

The Democratic Sentinel

RENSSELAER, INDIANA.

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BEET SUGAR MAKING.

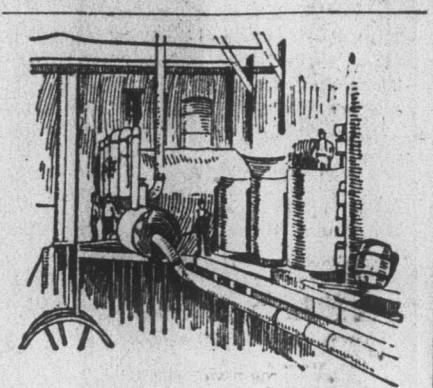
HOW SWEETNESS IS STOLEN FROM SUNBEAMS.

Beets furnish 60 Per Cent. of All the Sugar Used—No Difference in Taste—Extent of the Industry in This Country—Converting the Raw Material into Fine Table Sugar.

Process of Manufacture.

In a recent number of the Cosmopolitan, H. J. Brown, of Chicago, has had an excellent article on beet-sugar making. The writer says that while the average person, if asked to name the origin of his sugar-bowl, would respond, "Sugar-cane, of course," this juicy reed and all other sources combined, save one, supply only about 40 per cent. of the world's product; the remaining and larger portion has been stolen from sunbeams, drawn through the veins of myriads of leaves and stored up in the tapering roots of one of the most unassuming members of the vegetable world—the beet, a plant that hides its light under a bushel, that even in culinary art comes to the front only as a spig-salad, and a boiled beet in short, a dweller in tilled fields of which but little might be expected. Yet the whole world is under lasting obligations to this unassuming plant for its abundant liberality in supplying what has come to be considered one of the prime necessities of life. Tell this same person that he

of sugar, the grains, which resemble ordinary beet seeds in size and also in plant, containing several germs, are planted as soon after the first week in April as the weather will permit, quite thickly, in rows eighteen inches apart, the soil, which must be of the best, having been plowed at least a foot in depth



THE "DIFFUSION" BATTERY.

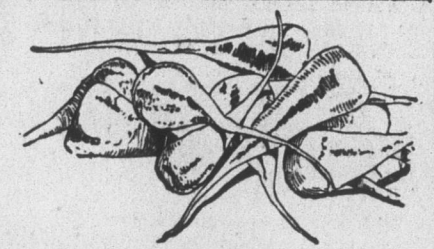
to allow the tap-roots to penetrate as far as they wish, otherwise a deformed beet would result or the top appear above ground and thereby accumulate an undesirable amount of salts. The roots should be of as perfect shape as possible, the best type being a long tapering form with a marked twist, resembling that of a cork screw. When the young plants show four leaves, they must be thinned out immediately, one being left every six inches or so. After repeated cultivation the weeds will have disappeared and the broad leaves spread over the ground. The crop must then be "laid by," that being very essential that the foliage remain unbroken so that the full complement may be in readiness to absorb the sugar that the sun showers down in reckless munificence. From now on each moment that they are basking in solar splendor the honeyed substance is mingling with the arterial fluid, and flowing on, seeks the subterranean storehouses. When sufficiently ripe they must be topped and carried to the factory as soon as possible.

Arrived at the factory, the wagon or car loads are weighed, tared, and as soon as a sample basket for analysis has been selected, the roots are stored in sheds constructed for that purpose. The latter are Y-shaped and connect with the sugar-house by means of conduits through which a moderate flow of water carries the beets. Into these they tumble hour after hour, day in and day out, almost incessantly, for a beet sugar mill must never flag during its necessarily short season—say one hundred days' run each year. The hapless beets are borne along to their doom

large cells, within whose walls the juice is extracted by what is known as the diffusion process. In other words, the withdrawal of it by soaking in water. Briefly, a current of warm water is turned on the contents of No. 1; this circulates through the mass of cassettes, passed out by means of false bottoms into a pipe which enters the top of No. 2, the mixture of juice and water being forced along by a flow of cold water which follows it constantly. The temperature of the former is maintained by steam chambers attached to each cell. The same process continues with the other vats until No. 12 is reached, when the circuit is ended, as one cell must be filling all the time and an empty one stands ready always to take its place. No. 1 is then emptied by removing the bottom, the wet mass being carried to presses, where the surplus moisture is removed, the pulp going out of doors to be used as fodder. No. 2 it becomes first a new circuit, and so on, the cassettes in each cell receiving twelve saturations.

