

HOME COURSE IN SCIENTIFIC AGRICULTURE

EIGHTEENTH ARTICLE. RAISING SUGAR BEETS.

By HARVEY W. WILEY, Former Chief of the Bureau of Chemistry and Former Director Department Sugar Beet Experiment Station, Nebraska.

THE successful growing of sugar beets is an art that one acquires by practice. The farmer who has made a success of raising other crops will quite often fail at first in this one, as the methods of cultivating ordinary crops do not apply in the case of sugar beets.

In the manufacture of sugar from the beet the farmer plays an important part by supplying beets in an adequate quantity and of a high quality, but beyond that he can hardly hope to enter the field. The manufacture of beet sugar is an industry entirely distinct from agriculture. From the nature of the process it is quite improbable that any simple method of home manufacture of beet sugar will ever prove commercially successful. The juice of the beet is extracted with difficulty.

Experience has shown that the sugar beet reaches its highest development in north temperate latitudes.

This isothermal line for the United States begins near the city of New York and passes up the Hudson river to Albany; thence turning westward, it runs near Syracuse and passes in a southwesterly direction, touching the shore of Lake Erie near Sandusky, O.; turning thence in a northwesterly direction, it enters Michigan and reaches its highest point in that state near Lansing; then going in a southwesterly direction, it enters the state of In-



SUGAR BEET.

diana near South Bend, passes through Michigan City, then in a northwesterly course continues through the cities of Chicago and Madison, reaching its highest point near St. Paul; thence it extends in a southwesterly direction until it enters the state of South Dakota, where it turns again northwest and reaches its highest point in Dakota just above the forty-fifth parallel of latitude, where it crosses the Missouri river. The isothermal line then turns almost due south, following very closely the one hundred and first degree of longitude until it leaves the state of Nebraska near the northeast corner of Colorado. Passing in a southwesterly direction through Colorado, it reaches, at Pueblo, almost to the one hundred and fifth degree of west longitude, whence it passes in a slightly southeasterly direction into New Mexico, turns to the west and crosses the one hundred and fifth degree of longitude at about the thirty-second degree of latitude. Then turning westward, it passes in a very irregular line through the states of California, Oregon and Washington.

Extending a distance of 100 miles on each side of this isothermal line is a belt which may be regarded as the theoretical beet sugar area of the United States. There are doubtless many localities lying outside of this belt, both north and south, in which the sugar beet will be found to thrive, but this will be due to some exceptional qualities of the climate or soil and not to any favorable influence of a higher or lower temperature. A study of the location of the sugar factories operating today will show that only five factories are outside of these lines.

Although conditions of temperature must be taken into consideration in selecting sites for beet sugar factories, those of rainfall must also be studied. The sugar beet requires a certain amount of moisture in order to produce its normal crop. This moisture must be derived either from precipitation in the usual way or from irrigation, or else the soil must be of that particular quality which will allow subterranean moisture to reach the roots of the plants.

The experience of more than twenty years in California and ten years in Colorado has shown that the climatic data, regarded as of prime importance in beet culture in Europe, cannot be regarded as rigidly applicable to this country. The successful growth of sugar beets in the arid regions of our country, with irrigation, has introduced a new factor into the science of beet meteorology. While the arid area on

which beets can be grown without irrigation is probably confined almost exclusively to the coast valleys of California, the successful commercial production of sugar beets in Utah and Colorado has opened a new and extensive field. What has taken place in these states is being rapidly duplicated in Idaho, a beginning has been made in Montana, and the time is undoubtedly coming when beets will be grown in Wyoming and probably throughout the whole arid region.

The northern parts of our eastern and middle states and the states of Oregon and Washington have at least an equal chance for the successful production of beet sugar with the fields of Germany and France. The irrigable parts of the great southwest have advantages of soil and climate which will enable them to enter into competition in the production of beet sugar.

The high cost of good irrigation renders it imperative that the areas under culture be devoted to a crop which is capable of producing a more valuable field than is afforded by cereal culture. If a net profit of from \$10 to \$20 per acre can be secured, from \$100 to \$200 per acre can be paid for the land. It is estimated that nearly 80,000,000 acres of land in the arid regions of the United States may eventually be irrigated, being nearly one-fifth of the total area. Of this area perhaps 10 per cent is capable of easy and speedy irrigation. Farmers who raise beets for a sugar factory are not left entirely to their own resources in growing the crop. They enter into a contract with the factory management which outlines the methods to be employed.

