

THE  
PLANTERS' MONTHLY,

PUBLISHED BY THE

Planters' Labor and Supply Company,

OF THE HAWAIIAN ISLANDS.

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VOL. I.]

HONOLULU, FEBRUARY, 1883.

[NO. 11

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*CO-OPERATION.*

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To many people, particularly Europeans, this is an offensive word, suggesting communism, agrarianism and similar ideas, of which Europe has had much and bitter experience in the past. The difference between these ideas is however perfectly marked and distinct. Communism, Socialism, Agrarianism, convey about the same thought and are indifferently applied to the same theories. Co-operation is often erroneously applied in the same way. The first three refer to an equal division of property among the people, a community interest in lands more particularly, and a negation of individual rights in property. Co-operation, on the other hand, fully recognizes private or individual ownership and has no reference thereto, but is simply joint operation, laboring together to one end. Technically it implies the association of any number of individuals or societies for mutual profit in the purchase and distribution of commodities for consumption, or in the borrowing and lending of capital among workmen. Sometimes two or all of these purposes are united in one society. It is interesting that these three objects have had their largest development in England, France and Germany, respectively. The United States is pre-eminently the land of independent individual property holders; co-operation has not flourished there as in other lands, nor is it likely to do so for many years, or till social and economic conditions are very different from what they are at present. In Canada, or in the eastern portion, there are a large number of co-operative stores, so-called, which are simply the depositories of the Society, whose business it is to purchase goods at the lowest figures, selling them to members at an advance sufficient to cover cost of business. This is the co-operation most frequently met with in England, the members of which are almost exclusively wage earners, but whose production brings them nothing except wages. There are large manufacturing towns such

as Leeds, Manchester and others where nearly the whole laboring population are members of these societies. Associations for production have not been so successful. There are several notable instances of failure of these, such as the United Coal Miners of Yorkshire, who purchased the Shirland collieries in 1874, and in a very few years sunk their whole capital of £70,000. In 1865 a coal mine owner entered into relations with the miners whereby they took one-half of the profits (besides wages), after deducting 10 per cent. for a sinking fund to redeem the capital. The plan worked well enough while business was good and coal sold readily, but when the markets were stocked and there were no profits to divide, the men backed out, and united with the Miner's Union. It is however noteworthy that during the existence of this compact, coal was produced by this company cheaper than elsewhere—which simply means that more coal was produced for the same outlay than by the surrounding collieries.

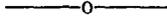
In France co-operative production has had its greatest success. It is noteworthy that there has been a strong leaning to the opinion among French economists that while the society supplies the labor the State is bound to supply the capital in whole or in part, which is a very long step towards communism. After the revolution of 1848, this view was recognized to some extent, national workshops were organized and 3,000,000 francs voted to fifty-six societies for co-operative production. It was not very long, however, before three-fourths of these societies perished, the members did themselves no good and the loss fell heavily on the State. Several associations, however, refused assistance from the State, declined the principle of equality of wages and survived. Of these there exist to-day the society of Turners, Masons, Piano-Makers and some others. There are now at least forty examples of this class of society in Paris alone, some of which possess a large capital. Probably no other country either, affords so many examples of workmen sharing in the profits of the business. One feature of the success of these associations is the fact that much business is said to be attracted by those paid workmen who also share profits.

The great success of the credit system of Germany, which is now regulated and fostered by law, is owing chiefly to the efforts of M. Schultze, who established in Berlin a great central credit bank wherein is transacted the main business of the associated societies. Two peculiarities of this system are, that loans are made only to shareholders, and none are made for a period beyond the date when the society must pay its own borrowed funds. This system with some modifications has been successfully introduced into the United States, notably into Philadelphia, whence it has been taken into other cities, generally in the form of Building and Loan Associations.

