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[No. 5

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The British ship Troop is now loading dark sugars at this port for New York, and will sail in a few days with a cargo of about 2,500 tons.

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Reports from Java state that there will be a considerable increase in the sugar crop of this year, all the weather conditions being favorable. It will exceed 500,000 tons.

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Texas raises one-third of the cotton crop of the entire world, and yet not one acre in a hundred of its fertile soil is in cultivation. Texas is large enough to raise cotton and breadstuffs sufficient to clothe and feed all the people in North and South America.

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Australian salt bush for the reclamation of alkali lands is highly recommended, and it appears to have been a complete success where fully tested for that purpose in this State. The plant is readily eaten by stock and grows luxuriantly on the strongest alkali soils.—*California Fruit Grower*.

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The cold weather of March and April in Europe is likely to affect the beet crop. Reports from all the sugar districts

show that planting has been set back several weeks. It is considered quite probable that the crop may be less than last year, though to what extent there are no means of learning.

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A California paper states that Mr. G. A. Hall, of Clements, is engaged in planting 100 acres of land to sugar cane, intending to enter extensively into the business. This year he will confine himself to the manufacture of syrup, but expects to make raw sugar as soon as he gets a good start.

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As anticipated in our last issue, the price of sugar in New York has advanced to 3.17, and may rise a few points above that figure. All indications point to a smaller crop than last year, both of beet and cane sugar, with a demand that will call for any surplus remaining from the crop of 1894.

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Those engaged in raising bananas for shipment abroad, will be interested in an item on next page relative to the mode of packing them for the English market, and also to the article headed Agriculture in Fiji, referring to the banana disease there. It will surprise many to learn that the traffic in bananas in Fiji amounted in 1893 to 788,000 bunches, while our export trade for the same year amounted to only 108,239.

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An extraordinary rainfall, or rather cloudburst, occurred in April at Hana, on Maui. It is stated, on reliable authority, that twenty-one and a half inches of rain fell during one hour. The amount was accurately measured by two gauges, both tallying the same record. During the same storm the rainfall was extraordinary at several points on the island of Hawaii, about the same amount having been measured as having fallen in two or three days.

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Mr. Malcolm Munro, formerly part owner and manager of the now abandoned sugar plantation Greenfield, on the East Coast, has entered into a three years' engagement to proceed to Mauritius and gradually close up several sugar estates there. It seems to be at present with planters in Mauritius pretty much as it is with planters in Demerara. The great

object in view is, not to avoid loss—for that would be hopeless—but to render the unavoidable loss as small as possible.  
—*Demerara Argosy*.

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CUBAN CANE LOADER.—Among late inventions to facilitate labor in the fields, that of an apparatus to automatically gather and tie cane in bunches, weighing from 60 to 120 arrobes each, is being highly spoken of; its inventor, Mr. Salustiano Caceres, who has already solicited letters patent of the Government, asserts that the quantity of labor performed in one hour by this apparatus is equal to that of 70 men, on an average.—*Havana Weekly Report*.

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London fruit brokers state that "large bunches of bananas, well selected and well packed, when arriving in good condition, obtain a price varying from 18 to 35 shillings per bunch. They arrive best when packed in crates, one bunch in each. Each bunch should be rolled once in a sheet of cotton-wool and then wrapped with waste paper. Pineapples should also be wrapped in paper and packed tightly in crates, 24 to 30 in each crate. Thus packed the finest St. Michaels bring 6 to 8 shillings each, while Florida pines fetch 1 to 2 shillings each."

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In the front yard of Mrs. C. Parke's residence on Beretania street near the ice works, may now be seen in bloom an *Agave Americana Variagata*, probably the first that has bloomed here. This is not the American aloe, so common throughout the islands, and which is often seen in bloom, but the beautiful variety with yellow stripes in its leaves. This plant must be about thirteen years old, though Mr. Jaeger has one nineteen years old, that has not yet blossomed. They are very ornamental, and younger plants may be seen in many gardens here.

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CANADA SUGAR BOUNTY.—Canada pays a bounty of about 2.09 cents per lb. on sugar produced in that country from beets. The home production is further protected by the import duty on foreign sugar of .64c. per lb. One beet sugar factory at Berthier was operated last season and proved successful. Other factories are projected, as there is reason to believe that a supply of beets can be obtained. In order

to provide for the bounty to be depended upon for a definite period, a proposition is made to the Government to fix it as follows: from 1895 to 1905 at  $1\frac{3}{4}$ c. per lb., to be decreased 10 per cent. each year from 1900 to 1905.

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Willetts & Gray's New York sugar circular says, April 25: "Dutch granulated is held as equal to 3.96c. per lb. net cash, landed in New York. Foreign refined have only been imported since January 1st to the extent of 3,272 tons, and are not likely to cut any figure in the coming six months' supplies. Buyers ask too big a reduction from the American price to induce any importations, and only now and then a small invoice comes forward. There is not a pound of foreign granulated for sale in any seaport in the United States at the present time."

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BETOSE AND SACCHAROSE.—A chemist, writing in *The Sugar Cane* on the difference between beet sugar and cane sugar, says: "If they are absolutely the same substance, how comes it that English housewives will not, if they know it, use beet sugar for making preserves? And it has been asserted that the syrups of phosphate of iron and other similar pharmaceutical preparations, when made with beet sugar, will not keep so well as when cane sugar is used. Many chemists now speak of beet sugar as *betose* and of cane sugar as *saccharose*, feeling instinctively that there is some difference between these two products. Is it not probable that betose forms a kind of link between glucose and saccharose?"

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MORE SUGAR BOUNTY.—The Colorado House of Representatives has followed the precedent of the Legislature of Nebraska, and has passed a bill granting a bounty to the producers of sugar. The Colorado measure differs from Nebraska in this: The Nebraska bill gives a cash bounty on every pound of beet sugar made in the State; the Colorado bill gives a bounty of \$2 on every ton of beets raised in the State and sold to a sugar refinery within the State. In the one case the bounty is paid to the manufacturer, in the other to the farmer; in each case the same object, that of stimulation of the sugar industry, is likely to be attained. If the

manufacturer receives a bounty, he can afford to pay a higher price for beet roots ; if the farmer receives a bounty, he can afford to sell beets at a reduced rate.—*New York Shipping List.*

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COMEAX'S CANE CART.—'This year's planting has again demonstrated the value of Mr. C. Lucas Comeaux's cane cart in planting seed cane. It saves so much handling and breaking of eyes, that this feature alone would commend it to planters generally, but when it is known that each cart used in planting saves several hands, it becomes a matter of surprise that every planter in the States does not use them. It is only a question of a short time until such is the case, for wherever used planters and managers speak of them in the highest terms. We have seen many letters to that effect from leading sugar planters in all parts of the State.

As Mr. Comeaux sells the right to make and use these carts, all should prepare during the summer for future use. Meantime, communicate with the inventor, by referring to his advertisement in the columns of the *Louisiana Sugar Planter*, from which this notice is taken.

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In the March issue of *THE PLANTER* attention was called to the experience of farmers in South Australia regarding the sacaline or saghalian knot weed, that any forage plant will be found better than this. Now the *Rural New Yorker* gives the views of N. Hallick as follows : "From my experience with polygonum saghalinese as an ornamental plant, my advice is to go very slow. I saw it in a garden and was struck with its wonderfully early growth. As the owner was digging around it, I asked as a favor a few rootlets, which he grudgingly gave me. The result was that the next year I had enough to supply and plant an acre, and I have been trying ever since to eradicate it. Canada thistles are mild compared to it. If the land will grow anything else, don't plant it. I have seen it with a stalk one and one-half inches in diameter and twelve feet high, and it looks as much like feeding as an immense pokeweed. Plant corn for feed, not polygonum aghalinese, unless you want trouble."

UNITED STATES BEET SUGAR CROPS.—The Western Beet Sugar Company report under date of Watsonville, Cal., March 20, 1895: "The long campaign of 1894 came to a close yesterday, having extended over a period of seven months and eight and one-quarter days. The following are our figures for the season: Hours mill run, 3,682 tons (2,000 lbs.); beets received and cut, 143,532 tons (2,000 lbs.); sugar made, 12,047½ tons. For the coming season we have cut the price of beets to \$4 per 2,000 lbs, delivered at the factory, providing, however, that if the McKinley bill shall be restored the price shall be \$5. The prices paid for fuel and other commodities have been similarly reduced. As all supplies for the mill are furnished from within a radius of thirty miles, the disastrous Wilson bill hit this community a body blow that is felt by every individual. We shall have between seven and eight thousand acres of beets raised, and notwithstanding the heavy rainfall (35.66 in. to date) the farmers have their land well prepared, and indications point to a favorable crop in 1895."

THE AMERICAN SUGAR REFINING Co.—The company has filed with the Massachusetts Secretary of State the following statement of its condition at the close of business December 31, 1894. We compare with the last statement of November 30, 1893:

Assets.	1894.	1893.
Real estate and machinery.....	\$43,119,866	\$42,931,601
Cash and debts receivable.....	19,428,000	23,322,076
Improvement account.....	5,607,563	3,624,249
Investments other Cos.....	26,201,599	26,985,376
Sugar, raw and refined.....	10,742,456	7,545,781
Miscellaneous .....	.....	671,435
Total .....	\$105,099,484	\$105,080,506
Liabilities.		
Capital.....	\$73,936,000	\$73,936,000
Debts.....	21,394,002	22,201,407
Reserves .....	9,769,484	8,943,100
Total .....	\$105,099,484	\$105,080,506

The item of "improvement account" is properly chargeable against the reserves, which reduces the same to \$4,161,920.—*Willetts & Gray's Statistical.*

Mr. A. H. Young, a Queensland sugar planter, who has recently returned from a tour around the world, having stopped in Europe, the United States and these Islands, to study the labor and other questions regarding the sugar interest, was interviewed on his return home, and expressed the following among other things: "The labor question does not cause so much trouble in the American Southern States as in Queensland. Wages there and also in Hawaii are somewhat higher than in Queensland. The Louisiana mills are no better than the best here; on the other hand, they can work with a lower power, much of the cane crushed in Louisiana being immature and softer than the Australian cane. The cultivation in the Hawaiian Islands surprised him. The average yield from plant cane he found to be about seven tons of sugar, and from first ratoons from three to four tons per acre. The system of irrigation there was so perfect, that the water which the land receives is equivalent to a constant rainfall of one hundred inches per annum."