After making the round, the fluid, which on exposure to the air has become a deep purple color, is conveyed to a measuring tank near by, from which it flows to a mixer, where it is defeated with lime and then pumped into a huge carbonation tank in which the lime and whatever foreign matter it may take with it are rendered insoluble by means of carbonic acid gas forced through it.

Now the carbonated juice is pumped to the filter-press room, where, by means of alternating series of frames hung with heavy cloths, it is filtered and becomes a transparent fluid of a pale-yellow hue. The lime thus re-



SUGAR BEETS.

lieved possesses about the same consistency as putty, and is conveyed at once into the yard, to be used the following season as a mild fertilizer. The process of mixing carbonation, the filtration is then repeated with a second set of machinery, less lime being used this time.

This finished, the juice is treated with sulphur fumes, filtered by means of mechanical filters, being used instead of folded cloths, passing into the quadruple effect, four great boilers in which the larger part of the water contained in it is evaporated by the use of steam. With a repetition of the sulphur treatment and mechanical filtering, the chemical part of the manufacture ceases, and the liquid, now called "thick juice," is ready for crystallization.

This syrup is boiled in the vacuum-pan, a receptacle containing a copper coil heated by steam, until the proper crystals are obtained, which, with the uncrystallized sugar, forms the "masse cuite," an unrefining mixture, through the center of which a stream of water is poured, the water under order into white sugar in the brief space of a few minutes. These machines make about a thousand revolutions a minute, the centrifugal force driving the molasses through the center, while the sugar, leaving a solid layer of crystals clinging to the side. After being sprayed with water, the damp sugar is released and conveyed to the drier, an immense tumbler whose heated walls remove all moisture. It is then conveyed to the other end, the crystals falling like spray from a mountain waterfall as they make their rough journey, and, arriving there, drop through various-sized sieves into chutes and thence into the open mouths of sacks. These are filled, and the sugar is ready for the market.

The entire process of converting the raw material into the finest grade of table sugar has thus gone on under the same roof and the beet which was yesterday in the farmer's wagon are to-day sacked and branded "extra fine" and loaded in cars for shipment. Not all beet-sugar factories refine their product, but in America, the refining is a disadvantage, partly because of the remoteness from the great refineries and partly from commercial reasons. There are now in this country six plants, the locations being Alvarado, Watsonville, and Chico, in California; Grand Island, and Norfolk, in Nebraska; and Lohi in Utah; the last four of which were established in 1890 and 1891. All have been able thus far to cope with the disadvantages that lie in the path of the industry in the way of the solution of the agricultural problem, and the business may be said to have gained already a strong foothold.

When it is considered that more than half a thousand of such factories, each costing several hundred thousand dollars, would be required to supply the sugar that we consume annually, it is not difficult to see that millions of dollars are now sent abroad year after year would be retained here, to say nothing of the labor afforded to thousands of workmen, the advantage to a community of possessing a factory that uses raw material whose production is a benefit to the immediate neighborhood, and last, but not least, the improvement in general agriculture that must necessarily result from the pursuit of the very careful methods required in the culture of sugar-beets.

But though still in its infancy in America, the manufacture of beet sugar is not a new departure for us; it is only its success that is recent. The long list of famous blunders as far as 1839, which is about the time that was placed on a permanent footing in France, and for nearly half a century its pathway was strewn with wrecks. Eight years later an attempt was made at Northfield, Mass., the experiment of drying the beet being tried, but the endeavor was unrewarded with success. Two decades and a half then passed before any move toward reviving the industry was made, when a plant was located at Chatsworth, Ill. It managed to struggle along several years, but finally went to the wall. It was moved to Freeport, and later to Black Hawk, Wis., with only failures as the result. At last, it found itself in Fond du Lac, in the same State. Here its establishment was attended with a measure of success; but the enterprise being hampered by insufficient capital, and the opportunity occurring for its removal, it was once more removed, this time to Alvarado, Cal. Again disaster, and Soquel was chosen for a site, but after a time abandoned. Then the factory at Alvarado was revived and a success, which continues to this date, was reached. Later on, the plant at Watsonville was erected.