The idea of co-operation exists in these Islands and to some extent has been put into practical use with varying success. An advertisement in one of our weekly papers of a recent date announces the fact that certain persons therein named have formed themselves into the Kallihl and

Moanalua Trading Association. They are all native Hawaiians and past experience renders success in such an undertaking doubtful. It appears from inquiry among them, that the object of this society is a co-operative store, for the purchase of necessaries of life, primarily for sale at low figures to the members. There have been a few attempts among native Hawaiians at co-operative production, but no striking successes. A company has just been formed among certain natives for the cultivation of sugar cane at Mokaenui, on Maui. It was stimulated, as others will be, by the success of the experiment at Makapala and Niulii, on Hawaii. At the present time, however, the Chinese in our midst have made of production by co-operation the greatest success. There is hardly a rice plantation on the Islands where the principle does not enter into the work as one of its strong factors. In many of them the laborers themselves are the sole owners of the concern. These are chiefly the smaller affairs, but most of the larger ones pay wages and a share of the profits. The Chinese also co-operate very largely in the business of wholesaling and retailing goods. They co-operate because they possess as individuals small amounts of capital, but united are able to accomplish much more than the divided efforts of the individuals. The success of the cane growing experiment at Makapala has been spoken of. That it has been successful is largely due to the patient kindness of its chief manager and projector, Judge Hart. It is said that in some cases interest on borrowed capital has been remitted, from which it is argued that without such a pure gift the affair would have failed. This has not, however, been true with all the cane planters—most of whom are native Hawaiians. It needs hardly an argument to show that co-operation, as conducted at Kohala by Mr. Hart, at Waimanalo and elsewhere, will produce more at the same expense, or the same amount with less outlay, in sugar growing, than where the whole system of sugar producing, both growing and manufacturing are owned by one person, association or corporation. The strongest argument in favor of this is the fact that sugar plantations are one by one dropping into the co-operation system. Hawaii is wholly given over to the growth of sugar—which requires large capital and long patience, waiting for returns. It is, and probably will be, for years to come our mainstay and chief industry. It should be so that a larger number of our laboring population should have a direct personal interest in the success of this industry. If co-operation will bring it about, then co-operation is to be fostered. But this system can also be used to advantage in other branches of employment and industry, and if the country can be made richer or better, and society established on a firmer basis than at present, the friends of Hawaii should unite in securing co-operation on a sound basis as one of our institutions. If the producer—the wage earner—has a share in the results of his labor which will be larger or smaller in proportion to the yield, it will give him a strong personal interest in the success of his labor, and he will become a protector and fosterer of his work instead of indifferent as to results. It will make him a better

citizen, a better voter, more careful of the maintenance of public order and the due observance of the law. He will become a citizen who will do much towards the general elevation of society.



### *THE LABOR PROBLEM.*

No question has so great an interest for all classes of society as this. Not only does it affect the planter of cane or rice, but the merchant, lawyer, builder, manufacturer, in short all classes, including the mere wage earner himself, have a vital concern in its various aspects. The laborer knows that if the supply is less than the demand he can dictate his own terms, within certain limits. If on the other hand the demand is freely supplied, the laborer can generally find some kind of employment which will furnish him at least a livelihood. Where labor is plenty and wages consequently low, the cost of the necessities of life is also low, except in rare cases having other controlling causes than that of the price of labor. Another feature attendant upon the scarcity of the labor supply is its comparative inefficiency, depending in part on the laborer's knowledge that he is master of the situation, which makes him somewhat indifferent as to his work, and because labor is employed which would not be tolerated if better were obtainable.

Hawaii suffers because it occupies the position of excessive demand with extremely limited supply. In almost all departments of labor the complaint is general of the inefficiency and unsatisfactory quality of the labor furnished. This applies more particularly to the mere wage earner, and the majority is comprised in this class. The effect of the labor contract system is in part to obviate the difficulties arising from a limited supply, because that the planter or manufacturer who is provided with these people is in certain senses independent of the market. But in no case is this system to be compared with the advantages of a plentiful supply, permitting the laborer to work so long as he gives and receives satisfaction, and the employer to get what he needs at a fair compensation, discarding worthless and injurious elements. No one whose needs could be supplied by simply advertising that so many laborers were required for a certain day or piece of work, would for a moment permit the presence on his fields, or in the manufactory, or about the house in domestic service, of idle and evil disposed persons. Yet in our labor contract system this evil has to be met and endured simply because there is no help for it. The employer must have service and his laborer is generally in debt to him, because of our vicious system of a money advance on entering into a contract. By means of the contract the employer often finds himself burdened for two or three years, with the obligation of paying wages to a man or men and women, whose presence he otherwise