Then the factory employs an agricultural superintendent and a corps of assistants whose duty it is to go among the growers giving instructions and suggestions regarding the selection and preparation of the soil, planting, cultivation, time of harvesting, etc. These men are of course well informed on all phases of beet culture, and they are usually able to make valuable suggestions in regard to the cultivation of other crops grown in rotation with beets. The instructions and influence therefore tend to improve the farm practice of communities in which sugar beets are grown.

The sugar beet does not require a particular kind of soil for its proper production. In general soils are described for practical purposes as clayey, sandy, loamy or alluvial soils. All of these soils will produce beets. The black prairie soils also have been found, with proper cultivation, to produce excellent beets.

New land should not be selected to grow sugar beets, for the crop is not a good reclaimer of soils. And especially to be avoided is new land containing decaying vegetable matter, which produces only rank growth with low sugar content. Preferably the most productive land on the farm should be used, such a soil as will yield a good crop of Indian corn, wheat or potatoes. The soil should neither be so compact as to interfere with cultivation to a depth of ten or twelve inches nor have a tendency to bake hard.

Especially in most American soils there is still sufficient natural fertility to produce a good crop of sugar beets, whereas in the soils of Europe, where sugar beets have been grown for years, the farmers must depend on fertilizers to insure a remunerative crop.

Every farmer should understand that he cannot continuously grow any crop on the same ground and secure maximum results. Beets do best after alfalfa, corn or small grains.

A good scheme of rotation is first wheat, then beets, then clover for two years, the last crop being plowed under; then potatoes, wheat and beets in the order mentioned. If alfalfa can be grown it should be included in the rotation of crops; also in some sections potatoes do well in the rotation. Beets do well after small grain crops, because these, being harvested early, leave the ground ready for late autumn plowing, an important point in successful beet culture.

The field in which beets are to be planted should be selected and plowed in the late autumn to the depth of at least nine inches. As a rule, the plow in each furrow should be followed by a subsoiler, which will loosen the soil to the depth of six or seven inches more.

Hand planting of the seed may be practiced when a very small plot is to be put in beets, but where a field embracing an acre or more is to be planted it is not convenient. In such cases planting by drill is best.

The beets should be covered to a depth of one-half inch to two inches, according to the state of the soil.

In the matter of space between rows there is considerable variation. In some cases the rows are made only sixteen inches apart and in others as wide as twenty-eight inches.

The cost of growing an acre of beets depends on so many varying factors as to render it impossible to give an estimate, which is reliable for every locality.

It is probable that the actual cost to our farmers for the first few years of the beet industry did not exceed \$25 to \$35 per acre and in many instances fell below these figures.

It is reasonably certain, accidents of season aside, that a net profit of from \$5 to \$15 per acre may be expected from the proper culture of the sugar beet in localities near a factory when all the conditions of the best methods of culture are fulfilled.

The byproducts from beet culture on the farm are the tops and leaves, which are commonly used for feeding cattle. Some farmers, however, turn them under as a fertilizer. When used as a feed the beet tops can be eaten by the cattle on the field where they have been grown. If they are fed in stalls the manure should be returned to the field.

WITH THE MYSTIC OM

Mr. Ramsammy Chundra Ghee Was Not Much of a Riddle After All.

By GEORGE MUNSON.
She was his little Molly, John Beatty realized that as, attired in a stiff shirt, which gave him a sensation of impending asphyxia, and a suit of evening clothes, which made him feel like a waiter, he stood moodily before the door and watched his fiancée moving among her guests.

He had returned from the west after a three years' absence. He had gone to make his fortune in the mines, and Molly had said she would be true to him. He had made the fortune and Molly had been true, but . . . Well, this was not the simple, pretty country girl whom he had left three years before.

There was incense in the air, and Beatty liked the incense of wholesome oxygen. There were three poets present. John did not mind poets, but these had long, greasy hair and dirty finger-nails. And he positively loathed the black man in the turban, who was holding forth a rapt audience—Molly included—upon the mysteries of Yoga.

"To attain the infinite!" he was saying with a supercilious smile. "It is easy, ladies. Concentrate! Concentrate, and repeat without cessation the magic syllable 'Om.' Then breathe in lightly through the left nostril, concentrate all feelings in the center of the spine, and exhale through the alternate nostril, meanwhile repeating the magic syllable 'Om.'"

After that came a lecture upon Esoteric Buddhism, as set forth by the great seer and sage Patanjali, several hundred centuries before Molly had opened her pretty eyes in Binghampton, N. Y.

After the guests had gone John Beatty stood facing Molly alone. He



"Night and Day, Forever, I Dream of You."

was sick at heart and angry words rose to his lips.

