

MAKING SUGAR FROM BEETS.

The Tedious Process Introduced in this Country Explained.

The raiser of sugar beets has a decided advantage over the grower of sugar cane. Beets can be shipped in any quantity to points miles distant. The cane is so bulky and the juice so liable to fermentation that it must be handled on the plantation where it is raised.

The juice is extracted from sugar cane by heavy iron rollers, operated by steam and exerting enormous pressure.

In the extraction of beet juice no crushing is done. The beets are topped before being brought to the factory. On arriving there they are placed in a large circular tank, the bottom of which is fitted with a knife, which is whirled around like an auger, slicing the beets to pieces, and dropping them into a conveyor below. The edges of the knife are wavy, so that the slices are corrugated, exposing the greatest possible amount of surface. These slices or cosettes, as they are called, are then placed in what is called the diffusion battery, a circle of great iron tanks, each holding about two and a half tons. These tanks are connected by pipes. Hot water is turned into the first tank, and after percolating through the tank of cosettes, is turned into the second tank, and so on, until it has completed the circuit. This water extracts almost every particle of sugar from the sliced beets. While this water has been the rounds of all the tanks it is drawn off and a fresh supply of water started in. As soon as the fresh water has passed from the first tank the pulp remaining is taken out and a fresh supply is put in this tank. Next time the circuit is made the fresh water is started into tank No. 2, and the pulp taken out of that tank, and so on.

When the sugar-bearing juices have been thus extracted from the beets, it is clarified with lime and carbonic acid gas. The big factories use eighteen to twenty tons of lime a day.

The clarified juice, after being filtered, is ready to be boiled. It is placed in immense tanks, usually four them connected by pipes. The temperature is never allowed to go above 170 degrees.

The juice is thus converted into a syrup of whatever consistency desired. This syrup is then placed in what are called strike pans and boiled into sugar grains or crystals. These enormous pans hold all the way from 90 to 150 barrels of sugar. The man in charge, called a sugar boiler, fills his pan about a fifth full of liquor. He turns on the steam and boils it until it begins to form grain. Then, at intervals, he draws in more and more liquor, so regulating his heat as to keep enlarging the grains already formed instead of forming other smaller grains, until the pan is full. Then the vacuum pump is stopped, the air admitted, the valve in the bottom of the pan opened and the sugar, with just enough syrup to make it a mushy mass, is poured into the mixer.

The mixer is a great tank, very like a churn of modern make, with a dasher in the bottom. This dasher, consisting of a series of iron paddles mounted on a steel shaft, with a belt and pulley. They prevent the sugar hardening in the mixer. The bottom of the mixer is fitted with pipes leading to the floor below, and emptying into the centrifugal machines. Each centrifugal holds about a barrel of dry sugar. The machine consists of a steel cylinder suspended in an upright position by a shaft with a belt and pulley. The cylinder is a steel frame, supporting a screen of brass so fine that, while syrup can pass the meshes, grains of sugar cannot. The machine is filled with the mass of sugar and syrup, the machinery is set in motion and the cylinder revolves at the rate of 1,300 times a minute. The centrifugal motion forces the syrup through the mesh of the screen and the sugar is retained. A spray of water is then turned into the machine, which passes through the screen after the syrup, washing out all vestige of the syrup. In two or three minutes the sugar is dry, the cylinder is stopped, the bottom of the centrifugal opened and the sugar poured into conveyors below, whence it is taken to the granulators, the drying room or other destination according to its grade.

The syrup from the centrifugals, called second liquor, or seconds, is caught by a jacket of iron which surrounds the cylinder and is conveyed to tanks set apart for it. It is tested by the chemists, and if found of sufficient strength is used in the pans again in the manufacture of granulated sugar. After being used the second time it is called third liquor, and is usually too dark and of too little strength to be used again. Then the liquor is filtered and is mixed with lime and blood fresh from the slaughter house, and is again used. By this time the liquor is of such low grade that it is impossible to use it in the manufacture of commercial sugar.