would not tolerate on his place. In most instances these people are a positive evil, the small amount of labor performed not compensating for the evil influences, the discontent and quarrelling bred. Though it does not often happen, for obvious reasons, such a person if discharged and expelled from a place, might still compel the payment of wages by showing in Court that he was ready and willing to work, but that work was refused. In practice this rarely or never happens because the employer cannot afford to lose the debts due by such, with the minimum of labor, or if discharged such a laborer generally goes off chuckling at his supposed smartness in "getting to windward of the boss." The attempts made by employers to remedy the existing state of affairs has added a motley crowd to our population, Chinese, Portuguese, South Sea Islanders, Mexicans, Greasers and others; but the demand is insatiable, wages constantly rise, and with them all of the necessaries of life tend upward, till Hawaii is now one of the most expensive places in which to live. It would be interesting to know which class of labor introduced is the best, whether the intelligent European or the South Sea Islander, or some grade between. Prior to the Treaty there were about twenty-four sugar plantations and as many rice estates as could be counted on one's fingers. The labor employed on the same was principally native although there were then a large number of Chinese. The exact number of natives and others for December, 1876, can not be stated, but taking the census returns of 1872 and 1878 the number of Hawaiian males between the ages of 15 and 40, which represents the best physical period of a man's life, was about 11,000. The census of 1872 shows about 4,772 plantation laborers, this number may have increased to 5,000 in 1876, but in 1878 the number appears to be 7,871; while the agricultural laborers decreased from 9,670 in 1872 to 8,763 in 1878, or a decrease of 800. It is probable that the number of plantation laborers to-day is not far from 12,000, while at the same ratio of decrease the number of able bodied male natives has diminished from 11,000 to less than 10,000. The number of Chinese in 1876 was probably about 2,500 or 2,600. So it appears that while the plantation laborers in 1876, when the treaty went into effect, were less than the able bodied natives, in 1883, the probable number of the former considerably exceeds the number of the latter. This allows nothing for sick and disabled persons. It is perfectly evident that the native population has ceased to be the source of supply whence the labor market is to be recruited.

From what source have we drawn our labor? Outside of what natives there are who still labor on plantations the main supply has been the Chinese. There are also Norwegians, Portuguese and South Sea Islanders in large numbers. These have not sufficed fully to supply the demand, the price of labor has steadily risen and with it as noted the cost of living. There is no data at hand from which to determine the relative value of labor performed by these respective nationalities. In order to procure such data, returns must be made by the employers. It is to be hoped

that full returns will be made by the several plantations and growers of cane, &c., as requested by the officers of the Planters' Labor and Supply Company. A few returns have been made and will be published in the March number to which attention is called. Statistics like these kept for a series of years will be of great value and will be found of use.

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*THE TREATY.*

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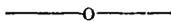
It was suggested in the January number that probably the treaty question would not arise at the present session of Congress—that other matters would so engross the time of the statesmen assembled in Washington that our little Kingdom with its affairs—so puny as compared with theirs—so great in our eyes, would drop into the waste basket as it were. But it seems that our enemies in the East as well as in California would not permit us to escape. No we must be hauled up for more merciless pummelling, without regard to the merits of our cause. We do not expect to have this case examined and tested wholly on its merits, because that the questions involved are so distorted and twisted from the truth by such papers as the *S. F. Chronicle*, and others controlled by the faction which pays for these falsehoods, that it will be very nearly impossible to present the truth to any Congressional Committee. There are men in Congress like Dawes, Hoar and others of that stamp who would like facts; plain and unvarnished, and who would decide and vote upon our little matter in a statesmanlike manner; but there are others in the Councils of our powerful neighbor, who will not care for facts, who will not vote upon the merits of the question but upon partisan or prejudiced grounds. It may be urged that we are favorable to the treaty because it is our source of life. True, but we also understand and appreciate the highest grounds of opposition to this treaty—such as advocated by Sherman and others of his stamp—that it is in violation of the recognized policy of the United States on commercial matters, that it was granted to the Islands partly on sentimental grounds, that some of the grounds existing in 1876 have been removed in 1883. But we are also aware that the existence of this treaty is of importance if the Americans desire the supremacy of American influence here, if this be of no importance the treaty is of no value in that light. We are also aware that the charges of slavery and oppression as made by the *Chronicle*, founded on the idle tales of dishonest and worthless Norwegians and others, are false, yet they may avail much in discussing the question where sources of information are few and the newspaper furnishes the main knowledge on the point. It may be, however, that owing to the death of Minister Allen, Congress will defer the question for the present, it is however likely to consider them regardless of that fact. The following statement of the present position of

affairs taken from one of the New York papers presents the aspect of affairs, as regards us, at the present time:

“WASHINGTON, January 2d, 1883.