There is a vast belt stretching from the Atlantic to the Pacific, and of no mean width, which invites the culture of the sugar-beet and promises success almost from the start, if experiments thus far made can be relied upon. Soil and climate are there; careful culture will come when farmers realize that the brain must be used in tillage. As for subseams, the best illuminator is not chary of them.

Intellectual Item.
It is said that a man does not reach his full mental power until the age of 35, and the development of talent is most marked between the ages of 30 and 45.

OUR DEBT TO RUSSIA.

What the United States Owe to the House of Romanoff.

That we are under tremendous obligations to the House of Romanoff is recognized by every American who knows the history of this country, says the New York Sun. Whatever may have been the motive which Catherine II. to join the so-called league of neutrals, the result of the act was to complete the discouragement of the British Ministers, to break the stubborn will of George III., and to compel the acknowledgment of American independence. Whatever, again, may have been the purpose controlling the mind of Alexander I. when, braving the anger of Napoleon, he refused to enforce the Berlin decrees against the American vessels thronging the Baltic ports, there is no doubt that he rescued from ruin our commerce. We accepted redemption at his hands; we profited by his protection, and it behooves us to remember it.

The services of the House of Romanoff to the American Republic culminated in the stand taken in our behalf by Alexander II. at a crisis when our national existence was at stake, the French Emperor having put forth all his influence at Westminister to persuade the British Government to join him in intervening on the side of the Southern Confederacy. Then it was that the Czar who freed the Russian serfs caused his ambassadors at Paris and London to announce that, if France and England undertook to assure the destruction of the American Union and to perpetuate the regime of slavery in the Western Hemisphere, they would find Russia arrayed against them. Nor was the friendly intervention of Alexander II. confined to words. Simultaneously with the utterance of diplomatic warnings a Russian fleet was directed to proceed under sealed orders to the harbor of New York, and a Russian squadron was dispatched to the Bay of San Francisco. For us, for the American Republic, for the consolidation of our Union, the Czar made known his willingness to fight; and there is not the shadow of a doubt that his willingness averted a catastrophe.

A GOOD MAN'S ANGER.

Charles Sumner's Resentment of England's Attitude During the War.

But especially toward Great Britain, Mr. Sumner felt his strongest, possibly his most bitter, resentment. Reared in the study of her history, filled with respectful admiration for her great men, learned in all the details of her constitutional existence, sincere follower of the liberal school from which her greater glories spring, and, so to speak, enamored of those abolitionists who, long before his day, had trodden the path upon which he had walked unflinchingly, Mr. Sumner, it may be said, felt, as regards that nation, which had well-nigh openly declared its hostility of the Union's cause, a sentiment of love betrayed.

How was it possible that Lord Russell, the impregnable bulwark of the abolitionist cause in England, had become in 1862 an opponent of American abolitionists? It was always with bitter sadness, though never angrily, that Mr. Sumner expressed himself regarding the existing relations between the United States and Great Britain. To his mind that nation was guilty of a great moral wrong, and owed those who had suffered therefrom a manifest atonement.

Such was the feeling which inspired his speeches, at times eloquently passionate, on the existing intercourse between the two Anglo-Saxon nations. On reading them one can readily understand what explosions such fiery words would provoke on the other side of the Atlantic. A challenge of war was thought to be concealed under them. The orator was even accused of exciting the worst of feelings of appealing to the darkest passions of the human mind.

Public Opinion.—In all this English public opinion was misled. Mr. Sumner only considered that Lord Palmerston, Lord Russell and their colleagues had wronged the United States, and it was by appealing to higher sentiments that he demanded justice of their successors.

