SUGAR

SUGAR BEET CULTURE, AND WHEN AND HOW IT ARRIVED IN WELD.

Going back to the first experiments in sugar beet culture in this state by way of *The History Of Agriculture In Colorado,* sponsored by the State Board of Agriculture, edited by Alvin T. Steinel with the assistance of Dr. D. W. Working as investigator and colaborator and published by the Board in 1926, we find that the first seed was planted by Peter Magnes and the second by L. K. Perrin or, possibly, both at the same time. The exact time of planting is not definitely known; but is believed to have been in the spring of either 1860 or 1861, most Histories giving the first date. It does not develop that either Magnes or Perrin knew that the other was planting, but both had reached the same conviction at about the same time, that the soil of Colorado Territory would produce a beet that would produce sugar. It may have been in the soil of Jefferson Territory instead of Colorado that the seed was planted, if the planting was done in 1860 or early enough in 1861, since the change from Jefferson to Colorado was not made formally until June of 1861. But it matters not what name the Territory bore, both Magnes and Perrin certainly demonstrated that its soil would produce the kind of beet that would make sugar.

Peter Magnes was a Swede and a practical farmer. He came with the gold seekers of 1859 but was soon convinced that the gold of this region was not to be found in the sands of its creeks but in the deep furrowed fields of its future farmers.

With this firm conviction he returned to Illinois in the fall of 1859 and prepared for a permanent move to the new Territory. In the spring of 1860 he came back bringing with him his family and an abundant stock of supplies, among which were fruit trees and seeds of many kinds, and took up his abode a few miles south of the settlement of Denver, soon thereafter putting his theories to the test. Perrin carried forward his experiments in the Clear Creek valley not many miles away. But not much

could be learned of Perrin's personal history prior to his planting the seed.

After a time, probably two or three years, no record states exactly, Magnes procured a small press, probably a cider press, extracted the juice of the beets he had grown and boiled it down. *It made sugar.* His theory was correct.

The point of discovery, however, was not that the juice of beets would make sugar; that had been demonstrated many years before; but the big discovery was that the soil of this region would produce a beet that would do it. And that was what he had now proven.

Between the planting and the proving Magnes and Perrin had come together and compared notes, finding that both had reached the same conclusion. Then they told W. N. Byers, editor of the *Rocky Mountain News,* explained the process and showed the product, and Byers caught the enthusiasm and published an editorial that started things going.

This was November 3, 1866. But things did not go very fast so far as material results were concerned. The leaven of the new idea had to work through the mental plane and that was a slow process. It was "too good to be true," and scepticism held it back a good many years. In fact it was thirty-three years before the first factory appeared. But the early enthusiasts did not expect it to be that long, so went ahead as though success were just around the corner.

The next important development was in 1869 when Professor Jacob Schrimer, a scientist, stepped into the picture. He established a laboratory in the old United State Mint Building that stood at 15th and Market streets, in Denver, and there made scientific tests that fully bore out the simpler tests made by Magnes and Perrin. These tests were entirely convincing to the scientists and the experimentrs, but to convince the skeptic required further proof.

In 1871 Professor Schrimer sent samples of the beets to the Agricultural Department at Washington requesting a laboratory test. The acting chemist of that departmen was an M. D. and his report was that he had "operated upon" two beets, giving

scientific details of the "operation," and he declared that he had found the percentage of sugar, as compared with European analyses, to be next to the highest; the top European figure stood at 14.78 and the Colorado analysis at 14.50, a figure much higher than the European average.

Two facts were now definitely established; that the soil of this region was adapted to the culture of beets, and that beets grown on this soil contained a high percentage of sugar. What now could hinder the industry from growing? Something did. The leaven of the new idea had not yet worked its way through the heavy mental material and many more experiments were necessary.

However, the enthusiasts kept on. Editor Byers again took his pen in hand. Articles were written, meetings were called, even conventions, and speakers, armed to the teeth with facts and figures and conclusive arguments, spoke; the mental ground was plowed and harrowed, and by and by the seed that had so long lain fallow sent forth one little shoot. A bill was introduced in the legislature of 1872 designed to attract capital for the building of a factory. It looked enticing and might have been a winner had it successfully run the gauntlet of the legislature, but it didn't; near the end it stumbled and fell. The $10,000 bounty offered was the stumbling block.