“Owing to the death of Minister Allen, the Secretary of the Hawaiian Legation has requested the House Committee on Foreign Affairs to postpone final action on the bills and joint resolution respecting the repeal of the treaty between that country and the United States. Should the Legation make a formal and official request the committee will not take, as was proposed, final action next Friday, but will defer this until the Hawaiian government can substitute a representative in the place of Mr. Allen, who had been paying earnest attention to the subject. The House Committee on Foreign Affairs has had, since their introduction and reference last session, three bills and one joint resolution on the subject. The bills are substantially the same in their purpose. Two of these are to terminate the convention or treaty of June 3, 1875, with His Majesty the King of the Hawaiian Islands. The other bill is to provide for the collection of the duties imposed by law on all sugars imported from the Hawaiian Islands above the grade of sugar known in 1875 in the markets of San Francisco and Portland as “Sandwich Island Sugar.” The House joint resolution before the committee has reference to the establishment of a customs union treaty with the government of the Hawaiian Islands. It requests the President to open negotiations looking to the formation of a customs union with Hawaii, by which the customs tariff of the United States shall be applied in those islands on all goods coming from countries other than the United States. While a majority of the committee oppose rescinding the treaty entirely they will vote to give the required twelve months’ notice to suspend the commercial relations. A joint resolution and bill for the same purposes have been for some time before the Senate Committee on Foreign Relations.”

There can be no great objection to the passage of the second bill above referred to, for the sugars sent to San Francisco to-day are the same as sent in 1875 and prior thereto, excepting that perhaps more refinery, or lower grade sugars, are sent now than then. The customs union proposed by the House joint resolution could hardly be entertained by the Hawaiian Government at present. It might virtually amount to annexation. Of course the imposition of import duties as there suggested would raise a storm of wrath on the part of our importers from European ports and they would lose no time in presenting the most embarrassing claims, besides securing prompt visits of war vessels from their home governments; visits which might prove uncomfortable to our army and navy. On the whole the outlook on treaty questions is not as encouraging as it might be. There is however a chance left for the presentation of facts at Washington which may be of value.



The New Orleans *Times-Democrat*, of January 8th, contains a very full report of an interview with Messrs. W. H. Bailey and H. P. Baldwin, of Maui, who were at that time visiting the city. As the paper says, the so called Spreckels monopoly was presented in a very different light from what

its readers had before been treated. It evidently had not appeared before this interview that Spreckels pays for Hawaiian sugars in San Francisco, just the price he would pay for Manilla sugars, the advantage to the Hawaiian planter being the the remission of the duty. It was also explained that the state of the sugar market in California and on the Pacific Coast generally has nothing to do with the treaty, but depends on wholly different grounds, that the continuance or abrogation of the treaty will not necessarily affect that sugar market. It was shown how the purchases by the Islands from the States have increased by reason of the treaty several millions of dollars, how the treaty fosters American interests here, how this little Kingdom has grown prosperous by reason of the treaty, and how in fact, from our standpoint there could be no loss but a gain to America by the continuance of the treaty.

The *Times-Democrat* very courteously gave the gentlemen a good hearing and a fair statement, which is more than can be said of some nearer newspaper neighbors.

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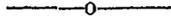
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*JUDGE ALLEN.*

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News of the death of Honorable Elisha H. Allen, the Representative of this Kingdom in Washington, came with a shock to the community on the arrival of the mail steamer in January. The gentleman was best known to us all here as Judge Allen. His long and honorable connection with the Supreme Court made his name familiar to all, and only with respect. He was universally liked for his cordial manners and for that never failing courtesy which bespoke a tender heart. His diplomatic services are less known because in them he was more removed from the immediate knowledge of the public, but they have made for him as bright a record as his judicial acts and decisions. To him are we largely indebted for the Reciprocity Treaty. His constant attention to the matter has been of incalculable service during the years of its existence. His universal urbanity also caused the general friendliness with which he was regarded in Washington. Mr. Gibson—in his remarks at the meeting of the Supreme Court and Bar assembled to do honor to the deceased—touched the key note when he spoke with pleasure of the distinguished honors paid to the remains of the Judge in Washington, and in connection therewith referred to the respect and esteem felt for him there on account of his high character and disposition. It was that, together with his former connection with affairs in Washington which brought those honors. The Secretary of State was an old personal friend of Judge Allen and took pleasure in paying him those last honors. Meanwhile we may take pleasure in the thought that Hawaii was so fortunate as to possess a representative whose personal character and connections brought

him honors which his diplomatic position as representative of this little State could not have obtained. We take the reflected glory. When great men die it is common to hear the exclamation "He cannot be spared! Affairs cannot go on without him!" Yet still the world moves on—a ripple—a little wave and the gone are forgotten in the rush of the great world, which moves on smoothly, serenely without break or manifest loss. Yet still we feel that it will be hard to replace Judge Allen.