Perfidious Fishing.—The killing of fish by exploding dynamite bombs under or upon the water, and then gathering the stunned or killed fish which are brought to the surface—is so generally condemned that there will not be much sympathy for the human performer in the following tragedy, recorded in some of the English newspapers:

A man in Bideford, in the southwestern part of England, had a dog which he had carefully trained to bring to him whatever he had thrown into the water. Early one morning this man went out to a pond near his place, carrying with him a dynamite bomb, with which he intended to "make a haul" of the trout in the pond. He lighted the fuse, and threw the bomb into the water.

Unluckily he had either failed to notice or else had forgotten that his dog followed him. On the instant the dog sprang into the water, swam to the floating bomb, seized it and brought it ashore, to place it at his master's feet.

The man tried to command the dog to drop the terrible object, but the animal showed the excellence of his training by clinging to it and rapidly approaching the shore.

Then the lazy fisherman took to his heels. The dog came ashore and followed him at a more rapid rate than the man could run, the dynamite still in its mouth and the fuse burning. It was a wild race for a high wall not far away. The dog gained every instant. The man was in despair, for he knew the bomb would explode presently with murderous force. He reached the wall, and scrambled over it just in time, for at that instant, as the dog came to the foot of the wall, the dynamite exploded.

The unfortunate dog was blown to atoms, but the man escaped with a severe shaking up and a disposition to fish in the future with a hook and line.

copies of the originals, and explains that it was led to set about their collection by reading one day the surprising statement that "Hailed and Odessa translated Euripides." We give a few of the choicest gems of her collection, in some of which the outcropping of the English idea that a history converges on the British Isles is almost startling.

Esau was a man who wrote fables and who sold the copyright to a publisher for a bottle of potash.

The Jews believed in the synagogue and had their Sunday on a Saturday, but the Samaritans believed in the Church of England and worshipped in groves of oak, therefore the Jews had no dealings with the Samaritans.

Titus was a Roman Emperor—supposed to have written the Epistle to the Hebrews—his other names was Oates.

Oliver Cromwell was a man who was put into prison for his interference in Ireland. When he was in prison he wrote "The Pilgrim's Progress" and married a lady called Mrs. O'Shea.

Wolsey was a famous general who fought in the Crimean war, and who, after being decapitated several times, said to Cromwell: "Ah, if I had only served you as you have served me, I would not have been deserted in my old age."

Perkin Warbeck raised a rebellion in the reign of Henry VIII. He said he was the son of a prince, but he was really the son of a respectable people.

The heart is a comical shaped bag. The heart is divided into several parts by a fleshy partition. These parts are called right artery, left artery, and so forth. The function of the heart is between the lungs. The work of the heart is to repair the different organs in about half a minute.

Explain the words fort and fortress. A fort is a place to put men in, and a fortress a place to put women in.

Hydrostatics is when a mad dog bites you. It is called hydrophobia when a dog is mad, and hydrostatics when a man catches it.

Few People Satisfied with Money Alone. As a matter of fact, the chief impression produced by great wealth, even in America, is simply curiosity, not admiration, hardly even envy.

The man who has more than wealth at any time—perhaps, thinks Harper's Bazar, valuing wealth only as a means for these things. In youth people prize amusement, pleasure, love; and wealth is thrown away recklessly for the sake of such ends. After the mature tastes are developed, people have no objection to wealth for the sake of other aims which it may promote, but it is not a substitute for those aims. An artist loves art, the man of science loves science, the student loves study, the inventor loves invention, the domestic man loves home. Even the man of action loves action mainly as a thing attractive in itself. He would readily accept wealth as a means of achieving his other purposes, but he would not sell those purposes for wealth. The proof of this is that he does not; indeed, he often impoverishes himself for his own pursuits. "Beyond a very moderate amount," wrote Coleridge, "I regard money as a real evil."

The man of other pursuits knows that one cannot possibly be very rich and carry on those other pursuits also, so engrossing is the mere care of property, and so difficult and absorbing is the wise use of it. Many a prominent artist or author has been simply ruined for the purposes for which he was created by becoming heir to a large estate; not that it demoralized him otherwise, but it left him no time for his natural work. Volumes have been written on the suppression of genius through poverty, but very little has been said on the wrecking of genius through wealth.