When liquor is of too low a grade to be used in the sugars of commerce it is boiled to grain and put through the centrifugals. The grain is called raw sugar, and is melted up and treated exactly as raw sugar from the plantation or liquor from the quadruple boilers. The grain is thus disposed of, but there remains the liquor, called raw syrup. This is boiled to grain as often as its strength, as determined by the chemists, will justify. When it is no longer strong enough to come to grain, it is boiled into what is called tank sugar, a pasty mass without grain, and set in huge tanks in the hot room for from four to ten days, until it comes to grain. It is then put through the mixer and centrifugals as before. If skillfully handled the syrup is then ready to be made into molasses. If not, it must be boiled into tank sugar again and put

through the same process until the desired end is accomplished.

The last process in the manufacture of granulated sugar, which is the form in which it is most familiar nowadays, is to pass it through the granulator. This is a great iron cylinder, one end of which is elevated about ten degrees from the horizontal. It is revolved slowly by machinery and the inside is fitted with iron shelves about three inches deep. The sugar is poured from these shelves like water from a mill wheel, and as the granulator is kept very hot by steam coils, every particle of moisture is soon obliterated from the sugar. It is then ready for the barrel.

Cut loaf sugar, instead of passing through the granulator, is moistened by a fine spray of pure A liquor and is passed through the die machine, which molds it into the little cubes so familiar to commerce. These are mechanically deposited on iron plates and conveyed by machinery to ovens, where it is baked for twelve hours. It is then barreled and sent to the warehouse.

Head Hunting.

Head hunting, as practiced in Samoa, is one of the most cruel practices in the world. The American and British seamen who were ambushed by Samoans April 1 were beheaded.

The killed included Lieutenant Phillip V. Lansdale, Ensign John R. Manzanhan, Coxswain James Butler, Ordinary Seaman Norman E. Edsall, all of the United States cruiser Philadelphia, Lieutenant Freeman and two seamen of the British cruiser Tauranga.

If the heads of the victims had not been recovered by priests of the French mission and returned to Apia, they would have been dealt with in the manner peculiar to the bloodthirsty head hunters of the islands.

The custom of a Samoan is to remove the head of a captured or dead enemy. He first displays it in triumph, dancing around it and holding a great feast. He then prepares it for preservation as an article of decoration and an heirloom in his family. He stuffs the neck with hot stones, repeating the process several times a day for three days. The stones are not hot enough to roast the flesh, and have the effect of preserving the entire head. The skin becomes leathery, and the head will last an indefinite time. When the head has been thoroughly cured it is placed in a network bag. Through this the dried and grinning features may be observed, and it need hardly be said that they present a very awful appearance. The netting is red, which heightens the effect. The Samoan hangs his trophy in his principal living room, in order to remind his children how voracious and fearless a man he is.

Head hunting flourishes in the many of the Pacific islands, and to a fearful extent in those islands which fringe the eastern coast of Asia.

It is by no means certain that the heads of some of the American and British sailors are not now decorating the huts of head hunters.

Head hunting made its appearance in another place during the Samoan troubles. The friendly natives, acting on the side of the British and Americans and of King Mafafeta, secured the head of one of the most redoubtable chiefs on Mataafa's side. With this they marched in triumph through the streets of Samoa. Captain Stuart of the British Tauranga dispersed the procession and announced that he would shoot any man found with a head in his possession. The king then issued a proclamation forbidding the practice.

Bright Girl Won Easily.

"Cholly," remarked Mrs. Fitznoodle Flushington, with something that might have been taken for a gleam of intelligence tinting his vacuous face, "If you want to meet clevah girls go down and spend a month at one of those Southern wintah resorts."

"Ah they great, old chap?" inquired Cholly as he flicked the ash from his cigarette.

"Rawthah. I met a girl down at one of 'em that beat any girl I evah met befoah. What that girl didn't know wasn't worth knowing, old man; deuced clevah, really."

"How did she show it, me boy?"

"Well, theahs a pier down there with a bathing float attached to the end of it. The float, ye know, lay about six feet below the end of the pier, quite a drop, ye know. One night I was talking to the girl on the veranda, and I suggested that the pier offer a good chance for a bicycle ride if it weren't for the danger of dropping off the end and taking a tumble of six feet to the float below. The girl looked at me and said that even if one did strike the float it wouldn't mattah. 'Why, I'll ride down heah and out on the raft,' she said. 'You daren't,' I replied. She turned up her nose and asked me what I'd bet. I bet her \$25 and a box of flowers. She told me to be out theah in the morning and I'd see her do it. I was theah bright and ehly. And blow my eyes, old man, she did do it."