### RECIPROCITY.

The question of the continuance of our reciprocity treaty with the United States is daily narrowing down to a difference between the eastern sugar refiners on the one hand and those statesmen on the other who look at the treaty as a simple and effective political expedient for giving the Government at Washington a paramount influence in Hawaiian affairs. In other words, from an American point of view it is a matter between purely private interests and national interests. Efforts in favor of the continuance of the treaty from ourselves must consist mainly in furnishing pertinent facts for correcting mis-statements made by the opposition, for showing the direct benefit the treaty is to the sugar planters here, a majority of whom are Americans or descendants of Americans, for showing the commercial advantages the treaty confers upon the United States, and especially upon the Pacific Coast, and the prospect of the steady increase of such benefit, and for the demonstration of the present and prospective effect of the treaty in developing American influence here. It is unlikely that the American Government will allow the political advantage which the treaty gives them, and will give them in the future, to slip from their grasp in compliance with any pressure from American sugar refiners. It is still less likely that any opportunity of regaining such vantage ground would ever occur to them if they once relinquished their present position. England, with its shrewd Polynesian policy of the present time, would doubtless be glad to take the leading position in Hawaiian affairs, if America should give them the opportunity by retiring from intimate treaty relations with us; and once acquiring such a status it would be contrary to all British precedent for them ever to diminish or terminate the influence of such a position by any voluntary act of theirs, but on the contrary they would probably aim for a definitely controlling influence. The distant prospect of a Panama Canal, and the near prospect of the northern overland railroad, taken together with British principles of free trade, would make this the obvious course for England, if once the opportunity was afforded by America's withdrawal from the present reciprocity treaty. It would be difficult to forecast at the present time the effect of a change from American to British reciprocity upon our commercial interests. One

thing is certain ; it would, with the completion of the northern overland railroad, build up the English Colony of Victoria at the expense of California.

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YEARS AGO Hawaii exported potatoes to California ; to-day we receive about all we eat from there, with a liberal quota from New Zealand, yet we have quite as good facilities for growing potatoes as ever. The high lands of Hawaii and Maui particularly are specially adapted to this industry. Those who have lived at the Islands for twenty-five years will remember the beautiful potatoes of those days, white, meally, free from rot or disease ; such must look back with a certain degree of longing when a dish of potatoes of to-day's supply is set before them. If there are no other reasons perhaps one cause of the falling off of this industry is the deterioration of the quality raised in our fields from the pernicious custom of using the same seed continuously. Breeding in and in is quite as bad for potatoes as for horses. The article in our last issue on the subject of seed bears directly on this subject and may be read with profit by all. It cannot be urged to-day that there is no market for potatoes because the whaling fleet is gone, for we have a potato eating population to-day much larger than that of those days. Probably not less than one thousand pounds of potatoes per day are eaten throughout the Islands, and this could be doubled if the supply were constant, cheap (something unknown to-day), and of a good quality. Potato raising cannot be gone into by the whole population at once, but there is room for a good many. It is an industry which requires no capital as comprred with sugar-raising.

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Before our next issue the coronation, D. V., will have taken place. If any one can suggest wherein the country or its ruler has been benefitted by this performance there may be some excuse for the large expense and the almost utter diversion of Government from its normal channels for a considerable time. Meantime the effect abroad has been injurious, judging from newspaper comments. The nations of the earth look on with amusement at our show—as one watches the ridiculous hops of a flea. If no other evidence of indifference were at hand, it is quite sufficient that nobody comes from abroad to do the occasion honor by attendance. So far the only representative from other lands is the Japanese Ambassador with his suggestively euphaneous name. The January steamer from California brought hardly passengers enough to replace those who departed by the last one up. The large exodus by that boat shows that among people who have the means or disposition to travel the affair is regarded with indifference. The only concern which the PLANTERS' MONTHLY has is in the possible injurious effects to the material interests of the country. So far the advantage shown by the *P. C. A.* is the expected large sale of gloves!