The Mysterious Loss. Mr. J. E. Emerson, a California "forty-niner," relates a curious story in the Scientific American. Gold, while its melting point is over 2,016 degrees, will evaporate at a much lower heat. In 1833, the chief assayer, Inspector visited the (then) new mint at San Francisco, to "take stock," and found a deficiency of \$160,000. Tremendous excitement ensued, the sensation being almost equal to that caused by the acts of the famous "Vigilance Committee."

Wholesale arrests were threatened, until some cool head suggested that evaporation was the thief—that the missing gold had flown up the chimney. Sure enough, examination of the late report showed it covered with fine gold, where the cold air had caused it to be deposited when it came out of the chimney. The slates were torn off; also those from several near-by buildings; these were ground to powder, and much of the gold recovered. So also was the furnace and chimney brick, and, after all was saved that could be profitably by the methods in use in San Francisco, the dust was sent to the mint in Philadelphia. Here it was worked over more closely, and then the dust was sold to French chemists, who shipped it to Paris and worked it over again there.

More than one-half of the \$160,000, as well as the good name of the San Francisco official, was saved by these various processes. Improved methods now prevent any recurrence of such mysterious losses.

Delay of Mails. One curious cause of delay in the delivery of mail in inclement seasons is not generally understood. It results from the fact that mail is assorted for delivery, or "thrown" as they say in the business, on the trains. Two men cover a certain line of road and one is supposed to be at one end when the other is ready to start from the opposite end. If one gets caught in a snow storm or by accident the other goes out as usual and both get on one end. The consequence is that when the next train is ready there is no railway mail clerk for the run and mail is not sent out.

A Historical Jewel. At the court ball in Berlin recently the Empress wore in her hair the famous jeweled hat-buckle of Napoleon I., which fell into the hands of the Prussian cavalry at Waterloo. The stones in it, though not large, are magnificent. It was originally made for the coronation ceremony in Notre Dame in 1804.

Bits of News. An English teacher, Miss A. C. Graham, has taken a prize offered by the University Correspondent for the best collection of pupils' blunders. She vouchers for them all as literal

LIFE-SAVERS FOR GRIP-CARS.

A New Device to Prevent Front-End Accidents on Cable Trains.

Mr. A. J. Brown, of Chicago, is the inventor of what appears to be a practical device for preventing front-end accidents on grip or electric cars, says the Chicago News.

It is in the form of an attachment projecting about four feet from the front platform, a couple of inches above the rails. The frame is of gas pipe, across which is stretched an elastic wire netting, and the edges are protected by pneumatic cushions, so that any one coming in violent contact with this new kind of cow-catcher is not likely to be seriously hurt. Instead of throwing persons off the track or under the wheels, the device picks them up and carries them until the car can be stopped.

The appliance is so arranged that the grip or motor car can raise or lower it at will by means of a lever. When raised it folds up in front of the dashboard, occupying very little space. It is supposed to remain down all the time when the car is on the road, except when there is danger of collision with some other vehicle.

Then it is easily lifted out of the way. The device weighs about one hundred and twenty-five pounds, and costs from \$15 to \$20. The accompanying cuts will give some idea of what it looks like when attached to a grip car.

Beginnings of an Inventor. A Berlin correspondent sends to the New York Tribune a letter about Werner von Siemens, the famous inventor, who died recently in that city. The whole city, and indeed the whole of Germany, was in mourning for him. Among those who felt his death most keenly were the poor of Berlin, thousands of whom had been helped by his generosity. In his "Memoirs," which he completed only a short time before his last illness, he dwells upon an incident of his boyhood, trifling in itself, that had a great influence upon his subsequent career. It was nothing more than a victory over a gander.

His younger sister, he says, was sent by her mother to get some trifles in the barn. She returned a minute later crying, because a terrible gander had tried to attack her as she passed the barnyard gate.

A second attempt on her part was equally unsuccessful. Then an appeal was made to Werner.

"My father," he writes, "gave me a stick and told me to use it when attacked by the gander, and all would go well. With my sister I opened the gate, and the bird, hissing, and with bended neck, started toward us. My sister, crying, clung close to me. I wished to flee, but remembering my father's words, I marched toward the gander with my eyes shut and brandishing my stick to the right and left. True enough, the bird turned and ran away, and we accomplished our errand."