Had Mr. Young visited the beet sugar enterprises at Chino and Watsonville, California, he would have seen sugar yields there fully as remarkable as what he saw in Hawaii, and surpassing any European.

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### *THE WESTWARD STAR OF EMPIRE.*

More wharves are needed in Honolulu harbor. And this clearly indicates that the commerce of the port is steadily increasing. Large vessels, especially steamships, find it for their interest to make this a half-way station in crossing the Pacific, and more of them will come. The broad ocean expanse, the long distances, and the increasing travel, all combine to make Honolulu a favorite and necessary port of call. But will this trade and travel increase? Most certainly it will. As the sun rises in the east and travels to the west, so is the course of trade and travel.

The north Atlantic ocean has bordering on its eastern and western shores some four hundred millions of restless, active, hustling people, who cannot remain at home, but must be on the move, to see the other side and how they live. This ebb and flow of trade and travel there maintains the two

hundred steamships that now plow daily through the waters of the Atlantic, loaded and overcrowded with cargoes of living humanity, and with the handiwork and fabrics which one people can produce better than another.

The Pacific has a still vaster area, and its waves beat on shores peopled by nine hundred millions of human beings—more than half the population of the entire globe. Can any one doubt that the future will see the streams of travel swollen to overflowing on this ocean as now on the Atlantic? The day is coming when a similar sight, such as now exists on the Atlantic, will be revealed on this ocean, when hundreds of leviathan steamers will be engaged in the trans-Pacific ocean service where there are now less than twenty. This does not imply that hordes of Mongolian and Hindoo barbarians will swarm across this ocean, but it does imply that the mercantile, the well-to-do and the tourists by thousands, seeking business or pleasure, will go and come as freely as they do on the Atlantic. This is no fancy sketch, for the day is already dawning.

Is it not then time for us to be planning for the needs of the near future,—planning as though the Republic of Hawaii were already a part of the great American Union. It must seem so to every thinking man, who sees the drift of coming events—that this ocean will soon become the theater of the world's greatest progress

The plan which has been decided on by the Hawaiian government to build two large docks, with capacity to berth three or four of the largest ships afloat, to be located directly opposite the entrance to the harbor, is a move in the right direction, and cannot be undertaken too soon. The recent detention of the five-thousand ton steamship *Coptic* in the offing, till the departure of the *Gaelic* should vacate the only berth at present available, shows that the work cannot be commenced too soon. Before it can be finished, there is now every probability that these docks will all be in demand.

The plan proposed by Mr. Rowell, the superintendent of public works, to build a wharf on the north side of the harbor, from the railroad coal wharf to the foot of Maunakea street, seems practicable and wise. By this work, a thousand feet of wharf frontage will be provided for, at no very great



cost, and if the land on which the old unsightly fish market now stands, were cleared of its rookeries and thrown open to water front traffic, it would afford the best accommodation for the inter-island coasting fleet that could be desired, and an outlet for the traffic which will naturally be attracted to the new Maunakea street wharf. Government can make no more profitable investment of its funds than in harbor improvements, which will become a permanent source of revenue.

In the number of American vessels trading with it, Honolulu stands first among all the ports in the world, with which the United States have commerce. During the year 1893, there were 165 American vessels here, with an average tonnage of nearly 900 tons to each vessel. This is a record of which Hawaii may be proud. It can be maintained, if we make an effort, by increasing the facilities which help to attract foreign vessels hither, as this port is and always has been one of the best to approach and the safest to enter, at all seasons of the year.

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### THE CLEANING OF RAMIE.

Considerable advance has been made during the past year in perfecting machinery for decorticating ramie, and thus putting it in a merchantable condition for shipment. Two machines were tested at New Orleans by the American Government near the close of last year, one being of English make manufactured by the Textile Syndicate of London, and the other an American machine, known as the Allison, made in New Orleans. The report made by the judges was very favorable, each machine having some advantages which the other did not possess, but neither of them was considered as perfect. The summing up of their report is given in the following paragraphs, which we find in the *Sugar Planters' Journal*:

"The work accomplished is far in advance of that performed by the machines on trial at this place two years ago. At that time some of the machines were capable of running without obstruction. In the trial of these machines there has been no disposition on the part of either to fail to work. The Textile Syndicate machine is easily run by a four horse-

power engine, and is capable of treating any quantity of stalks that can be fed to it without choking or stopping. Its great fault lies in the fact that it delivers the ribbons in a tangled, matted condition, requiring a large amount of time and patience to straighten them; besides, at the end of each fibre there was a piece of adherent wood which the machine failed to remove. The filament on the back is partly scraped, but not completely. These are serious objections, but by no means insuperable, as it is believed that mechanical skill can easily overcome these defects.

"The large Allison machine delivers its fiber in good condition and better cleaned, but its immense size and the power that it takes to run it preclude the possibility of its being used in the field upon small experiments. In the small machine the size is considerably reduced without destroying its efficiency, in order to adapt its work to the field and to be run by a small power.

"In addition to the official trials herein reported, the committee witnessed a large amount of work done by these machines, which afforded them an opportunity of making a careful study of the machine problem.

"The committee desires to call special attention to the fact that in trials on green ramie the stalks were denuded of leaves, while in the trial of two years ago the stalks used by three machines under test were required to be stripped. The Textile Syndicate without and the Allison machine with saturation, in the present tests, ran continuously without gumming, fouling or breaking in any part, and gave evidence of ability to meet any demand in continuous running that might be made upon them.

"It is, therefore, with pleasure that we recommend great progress in ramie machines since our last test; but neither of these machines are ready for successful operation on a small scale by farmers and planters; although, with modifications that have been already suggested and in part carried out, they will do far better work. The outlook is, therefore, promising."

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A soup made from onions is regarded by the French as an excellent restorative in debility of the digestive organs.

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### THE NEW EXPERIMENT STATION.

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Mr. J. T. Crawley, chemist from the United States, arrived by the Alameda on the 9th inst. Dr. Maxwell, director of our new experiment station, has selected Mr. Crawley as assistant director, and first assistant in the laboratories. Mr. Crawley appears to be a good appointment. He is a *trained* man, having graduated in science from Harvard University. He was an assistant under Dr. Wiley in the laboratory of the United States Department of Agriculture, where he was largely engaged in soil analysis. Later he was appointed chemist at the Louisiana Experiment Station with Dr. Stubbs; and also had experience as chemist on sugar plantations.

Professor Maxwell knew Mr. Crawley as a student at Harvard, and has been interested in him since that time up to the present; so that there is little doubt of the Director's selection being all right.

The Director has already entered upon the study of the numerous problems presented to him, and the analysis of soils and fertilizers, in which Mr. Crawley will be chiefly engaged.

The laboratory and office of the new experiment station have been fitted up and opened on the ground floor of the Robinson building, corner of Nuuanu and King streets. The entrance is at the south front door, on Nuuanu street, the store formerly occupied by Afong & Chulan.

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### THE EHERMINITE-MASOTA PROCESS.

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Through the Hawaiian foreign office we have received the translation of a circular sent out by Messrs. Dunn and Purcele of the city of Mexico, patentees of the above process, calling attention to the advantages of its use in the manufacture of sugar:

The following are some of the advantages claimed for the "Eherminite-Masota" process for the defecation and clarification of cane juice.

With the Eherminite-Masota process a means is afforded of producing the finest qualities of sugar, and such as would bring the highest market prices; scarcely in excess of the cost of producing the inferior qualities usually produced without refining.

Among the advantages resulting from the use of the Eherminite-Masota process are the following—viz :

- 1st.—Increased yield of sugar.
- 2nd.—Superior quality.
- 3rd.—A higher percentage of first quality sugar produced.
- 4th.—Proportion of Molasses reduced.
- 5th.—Necessity of Filters obviated and a more perfect clarification obtained.
- 6th.—The evils of overtempering counteracted.
- 7th.—The Eherminite-Masota process can be applied in any existing sugar plant at a very slight outlay, and without any alteration of any existing machinery.

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The sugar factory of Culmsee, Prussia, is said to be the largest in the world. The daily consumption of beets is 1,250 tons, and during the campaign 1894-95 this will be increased to 2,000 tons per diem.

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We are glad to learn that the ladybugs introduced by Prof. Koebele and sent to Kona by Mr. Marsden, are doing good work among the coffee and orange trees in that district. They promise to clean out the insect plague, and keep the trees in good condition for bearing crops. If they are as active here as they have been in Southern California, this will be all that can be expected from them.

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The extension of the Oahu Railway is being pushed with energy by Mr. Dillingham, the efficient manager, and before the end of June, the road will be opened for traffic to Wai-anae, thirty-three miles from Honolulu. The new section from Ewa mill to the above village is well constructed, the ties being of best hard ohia wood from Hawaii, and the rails heavy, forty-five pounds to the yard. Nothing better could be desired on any road. We are told that the remaining forty miles to Kahuku can be built more easily and rapidly, as it is, for the most part, over level surface, requiring very little grading. Twelve months' work will finish the road to Kahuku.

## CORRESPONDENCE AND SELECTIONS.

*JAMAICA ORANGES.*

BOSTON, MASS., April, 1895.

EDITOR PLANTERS' MONTHLY:—The orange production of the island of Jamaica, West Indies, forms a very important branch of the industry of that island; and the annual exports of this fruit to the United States are very large. What seems almost remarkable is that these oranges nearly all grow wild upon the *hillsides*. They are "cultivated," after the native style of doing things; that is, the trees are cared for to some extent, but are planted at random and not in rows. Most of the trees are just where nature planted them, the only care given being to keep the undergrowth cut away beneath and around them. There are several varieties of Jamaica oranges. There is the wild sour orange which grows in great abundance; the "Seville," or bitter marmalade orange, and the sweet orange, which is the only one exported to the United States. As above stated, these oranges mostly grow wild, and are picked and brought to the depots of the fruit companies by the natives, either by women, in baskets and trays on their heads, or in "hampers," a kind of basket or pannier, slung upon the backs of the little donkeys, or else in little carts, from the hillsides near by and far away.