"Why, wasn't she hurt, me boy?"

"Not a bit. The tide had raised the float to a level with the pier and at the end she just rolled out upon it on her wheel. Deuced clevah, wasn't it?"

By Dr. C. H. Johnson: A sure remedy for "car sickness," a form of nausea resembling sea sickness, which affects many travelers, is to take a sheet of common writing paper, large enough to cover both the chest and stomach, and put it on under the clothing next to the person. If one sheet is not large enough paste the edges of two or three together, as the chest and stomach must be well protected. Wear the paper thus as long as you are traveling, and change it daily if your journey is long. Those who have tried it say that it is a perfect defense.

WILDCAT SMITH OF CALDWELL

Said to Be the Bravest Man in the State of Texas.

When he makes one of his infrequent visits from his log cabin in the woods to the town of Caldwell, ex. men look after him with interest and murmur in respectful undertones the name of Wildcat Smith.

"Why do they call him that?"

"Oh, —; that's jes' a nickname; that's nothin'; that wildcat foolishness warn't the story at all. This yer Smith one time he played the nerviest game of cyards a man ever sat into in Texas."

After certain preliminaries Brazos Pete wiped his tawny trailing mustache with the back of a scarred and brawny hand and went on:

"This yer Smith he come to Texas in '36 he did, an' he fit any'n'—Injun, bar, Greaser, white man—tried to fight Sam Houston once, an' th' ol' man list 'em he was the fortieth on his list. 'Wen he'd killed the other thirty-nine, says he, 'I would be Smith's turn."

"Smith, he fit Injun more'n anythin' else o' course. Kep' 'tab on a notched stick and had notched it down all one side and turned it over—dead Injun for ever' notch—'wen the Comanches corralled him one time."

"We take um white man our village by Devil river burn um up," said the Comanche chief. He was the one they called Big Laugh, 'cause had a kin' o' hailp grin, fit to make a man dream o' snakes an' centipedes.

"'White man um say 'Wow, wow, wow' in fire. Heap plenty fun um burn up," says this yer Big Laugh, grinnin' jes' that a-way; 'white man cry, 'Wah, wah, wah' like squaw."

"Oh, mebbe not," says Smith; 'have a drink."

"So they made love to the big bottle in Smith's pocket until Big Laugh felt good an' happy, this yer Smith all the time thinkin' an' thinkin', and noticin' out of the corner o' his eye a white gal tied on one o' the ponies, moanin' in fear an' pain; somebody they'd captured an' carried off. Purliest gal in Texas, she was, Smith says, an' slender as a young pecan tree.

"'Yes,' says this yer Big Laugh, 'white man um say 'Wah wah' like 'white squaw there. Play seven-up?' Fer Big Laugh he thought he was some on cyards."

"Then this yer Smith sees his chance, fer Big Laugh was feelin' pretty good with the wisky an' all, an' grinnin' wider'n ever; but Smith he only says, kin' o' careless like: 'Oh, y-a-a-s, I kin beat any man in Texas; y-a-a-s, I play seven-up jes' a little."

"'White man um play me?"

"'Nawthin' to play fer now, 'cept my cussed o' life,' says Smith, an' he made 's if he'd go to sleep.

"Big Laugh was mad clean through. 'Play um white man fer life,' says he.

"Oh, well, if I got ter play, trot out yer cyards," says Smith. So they played, puttin' down the cards on a blanket, the other Injuns a-scringin' 'round an' a-lookin' on. An' pretty soon Big Laugh an' Smith they stood 6 to 6, an' it was Smith's deal. He run th' cards an' turned up a jack from the bottom.

"'Waugh!' grunted this yer Big Laugh; 'white man play seven-up plenty! Heap git out! Mosey! Make up track! Um go home!"

"But Smith he didn't want ter go alone. 'I'm glad ter git shot o' yez,' says he, slow like. 'I never did like ter play seven-up with no dern amatoors,' says he.