To the boy it was a great victory, and he never forgot it. In after life, whenever he was near becoming discouraged before some almost insuperable difficulty, he remembered the gander, and shutting his eyes, as he used to say, he pushed on to a new triumph.

His first patent was applied for from a prison cell. After graduation from the artillery school, in Berlin, he was attached to a regiment in Wittenberg. Here he acted as second in a duel, and was sentenced to five years' imprisonment. In his cell, however, he was allowed to fit up a laboratory and continue the scientific experiments on which he had been engaged.

Within a month after his incarceration he perfected his method of galvanic gilding, and applied for a patent. It was granted, and a pardon was never received with less glee.

Siemens had other experiments under way in his workshop, and begged to be allowed to remain till they were finished, but the keeper told him that such a course would be an insult to the King, and sent him forth.

Women in Medicine. The first scientific medical journal ever issued by women will be published this month by the Recorder Publishing Company, of Toledo, Ohio. It will be edited by E. M. Ross-Gay, M. D., a graduate of the Woman's Medical College, of Philadelphia, with Claudia Q. Murphy, editor of the Woman's Recorder, as managing editor. It will be a fifty-four-page monthly. Among the first contributors will be Dr. Mary Putnam Jacob, of New York, and a number of other prominent and successful physicians. All the work will be done by women.

Not a Failure. Johnny Gibbs is a youthful philosopher. He believes that life would be simplified if people would be content to do one thing at a time.

The other day Johnny was hard at work with paper and pencil. His mother looked over his shoulder.

"Why, Johnny," she exclaimed, "your spelling is perfectly dreadful! Look at that—sitting in a chair. I'm ashamed of you!"

"But, mamma," said the little boy, reassuringly, "this isn't a spelling lesson. It's a composition."

HUMOR OF THE WEEK.

STORIES TOLD BY FUNNY MEN OF THE PRESS.

Many Odd, Curious, and Laughable Phases of Human Nature Graphically Portrayed by Eminent World Artists of Our Own Day.

Sprinkles of Spice. "That man Kirby Stone was a born speculator." "Born with a caul, eh?"—Puck.

This figure-head of a college is usually the Professor of Mathematics.—Philadelphia Record.

It's queer about shops—they're never shut up unless they're shut down.—Elmira Gazette.

Few men who go into maple-syrup manufacture make an unadulterated success of it.—Troy Press.

If you want to find out what enters into a boy's composition, ask his school teacher.—Yonkers Statesman.

"INK is cheap." "I don't know about that. I left a pen full on the sack of a note once that cost me \$2,500."—Puck.

"THE most important period with February," said the man whose patriotism runs away with his good taste, "is when it cuts its 22nd."—Washington Star.

MINNIE—"Honestly, now, didn't he drive with one hand as soon as you were out of town? Mamma—No. He—drove with the other hand.—Indianapolis Journal.

"Do you think, Schmidt, that your affection for Fraulein Goldstein is reciprocated?" "I really can't say; I am loving her at present on credit."—Lustige Blaetter.

"Mrs. DOVEKIN's trip to Scarborough was a great success this year." "Indeed! Has she got rid of her old trouble?" "No; but she has got rid of her old daughter."—Tid-Bits.

"I DIDN'T see anything funny in the story that fellow just told. What made you laugh so over it?" "Do you know who he is?" "No; who is he?" "He's the head of our firm."—Life.

"I'D like to be very rich," said Tommy. "How rich?" asked his sister. "Oh," replied the young man, after some thought, "rich enough to wear my Sunday clothes every day."—Life.

DE CASH—I see you have taken a partner. De Curb—Yes, I had to. A man can't keep a suburban residence supplied with servants and attend to business, too.—New York Weekly.

A NEW Paris hat is of absinthe green, a fashion journal reports. The back-rod folks will vote for it if it is a theater hat of the absinthe-makes-the-heart-glow-fonder sort.—Philadelphia Ledger.