While at St. Ann's Bay, I visited a large orange assorting and packing house. Here black women were engaged in wrapping oranges in tissue paper, and packing them in boxes. The Jamaica oranges are very handsome and fine, of beautiful, compact texture, very full of juice, and possess a peculiarly pleasant flavor, entirely different from either Florida or Mediterranean oranges.

The sorting department consists of a long building with rows of bins on each side, each bin being marked with the grade, or size of the orange it is to receive. Down the centre of the room are arranged sorting machines. These consist essentially of a long spout placed at an incline. At the upper end there is a box to receive the fruit. A black boy

takes the fruit from the baskets as it is brought in, and places in it half a dozen oranges at a time. The fruit rolls down the spout, which has its bottom perforated at regular intervals, with holes of different sizes. These holes are small near the upper end of the spout, increasing in size near the lower end, and as the fruit rolls down, each orange drops through the opening corresponding to its diameter into a basket below, the oranges continuing to roll down the spout until they come to an orifice large enough to allow them to drop through. As the baskets receiving the assorted fruit get full, they are taken away and emptied into the proper bins—whence they are carried to the packing room.

There is no fruit which so wonderfully, and so satisfactorily responds to cultivation as the orange, and with what I consider to be the finest flavored orange in the world. It seems strange that the Jamaicans do not develop it on a large scale,—unless it is because the banana industry absorbs the bulk of attention, as it certainly does. The Jamaica orange has practically no competition to contend with, for it comes upon the market when Florida oranges are nearly out of season, and the proximity of Jamaica to the markets of this country,—only five and one-half days—renders it a formidable rival to Mediterranean fruit, were it exported in sufficient quantities to meet the demands of the market.

ALLAN ERIC.

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### *SCIENCE A NECESSITY FOR SUCCESSFUL AGRICULTURE.*

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At no period has science so largely benefitted agriculture as at present, and the time has long since past when there is nothing to be done but to plant the seed in the spring and gather the harvest in autumn. While agriculture has made much advancement during recent years, yet it has hardly kept abreast of the times during the last decade, and some of the other industries have pushed ahead of this most ancient and honorable occupation. Agriculture has excluded itself too much from the other lines of industry, and is just now coming abreast of the times through the aid which science has rendered. This is particularly true in some lines.

Farm crops are attacked by two kinds of organisms—the injurious insects and the parasitic fungi; and it is in dealing with these that perhaps the most advancement in scientific agriculture has recently been made. The insects eat the leaves and suck the sap of the plants, while the parasitic fungi feed upon the rich juices of plants, causing a great check in growth. How much damage is caused by injurious insects and parasitic fungi cannot be estimated in just so many dollars and cents, but it is safe to say that fully one-fourth of the average yield of all farm produce is destroyed by injurious insects alone. That is to say, that were it not for the insects, the yield would be one-fourth greater than it is at present. To one who has not given this matter attention, this statement may be received somewhat doubtfully; but it is, nevertheless, only too true.

By the application of proper remedies a large part of the loss caused by injurious insects can be prevented, and that with but little trouble and expense. It is here that the science of entomology comes to the rescue of the agriculturist by bringing forward insecticides to lessen, and indeed in some cases to entirely prevent, the loss caused by the ravages of injurious insects.

In many cases the loss through damage by parasitic fungi is no less than that caused by the attack of injurious insects. The diseases of the grape have, perhaps, received the most attention at the hands of mycologists, and the beneficial results of their work in this branch of scientific agriculture manifest themselves on every hand. Grape diseases were formerly but little prevalent, but during recent years they have increased in their distribution and destructiveness to such an extent that it is now almost impossible to bring the grapes to maturity without the application of a fungicide to check the growth of the parasitic fungi which are the cause of the grape diseases. This being the case, the viticulturist knows that the application of the Bordeaux mixture is as fully an important part of success as pruning or cultivation. But it has also been recently shown many plant diseases other than those of the grape can be checked in like manner by the application of fungicides. A prominent example of this is found in the good resulting from the application of Bordeaux mix-

ture to potatoes, recent experiments showing that this fungicide not only prevent the potato rot, but also so very largely increases the yield that it would pay well to apply the Bordeaux mixture for this latter purpose alone, where potatoes are subject to early blight. This increase in yield was a result unlooked for when the experiments were conducted. This same fungicide is used in spraying apple trees to prevent the apple scab, and experiments last season at the Cornell station show that the Bordeaux mixture not only prevents the scab, but it increases both the yield and keeping qualities of the fruit.

But in other lines of agriculture, science has but recently shown many things of interest. The matter of sub-irrigation has received attention at the hands of some of our stations, and the experiments have shown that this system of irrigation is much superior in its results to the usual methods. Agricultural chemistry, dairying, and bacteriology are as yet but new sciences, and this is especially so in the intimate relations which they bear to each other. The matter of fermentation of milk is now receiving much attention, and bacteriology will probably soon show us a method of greatly prolonging the sweetness of milk. By a method of milk testing, we are now able to say just how much butter-fat a given amount of milk contains, *i. e.*, how many pounds of butter can be made from the given quantity of milk. This being the case, the milk now sold at creameries is paid for in proportion to the amount of butter-fat it contains. Thus we see the intimate relations existing between the sciences which underlie agriculture. We also see that science has brought agriculture forward to the state of advancement in which it now stands. That agriculture should be our foremost, as it ever has been primarily the most important industry, there can be no doubt. But science has not completed its work in aiding agriculture. Indeed, the results so far obtained but go to show the possibilities which lie beyond. Other equally important results in scientific agriculture may be looked for, and if the agriculturist wishes to be successful, he should put the latest results of scientific investigations into immediate practice. The greatest aid to the agriculturist in this country is the experiment stations—and it is through these institutions that much of the future aid to agriculture will be brought forward.—*American Agriculturist.*



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*THE CRISIS IN FLORIDA.*

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Florida is *hors de combat*. What the people of the North are going to do for oranges next winter is a question that enters into the consideration of the situation, but what the poor Floridians are going to do at all, concerns us more nearly.

The news of the calamity has been crowded into an incidental paragraph of the newspapers. It has been briefly reported that the oranges on the trees are frozen, and the trees also badly damaged. It is impossible for the people of the North from such meagre statements to form a conception of the vastness and completeness of the ruin. I fear it will be as hard for Florida to elicit sympathy as it is for a corpulent invalid. It is hard to associate distress with a genial climate. In our mental picture of suffering, hunger and cold go together. The famine in Western Kansas, and Nebraska has stirred the heart of the whole land to active compassion, but a frost in Florida appears more in the light of a joke. Indeed, there is a boastful saying extant here that you can neither freeze nor starve to death in Florida. As to the freezing, it may be true, with millions of cords of fat pine going to waste in the woods, but I can foresee that thousands will be on the verge of starvation very soon.

The distress in Kansas and Nebraska is a passing affair to this. The people have their farms, and with one season of good crops their loss may be retrieved, but this winter's work in Florida means impoverishment and annihilation. It has already reached the *suave qui pent*. Those people who can get away and who have employment in view elsewhere are leaving in large numbers, abandoning their homes. But by far the largest number cannot get away, and what are they to do? Go to raising vegetables for the early northern markets? That is the answer and the solution with which the facile sympathizer in the North puts the matter from his mind. He may be pardoned for doing so, for he is ignorant of the conditions, but for the flippant Florida editor, or real estate agent, or any Board of Trade, railroad company, horticultural association, or other such quasi official, authoritative persons, who promulgate the proclamation that Florida is all right, and so forth, I think no measure of execration is too strong.

Do they expect to repair the ruin by denying it and thus inveigling a few fresh victims into it? To suppose that the whole character of a country can be changed from that of an orange-grove into that of truck garden as by magic, is exceedingly superficial. It is true the people have planted vegetables, some of them for the third time this winter, but most of them are doing it from desperation and because they have nothing else to do and in the hope of getting something to eat for themselves rather than of substituting their lost fruit returns with any commensurate earning. A man making his living from an orchard on a rocky hillside, who found his trees suddenly ruined, would hardly expect to compete with his neighbor, who derives his livelihood from a vegetable garden on well-cultivated and well fertilized bottom-land.

The orange groves of Florida, as a rule, are situated on the high pine, sandy land. It is well known that the land produces neither the tree nor the fruit, but forms merely the medium, through which the fertilizer accomplishes it. On the other hand, the rich hammock soil, so ill-adapted to fruit culture, will produce vegetables and grains in abundance. But how are the impoverished orange-growers to get the hammock land, clear, and cultivate it on short notice? That is the present situation: Most of the orange and lemon-groves in the State are five-acre plots belonging to poor men. They comprise their all. For years they have drudged and saved to bring their little plantation to remunerative maturity. They have cultivated nothing else, not even the feed for their horses. They have eked out a poor living in the meantime by tending the groves of absent owners or by working at odd jobs. In those three hundred or less trees are bound up the heat and burden, the sweat and care of the past, as well as the hopes and longings of the future, the toil and edifice of a lifetime. All this is swept away, or at least, so prostrate that it seems too discouraging to attack the debris. Many are nevertheless doing so, rebuilding and replanting, but many have neither the heart nor the money to go on. Even the truck farmers and those who have been compelled in the panic-stricken, extemporaneous way referred to, to join them, have little prospects of success this year, since the season is

about six weeks late. The moment the Georgia shipper step into line, Florida is out of the running.

I saw Chicago shortly after the great fire, and Louisville after the tornado, but neither of those two pictures of devastation approaches, in sad suggestiveness, the present picture of a Florida settlement. The pain and melancholy of the contemplation is multiplied beyond the point of comprehensibility by the reflection that the picture is only a miniature type of the whole State. And the contrast between the present scene and that of two months ago! Then the song of the pickers came upon the crisp morning air down the avenues of dark green trees, studded with their round, ripe, golden fruit. All was a scene of merry bustle and excitement, that acme of all happy harvest scenes, an orange-gathering. To-day the trees are bare of fruit and foliage. The very absence of every melo-dramatic, phenomenal accompaniment of destructive elements adds horror to the sight. Just a few degrees on the thermometer below the safety notch in the stillness of the dawn did it.