"'White man play more?' says Big Laugh, grumpy, 'cause he didn't know what 'amatoor' meant.

"'Oh, wa-al,' says Smith, lookin' all round slow like, 'let's play fer—don't want blankit, don't want pony—e's play fer th' gal,' an' he pintoed to the poor critter, cryin' on the pony; an' she looked at Smith with her big round eyes, an' he felt white all th' way thro', stayin' there ter git burnt alive fer a pair of blue eyes.

"'Good!' says this yer Big Laugh. 'Play um game. You win me let squaw go; you lose, we keep squaw, put white man on fire, hear um cry 'Wah, wah!'"

"So they played cyards on the blanket, th' Injuns lookin' on an' not hardly breathin'; they was so interested. An' purt soon it stud 6 to 6 agin, an' 'twas Big Laugh's deal.

"Big Laugh he grinned worse than ever as he come ter th' las' cyards, an' the Injuns begun to yell. Smith says he could feel the fire already a-sizzlin' 'round his legs, an' the gal jes' kivers her eyes with the whitest pair o' little hands in Texas. An' then with a yell Big Laugh he turned the trump.

"'Twas the queen o' hearts, an' Smith had an ace an' deuce. Well! the Injun couldn't give, o'course, an' Smith won.

"Big Laugh, his gal an' two ponies, an' Smith an' th' gal jes' lit off fer th' settlements, a-ridin' day an' night.

"Smith marry th' gal? Who's a-tellin' this yarn? She married Colonel Sam Jones, that was killed at Shiloh. Beats — how dry talkin' makes a feller."

"But why do they call him Wildcat?"

"Oh, that wasn't nothin'," said Brazos Pete, with visible annoyance. "Oncet a fool wildcat jumped him w'en he hadn't no gun. Natchly Smith he busted the critter's slats in with his fist and got his ear in his teeth an' unjinted his neck, an' then tuk it home an' skinned it."

The handsomest of the new satin foulards are striped with a line of heavier satin and polka-dotted between the stripes. These are very fine in quality but the designs lack novelty under the present craze for spotted fabrics, and purchasers of these soft, clinging materials, who look for something uncommon in style, pass they by for the quaint weaves figured with small Persian devices showing a fine but bright melange of rich Oriental colors, on a ground of black, blue, green or brown.

NEWSPAPER ENGLISH.

Some Odd Phrases Used by Untrained Correspondents.

Telegraph editors and copy readers of newspapers run across a great many remarkable statements in the copy received from country correspondents and even from the press associations. Trite expressions become a habit with correspondents, and it is one of the duties of the copy reader to eliminate these when he comes across them. A "desk man" on the Kansas City Star took the trouble to jot down such of these as he came across from day to day. Some of them are actually weird, as follows:

"He was overcome by smoke in the upper story."

"The man was fatally wounded. He may die."

"The supposed to be dead Jones stabbed the alleged murderer twice, inflicting fatal wounds which he cannot survive."

"Jerrel was blown about thirty feet. He leaves a family."

"Smith was shot twice by the allied slayer, one ball entering the intestines, the other penetrating his right lung. The coroner is investigating. Bloodhounds have been put on the trail."

Writers often have things occur in the most remarkable places. The following instances have actually appeared in newspapers or have been dragged out of copy by editors before they got into print:

"The man was shot twice in the saloon."

"He fell upon his being shot."

"He was shot in the suburbs."

"He was injured in the fracas."

"She whipped him upon his return."

"He kissed her passionately on her reappearance."

"He kissed her back."

"He walked in upon her invitation."

"She seated herself upon his entering."

"She fainted upon his departure."

"He clung to her weeping."

"They gossiped upon his downfall."

Dead persons often do stranger things than one would suppose. Witness the following:

"The suicide on reviving said—"

"Before he died the deceased said—"

Triteness however, is the besetting sin of untrained correspondents. The following are old friends and will be readily recognized by newspaper readers:

"It is reported on the highest authority by one who has the ear of the president, but whose name is suppressed for obvious reasons, that—"

The information that usually follows a statement of that kind is as valuable as its introduction is authoritative.

The correspondent who concludes his story by saying, "It said the story can be supported by facts," seldom sees the story in print.