COMMUNICATIONS.

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THE TREATY.

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HONOLULU, January 25, 1883.

EDITOR PLANTERS' MONTHLY—I have read with interest the report of the Congressional Tariff Commission upon the subject of sugar, published in the *Hawaiian Gazette* of the 2d instant.

It is very decidedly protective of the refining interest, and correspondingly adverse to the sugar-growing and manufacturing interests seeking the United States markets from beyond its jurisdiction.

The Committee recommend a specific duty to be levied according to the value of the sugar, as per Polariscope or analysis, on and below all sugars, including No. 13 Dutch Standard. These sugars, on account of their dark color, are not in demand for consumption, and only made so by being refined—upon these the Commission recommend a reduction of the present duty of  $20\frac{7}{100}$  per cent., but for these there is no customer but the refiner. The seller has not the benefit of competitors, but must sell for what his customer is inclined to give, who has the facilities for refining them and putting them into competition with sugars introduced at a much higher rate of duty; for *seconds*, above No. 13, the Committee recommend a *higher* rate of duty to be imposed *according to the color*, without reference to the intrinsic value. Sugar is saleable for consumption over the counter upon its color, and not its value. If the customer finds the article offered handsome and sweet he asks no questions about the *degree* of sweetness, and most likely neither he or the grocer know anything about it. Both of these classifications protect the refining interest and are adverse to the introducer—*first*, there being but one class of buyers of a perishable article which must be sold, the seller must accept the buyer's terms. *Second*, the increase of duty and change from intrinsic value to color enables him to prepare and place in market his more cheaply bought article than his competitor who has paid the higher duty can do. I do not discuss the policy of this system as a state policy, but it is evidently protecting to the refining interests and adverse to the foreign interests and adverse to the foreign producer. Through the courtesy of the United States Consul, I have also read the argument of Mr. Brown for the abrogation of the Treaty, and am fully aware of the strong tide of opposition which is now setting against it.

Mr. Brown makes statements that have been disproved time after time, and seems to have no difficulty in supposing that Hawaiian and United States officials at this end are colluding in countenancing fraud. If he supposes that everybody can be bought, and has learned this lesson of human nature in his duties as special agent of the treasury, he has been very unfortunate in the class of officials with whom his duties have brought

him in contact. There are both United States and Hawaiian officials who are not to be bought, and there are merchants and planters both here and in the United States whose truth and integrity would never perpetrate or connive at the frauds charged on them by Mr. Brown. He denies that the ante-treaty sugars in the San Francisco market, known as Hawaiian sugars, were as good as since the treaty. I assert that, with the exception of 1867, 1868 and 1869, they were, by my own personal observation and by the testimony of the United States Custom House records, collated by a man of unimpeachable truth. The sugars in the excepted years were chiefly contracted to the old San Francisco Refinery, and not to exceed No. 12 Dutch standard in color. To bring them down to this color in many cases they had to be boiled with molasses. But through all the years, with this exception, sugars were better in color before than since the treaty, by the general observation of those who handled them here, sustained by the United States Custom House records.

He asserts that vacuum pans and centrifugals were not in general use before the treaty. Here again he is mistaken. Centrifugals were invented here, and for the last 25 or 30 years I have known of no plantation draining their sugars in any other way, and vacuum pans were introduced into the larger plantations generally before the treaty. Upon Kaupakuea, Onomea, Hilo, Kohala, Lahaina, Wailuku, Waikapu, Waihee, Grove Ranch, East Maui, Haiku, Koloa, Lihue, Princeville and Kau, comprising about all the large plantations. At that time draining by centrifugals was the only method, and I think no other method of finishing except by the vacuum pan was practiced by the same. But neither of these methods of boiling or draining are refinery processes, any more than the liming and skimming of the open trains with the old slow method of drainage. Boiling in the vacuum pan does not eliminate impurities any more than it does in the open train. Neither does the rapid separation of the molasses from the grained sugar, the solid from the fluid, any more than the old slow method. The only thing which can be construed as having any approach to refining is the addition of lime or some defecating substance to which the grosser impurities attach themselves and are removed by skimming; but all this is done *before* the juice goes into the pan, and whether finished in the vacuum pan or open train.