But will it prove a crisis, a turning point in the history of Florida? After an eruption of Mt. Vesuvius, the surviving peasants gradually creep back to their old sites on the slope and soon are settled again beneath the shadows of the crater. Many in Florida may behave in like manner, but, as a rule, Americans are not Neapolitan peasants. The acquisition of of an orange-grove in Florida has been based either upon romance or upon chance. There is an enchantment in the idea of owning an orange-grove an enchantment from which a nearer acquaintance does not detract. With such as can afford to indulge this romantic penchant, this article is not concerned. The large majority of grove-owners are engaged in the work for the purpose of gain. These have long been aware that the gain has been uncertain, precarious, and elusive, but either from the hope of improvement and ultimate success, or the hope of selling out profitably, they have kept their disappointments to themselves. The two freezes of the past winter have effectually proclaimed the truth to the world. There have been many and serious artificial or commercial drawbacks, such as exorbitant freight rates, irresponsible commission dealers, the desultoriness of the market, the lack

of cooperation among the producers. How far these are remediable may now take a long time to ascertain. It seemed that through the newly-organized Orange Growers Union, they were on the eve of solution when the calamity came.

But the chief drawback, and the one altogether beyond the control of unions, officers, and all of man's puny contrivance, is the natural one of the climate. The simple, honest truth is that Florida is not a safely semi-tropical country. If this winter were the first of its kind in severity, the assertion might be combatted, but it is not. It was only a little worse than some others. In '86 there was a similar experience, and there have been lesser frosts since. Losing the crop on the trees might not be a criterion, but the trees are being frozen back from time to time. That Florida, in spite of these facts, has grown to be the greatest producer of citrus fruits in the world, speaks much for the daring and perseverance of its people. The visitor, however, sees only the result, not the cost.

In his eager thirst for money the American becomes a speculator and gambles. He spurns the thrift and prudence that would prompt him to the hum-drum preliminary of securing a living, and boldly stakes his possession on one great throw. Florida, the new Florida, has been playing this game of dice with the weather. The change will be a change of the entire policy and character of the State. The persistent folly of sitting down in a five-acre grove and waiting to get rich, while living miserably on canned beef and canned milk, will surely not be persisted in further. The people will become, first, farmers; second, truck-raisers; and last, orange-growers. Fortunately, there is good land enough with which to do these things. Of course the change will be effected gradually and laboriously, but it must certainly come. Like all beneficent revolutions, it demands its victims, but although these are numerous enough now, they would have been more numerous a few years hence.—*Correspondence N. Y. Evangelist.*

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Salt Lake City is one of the most beautiful in the United States. It was laid out when land was worthless, the streets are wide and each has a rivulet running through it.

## *THE AMERICAN SUGAR REFINING INDUSTRY.*

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The object of refining is to cleanse or purify the sugar, which includes the destruction of animalculæ frequently found in raw sugar. The principle upon which it is based is, that increased purity is obtained when a substance is crystallized out of a solution; as the process is repeated, a higher degree of purity is obtained, until a product containing 99½ per cent. of saccharine is obtained, the balance being water. Practically it is chemically pure. This was the basis of the method, which had its draw back, the color of the sugar being impaired. This was removed by leaching water through potter's clay placed upon the surface of the sugar as it stood in iron molds, the washings being repeated until the sugar was white. The method is still practiced. Let us follow the process as viewed in one of the huge smoke-begrimed refineries so prominent an object along the East River and mouth of the Hudson, or further north on its eastern bank, along the Delaware, and on San Francisco Bay, in New Orleans, Boston and Portland.

From the lighter by the wharf the huge hogsheads, the heavy boxes, the dirty, black, sticky bags, the discolored baskets and mats, laden with dark-colored sugars, are removed to the refinery, and their contents emptied into the melting kettles. These are large covered cylindrical chambers, built of brick and cement, and provided with a number of coils of perforated steam pipes. Steam is now let on. This melts and, of course, dilutes the sugar. The resulting liquid, containing about 50 per cent. of sugar, is now pumped to the blow-ups, which are large tanks situated higher up in the building. Into these tanks air is blown for the purpose of keeping the liquid in a state of agitation, and consequently thoroughly mixed. This counteracts the tendency of the liquid to local solidification, and at the same time reduces its temperature. A little lime is here introduced to neutralize the acidity, if there be any.

From the blow-ups the liquid flows by gravity to the filter pans. These are flat, shallow pans, with series of holes in the bottom, and below each hole is a nipple, to which is attached a bag filter. This consists of a large bag of coarse

material confined within a smaller bag to keep the large one from being distended and failing to perform its functions. The liquid is now filtered through these bags, and the syrup passing through them is then ready to be taken to the charcoal filters.

When the bags have become so choked up with dirt as not to filter well they are detached from the filter pans, and the adhering material is emptied out and taken to a filter press. The syrup here squeezed out is taken to the melting kettles, while the residue, which is only dirt, is thrown away. The bags are then washed by passing them through running water and wringing them out between rollers. The water in which the bags are washed is then sent back to the melting kettles.

The bags are now in condition to be used again by placing the large bag inside the small one as before. This was done with more or less difficulty by hand until a simple machine was devised, in which automatic fingers, attached to a piston moving in an upright tube, drew the bag into the tube with the aid of a partial vacuum. The large bag is then dropped into the sheath or outer bag, the rapidity of the drop being regulated by the amount of air admitted behind the piston.

The syrup that has passed through the bags is transferred by a pump to the bone-charcoal filter. These are twenty feet deep and twelve feet in diameter. The syrup is thus decolorized, and it then goes to the vacuum pans, where the water is boiled off, and the sugar is formed. The sugar is then dropped into a conveyor, where it is made to travel along by a screw, and delivered to the centrifugal machines. The water is here driven out, and the sugar is left white and very nearly dry.

It is next granulated. For this purpose it is introduced into the upper end of a long cylinder, inclined a little to the horizontal, and the rotation of this cylinder alternately raises it and lets it fall, at the same time feeding it slowly forward to the lower end, while a series of hammers constantly jars the cylinder so that the sugar shall not stick to the sides. In this way the sugar is dried. On leaving this cylinder it is carried on a belt-carrier to the bin where it is stored. As with grain in a grain elevator no attempt is made to keep

separate the sugars made from the different lots of raw sugar.

Such, in brief, is the process through which the sugar is carried, but the bone-black must undergo a process also. When the syrup has filtered through the bone-black for a certain length of time, the latter is found too dirty and has to be cleaned. For this purpose the filters are opened near the bottom, and the bone-black is drawn out with a rake and conducted into vertical retorts, where it is heated to redness and the dirt is thus burned off. The bone-black is then allowed to cool to a certain extent before the retorts are opened, and after it has cooled down after it is returned to the filters. The final cooling is accomplished by running the bone-black into a kettle provided with pipes through which cool water circulates. Under the retort is a fire which heats the bone-black to a temperature of about 700 degrees, and it is left at this temperature for several hours. Now, as it cannot be exposed to the air at once, it is passed into sheet-iron flues and allowed to stay there until it cools to a temperature of 400 degrees. From here it is transferred to a hopper, and this transference must be done at a regular rate and in measured quantities. This is accomplished by some very ingenious special machinery. From the hopper this bone-black is dropped upon a belt-carrier, which takes it to the kettle already referred to. From this it is taken by another belt-carrier, provided with little buckets, and carried to the room where the tops of the filters are situated, and, finally, a horizontal belt-carrier delivers it to the fillers.—*Exchange*.

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### WHAT ARE MICROBES ?

“What are bacteria,” or “What is a Microbe ?” These questions are constantly repeated after reading articles on bacteria in ice cream, bacteria in bread and so on *ad nauseam*. I say advisedly “ad nauseam,” because most people who know anything of microbial life as well as the laws of larger life are well aware that even the microbes of disease are harmless except under special conditions and in considerable numbers.

What is the difference between a germ and a microbe, a bacterium and a bacillus ? Microbe is the name given to de-

note extremely minute life, life that requires the aid of a microscope to discern; usually requiring to be magnified more than 300 diameters. Biologists and naturalists have been greatly bothered to properly classify this minute life. Some have claimed that it properly belonged to the animal class and called them micro-zooaria or small animals; another section claimed them as vegetables and named them micro-phyta, small plants; and still a third group claimed that they exhibited characteristics of both animal and vegetable life, and compounded the term zoophyta, animal plants, as being the more correct name.

This was the condition of thought in 1878, when a meeting of those interested took place in Paris. Sedillot, a noted French surgeon, taking part in the profitless and apparently interminable discussion, suggested the term microbe as a compromise, as it determined nothing but their extreme smallness; microbe, therefore, means microscopic life. This definition properly covers all kinds of yeast, all the bacteria and bacilli of disease. To distinguish between the microbes that caused disease, and those which did not, the former were called pathogenic, or disease-generating; the latter were given the negative term of non-pathogenic.

Among many intelligent people the microbes that cause disease are improperly termed bacteria, which really is the specific name of one class, determined by its shape and activity. The people I refer to, however, indiscriminately consider all bacteria as producing disease, and all disease-producers as bacteria. Both positions are untenable. This ignorance is very great even among medical men, considering the importance of the knowledge to them. During 1894, a medical congress was held in San Francisco as one of the many congresses held there in connection with the Midwinter Fair. I was employed there in a professional way to demonstrate the activity of certain organized bodies; and as a matter of interest set up a microscope and mounted various cultures—chiefly those drawn from the air of the room, some from the public water supply. I also showed a culture of the *Bacillus Anthrax* from which I was suffering. Of the many hundreds of doctors who examined the various fields not more than six or seven had an intelligent knowledge of



the fields they looked at. I felt quite disappointed that they looked at them with curiosity instead of professional interest and enthusiasm, and the end of each of the four days the congress lasted found me hoarse with explanations. A few showed knowledge which I must admit was broad and deep.

Bacteria are defined as cells elongated in short movable rods. Bacilli, as having the cells more cylindrical and joined so indistinctly as to seem like a long rod. Both names mean rod-shaped. The round-celled microbe is called micro-coccus; therefore yeast may be classed as micro-cocci, although it rarely gets that name. Some microbes exhibit different forms according to stages of development. I had the misfortune to accidentally inoculate myself with a culture of anthrax bacillus, the microbe that produces carbuncle; at first they were long rod-shaped, (bacilli) but later became separate oval cells (micro-cocci). In both of these cases they were microbes, pathogenic microbes. All the microbes constituting pure yeast are termed, generally, saccharomyces, because of their fermenting only in solutions that contain sugar. All microbes set up chemical changes as a result of their activity and reproduction. Yeast acting on sugar produces gas and alcohol; *Bacterium Lactes*, the microbe that causes sour milk, acts on the sugar in milk, malt liquids, potato ferments and doughs and turns it into lactic acid; *Bacterium Termo*, one of the microbes of putrefaction, is usually among the first to make its appearance in all liquids or solids capable of being decomposed. And so on through the whole list, always setting up chemical changes more or less complete.