Some of the most common examples of triteness are:

"It was a gala day," or red letter day, as the case may be.

"The police are in suspense."

"He broke down and confessed."

"The distracted husband," or wife.

GLEANINGS.

Paragraphs Selected From the Writings of Wise Men.

Plough deep while sluggards sleep.—Franklin.

Common sense is instinct, and enough of it is genius.—H. W. Shaw.

Caution, though very often wanted, is a great risk to take.—H. W. Shaw.

Be true, and thou shalt fetter time with everlasting chain.—Schiller.

Excellence is never granted to a man but as the reward of labor.—Sir Joshua Reynolds.

Attention is the staff that memory is made of, and memory is accumulated genius.—Lowell.

In the power of fixing the attention lies the most precious of the intellectual habits.—Robert Hall.

Take time to deliberate; but when the time for action arrives, stop thinking and go on.—Andrew Jackson.

No man is bound to be rich or great; no, nor to be wise; but every man is bound to be honest.—Sir Benjamin Rudyard.

The art of using moderate abilities to advantage wins praise and often acquires more reputation than actual brilliancy.—Rochefoucauld.

Good taste may not be necessary to salvation or to success in life, but it is one of the most powerful factors of civilization.—James Russell Lowell.

Style in painting is the same as in writing, a power over materials whether words or colors, by which conceptions or sentiments are conveyed.—Sir Joshua Reynolds.

I reverence the individual who understands distinctly what he wishes, who unweariedly advances, who knows the means conducive to his object, and can seize and use them.—Goethe.

Literature is full of coincidences which some love to believe are plagiarisms, and there are thoughts always abroad in the air which it takes more wit to avoid than to hit upon.—Oliver Wendell Holmes.

Common sense in one view is the most uncommon sense. While it is extremely rare in possession, the recognition of it is universal. All men feel it, though few men have it.—H. N. Hudson.

The commerce of intellect loves distant shores. The small retail dealer trades only with his neighbor; when the great merchant trades he links the four quarters of the globe.—Bulwer Lytton.

We grow strong and firm to resist and to do; we gain the mastery of ourselves which brings superiority, by a patient use of the incidents of daily life.

To rule one's own spirit on the petty theater of a private sphere creates a power which goes with us to wider fields of action.—Geikie.

If he could doubt on his triumphant cross.

How much more in the defeat and loss Of seeing all my selfish dreams fulfilled, Of being lived the very life I willed, Of being all that I desired to be? My God, my God, why hast thou forsaken me! —W. D. Howells.

I am not sure but we shall have to go back to the old idea of considering the churches places of worship and not opportunities for sewing societies and the cultivation of social equality.

I remember that when I was a child I used to think that a stick of peppermint candy must burn with the consciousness of its own deliciousness.

For did a woman ever live who would not give all the years of tasteless serenity for one year, for one month for one hour of the uncalculating delirium of love, poured out upon a man who returned it?

The world seemed in a vesper mood—in truth nature herself, at the moment, suggested that talk was an impertinence.

I heard the other day that Boston, getting a little tired of the Vedas, was beginning to take up the new testament.

All Americans expect to go to Europe. I have a friend who says she would be mortified if she reached heaven and there had to confess that she had never seen Europe.

Why is it that to do the right thing is often to make the mistake of a life? In fact, however, I doubt if there are any episodes in our lives, any asides that do not permanently affect our entire career. Are not the episodes, the casual meetings, the fortuitous unplanned meetings, the brief and maybe, at the moment, unnoted events, those which exercise the most influence on our destiny?

But often the implanting in the mind of an idea is more potent than the frustration of a plan, or the gratification of a desire, so hidden are the causes that make (or mar) character. Unnoted the desire so swiftly follows the thought and juggles with the will. Is there a particular moment when we choose our path in life, when we take the right or the left?

It is such a pity that for most people there is only one chance in life.

Good-bye, I shall see you tomorrow or next year, or in the next world. Hall and farewell that is the common experience. But, oh, the bitterness of it to many a soul.—Charles Dudley Warner. A Little Journey Into the World

YET TO BE EXPLORED.

Portions of the Earth That Still Remain Unknown Lands.