It is done by the farmer to his maple juice by adding eggs, milk, or something with similar properties. It removes the grosser impurities—but he knows nothing of technical refining. He has never heard that it must be filtered through ten or fifteen feet of pulverized animal charcoal to remove the coloring matter, and other processes to make it white as it comes to us in the form of loaf, crushed or granulated sugar. There have been no abuses or frauds of the kind set forth by Mr. Brown. The government and planters have honestly aimed to fulfill its provisions. A committee of the Legislature of 1880 could find no case of the kind; I was the chairman of that committee and fully believe what I write.

The commercial benefits of the treaty, too, are mutual but not equal. If the sugar consumer realized all the benefit, what would the Hawaiian Government get in return for relinquishing duties on nearly all goods, the growth and product of the United States? If the planter could get no more for his sugar, when he could scarcely make expenses before, what object could the treaty be to him with increasing expenses? But he did expect to get more for his sugar, at least a part of the duties saved, and he has sold to the refiners on the Manilla standard generally, the purchasers allowing for the duties in the price. The Government has recouped itself for its relinquished duties by its growing commerce and increased activity in all its industries. Whilst the United States has reaped its reward by a five fold exportation of its products to the islands, and a corresponding increase of its commerce.

For 19 ships in 1876, the treaty being in operation the last third of the year, it has for 1882 nearly 200. The following table only covers 1876 and 1880; but the increase has gone steadily on:

	1876.	1880.
Animals.....	\$ 261	\$81,538
Clothing, hats, boots &c.....	176,128	266,169
Building materials.....	21,596	82,287
Flour.....	54,907	100,888
Fish.....	17,891	35,276
Furniture.....	27,762	73,345
Grain and feed.....	14,513	73,951
Groceries and provisions.....	90,466	379,794
Agriculture tools and hardware &c.....	105,828	215,088
Lumber.....	98,322	221,212
Leather.....	8,686	27,586
Paints and oils.....	13,548	40,700
Saddlery, carriage materials, &c.....	34,536	74,486
Tobacco and cigars.....	57,475	106,111

I have no later table at hand, but probably the amounts would now be much greater, and this represents only San Francisco. A line each from Boston and New York of about three vessels a year via Cape Horn from each port, represents only a part of the commerce from the east; large quantities of goods are sent by rail and isthmus via San Francisco, and the Eastern States markets have shared largely in the growing trade.

The benefits of this treaty have been mutual beyond expectation, though perhaps not equal, both parties have been benefited by it, in its commercial aspects only. These only have been considered and neither your room or my time will allow me to add more at present. Yours truly,

S. N. CASTLE.

P. S.—I wish to add a few words. *Refining sugar* was first applied by the Venetians to the crude sugar brought from Egypt several hundred years ago. It was practiced in Antwerp more than three hundred years ago and was thence introduced into England. The *vacuum pan* was invented in England by Howard in 1812—long after sugar was refined. Its advantage is that it evaporated at low temperature. It takes place when the atmospheric pressure is removed at 145° and upward, and as long as boiling at a higher temperature darkens the sugar, the vacuum pan sugar

is usually lighter in color than that boiled in the open train. The vacuum pan since its invention has been used generally by refineries, and in later years has been introduced upon most large plantations where no refining takes place. The best and the worst sugar may be, and is, evaporated and finished in it. It has no process of eliminating impurities any more than the open train and forms no part of the refining process which is done by filtration, the addition of blood or other like constituent substance, to which the foreign substances adhere and are skimmed off or filtered out—and the same is true of the centrifugal. They are valuable improvements in evaporating and draining, but have no refining qualities, and both of these methods of manufacture were used in manufacturing the sugars known as "Sandwich Island Sugars" before the treaty—and by the United States Custom House records the whole product averaged a lighter color, or higher by the Dutch Standard, than since, except a part of the years 1867 and 1869 and the whole of 1868 when the plantations were under contract to the San Francisco Refinery for their sugars not above No. 12 Dutch Standard. I think the planters generally regard Mr. Spreckels as having dealt fairly with them. He pays them the price at which Manilla sugar could be placed in San Francisco, freight paid, he adding the duties in the price paid to the planter. In his letter to the *Chicago Tribune* Mr. Spreckels says the price paid by the consumer has been less since than before the treaty, and he appeals to the trade and market record in verification of the fact, I do not doubt the correctness of his statement. But if the recommendation of the Congressional Tariff Commission is adopted the consumers will be placed in the power of the refiners, as no outside party could compete with them. The consumers could only be saved from exorbitant prices by their competition with each other, or their moral consciousness—which cannot often be relied upon—that it is wrong to sell for more.

