from the soil, which grows everything from tumble weeds to oranges. These farmers found in their local paper of February 6, last year, a notice from a local firm that seeds would be furnished if the farmers would undertake the task of producing sugar beets. With the notice were the following instructions:

"'Plant a space 60 feet square—one-tenth of an acre.

"'Keep all stock off the land after the rains begin.

"'Plow deep, pulverizing thoroughly the soil before planting.

"'Sow when the soil is warm; after the rains; say in May or April.

"'One pound of seed will sow one-tenth of an acre.

"'Sow in rows, 18 or 20 inches apart.

"'Sow with a drill, forced seed; sow shallow, just deep enough to be covered.

"'Seed should come up in from seven to 21 days.

"'Thin the beets out as soon as they develop four leaves.

"'Thin out from 6 to 10 inches, according to richness of soil.

"'Leave only one beet in one place, and that the most vigorous one.

"'Keep weeds out entirely.

"'Do not allow a crust to form on top of the land after seeding or while beets are growing.

"'Continue to keep the soil loose by drawing a cultivator between the rows, until the tops cover the ground.

"'Beets should ripen in from 120 to 160 days after sowing.

"'When the outer leaves turn yellow or die down, it is an indication that the beets are ripening, or ripe.'

"In September of the same year, just eight months after the notice was published, tests were made by experts sent from the Chino factory under an arrangement made by which the Chino factory bought the product at a price based upon the saccharine purity percentage. All the beets that were sent ripe ran over 15 per cent. only three loads being a fraction below that figure. The highest average was 23.05 per cent saccharine matter; average purity 83.68 per cent. while the average weight of the beets was 1½ pounds. None of the beets shipped ran below the per cent. required.

"The farmers were permitted to bring in their own samples, and, in many cases, the largest beets with the whitest skin were selected, and this is the very beet that is the greenest and has the least saccharine matter; consequently, it is fair to state that the beets ran a fraction higher than the tests indicate. The average price for the entire shipment was $4.75 per ton.

"The average tonnage an acre was not ascertained, but a close estimate is made that it will run over 17 tons. In some cases over 22, while in other places only 12 tons were raised. All were surprised to learn that such rich beets were raised with so little care and attention. The per cent. of saccharine matter averages 3 per cent. higher, and 8 per cent. higher in purity, and over three tons more per acre than in Chino, where the beets for the factory had been previously grown.

"Thirty farmers experimented in different parts of the valley upon about 180 acres in all. The result of this small endeavor is that now 1,200 acres are under contract with the Chino factory to be planted this season, and farmers have signed for 8,700 acres, which they agree to plant for five years. The contract price is $3.25 a ton for beets containing not less than 12 per cent. sugar, and an additional 25 cents per ton for every per cent of sugar in excess of 12. As the product will probably average 15 per cent. the price will be $4 per ton.

This locality is 110 miles from Chino, and the average haul from the farms to the railroad is 10 miles; so the farmers will lose the cost of hauling and the railroad freight, a total of say, $2 a ton, or, on a product of 75,000 tons, they will be out $150,000 in consequence of not having a factory in that locality. The contract is so drawn that the Chino factory has the first privilege of erecting a factory, and any outside party contemplating building one in that district will be deterred from doing so, which is a misfortune to the farmers; but in the enthusiasm of their success in beet-growing, they signed away the chance of securing a factory at an earlier date than the Chino proprietors may see fit."

Mr. Callihan said that the uniform experience in California has thus far been that in the commencement era, the factories have difficulties in securing sufficient beets; but after its establishment is assured, and the production in the locality is proved, then the production overtaxes the factory. Farmers are slow to enter into the business, until it has been demonstrated by actual trials that it is a success. Even where beets grow near with the most flattering results, districts delay starting into beet-growing until its success seems to be a moral certainty. In most of the cases in California of beginning, owners of land have been induced to plant and properly cultivate a small patch of beets, which were submitted to the chemical tests to determine saccharine contents; and when these proved satisfactory, production in greater quaitities were ventured upon. As soon as returns are received by some for their beets, the rush begins, and available land is all planted until the limits of the factory have been reached.

Mr. Calliham also attended a meeting of agriculturalists, given under the auspices of the Chit-Chat Club, in San Francisco, at which Mr. Albert Gerberding, president of the San Francisco produce exchange, gave a very able address on beet sugar. The process of manufacturing, as detailed by Mr. Gerberding, is of especial interest to those anticipating starting such a plant in Oregon. It is as follows:

HOW THE SUGAR IS MADE.

"For information in regard to the manufacture of beet sugar, I prefer that you visit the factory at Alvarado, a short journey, where, in a few hours of interesting observation, you will learn more than I can tell you. You will see outside the factory long rows of covered bins overflowing with headless beets, for the vegetable is decapitated in the field. Then as you enter the factory, you will observe a very peculiar and unpleasant odor, to which you soon become accustomed, and ere long are deeply interested in the manufacture of sugar, of which your guide will furnish a description similar to the following:

"The beets are first washed by machinery in flowing water, and sliced into a peculiar shape by rapidly revolving knives, having fluted edges. These ribands, called cosettes, are fed into the diffusion battery, where the process begins. The battery consists of a circle of 12 or 14 cells, resembling upright steam boilers, each charged from the top and having a capacity of a ton of ribands. After being charged, water is admitted first into one, then through an intervening heater into another, and so on until this water has completed the circuit, when it will have become so saturated with juice as to be almost equal in density to the expressed juice itself. This first water is followed by other supplies, until all the sugar is had that is commercially obtainable; then the exhausted ribands are discharged through the bottom, compressed and stored for cattle food. This residue, or pulp, contains only about two-tenths of one per cent. of the sugar originally in the test.