"Don't you see, Molly, this isn't real!" he was saying. "It isn't wholesome. That black man—"

"You mean Mr. Ramsammy Chundra Ghee?" inquired Molly, with ominous calm.

"I do," said Beatty. "I don't like to see you mixed up with a crowd of fakers like those, dear. If he wants to concentrate on the infinite let him do his breathing exercises in some good gymnasium. Why, Molly, there isn't a real man or woman among all that crowd. You seem to have changed—"

"Yes, I have changed, John," answered Molly. "I have found myself. And you haven't changed. You have lost yourself in the whirl of worldly interests. It isn't any use, John. We could never be happy together. I want to live in the soul, to have my spiritual freedom. We could never be happy together."

"You want to break our engagement?" asked Beatty coldly.

She looked at him, half in terror. In the strong lines of his face she remembered the man who had won her love, of whom she had dreamed during the first of those three years that had elapsed since their passionate farewell—before she had fallen into the ways and habits of her new friends. She put out her hands.

"John—" she breathed.

John clasped her in his arms.

"God bless you, Molly," he said. "But it isn't any use. Only if you grow tired—if you want me at any time, anywhere, you'll let me know, won't you?"

Then he was gone, and Molly was alone in the incense-scented room with the idol of Buddha in one corner and the Japanese screen in the other, and the barbaric, Oriental couch cover and Turkish pillows and all the other paraphernalia of the mise-en-scene.

Her thoughts went back to those first days when she had come to New York. She had met John in a commonplace boarding house where there was no Ramsammy Ghee and nobody had heard of Buddha, and they ate steak smothered in onions and breathed through both nostrils simultaneously and never thought of their spines. And yet those had been days of perfect happiness. Now—

A ring at the bell aroused her from her reverie. She glanced at the clock. It was nearly midnight. Who could want her at such an hour? Perhaps it was John! Her face hardened. Her wavering mood impelled her thoughts to bitterness. She would send him about his business. She opened the door.

The Indian was standing upon the threshold. At the sight of him her face softened.

"You left something, Mr. Ramsammy Ghee?" she asked.

Ramsammy entered after her and closed the door behind him. He turned toward her and held out his arms.

"Yes," he whispered hoarsely. "I left you, my moonflower, my perfect pearl. I could not go home until I had told you that I love you. Night and day, forever I dream of you. With you beside me I would seat myself upon my peacock throne in my own land and dream away blissful hours, immersed in the creative principle of the sixth sphere, my bride, my seraph."

Molly recoiled in horror. She had always associated Ramsammy with unearthly detachment and philosophic serenity, with the mystic Om and all that it denoted. And here he was talking like a lover? No, like a drunkard. There was a quite unmistakable smell upon his breath, and all at once she understood why Ramsammy was so very partial to incense.

"Will you come with me and be my bride, lotus-flower?" inquired the black man eagerly. And without waiting for the lotus-flower to answer he clasped her in his arms. And Molly, overcome with aversion, screamed as vulgarly as any ordinary maiden.

"Oh, I hate you! Go away!" she cried. "John! John!"

The answer was immediate. With a crash the door came off its hinges, and Mr. John Beatty stood in the entrance. His stocky figure, in evening dress, the total absence of anything esthetic or esoteric, had never seemed more welcome.

With a leap he was upon the black man, and before he quite knew what had occurred Ramsammy was receiving a long deferred and long needed trouncing. John Beatty did not strike too hard. He propelled the black man toward the door with a series of well-directed kicks, got him into the street, and, with a parting hoist, deposited him upon the sidewalk. Then he turned back into the apartment.

Molly was weeping pitifully as she crouched on the Turkish lounge.

"—I saw that black skunk turn back, Molly, and I suspected something," John explained. "So I waited outside to make sure that it was all right. You aren't angry with me, dear?"

"Angry, John?" she answered, looking up. "Oh, John, can you ever forgive me?"

John sat down beside her and took her hand in his.

"Molly, dear," he said, "I guess you didn't understand—that's all. When a man's knocked about the world he somehow feels things. I knew that fellow was a cur, and yet I couldn't put it into words. Molly, if you'll marry me, you shall have a different poet every night to supper, as long as his hands are clean. But I guess we'll let Ramsammy do his breathing stunts elsewhere. What do you say?"

"All right, John," answered Molly. (Copyright, 1913, by W. G. Chapman.)

Broadly and Unsympathetic.

"Broadly speaking," declares a prominent English woman, "New York women are dowdy. Limply hanging skirts and badly fitting coats are as common as blackberries among the poorer sections, while the taste of the wealthier women often is execrable. Freak fashions from which a French woman would recoil in horror are accepted with complacency by the moneyed matrons of New York. Here and there in the mad medley of color one sees an example of exquisite taste, and it is these rare exceptions, no doubt, which have given the American woman the reputation she possesses for smartness and chic.