The action of microbes on meat or fish, under special conditions, produces poisons which are termed either ptomaines or toxines. The new cure for diphtheria is called anti-toxine, showing its character to be that of antidote to the toxine in the body produced by the microbe of diphtheria. It is because of the toxic products of microbes that we fear their influence; but I am bound to say that I believe that more than half that is written of pathogenic and other microbes is utter trash. Not many months ago the dailies all through the country published the sensational findings of a New York doctor, as "death in the telephone; telephone boxes

found swarming with deadly bacteria." The deadly bacteria referred to and specified are, (1) *Mycoderma Aceti*—the harmless vinegar microbe, thousands of which we swallow with a single pickle; (2) lactic acid bacteria, whose presence I believe to be essential to digestion, as it is never absent from the mouth except in disease; (3) *Saccharomyces Mycoderma*, which might be present in wine or beer every time they are drunk. These are all the "deadly bacteria." Most people take myriads of these daily without a particle of injury. That is why they are found in the transmitter of the telephone—because everyone has them just as everyone has a mouth.

It is unnecessary so criticize this nonsensical report too closely, but a doctor who can assert that "if a man becomes intoxicated acetic acid rapidly forms in his stomach;" then, further on, "the lactic acid bacteria cause the decomposition of milk, and are almost always found in unclean places; if, by chance, either of these bacteria"—(referring to the vinegar microbe, as well)—"finds a lodgment in the mucous membrane of a person afflicted with diphtheria or pneumonia a nursery is immediately formed and the process of multiplication progresses with great rapidity;"—such a man is either an ignoramus or fooling the public. This is the purest undiluted buncombe: of course it is quite right to clean the telephones, as well as everything else; but statements like the preceding are either the results of the most dense ignorance, or else a mischievous desire to mislead and alarm the public.

Microbes of nearly every variety are always with us; we are constantly breathing, drinking and eating them—we cannot possibly avoid them. It is only a question of conditions and number. When conditions are favorable to the microbe of diphtheria, for instance, they multiply enormously and set up an unusual activity; then their greater numbers and activities permit them to set up conditions favorable to themselves, that they were not previously able to do: the healthy and the weakly partake of them equally, but they only affect those individuals whose organizations favor their development.—*The Chicago Baker's Helper*.

*RAMIE CULTURE IN FRANCE.*

Much has been said and written in the South recently about ramie. The planters of Louisiana, when the sugar bounty was taken from them, thinking the sugar industry would no longer prove profitable, turned their attention to an investigation of the ramie. It was hoped and expected that the government would establish an experimental station to demonstrate, if possible, the profit of its culture in this country. The Secretary of Agriculture has decided, however, that it will be impossible to establish this station at present.

Some of the people of Florida have also, from time to time, considered the advisability of engaging in the industry. The following article on the cultivation and preparation of same in foreign countries, which we find in an exchange, may be of interest to these :

Though China has always been the chief producer of ramie, other countries have attempted its cultivation. More than a quarter of a century ago a systematic endeavor was made to introduce a general cultivation of this plant into India, and the effort was so successful that in 1865 India exported to England 70,000,000 pounds of ramie. But the aversion of the natives to the growth of the new staple and their ignorance of intelligent methods of extracting the fibre, proved to be insuperable obstacles to a national development of the new industry.

Latterly an experimental cultivation of ramie has been carried on in many lands. There have been plantations of this textile in the Sandwich Islands, in South America, in the United States, in Northern Africa, and in every country in Southern Europe, and though their total extent has not probably exceeded 50,000 acres yet their existence in so many lands has shown a world-wide interest in the cultivation of this plant. In the southern part of France the formation of several companies for the fabrication of ramie indicated the confidence of capital in the success of the undertaking. Their active and aggressive enterprise, not content with the domestic manufacture of the fiber, invaded foreign lands and established plantations of ramie in Spain, Algeria and Egypt. From a great similarity of conditions and a more exact record

of results, French experience affords the most trustworthy information for the guidance of American planters. The following facts derived from the reports of actual operations, show the luxuriance of ramie and the possible profits of its cultivation. In the French experiments, the number of roots planted to the acre varied, according to the richness of the soil or the judgment of the manager, from 10,000 to 20,000. After the second year each root sent forth fifteen or twenty stems. These stalks grew to the height of from five to eight feet, and averaged about 200,000 to the acre. There were always two and often three crops a year. At the time of the operations whose results are here recorded, the prices of dry stalks, ribbons of crude bark, and fiber ready for the comb were respectively 1, 4.38 and 15.9 cents a pound. In one instance where there was need of costly irrigation, careful tillage and rich fertilization to repair a soil exhausted by centuries of culture, there was a clear profit of from \$70 to \$90 per acre. In these cases the total returns from three cuttings a season were \$86.85, \$124 and \$154 per acre. Americans who have tried the experiment of raising ramie in our Gulf States have estimated the gross value of the two crops a year at from \$90 to \$120 an acre. These figures do not refer to the products of the first two years after planting. During that time so large a yield would be impossible, but afterward, in consequence of the luxuriance of the plant and the small cost of its cultivation, the return would be large and profitable.

It is certainly reasonable to assume that the unworn soil of our Southern States will bear as bounteous harvests as the long-cultivated fields of France, and it is therefore fair to judge of the possible productiveness of American plantations by the richest yield of gallic lands.

The largest gain mentioned in the foregoing statistics is \$154 an acre. Official authority entitles this statement of profits to full credence. But to avoid all possibilities of exaggeration, take only one-half of this amount, and then, even after this unwarranted reduction, there remains a net profit of \$77 an acre.

The following facts furnished by Mr. Felix Fremery, an active and zealous promoter of American fibre culture, for-

cibly illustrate the exuberance with which ramie grows in our Southern States.

In July, 1887, a Texas planter set out several thousand ramie roots. The next spring each root sent out thirty or forty sprouts, with great rapidity. But early in July a drouth began which lasted nine weeks. During this period so great was the intensity of heat that the soil was dried to a depth of more than two feet. Hundreds of thousands of cotton plants perished, but the ramie survived the drouth, and, quickened by the fall rains, grew with such luxuriance that often 150 stems were found in clusters not more than two feet in diameter. In one instance 168 stalks sprang from a single mass of roots. The plants grew so rapidly, that fourteen days after the cutting of the mature stems, the new stems were thirty inches high. Each root yielded a gross return of four or five pounds of fiber, the price of which was then four cents a pound. From the product of the few plants which were permitted to fully ripen, it was estimated that the production of seed would not be less than forty pounds to the acre. In previous years New York firms had sometimes paid Texas growers as high as \$4 a pound for ramie. The result of his experiments convinced Mr. Fremery that the portions of Texas best suited to the cultivation of this textile can produce three, or possibly four, harvests a year, with an average of one hundred stalks to each root.

Unless this is a case of exceptional fertility, the preceding statistics of French husbandry but inadequately indicate the profits of the cultivation of ramie in the United States. Later facts derived from the same courteous source, show that the foregoing figures do not fully represent the gains which have rewarded the French cultivators of ramie. M. Favier has tabulated the results of the experiments which were made at Hyeres. The plantation contained 250 acres, the capital of the company was \$90,000, and the value of the machinery \$28,000. In the first year the results only partially defrayed the expenses, and there was a loss of \$17.92 an acre.

In the second year there was a net gain of \$28.60.

In the third year there was a net gain of \$79.66.

In the fourth year there was a net gain of \$131.00.

It takes several seasons for a ramie plantation to reach its

full bearing, and the yield of the fourth year may be taken as a fair average of its productiveness.

On the plantation of 250 acres at Valobre, in the department of Vaucluse, 16,000 plants were set to the acre. Two cuttings yielded the first year 440,000 pounds of dry stalks and 83 000 pounds of fiber.

Second year, 1,694,400 pounds of dry stalks, and 321,860 pounds of fiber.

Third year, 2,565,200 pounds of dry stalks and 489,588 pounds fiber.

Fourth year, 3,380,000 pounds of dry stalks and 643,720 pounds of fiber.

The price of dry stalks was then a little less than one cent a pound, and of the fiber about nine cents per pound.

But the fiber of ramie is not the sole source of profit. The leaves save outlay for manure and hay, for they fertilize the soil with the very elements which the plant requires, or serve as a cheap and nutritious fodder. The woody stalk yields a good pulp for the manufacture of paper. The receipts which, in the fourth year of its production at Valobre, the French Ramie Company derived from the sale of fibrous waste, tannic bark and ligneous stems amounted to \$73,950.

From the cultivation of what other staple could the Southern planter, with so small an expenditure of capital and labor, obtain so large returns? Is not an industry which is so fruitful a factor of public wealth entitled to national encouragement?

The demand for ramie is large. It has been asserted that the products of 100,000 spindles would not meet the wants of France alone. A few years ago, Senator Ferry publicly stated that the manufactures of France were ready to make contracts for a supply of 20,000,000 pounds of ramie per month.

In consequence of its urgent need of more fiber, one of the largest textile organizations in France offered to form companies in our Southern States, contribute a liberal portion of the requisite capital, build mills, equip them with their own decorticators and buy at stipulated prices all the ramie our Southern planters raised. But this great opportunity to establish an industry which would largely increase the fibrous

resources of the nation was not improved, and the French manufacturers, disappointed in their expectations of obtaining ramie from the United States, are now importing the fiber from China. The greater profits of vineyards of France have discouraged the culture of ramie. Frenchmen have secured larger returns by importing the fiber from China and devoting their lands to the production of the grape.

The largest ramie factory in France is located at Avignon. Its proprietors are A. P. Favier & Co. The mill does not produce tissues, but simply makes the thread which the looms of other manufacturers weave into fabrics. The present price of thread varies, according to quality, from 37 cents to \$1.10 a pound.