The bill provided that—

"The first corporate company, person or persons, who will, within the limits of the Territory, erect a manufactory and refinery for the extraction of sugar from beets at a cost of not less than $50,000, having a capacity for, and producing, not less than 2,000 pounds of sugar per day, and which shall manufacture from beets grown in the Territory of Colorado not less than 200 barrels of good merchantable sugar, shall receive a bounty of $10,000 from the Territorial treasury."

The enthusiasts watched the fortunes of this bill breathlessly. It had many friends in the legislature, but lacked ONE of having enough. It was defeated by just ONE vote. None opposed it on principle, but the argument that swung the decision was *economy*; the Territory could not afford the gift of

$10,000 to anybody for any purpose. The count of the final vote showed only a majority of *one* holding this view to the end, but it was enough.

Had the legislature of that time, 1872, added to the $10,000 proposed as a clear gift enough more to have made up the $50,000 estimated to be needed for the establishment of a factory and set that amount aside for that purpose, the factory so built would have been the property of the state and a never failing source of income to meet the expenses of the state, and must have obviated in later years the necessity of such arbitrary enactments as sales and service taxes. Confidential figures pertaining to the wealth actually produced are not easily available, but it is more than a safe guess that the income of the companies that finally did invest has run well over the million dollar mark every year on an average since factories have been established.

But the legislature of 1872 did not embrace this opportunity, and it is doubtful if that of 1936-7 would have done any better, so slowly does the leaven of a new idea work through heavy mental matter.

It was not only the idea that Colorado beets would produce sugar that had to be proven, but it had also to be shown that this could be done at a profit, and so a group of men started immediately after the defeat of the bonus bill to prove this point.

On February 23, 1872, the Colorado Sugar Manufacturing Company was organized for the purpose of raising a fund of $30,000 to start a factory. But that was $20,000 short of being enough, so failed; the enterprise that might have succeeded at $50,000 failed to get a start at $30,000. James Arden, one of the incorporators, made the statement that the sugar industry when under way would bring to the Territory *a million dollars a year*. This statement was, of course, considered extravagant, but the authority from which these facts are taken, *The History Of Agriculture In Colorado*, page 291, states that in the early 1930s an average of *twenty* millions a year was coming to the farmers of the state. And this after allowing other millions for the company.

In 1879 the Agricultural College at Ft. Collins was started and in the following year an experimental station established. Here the tests of the early experimentors were continued. Setting aside for the time being the hope of sugar production, the demonstrators proved that the raising of beets was not a loss even without their utilization as sugar, their forage value being sufficient to pay for their cultivation. Somehow sugar beets had taken a hold on the farmers and could not be entirely abandoned.

In the spring of 1888 seed was procured from the Spreckles plant in California and beets sent to the Watsonville factory for test. This test brought a report of 16 and ¼ per cent sugar content, which was above that of the California grown beets. The yield was from 22 to 29 tons per acre.

In the early 1890s a Federal Bounty law was enacted to stimulate the establishment of factories over the United States; following this, in 1895, a bill made a successful passage through the Colorado legislature, but met defeat at the hands of Governor McIntyre.

A WOMAN AT THE BOTTOM OF IT.

Since the days of Mother Eve women have been to blame for things, but once in a while, perhaps, they might be given credit.

There is no way of knowing how much longer the beet sugar industry might have languished in Colorado had it not been for a woman.

In 1882 Mrs. C. E. Mitchell, wife of a druggist in Grand Junction, went visiting. Her friends lived in Grand Island, Nebraska. The Big Show Place they had to show her was the sugar factory. She was deeply impressed and gained so clear an understanding of its intricate processes that on her return home she was able to make a sugar enthusiast of her husband. And from that time to the end of the century—and beyond, the Mitchells, the farmers and the Agricultural papers hammered away on the subject until at last Garfield, Montrose and Delta counties joined in the chorus and Mesa stepped forward with the first tangible proof that the leaven was working. Mesa offered a one per cent

bonus on whatever capital could be induced to invest and soon raised the ante to three per cent. And the leaven that had so long been working through the mental plane began to show up on the material plane.