"When a New York woman is beautiful she is very beautiful, but she lacks poetry and sympathy. She has not suffered enough. There is no suggestion of softness or subtlety about her. Her lips are too thin and her eyes too hard."

Convivial Clerk.

Rev. H. P. Ditchfield tells in the June Treasury some more stories about parish clerks. His own little church at Barkham was many years ago the scene of a deplorable episode. It was not known that the clerk on occasions used to patronize the village inn, which was kept by a parish worthy, Mrs. Collyer. One Sunday afternoon, when the weather was warm, and the sermon long, the clerk slept and dreamed. He imagined himself the center of an admiring company at the village inn. Hence, when the sermon was ended and the ascription said, and he was expected to utter a loud and sonorous "Amen," he started the congregation by shouting "Fill 'em again, Mrs. Collyer; fill 'em again." The congregation naturally was somewhat scandalized.—Westminster Gazette.

An Afterthought.

"I have just been reading another list of rules for living a hundred years."

"Stuff and nonsense!"

"Maybe you are right. I notice that most of these old chaps who have lived to be ninety-eight and a hundred years old seem to formulate their rules for longevity rather late in life."

AROUND ABOUT

Gibson City is holding a corn carnival.

A hail storm in Ottawa did considerable damage to greenhouses.

C. H. Williams was elected president of the Streator Club last week.

The U. of I. at Urbana have added 320 acres to develop horticultural interests.

Miss Myrtle Valz and E. G. Baird, of Streator, went to Ottawa and were married.

Nicholas Burch, of Taylorville, 85 years old, fell down stairs and broke his neck.

Hon. and Mrs. J. A. Montellus, of Piper City, celebrated their fifty-sixth wedding anniversary Oct. 8.

Leonard Scroggins, born in 1818, the year Illinois became a state, was one of the visitors to the state fair.

There are 217 adult students enrolled in the night schools at Peoria, in manual training and domestic economy classes.

The Sox are still champions of Chicago, and the Athletics of Philadelphia are the world's champions—both American League clubs.

Edna Young, a pretty little four-year-old child of Mr. and Mrs. Young, was ground to death under an interurban car at St. Charles last Friday.

A peculiar case was that before Justice W. F. Sell on Monday afternoon. Herb Lannon sued C. A. Doty, a neighbor, for damages alleged to have been caused by Doty's horse which got loose and entered Lannon's garden. The jury found defendant guilty and assessed damages at \$1. But it developed that Doty had already offered Lannon \$2—and because of this offer the costs between \$7 and \$8 seemed to be assessed against Lannon. There was some deep thinking and scratching of heads over the problem.—Sycamore Republican.

Mrs. Thomas C. Butler died at the home of her daughter in Maple Park. She was ninety years old and the mother of eighteen children, probably more than any other woman in this state. The Butler family was known a number of years ago as the largest in the state. Gradually the children died until now there are only ten of the eighteen living. Two are close to sixty-five years of age. There are forty-one grandchildren and twelve great grandchildren in the family. Municipal Judge Rooney of Chicago is a grandson.

Woodstock Sentinel: A large delegation of Woodmen and friends of the late Charles Pope journeyed by automobile to the Pope home in Greenwood township last Sunday and proceeded to cut fifty-five acres of corn. The men worked diligently all day, and when they left for their respective homes at night the big undertaking was successfully completed. It was a laudable undertaking, and the willing and energetic way in which the men did the job is to be highly commended. Automobiles for the trip were furnished by Judge D. T. Smiley, Theodore Hamer, V. E. Brown, T. B. Merwin, Walter Simmons, W. P. Lounsbury, Lynn A. Stone, S. J. Agle and E. J. Mansfield. At noon a sumptuous dinner was served by the ladies of the Camp, and Charles B. Closson, assisted by Charles O. Young, arranged the binders with teams, and the entire company of ladies and gentlemen, and took a photograph of same.

A dispatch from Streator to the Pantagraph had the following to say of the will of the late Rev. F. R. Lord: "The will of the late Rev. F. R. Lord, well known in Livingston, McLean and La Salle counties, was filed for probate in Ottawa today. It disposes of an estate of \$22,500, and the instrument was drawn up August 16, 1913, and the wife and son-in-law, Ralph G. McCullough, were named as executors. Seven thousand and five hundred of the amount is in real estate, the remainder in personal property. The widow is to receive \$6,000 as her share and the remainder is to be divided among the five children equally, with the exception of the son, Dr. W. F. Lord, who is to receive one thousand more than the others. An interesting feature of the document is the bequest of one thousand to the board of trustees of the First Methodist Church of Streator, to be known as the anti-baccaro fund. A committee is to be appointed as custodians. Only the principal is to be used for the purpose of keeping the boys of the city from the use of the weed."