MISS ELDERBODY—"I met Mr. Blake at the reception last evening." Miss Pert—"Yes, he told me saw you. He said it was such a pleasure to meet an old face in such a crowd."—Boston Transcript.

YASLEY—Miss Passay seemed offended at you last evening. What did I say? Mudge—Blessed if I know. I only asked her if she didn't read having to wear hoops again.—Indianapolis Journal.

Mrs. GOOD—Isn't it queer that a man would request that his shroud should not be fastened with a collar button. The Widow—Well, he knew his weakness and didn't want to make a bad break before St. Peter.—Exchange.

A MALE OWNER.—Jake—Here's an advertisement in 't' paper fer that dog you found. The man wot owns him offers a reward. Jim—How d'ye know it's a man? Jake—Th' paper says, "No questions asked."—New York Weekly.

DAISY—When I get big like you, mamma, I'm going to marry a doctor or a minister. Mamma—Why, my dear! Daisy—Cause if I marry a doctor I can get well for nothing, and if I marry a minister I can be good for nothing.—Funny Folks.

CRIS HALL.—They say that Busman ran away with another woman because his wife never did anything right and constantly irritated and annoyed him. Temple Court.—That can't be the reason. Why, the other woman was his typewriter.—Truth.

"SUSAN," said the housewife, "I think that once a week is quite often enough for your sweetheart to be calling here." "He ain't my sweetheart," Susan explained. "He's the man I'm goin' to marry. D'you s'pose if I had a sweetheart I'd go an' spile him by marryin' him?"—Indianapolis Journal.

TEACHER—Johnnie, do you think if you had cut down your father's cherry tree you would have told the truth about it? Johnny (slowly)—No, I don't believe I would. Teacher—What! you would not tell a falsehood? Johnnie (apologetically)—Well, ma'am, yer see I don't believe Washington's father was just the same sort of feller as mine.—Harper's Bazar.

The Penalty of Headlessness. The army stood in the presence of death, silent with horror.

The condemned man, pale but resolute, had taken his place beside the coffin which was to hold his mortal clay, facing the firing squad. He was a handsome soldier, and it wrung the hearts of his comrades to see him about to meet a dishonorable end.

The culprit was speaking. His voice was clear and firm, and his words reached every ear in that great course.

"My friends—

Already there was many a tearful eye riveted upon that beloved figure. "I die the victim of my own carelessness. Once my prospects were as bright as yours. I had been commended for my bravery—

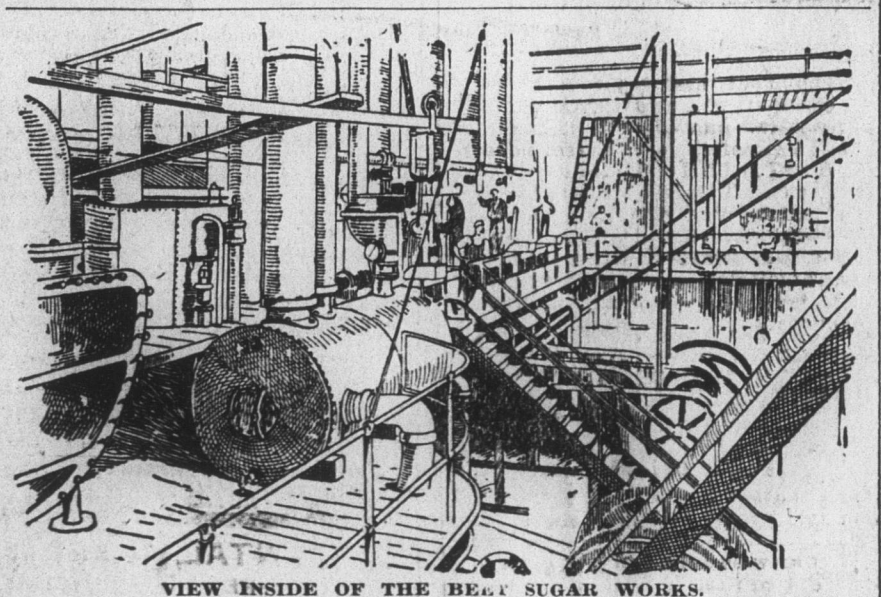
A murmur of approval ran through the troops.