On February 8, 1899, a contract was signed by the Colorado Sugar Manufacturing Company with E. H. Dyer of Cleveland, Ohio, for the erection of a factory at Grand Junction. That city donated 1,500 acres of land for a factory site and, in addition to the three per cent bonus given by the county, the farmers pledged 3,500 acres of beets each year for three years. The capital stock of the company was $750,000.

The factory was a success from the start, and now profits began to talk and capitalists to listen. Capital lost its timidity and factories began to spring up all over the state until within the next twenty-six years seventeen had appeared.

The contract price for beets was at first $4.25 per ton, but ex-Governor Eaton declared that was not enough and that it ought to reach $8; that it could come to that figure and still make a generous profit for investors. Since then in years when prices have climbed toward that figure and companies have still realized profits, that assertion has held its ground.

PRODUCTION IN WELD COUNTY.
WHEN AND WHERE FACTORIES WERE ESTABLISHED.

Charles E. Evans, for thirty-three years manager of this district who retired in January 1938 and was succeeded by Harvey S. Looper, is authority for the following information regarding the different phases of sugar production in Weld county. Five factories have been established: Greeley and Eaton in 1902; Windsor, 1903; Ft. Lupton, 1920, and Johnstown in 1925.

FACTORIES OF GREELEY AND EATON.

Ground was broken first in Greeley but was followed so soon by Eaton that both plants finished at the same time and opened for business on the same day. The first spade of dirt was lifted on October 15, 1901, and a year later, October 6, 1902, both factories were ready for a great celebration. They were ready,

but arrangements for the celebration of so tremendous an event, the like of which had never occurred before, took a few days longer; so it was actually on October 23 when A. M. McClennahan, representing the Sugar Company, pulled the lever that set in motion the great machinery that was destined to put Weld county definitely on the agricultural map and give it first rank in the state as a sugar producer. It was a history making event, marking a great forward stride industrially, economically and socially.

In 1902, the factories being established and acreage pledged, the next question arising for settlement was the cultivation of beets. The Sugar company stated that American workers neither understood nor would be willing to perform the labor necessary to the successful cultivation of beets, therefore it would be necessary to bring in laborers who did understand and were willing to do the work. Whether or not this was a surprise development to the farmers does not appear, but history does record that the Company brought from near Lincoln, Nebr., a group of about 400 workers who had been brought to Nebraska from across the water and were called German-Russians.

A few of this group were sent farther north and east but the bulk of them were retained in the Greeley-Eaton district. As other factories were established their labor needs were supplied in the same manner. For this first group land was leased about two and a half miles northwest of Greeley and a colony established; those for Eaton were located just east of the town, which location later became a part of the town. In personel these colonies have changed considerably in the passing years, owing mostly to changes in the emigration laws by which quotas have been so regulated as to check the inflow of immigration from Germany and Russia. Because of this beet workers have been brought almost exclusively from Mexico and the colonies are now known as Spanish-American.

The Greeley factory was first constructed with a capacity of 600 tons of beets but has been increased to 1,550 tons. It has a yearly average of 122,700 tons. Its last report gives 122,112 tons used and 15,843 tons of sugar produced. But the Eaton fac-

tory topped this figure with the production of 16,289 tons of sugar from 124,500 tons of beets, thus securing top rating for that district.

Length of the campaign in both factories is an average of 75 days. Each employs eight people in the office and 250 in the factory.

WINDSOR.

Windsor opened for business in 1903 with a capacity of 1,155 tons of beets. In 1936 it used 123,000 tons of beets, and produced about 16,200 tons of sugar. It consumes yearly about 124,000 tons of beets. Its campaign is also an average of 75 days, and its number of employes the same as Greeley and Eaton: eight in office and 250 in factory. Its manager is Ralph Partridge.