"The principle of diffusion is to obtain by a sort of osmotic process the sugar juice held in the minute sacs in the beet, and this without bringing away the cell membrane. From the deffusion battery the juice, resembling muddy water, is pumped to a tank, from which measured quantities are passed for treatment first with a definite proportion of milk of lime. This either decomposes the albumen, coloring matter, salts, acids, etc., or it renders them inert. These undesirable substances having an affinity with the lime, unite with it, and carbonic acid gas is afterwards forced into the liquid, and, joining the lime, forms a precipitate. The juice thus treated is forced into a series of filter presses, consisting of iron frames filled with perforated plates, covered with burlap, and in this process all the foreign, solid and coloring matters are deposited. After this it is subjected to a careful treatment with sulphurous acid, and then a filtration leaves it almost colorless, and ready for the evaporating process, where it is boiled with steam heat in vacuum. Then it is passed to the vacuum pans, where the vacuum and heat are greater; and when the process of granulation has been carried to the proper point, which is determined by the sense of tough, the viscid mass is passed through the centrifugal machines. Here the molasses is thrown off, then the damp sugar crystals are dried by hot air and packed for shipment.

"This process, intricate as it may seem to the layman, is rapidly accomplished. The beets go into the factory today; tomorrow they are pure white granulated sugar, ready to be put into your coffee.

"It requires between seven and eight tons of beets to make one ton of raw sugar. The pulp, i. e., what is left of the beet after the sugar is extracted, is an excellent fodder, and in Germany and France is returned to the farmer in part payment for his beets. In California it is only partially utilized, but a little more experience will demonstrate its value as food for stock.

THE MONEY SIDE OF THE BUSINESS IN CALIFORNIA.

"We now come to the all-important question: Does the manufacture of sugar in California pay? Those of you who hold shares in these enterprises can answer this question better than I, for unfortunately for me, not being a stockholder in any sugar company, I have not had access to the books. I have, however, gathered a few figures which I believe to be correct: Seventy-seven thousand tons of beets produced 11,000 tons of sugar; i. e., seven tons of raw material made one ton of sugar. To produce these 11,000 tons of sugar, there was an outlay for fuel, lime, labor, etc., of $200,000; i. e., it took $200,000 to transform 77,000 tons of beets into 11,000 tons of sugar, being a cost of $18 dollars per ton for the manufacture of the sugar. Add to this the cost of the beets, at $4 per ton, and it requiring seven tons of beets to make one ton of sugar, we have the cost of material, $28; cost of manufacture, $18; add for errors and omissions, $1.50; and we have the cost of one ton of sugar, $47.50.

"The price obtained for this sugar was $67.50 per ton; deducting above cost of $47.50 from sale, and we have a net profit of $20 per ton on 11,000 tons, equals $220,000 for one season, as a return upon a capital of say $1,000,000, or say 22 per cent. per annum. If this estimate is 50 per cent. too high, we still have a profit of 11 per cent, and we know that capital is well pleased with a return of 10 per cent. per annum. These figures are not surprising when compared with statements from two factories in Germany, where the annual profits for 1895 are shown to be 30 per cent. and 18 per cent. respectively. To purchase 77,000 tons of beets at $4 per ton, it requires $308,000; to work the same, $200,000; consequently the working capital should be $500,000, and $500,000 will pay for the requisite plant; consequently a properly equipped beet sugar company requires a capital of say $1,000,000 Sugar, however, is a cash article, and a company with intelligent financiering could be well conducted upon a capital of half that amount, for the season is short, four months, and the working outlay is soon recouped. It is quite within the range of probability to state that some of our local sugar enterprises have earned 50 per cent per annum upon the capital actually invested. And this in spite of the fact that we have not yet in California a manufactory constructed upon the most improved methods. It is supposed by many that we are dependent upon foreigners for the necessary machinery, but it has been demonstrated that the American machinist can supply everything required, and there is little doubt that when the inventive genius and the practical facilities of the skillful Yankee are called into play, that even present methods will be much improved."—(From The Oregonian.)

Like Manna in the wilderness comes the welcome word to hosts of office seekers that it is stated on good authority that McKinley will suspend the sweeping civil service order of President Cleveland's. Should he do this more than twenty thousand subordinate places will be opened for appointment.

The general appropriation bill just passed contained an item of $25,000 for completing the present project for the improvement of Yaquina Bay. No money was appropriated for the new million dollar project for the reason that no contract has yet been let.

None of the nine who were examined in Gilliam county last week succeeded in securing teachers' certificates, all having fallen below the 70 per cent mark. This is the first time this is known to have occurred in Gilliam county.