"And the scars upon my body attest my devotion to the cause. I have been declared a good soldier, but one day, in a fit of unaccountable headlessness—

His head sank upon his breast.

"I passed within four miles of a superior officer and did not touch my hat. My fate is a just one and I make no complaint."

They were sorry to see him shot, but they appreciated the necessity of maintaining discipline.—Detroit Tribune.



VIEW INSIDE OF THE BEET SUGAR WORKS.

Is eating beet sugar, wholly or in part, and he will laugh at you, because he labors under the delusion that as compared to sugar, i. e., cane sugar, it is as oleomargarine to butter—in other words, a substitute of inferior quality, for of course he could tell beet sugar if he saw it. The fact is, however, that there is no difference at all, except in name. Sucrose, or crystallizable sugar, is identically the same, whether extracted from cane, sorghum, maple trees or beet-roots, and those people who claim, on sampling the product of the latter, that they can

like so many hogs to a Chicago slaughter-house; on, on they go, in mad confusion, as they are driven down the length of the canals; through the factory wall they pass, are caught by a wheel and hurried without ceremony into a huge gutter, where revolving arms speed them along, and—minus stones, dirt, etc.—delivers them to a spiral, which in turn carries them to the washer proper. This is an immense barrel, with sides perforated, in which they are whirled round and round until they disappear beyond the farther edge, only to reappear beyond

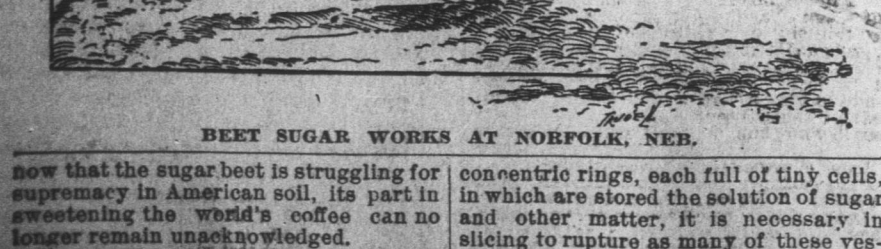


THINNING OUT THE PLANTS.

distinguishing "a vegetable taste," are giving too much credit to their tongue and too little to their imagination. Europe floods us with it in a raw state; it reaches the great Eastern refineries, where also comes raw sugar from the cane countries. These two are inseparably combined, and the mixture goes forth as refined sugar, far and near; and refined sugar, it is, nothing more or less. Nothing is distinguished, as there is nothing to distinguish; so it must not be thought for a moment that there is any sailing under false colors. Only this—this honor should be given where honor is due. Up to the present time the cane has received in the popular mind the credit of being the original source of all this product; but

bing along over a set of great whalebone brushes; then, with the last vestige of dirt removed, they leave the washhouse and enter the factory proper. Without a moment's rest they are caught in the buckets of an elevator and taken to the top of the house, where they fall pell-mell into the receiver of an automatic scale. When this is full it holds 1,100 pounds. It registers the number of the weighing and then precipitates its bulky load into the slicer. A hand on the lever, and the great mass sinks like melting snow, until, after the lapse of several moments, nothing is left but a few chips dancing and coquetting with the swiftly rotating blades on the bottom of the receptacle.

The beet-root, being composed of concentric rings, each full of tiny cells, in which are stored the solution of sugar and other matter, it is necessary in slicing to rupture as many of these vessels as possible. To this end the knives used are serrated, produce narrow slices, which we call "cassettes" for lack of an English name. As these leave the slicer they glide down a movable feeder which supplies the diffusion battery below. The latter consists of a circular arrangement of fourteen



BEET SUGAR WORKS AT NORFOLK, NEB.

now that the sugar beet is struggling for supremacy in American soil, its part in sweetening the world's coffee can no longer remain unacknowledged.

The amelioration of the sugar-beet is a business in itself and would require a volume to discuss it thoroughly. In this country it is as yet quite undeveloped, but in Europe has very long been carried out on the most scientific and elaborate scale. Having secured a seed that bids fair to produce a large yield