FT. LUPTON.

Ft. Lupton opened for business in October, 1920, with a capacity of 1,150 tons of beets daily and a yearly production of 12,000 tons of sugar. The report of 1936 gives it 92,000 tons of beets and approximately 11,900 tons of sugar. It employed seven in the office and 200 in the factory. Its campaign is also about 75 days, and its manager is Charles F. Johnson.

JOHNSTOWN

This factory is different from all others and is now the only one of its kind in the world. Its processes were invented for the purpose of utilizing the molasses from other factories that was otherwise, so far as sugar was concerned, a waste product.

From the very beginning of sugar manufactory the scientific question that had baffled all sugar makers was how to extract *all* the sugar from beets. After the juice had reached a certain stage of molasses beyond which further extraction was impossible by any method known to refiners, there still remained a large percentage of sugar in it, even, it is claimed, up to 50 per cent. It was a serious problem, and it was a world problem; therefore Weld county can be congratulated on the best solution

that has yet been worked out in the world. Other countries have wrestled with the problem and some have had confidence enough to establish factories based on their discoveries; but for one reason or another all have been abandoned and the factory at Johnstown alone holds the world solution at the present time.

The Johnstown factory produces the finest quality of confectioners sugar, and its processes are now being studied by expert chemists from all over the world.

It is not claimed that without the Johnstown process the sugar that eluded refineries was a total waste, for it was being used in the make up of cattle feed; but in that it was not needed and was, to use the expression of the Great Western, at least "an un-economic" use to make of it.

The Johnstown factory runs concurrently with the others and from six to eight months longer. C. C. Crawford is its manager.

GREAT WESTERN SUGAR COMPANY .

The Great Western Sugar Company was formed by the consolidation of several smaller ones and placed under one general management. The factories constituting the Great Western are: Greeley, Eaton, Longmont, Loveland, Ft. Collins, Windsor, Ft. Lupton, Sterling, Brush and Ft. Morgan. The first of its factories was built in Loveland in 1901. Charles S. Morey was its first General Manager and President. He was followed by W. P. Lippett, after whose death on February 17, 1935, Frank A. Kemp became General Manager, and three months later, President.

GENERAL INFORMATION. UNCLASSIFIED.

According to the observations of Charles Evans beets planted before April 15 produce from two to two and a half tons more sugar than seeds planted later; but the season has much to do with results.

There have been many variations in the manner of computing prices to farmers and wages to labor, but (in 1937) Mr. Evans believed the general trend was to be upward. However,

as this History goes to press early in 1938 this prediction does not seem likely of verification.

Colorado produces more than a third of all the beet sugar made in the United States, and Weld county almost a third of the state's production. Weld has five out of the seventeen factories of the state.

During the War when potash was at a premium it was found that it could be extracted from the waste of sugar factories. One of its uses is the making of soap. Rare chemicals can also be made from the waste, but the demand does not make such production profitable.

The average value of sugar plants in Colorado is $1,000,000. The highest production of the largest plants is about 1,000,000 pounds of sugar every 24 hours during slicing time, about 75 days per year.

The above facts and those to follow are taken from a statement issued by the Great Western Sugar Company. The following statement will be surprising to many home canners who have always supposed that there was a distinct difference between beet and cane sugar for preserving. This statement is that in their chemical properties they are identical. The pure chemical base of sugar is called "sucrose," and is the same no matter whether found in beet or cane or tree.

There are many common plants that contain sucrose but not in sufficient quantities to make extraction profitable. Clinching the above statement that there is no difference between cane and beet sugar, the authority quoted further states that when sugar is refined to its highest state of purity not even an expert chemist can tell where it came from, whether beet, cane, maple tree or common plant.

The by-products of beets have worked a big change in the feeding of stock and played a prominent part in placing Weld at the head of the counties of the state in dairy farming.

Since calories have come to be recognized as an important factor in human diet, it may be interesting to know that sugar contains 1,794 to the pound; only butter, oat meal and bacon are rated higher. Also that sugar is NOT harmful to the teeth.