For paper making ramie furnishes a fiber of unsurpassed excellence. The bills of the bank of France are made chiefly of this material. Favier & Co. have contracted to keep on hand a constant supply of 150,000 pounds for the use of this bank. The average price of the pulp is fifty-five cents a pound. The paper made from it has a strength and fibrous structure which greatly embarrass the art of the counterfeiter. The number of men employed in the works of M. Favier is about 200, and the value of the manufactured product is nearly \$200,000 a year. In 1892 the company paid its stockholders a dividend of  $6\frac{1}{2}$  per cent. and the prospects of still larger profits in 1893 were then highly encouraging. But it is quite probable that the industrial depression which has prevailed in Europe, as well as America, has disappointed the expectations which were entertained at the beginning of that year. The reports of the operations of this company in 1893 have not yet reached the United States.

These facts relative to the manufactory at Avignon are derived from the consular report of last November. Sanctioned by official authority and based upon practical experience, the statements are both trustworthy and suggestive. The experiments of the French teach the American planters that it would be unthrifty husbandry to cultivate ramie if any more profitable crop could be raised in its place; and they also demonstrate the futility of attempting, without the aid of mechanical appliances, to compete with the Chinese in the decortication of the stalks.

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*BUSINESS MEN'S INTERESTS.*

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During his speech at the Chamber of Commerce dinner at Rochester, N.Y., Governor McKinley said :

Interest in public affairs, national, State and city, should be ever present and active, and not abated from one year's end to the other. No citizen is too great and none too humble to be exempt from any civic duty, however subordinate. Every public duty is honorable.

If the best citizens will not unite to serve the State and city, the worst may and generally will be in control. There is in every State and city a majority in favor of the best government, and when they fail to secure it, it is because the majority is indifferent and without unity of purpose and action. Business men cannot, with safety, stand aloof from political duties. Their success or failure in their own enterprises is often involved in good or bad government. The great danger to the country is indifferentism.

The menace often comes from the busy man or man of business and sometimes from those possessing the most leisure or learning. I have known men engaged in great commercial enterprises to leave home on the eve of election, and then complain of the result, when their presence and the good influence they might properly have exerted would have secured a different result. They run away from one of the most sacred obligations in a government like ours, and confide to those with less interest involved and less responsibility to the community the duty which should be shared by them. What we need is a revival of the true spirit where all—not a few—participate actively in government. We need a new baptism of patriotism ; and suppressing for the time our several religious views upon the subject, I think we will all agree that the baptism should be by immersion. There cannot be too much patriotism. It banishes distrust and treason, and anarchy flees before it. It is a sentiment which enriches our individual and national life. It is the firmament of our power, the security of the Republic, the bulwark of our liberties. It makes better citizens, better cities, a better country, and a better civilization.

The business life of the country is so closely connected



with its political life that the one is much influenced by the other. Good politics is good business. Mere partizanship no longer controls the citizen and country. Men who think alike, although heretofore acting jealously a part, are now acting together, and no longer permit former party associations to keep them from co-operating for the public good. They are more and more growing into the habit of doing in politics what they do in business. Strong as the party tie may be, it is not so strong as the business tie. Men would rather break with their party than break up their business. They prefer individual and national prosperity to party supremacy, and a clean public service to party spoils. The business man cannot stand aloof from public affairs without prejudice to his own business and without neglecting the grave duties which he owes the State. Wholesome political activity in the business world is promotive of the general good. Interest in public affairs by spurts is probably better than no interest at all, but the steady, uninterrupted, everyday interest is the crying need of the hour and the only path of safety. The best results in free government can be had in no other way.

You cannot help to improve public affairs by withholding your own good offices. If you would clear and purify the atmosphere of our political life, you must lend your own energy and virtue and intelligence and honesty to do it.

The business men of the country have devolving upon them a grave responsibility. It is no easy task to keep the mighty wheels of industry in operation. Idle wheels mean idle men and idle capital. Both draw upon their accumulations, and each is unprofitable when the other is unemployed. Think of the vast capital invested in manufactures in this country, and what skill and watchfulness are required to keep it at work. The manufactures of the United States in 1890 engaged \$2,900,835,884 of capital, and the value of the output was \$4,860,286,837. The making of these products furnished steady and remunerative occupation to 2,251,134 persons, and the stupendous sum of \$1,221,170,454 poured into the then happy and prosperous homes of the American workingmen—nearly four million dollars for every working day, and nearly half a million dollars for every working hour

of every working day of the year 1890. Our manufactures have made steady advance from 1865 to 1892; nearly one million more persons were employed in the year 1890 than in 1880, and more persons were employed than in any previous year of our history, and more, it is needless to say, than have been employed since; and the wages paid in 1890 were more than double the amount paid in 1880. The value of our manufacturing products in 1890 was more than 100 per cent. greater than in 1880. I do not think even the business men of this country appreciate—I am sure the people at large do not appreciate—the full magnitude of the manufacturing interests in the United States, and the wealth which agriculture and manufactures and labor working together have made for the Republic. Our wealth in 1890 was \$61,439,000,000. In 1880 it was \$43,642,000,000. From 1870 to 1890 it increased \$31,391,000,000, or almost twice the entire wealth of the Empire of Russia. Take Great Britain, the richest nation in the Old World, with the accumulation of centuries, and our wealth exceeded hers in 1890 by \$276,000,000.

In 1880 our wealth was 23.93 per cent. of the wealth of all Europe. Our earnings were 28.01 per cent. of those of Europe, and our increase of wealth was 49.28 per cent. of European increase. From 1870 to 1880 the per capita of wealth of Europe decreased nearly 3 per cent., while in the United States there was an increase of nearly 39 per cent. The freight which passed through the St. Mary's Falls Canal in 1890 exceeded by 2,257,876 tons the entire tonnage of all the nations which passed through the Suez Canal in 1889. Our home markets have consumed heretofore five times as much of our manufactured products as Great Britain exported of hers to all the markets of the world. Our products are carried to our own people and distributed among them with greater facility and at cheaper rates, taking into account distance, than products are carried in any other country in the world.

How are we to get back what we have lost? How is the vast capital now invested in manufactures to be preserved and made profitable? Only by keeping it busy and constantly at work. Capital scorns idleness, it loves work if for no other reason than that it loves gain. Capital in manufac-

tories which are shut down is not unlike money on deposit subject to call, or in the strong box hoarded away, which, while it earns nothing, keeps the principal sum intact and unimpaired. The closed mill depreciates the value of machinery and buildings and land and everything connected with it, and is ever wearing away the capital invested in it. This is followed by impoverishment to the owners, injury to the community in which it has been located, and destitution to those who have been employed.

Every business man would, therefore, rather run his factory than close it, because he wants his investment to earn him something. When closed, his capital, so far as any immediate profit is to come, is stopped. It is with him a question whether he can run with as little loss as he can stop. If he can, he will always run. If he cannot, he is bound to stop. He cannot run at all, if there is no demand for his product. Production requires consumption. Markets are inseparable from manufactures. The manufacturer must have a market; he wants the best market if he can get it, and he has come to learn where it is and how to get it. He knows, as he never knew before, how he lost it, and he knows how to regain it. We know, and we do not know it any better than our competitors in foreign lands, that the American market—our home market, is the best of all. We not only want to keep our home market, but we want a foreign market for our surplus products of manufacture and agriculture. We do not want it, however, at the loss of our home market. I am sure we do not want it when it shall involve the idleness and destitution and degradation of our own labor. We want not only to send our products abroad, but we want them to go abroad in our own vessels sailing under our own flag. We should not depend upon our commercial rivals for the means of reaching competitive markets. We can well supply and, for the general good, furnish our own transportation to foreign ports with fair encouragement, and it should not be withheld. Many markets of the world are open to us if we could reach them directly, without transshipment, with our own ships.

The general situation of the country demands of the business men, as well as the masses of the people, the most

serious consideration. We must have less partizanship of a certain kind, more business and a better National spirit.—*American Economist.*

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### AGRICULTURE IN FIJI.

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(QUEENSLANDER.)

The disease amongst bananas in the island of Ovalau and Viti Levu of the Fijian Group, has, during the past five years, wrought such devastation that the export of bananas from those islands, has rapidly decreased until a danger now threatens that the export will ere long entirely cease. As an instance of the nature of this falling off it is only necessary to state that, while the export of bananas in 1892 amounted to 788,100 bunches, in 1893 it had fallen to 348,589 bunches. This of course reacted on the steamship companies trading with the islands; and for the purpose of thoroughly investigating the Fijian trade Mr. J. E. Leresche, travelling inspector of the A. U. S. N. Company, visited the group and gleaned some interesting information. He returned to Brisbane by the Cintra, and to a representative of this journal he has since imparted a knowledge of certain matters connected with Fiji.

The banana disease was of course the chief item of interest in his inquiries. The island of Ovalau, the capital of which is Levuka, was five years ago the principal centre of the banana export trade, yet for the past two years not a single bunch of that fruit has been shipped from the island owing to the advances of the disease. The evil has spread to the island of Viti Levu, and is playing sad havoc with the banana plantations there. The cause of the disease is unknown, and so far no remedy for it has been discovered. Mr. Leresche was informed, however, that it was the intention of the Governor of the group to place a certain amount on the Estimates during the coming year to cover the expenses of obtaining the services of an expert to examine into the nature of the disease and to ascertain if possible a cheap and simple remedy for its cure or prevention. The disease has several characteristics. A banana shoot may grow to a healthy plant, when the leaves will gradually assume an appearance as if eaten by insects, yet no insect has been seen. Then perhaps a bunch of fruit will appear on a

plant and give good promise, but will shrink away to worthlessness. A diseased plant may be cut down once or twice, and a shoot come up from the root which will bear a healthy bunch of bananas to maturity. A planter in Viti Levu, who has a considerable area under bananas and has not been troubled with the disease, expressed the opinion to Mr. Leresche that the cause of the evil existed in the planters neglecting to properly cultivate their areas. They expect too much from the land and too much from the banana plants. There are many islands in the group which are free from the disease, and in order to encourage the planters to cultivate the banana on these virgin areas the A. U. S. N. Company has decided to reduce the freight on bananas from the group to Sydney from 1s to 9d per bunch. This in itself is a great inducement, but to further foster the industry the same company has promised to send its steamers to any safe anchorage in the group, provided a fair quantity of bananas is guaranteed for shipment. At least half of the bananas now exported from the group are grown by Indians and a few Fijians.