During the last few days there has been a foxy confidence man at work in Illinois cities and Joliet is the last place he has visited. His scheme is about as slick as anything ever heard of and Morris people, especially business men, are warned to be on the lookout for his game. He has been operating in Joliet and made quite a haul. Finally the police were given a tip, but he eluded them and is again at large. The stranger enters a business house, carrying a letter in his hand. He explains that the letter is addressed to his wife, who is in some far distant state and that he has everything ready to send her ten dollars. He has nothing but silver money and asks the business man if he will kind-

ly give him a \$10 bill for the silver which he displays in his hand. The accommodating merchant wishes to do him the little favor and gets the \$10 bill. The stranger takes the bill and makes a pretense at pushing it into the envelope addressed to his wife, at the same time dropping down the silver money. The business man counts over the silver and to his surprise there are but nine silver dollars there. Mr. Stranger begs the pardon of his victim and returns the envelope with the corner of a bill protruding. At the same time he picks up the silver and states that the other dollar must have dropped from his pocket in his room. He tells his victim that he will return with it in a few moments, but allows him to keep the envelope and the bill while he goes after the other dollar. He goes out, but never returns. In the meantime the victim discovers that a "phony" \$10 bill has been placed in the envelope and that he is out just that much money. Each victim brings him \$10 and it takes only a few operations to net a good day's wages.

Entirely a Personal Matter.

Mark Twain and his peculiarities were being discussed by an English class in a western high school. One youthful orator had very eloquently described Mark's unusual appearance and had laid for emphasis on the author's fondness for wearing white flannel. "Gee!" said one much interested youth. "I don't see how public knows whether his flannels was red or white."—Everybody's Magazine.

Essay on the Human Hair.

Under the microscope human hair is a more or less complex and very variable tissue. In size, shape and man-ner (it is a sort of concrete structure) as well as color there is more or less variation of detail. Architecturally curly hair differs from the straight variety; kinky hair has a special construction of its own which explains the kinks; there's a reason, apparent under the revealing eye of the microscope, for the black, red, silky, and all other varieties.

World Beyond Our Ken.

There are noises louder than thunder which we cannot hear, the roar that lies on the other side of silence. We men are poor, restless prisoners, hemmed in by our senses as by the wall of a cell, hearing only a part of Nature's orchestra and that part imperfectly; seeing only a thousandth part of the color marvels about us and seeing that infinitesimal part incorrectly and partially.—From "Un-
pathed Waters," by Frank Harris.

Visiting Cook.

An English girl has adopted the profession of visiting cook, and will devote herself to teaching the indispensable art. She believes that "kitchens were beautiful, and not the stuffy, stodgey dungeons that they so often are, and that if women dressed for their work in them with the care that they dress for a ball, cooking would no longer be regarded as dreary and a monotonous business."

Trees and Lightning.

The electrical resistance of trees is quite great, a quality which protects them to a considerable degree from lightning stroke. This resistance varies greatly with the character of the tissues and also with the temperature. This fact results in an annual and daily period of resistance. The cambium layer shows the least electrical resistance, followed by the pith and sapwood.

Thought Window Was a "Movie."

At the general assembly of the Presbyterians in Edinburgh a home mission deputy told this story to illustrate the part the picture theater plays in a modern child's life. A little girl, being taken to church by her mother, viewed a stained-glass window for a minute or two. "Ma," she asked, "when are they going to change the picture?"

Little Wonder.

"I hear a prominent member of the Nunckatesset Canal club has had to go to a sanitarium for treatment." "What was the matter?" "Broke down with nervous prostration trying to spell the name the same way twice.—Brookton Enterprise.

Getting a Start.

At the Welsh "marriage of contribution" each wedding guest makes a contribution of some sort, all the contributions enabling the poor young people to start housekeeping.

Doubly Painted.

Of yore portrait painters tried to make women look as if they had exquisite natural complexions; now some of the new ilk make them look more than painted.

Bit of Scientific Information.

If the earth were to revolve seventeen times faster than it does bodies at the equator would lose their weight and remain stationary in the air without support.

Where the "Kicker" Shines.

The most irritating thing about the continuous kicker is his egotism. He always assuming that he has discovered something novel and important.