Many people suppose the whole world, except the extreme arctic and antarctic regions, to have been explored and mapped already; but, in fact, there is no lack of unknown lands to which our modern Nasamonians can turn their attention.

In Africa Wadal has been visited by only three travelers, and, although it would be very difficult to penetrate into the territory itself, useful exploring work might be done in some of the outlying districts, approachable from the upper Benue of the Ubongi wells.

The region between Lake Rudolf and Abyssinia and the valley of the Sobata, a tributary of the White Nile, are believed to be of great interest, but are entirely unknown.

Outside these three regions there is a fair knowledge of the general geographical features of Africa, but much detail remains to be filled in and much indifferent work requires to be done over again. There are also regions which have indeed been traversed, but which will repay further detailed examination. So that Africa still offers a wide and interesting field of research to the young explorer.

In Asia there are unexplored tracts in various directions. In spite of recent journeys in Oman and the Hadramut there is still an unknown region in Arabia upward of 400 miles square and there is also much yet to be done in Asia Minor.

In Persia, parts of Loristan, and the country of the Pei Kan Kurd still remain unexplored. Further east, Dr. Sven Hedin, extensive as his travels have been, has left a great deal of work for the future explorer. There are the passes from Tibet into Nepal, much unknown country in southwestern Tibet, the mighty range which bounds the Tsanpu valley on the north, and extensive tracts of the northern plateau while Lhasa, the capital, has never been visited since the days of Hue and Gabet, who were there upward of fifty years ago.

The great river Tsanpu, from latitude 94 degrees and 10 seconds east to its entrance into the valley of Assam, under the name of Dibong, is wholly unknown.

The whole region of complicated mountain and river systems between India and China urgently calls for bold and hardy explorers to disentangle it. There is also much to be done in the mountain ranges of western China.

Passing to the mass of islands lying to the south of Asia, there is a great field for exploration in the Dutch portion of New Guinea. Its interior is a complete blank, with its chain of mountains believed to be 16,000 feet high.

It is, however, in South America that the most extensive unexplored regions still await the visits of scientific explorers. Although this continent is much richer and of far more beautiful scenery than Africa, and, although it has attracted the ablest and most accomplished travelers, such as Comandins, Humboldt, D'Orbigny, Schomburgk, Martins, and Bates, it has received, on the whole, much less attention than Africa and much less than it deserves.

Many parts of the Colombian cordilleras still need exploration, as well as the basins of several affluents of the Amazon; while there is an enormous tract to the eastward which is still practically unknown. It is that wild, forest-covered region which was the scene of the adventurous searches for El Dorado in the sixteenth century. Farther south, although the region of the eastward of Cuzco, the ancient capital of the Incas, is now attracting attention, much remains to be done.

There are also many undescribed parts of the Andes of Peru which are of great interest, especially in the little-known districts around the lake of Parinacochas. The mountain peaks of the range above Tarapaca are still virgin, and those of Sajama and Palahuari have not yet been measured. Indeed, the whole orography of western South America is very imperfectly understood, and offers a most tempting and interesting field of research for young explorers.

Equally unexplored is the southern part of the dividing ranges between Chili and Argentina, which incloses within its unknown regions several geographical problems of great interest. The wild mountain ranges still farther south and the numerous intricate rocky channels up the gulf of Trinidad also invite exploration. These narrow, winding channels, full of rocks and islands, look as if the cordillera of the Andes had here dipped itself into the sea.

On the whole, the unknown or unexplored parts of South America offer the most extensive, and certainly not the least interesting, field for research that remains on the earth's surface, apart from the polar regions.—Sir Clements Markham in the Youth's Companion.

Chicago Chronicle: In these days of progressive pulp methods it is not surprising to learn that a New York Methodist minister named Baylis wore the costume of a cowboy last Sunday while preaching at the Bowers mission. Mr. Baylis' remarks to his audience, judging from the published reports, seem to have been about as sensational as his costume. These modern innovators have already introduced racks of cards, sleight-of-hand performances and other realistic exhibitions into the pulpit, and there is no telling where they will stop. Perhaps with the aid of an assistant they will yet put on four-ounce gloves and engage in a realistic pantomime representation of the new imperialistic doctrine of pommeling religion into reluctant converts.