Out of the banana evil, however, has sprung some good as regards the sugar industry in Fiji. The Colonial Sugar Refinery Company is offering a good price for cane, and has induced the planters to uproot their bananas and take up the cultivation of sugar cane. To make this change the planters did not require much persuasion, for in addition to the disease amongst bananas the general depression had lowered the market value of that fruit since it was included in the list of luxuries, and was consequently an avenue by which to pursue economy. Thus it ruled at low price. The sugar industry is, therefore, rapidly increasing, in about the same ratio perhaps as the banana industry is declining. The sugar output for 1893 amounted to 15,389 tons, whereas this season's result is expected to reach from 28,000 to 30,000 tons. From present indication, too, it is likely that the output will increase yearly. There are eight mills in the group, four of which are the property of the Colonial Sugar Refinery Company, while the other four mills sell their produce to that company, so that the total export of sugar is entirely in the company's hands. As far as Mr. Leresche was able to discover, the cost of production would be less in Fiji than in Queensland.

The work in the group is principally done by Indian coolie labor. About 200 Japanese are imported some time ago to take up the work, but the climatic and general conditions are not favorable to that class of labor in Fiji, and as a result the Japanese have been ill and unable to work.

It may be mentioned here that the British-India and Queensland Agency Company has secured the contract for conveying coolies to Fiji during the coming year. It is anticipated that 1200 coolies will be taken from Fiji to India. The coolies engage for five years. They may at the end of that term engage for a further term of five years, and if at the expiration of that period the coolies should elect to return to India the Government pay the passage money. The coolies, however, may remain permanently in the island, and are then released from all the restrictions imposed by the Indian Government. Quite a large number of these coolies have settled in the islands, and cultivate rice, bananas, etc. The largest sugar mill in the group is the Nausori, on the Rewa River, in Viti Levu. It is indeed the largest sugar mill in the southern hemisphere, and is the property of the Colonial Sugar Refinery Company. It has from 70 to 80 punts constantly employed on the river carrying the cane, and 16 launches are engaged towing these barges. The output of this mill is 450 tons per week.

Pineapples were exported in considerable quantities from Fiji a short time ago, but the closer proximity of Queensland to the Fijians, and they are now abandoning that article as an export. One of the largest pineapple planters in Fiji rooted up 50 acres of these plants whilst Mr. Leresche was there, and expressed his intention to plant sugar cane. This planter shipped on an average about 5000 cases of pines each season, but he intends now to put all his land under sugar.

Tobacco is being grown on approved lands and under proper principles. An expert in this branch of industry informed Mr. Leresche that he was most hopeful of tobacco culture in Fiji, and expected excellent results.

Tea is amongst the later productions in Fiji, and its culture is being pushed ahead by enterprising men. The product of the group is of excellent flavor, and similar to the Ceylon teas

It has been exported in small quantities, and gives promise of extension.

The cultivation of coffee failed owing to a disease breaking out.

From two small plantations near Suva the owners have had excellent results from vanilla culture. The produce was sent to Melbourne, and realised a handsome price, the reports on the quality of the vanilla being specially encouraging.

Cotton for export is grown to some extent by the Fijians, and a giinning plant has been erected at Suva.

The copra industry is on the increase. In 1893, 4,939 tons were exported, whilst this year's output is expected to reach 6000 tons. The natives are being induced to plant cocoanut trees, and it is likely this industry will go steadily ahead. The native tax is almost entirely paid in copra. Every native on the islands has to contribute so much per annum as taxes to the Government; he is not allowed to pay it in sterling, but must pay in kind.

The merchants and traders appear to be in a good position, and everything gives promise of a bright future for the group. The present Governor (J. B. Thurston) is an excellent man in the right place, says Mr. Leresche, and so long as he is there to administer affairs no trouble need be expected from the natives.

The climate of the islands is very much like that around Cairns and the Johnstone River. The rainfall is very heavy and the vegetation luxuriant. It is a most desirable place for tourists to visit, the scenery being delightful, especially up the various rivers. A special feature in its favor is that fever is a stranger to the group, and the climate is pleasant.

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### *OBSTACLES TO SUCCESSFUL CANE PLANTING.*

The obstacles to success in farm or plantation life are numerous and disheartening at times, yet they are not more so than attach to other vocations. Many of the serious obstacles that agriculturists have to contend with are of their own making, and by them can be removed, if they but so will it. We will consider a few of the most important ones, and see if they cannot be overcome without serious inconvenience.

1. **TOO MUCH LAND.**—It will be admitted that we attempt often more than we can perform. The number of acres we plant is spoken of as a matter of pride. We weaken our energies and means instead of concentrating them upon as small an area as possible. More land than can be properly cultivated is yearly manipulated with plow and hoe, and unnecessary expenses entailed in the tilling and harvesting of inferior crops of cane and corn, which would ultimately have given better results, if curtailed to a smaller quantity attainable in a given case. The mania for extensive cultivation is a stumbling block in the way of many planters of small means, limited resources or deficiency in the essential requirements in teams and labor, to meet the important exigencies of the case, viz : proper cultivation at the right time.

2. **TOO LITTLE MANURE.**—On this subject much has been said and written, and a great deal more can yet be said without exhausting the subject. Feed the land, if we expect a commensurate return. Compost manure from materials procured on the plantation for the most part, and save every valuable ingredient so plentiful in a practical point of view. Buy commercial fertilizers in moderate quantities and test their value scientifically, but pile on the home products, and the soil will be renovated and filled with vitality.

3. **SHALLOW PLOWING.**—Deep plowing enables the soil to expel superfluous moisture, yet, like a sponge, it will hold enough to hold all demands. If the subsoil is hard, so that the roots of plants cannot penetrate it, deep plowing is a necessity. The subsoil need not be brought to the surface in every case, but it must be broken and pulverized. The subsoil plow is an implement of the greatest value.

4. **INFERIOR SEED.**—"Like begets likes," the general tendency is, however towards deterioration. The best seed should always be procured, and this holds good with every product of the soil with which we are acquainted. "The quantity and quality of the harvest are often determined by the quality of the seed planted."

5. **POOR TOOLS.**—False ideas of economy induce many planters and farmers to plod along with worn out and ill constructed tools. Thus bodily labor is rendered more severe and the amount of work performed is much less than it should



be. The inventive genius of the country is continually producing labor saving inventions, for which the demand is continually increasing.

6. CARELESS PLANTING.—Having procured good seed, the next thing is to consign it to the bosom of mother earth, in the hope that it will yield a liberal increase at the proper time. Our seeds should be planted or sown with great care upon ground properly prepared. Do not think the extra labor required for this purpose is thrown away. It will be well rewarded.

7. SLOVEN CULTIVATION.—This is a great drawback. Thorough cultivation does not only consist in the total eradication of weeds and grass. The soil must be thoroughly stirred at proper periods, and in an intelligent manner to produce the best results. This requires study and experience, since different soils require different methods, and what would be proper in one place would be detrimental in another. With favorable spring prospects, vegetation soon gladdens the eye of the planter, but the sequence of this propitious outlook may be marred by calamitous drouth. "The brain must direct the hands."

8. KEEPING SCRUB STOCK.—The best stock should always be procured, regardless of cost, particularly in the cultivation of a crop of any magnitude. Dispose of all worthless stock, and fill their places with others that will prove valuable and in every way augment profitable culture. It takes as much time for a driver to care for and drive a poor team as it does a good one, while the cost of feeding will be equal. A fast walking team is more economical at a high price. A team which walks slow, will prove in the end a waste of capital, time and labor. By overcoming these obstacles, the promise of future success and prosperity is more assured.

Permit me, in conclusion, to revert to the unmistakable injury that the seed cane, fall plant and rattoons have experienced by the inclemencies of the past winter. The tender shoots emanating from the mother cane will in each case (a sound germ but diseased cane) lack the necessary nutriment. Timely protection to the young plant should be observed as the season advances, as much will depend on the after culture. The least inadvertence in the necessary cultivation at

this time will be materially felt. A light sprinkling of well pulverized soil will ward off an undue amount of heat, which the susceptible and frail sprout cannot stand, lacking as it does the necessary nutrition from the mother cane, and which will often culminate fatally by "nipping in the bud" many a promising shoot.—*Correspondence Sugar Planters' Journal.*

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### EGYPTIAN SUGAR INDUSTRY.

The first practical step by the Egyptian Government towards inaugurating the sugar industry was in the year 1818, with the erection of a sugar manufactory at Reyremoun, in the province of Mineh, which district to-day is the centre of the business. The plans and schemes upon which the factory was constructed were those in vogue at the time in the Antilles. As experience was gained, the industry grew to larger proportions, until Egyptian sugar was favorably known in the home markets. The United States Consul at Cairo says that, in 1826, European refined sugar—considered better in quality and lower in price—came upon the Egyptian market, and for the moment, stifled the home trade. Domestic sugar was, however, restored to favor, and, in 1833, the factory at Reyremoun produced 29,000 cwts., and Egyptian sugar controlled the market in every town of Lower Egypt, from Cairo to the Mediterranean. This established the sugar industry of the Nile country, and, as years passed, other factories were established. There appears, however, to have been no general movement in the direction of extensive production either in the reign of Mehemet Ali, or his successors, Ibrahim, Abbas, and Said. Practical impetus was given to this industry in 1875, when was grown on the Khedive's Daria Sanieh estates 9,200 feddans (feddan=1.03 acres) of cane; on other properties of the Khedival family about 500 feddans, and on private estates about 5,300 feddans. Much of the cane from the last mentioned estates, however, was used for *assul* or molasses. To this should be added 9,000 feddans of cane sugar, consumed by the peasantry, as food, in a fresh state. These figures, from an authentic source, indicate that the product

of only about 15,000 feddans was made into sugar. The progress setting in, in 1875, has been steadily maintained until the present time, not only in area under cultivation, but in the percentage of sugar obtained from the cane. The acreage on the Daria Sineh estates in 1893 was nearly four times greater than in 1875, while on other Khedival estates the cultivation has ceased. On private estates it had increased to 12,000 feddans; and the area devoted to food for the peasantry, and not included in the above figures was 12,000 feddans. Thus, the area devoted to the manufacture of sugar is now 40,000 feddans, against 15,000 feddans in 1875. Advancement is further demonstrated by an analysis of the statistics for the years 1875 and 1893. In the former year a feddan yielded 1.44 tons of marketable raw sugar, against 1.94 in 1893. This increase, resulting mainly from improved methods of extraction is no less than thirty-five per cent. In the cultivation of the cane, planting takes place in March, after the land has been ploughed three times.

On the important Government estates modern machinery is used, but the small native farmers still uses the wooden plow, known in the east from time immemorial. The seed cane, cut in lengths of about thirty-five inches, is set in furrows four feet apart and eight inches deep, with little or no space between the pieces. The furrows generally bear north and south, that the young plants may escape damage from prevailing winds. When the planting is completed, the soil is periodically watered from the Nile, until the crop is matured, about the end of December, when it is ready for harvesting. The cane is conveyed to the mill for crushing as soon as possible after cutting to prevent fermentation. The yield per acre depends, of course, largely upon adaptability of soil, water supply, and care in the several processes of cultivation. The Daria Sanieth estates employ in cane growing about 6,000 men, with their families, and a daily wage of from 5d. to 10d. per person is paid. There have been many experiments with artificial manures; but while fertilizers have been found which increase the product, their cost has prevented the adoption. Superphosphate of guano gave excellent results, and cane compost very little benefit.

Soil from the ancient towns and villages—costing nothing but the labor of gathering—is employed wherever possible, and with fair profit. Pigeon manure is used with benefit on some estates in Upper Egypt, where enormous numbers of pigeons are kept for the purpose. As on cotton land, almost the only fertilizer used on the Egyptian sugar plantations is the Nile water, carrying a muddy deposit of magical richness. Cane crushing begins about the 1st of January, and continues for a hundred days or more. It furnishes employment at the Daria factories to 8,500 natives, at wages of from 7d. to 10d. a day. The cane is brought from the fields by trains of from twenty to thirty cars running on agricultural railways. There are more than 300 of these lines. Seven years ago the Daria factories adopted the “double pressure” system, which largely explains the improvement in product shown by the statistics already quoted. After the cane has been crushed in the first mill, the mash is watered and conveyed to another, which completes the extraction process. The “megass,” or cane fibre, is drawn away to the drying field by small locomotives, and furnishes three parts of the fuel for running the factories, an important item in a country having little wood, and no coal save that brought from abroad. There is in Egypt but one refinery, owned by an influential company, and situated on the Nile about fifty miles north of Cairo. It has a capacity of 15,000 tons per annum, but its output never exceeds 12,000. French processes are employed, and its sugars are claimed to be equal to the best in the world. Consul Penfeld says, in conclusion, that while the conditions of irrigation remain as they are, the area under sugar cultivation cannot be materially extended, cane being a crop demanding much water at a time when the Nile is at its lowest point, but if the project for giving the country perennial irrigation, by the construction of a vast reservoir at Assouan, to husband the flood of the high Nile until the summer months, be successfully carried out, it is the general opinion that the cultivable limits of Upper and Middle Egypt may be doubled, as tens of thousands of acres would be brought within reach of the proposed high-level canalisation. The reservoir is said to be practically assured.

—*Journal of the Society of Arts.*

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*PRESERVING MANGOES.*

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Now that mangoes are in season, the following hints on preserving the fruit, by Mr. E. M. Shelton, of the Department of Agriculture, Queensland, may be useful:—

**CANNING.**—After peeling, the fruit is separated from the stones by slicing into pieces of convenient size; these should be stewed for a few minutes only, before pouring into the cans, in syrup strong or weak in sugar to suit taste, or the fruit may be cooked in the can with syrup as before. There may be a difference of opinion as to the palatableness of canned mangoes. A considerable number of those persons who have tasted the results of our work have pronounced the canned fruit excellent, while others have declared their indifference to it. A like diversity of opinion, we note, holds respecting the raw fruit, particularly with those unaccustomed to its peculiar flavor. Mangoes stewed in the form of a sauce will be found a welcome addition to any dinner table. “As good as stewed peaches,” we have heard them pronounced.

**MARMALADE.**—Webster defines marmalade as “preserve or confection made of any of the firmer fruits boiled with sugar, and usually evaporated so as to take the form of a mould.” Nearly in this sense the word “marmalade” is used in this essay. Peel and slice the mango, cutting close to the stone, and cook, using plenty of water. Boil until the fruit is thoroughly disintegrated, when the pulp should be run through the colander with the purpose of extracting the “wool.” Sugar should now be added to suit the taste (about  $\frac{3}{4}$  lb. to the pint of pulp), and the mass boiled until clear, when it should be poured into the moulds or jars in which it is to be kept. The marmalade is of a rich golden yellow color, it retains the form of the mould perfectly, and it seems in all respects to satisfy the most exacting taste. In the absence of the experience necessary to test the keeping qualities of mango marmalade, it would be the part of wisdom to seal the jars designed for future use while hot with wax or, better yet, with a plug of cotton wool.

**JELLY.**—For jelly, prepare the mangoes by slicing as for marmalade; boil the fruit with water, prolonging the boiling

only to the extent of extracting the juices. Great care should be taken in boiling, as the mango rapidly "boils to pieces," in which case it is impossible to make satisfactory jelly. Pour off the juice, strain, and boil down to a jelly, an operation that occupies only a few moments, as the mango is rich in gelatinous materials. The pulp remaining after the jelly has been removed may be used to advantage in making marmalade. In the amount of sugar used in making jelly, the housekeeper is safe in following old practices in this respect with other fruits. It is impossible to give exact rules in all the operations connected with working up this fruit. In general it will be well to use, in boiling, water somewhat to excess, and as the mango "cooks" readily, constant watchfulness is needed to prevent burning.

To show something of what is possible in the way of results with this fruit, I may say that in our experiments thirteen good sized mangoes gave one pint of jelly and five quarts of marmalade. This certainly must be counted a very favorable, not to say remarkable, result.

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### *WHERE THE CENTS TELL.*

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A scale of prices obtains on the East Side which shows that it is the useful cent and not the almighty dollar that makes its presence felt over there. Are you thirsty? You can get a glass of soda water for two cents, syrup and all; but if you want to indulge in the extravagance of cream, it will cost you three cents. A glass of lemonade scooped out of a common receptacle is to be had for a cent; but if you are exclusive in your tastes and wish to see the lemon cut and squeezed, the sugar ladeled out, and the whole beverage prepared to order, you will meet with the prohibitory tariff of five cents.

In the matter of cigars, cheapness has been whittled down to a fine point. Beginning at the top of the scale with the Havana Perfecto, the price of that aristocratic weed is twenty-five cents for six. Key West cigars of magnificent proportions can be had at the rate of four for ten cents, while a box of twenty-five stalwart domestics can be bought for fifty cents. Venture into Essex or Division street and

you can get a beautiful black cigar for one cent, and one old woman was actually selling things that looked like cigars at the corner of Stanton street and First avenue at three for one cent. But then it was late in the evening and she wanted to get home.

Tobacco is found put up in neat bags of two ounces for three cents, and clay pipes to smoke it in can be bought at half a cent each.

Five cents is the regular price for all drinks, whether ale, beer, plain whiskey or mixed, and one place was noticed where a pint of milk punch was offered for a nickel.

Eating is just as cheap as drinking. For five cents you can get three eggs in any style you may indicate, and a whole sirloin steak, with choice of garnishings, will be served for fifteen cents, for which price, too, you can secure a three-course dinner, with a cup of coffee thrown in.

After dinner you can get shaved for five cents, although it will cost you one cent more for a dash of bay-rum; and you can get your hair cut by machine for ten cents. Then, with a one-cent cigar rolled into the corner of your mouth, you can while away an hour or two at pool for two and half cents a cue. Or, if there is a high function somewhere which you wish to attend, you can make yourself gorgeous in a full-dress suit hired at the rate of fifty cents for the whole night, provided you furnish your own cravat.—*New York Sun*.

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### STATE BOUNTIES AND THE BEET SUGAR FACTORY IN THE STATE OF WASHINGTON.

[LOUISIANA SUGAR PLANTER.]

*Editor Louisiana Planter:* I have been deeply interested in the articles recently published in your journal from the pen of Mr. Gerrit Smith Glen. I agree with him as to the good policy of State bounties for sugar instead of a national bounty. Let those States give bounties when it is shown the soil and climate are suited to the production of either cane or beet sugar. Then let the general government establish a protective duty, say 2 or 2½ cents a pound. Such a policy would soon develop a very large beet sugar industry here on

the Pacific coast. The State of Washington has already put itself in line by offering a bounty of 1 cent a pound— $\frac{1}{2}$  cent to the manufacturer and  $\frac{1}{2}$  cent to the beet grower.

This, along with the high quality of our beets, has had the effect of inducing capital to come into the State and engage in the beet sugar business at a time when it is very hard to get capital to do anything. The factory is to be built at Waverley immediately, and one will probably follow at another point. The sentiment in the State is quite united in favor of the bounty. Our people are determined to bring this industry here and they are willing to supplement the bounty with liberal land subsidies. Washington is the only State in which any bounty is given the grower of beets. Here the grower is to receive  $\frac{1}{2}$  cent a pound on all sugar made from his beets. Tests made over a period of three years show that we may expect growers of beets to earn from \$18 to \$25 per acre of bounty money. This ought to make beet growing here a very profitable business, for the bounty will almost, if not quite, pay the cost of producing the crop.

If Mr. Glen will keep his eye upon the State of Washington, he will see, I think, a practical and successful illustration of the policy he is urging so effectively in the columns of the *Planter*.

JOHN H. REAVIS.

Waverley, Wash., March 22, 1895.

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### TO RESCUE A MIRE D ANIMAL.

In plowing in a swamp an inexperienced driver forced a yoke of oxen into a mire, and after much trouble the yoke was taken off and one released. The other in the struggle sank deeper and became much exhausted. As we were two miles from any house or help, our ingenuity was taxed beyond measure to afford means of rescue. In desperation we fastened the ox chain to the animal's horns and secured it to a sapling close by, and left the green man to watch while we went in search of help. On our return we found the ox on terra firma, and a narrow ditch from the mire hole about ten feet to the solid earth, gradually sloping up, had afforded a safe and solid incline on which the ox had walked out of trouble. The greenhorn had been equal to the emergency.—*Cor. American Agriculturist.*