The treaty continuing as it is, stimulates trade and industry both in the United States and here, and is a source of mutual and great benefits to both the planter here and producer in the United States.

The refineries east and in California may compete with each other, but they will do that under any circumstances, treaty or no treaty, and the price to consumers will not be likely to be affected except by sharp competition, but the quickened industries of both parties stimulated by it will be, as it is, a great blessing to both.

S. N. C.

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*REPORT OF CAPT. TIERNEY.*

HONOLULU, January 11, 1883.

*E. P. Adams, Esq., Secretary of the Planters Labor and Supply Co.—*  
*Dear Sir:* The schooner *Julia*, of which I had the honor to be the Master, having returned from a voyage for which she was chartered by the Planters' Labor and Supply Co., I deem it my duty to return you a suitable report of the cruise.

We sailed from Honolulu July 13th, 1882, bound for the New Hebrides, Banks and other groups of islands for the purpose of obtaining laborers for the Planters' Labor and Supply Co. to work on the Hawaiian Islands.

I sailed direct for the Island of Rotumah, where I obtained necessary boats' crews and then sailed for the New Hebrides, where I arrived six days after leaving Rotumah. But few laborers are to be had at the Southern Islands, yet I concluded to give them all a trial and did so.

I had a great deal to contend with, the weather was boisterous; the natives in the numerous islands thought that the *Julia* was from Fiji or Samoa and they have a great prejudice against those places, and do not desire to go to them; and also the competition of no less than forty-two other vessels, schooners, brigs and barques, all working for the same object as myself, viz. the obtaining of labor.

Then the trade goods were not altogether what was required, the hatchets and half axes were good and in sufficient quantity, the tobacco though of better quality than is usual in trade was not in right shape. That which I had was in 1 lb plugs, that usual in trade runs 24 to 26 plugs to the pound, and the natives regard a plug as a plug only, the superstitious nature of the native not allowing them to take a plug of tobacco which has been cut. You will therefore readily understand that there could be but little advantageous trading done with the kind I had, I have brought a sample of tobacco suitable for trade. I was obliged to purchase tobacco which would be taken by the natives, and this I managed to do by exchanging some of my own, thus saving an extra outlay of money.

I would most earnestly recommend that the bread purchased for any future voyage be in tins, as it will not keep in wooden cases. Herewith I present you with a sample of bread taken out of a wooden case on the 15th November—I assure you it did not improve after that date. I succeeded in buying 8,000 cocoanuts and 45 pigs, and was thus enabled to feed the immigrants with a good variety of desirable food.

The *Julia* brought 89 men, 6 women and 1 boy all engaged as laborers, they all shipped of their own free will and were all conversant with the terms of their contract.

During the voyage of the *Julia* I have laid off and on at 25 islands, anchored 43 times and made about 2,000 miles of boating.

I generally avoided all ships having no time to waste in waiting. I mention this last fact to let you know that the vessel has been fully occupied in the business for which she was chartered.

I think that with proper management the prospect is good for obtaining laborers in the New Hebrides and also in the Solomon group, the latter being almost a new field for obtaining labor.

I am happy to say that the people brought by me arrived all well, although some of the immigrants have been on shipboard for five months. My letter of instructions required me to take good care of the people in

my charge, and I have used my utmost endeavors to do so although it was very difficult, laboring as I have been under certain disadvantages.

Enclosed please find statement of articles bought by me, and hope that after a careful auditing of the same you will find it correct.

Hoping that the result of the voyage has proved satisfactory, and that you will approve of my actions, I remain with respect your obedient servant.

CHAS. H. TIERNEY,

Master of schooner *Julia* and Agent Hawaiian Board of Immigration.

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## ITEMS.

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—The New Orleans *Times-Democrat* notes the receipt of the PLANTER'S MONTHLY, and promises to notice the article on the Reciprocity Treaty at a future date.

—An English commercial paper, discussing the subject of American canned goods, says: "There is no country enjoying a fairly temperate climate in which home-grown fruit is so scarce and so dear as in England. There can be no question that the demand for dried and preserved fruit is capable of almost indefinite expansion, with larger and more varied supplies, for the supply at present is so inadequate that some varieties, even of leading descriptions, cannot be had for months at a time, and the trade, indeed, almost comes to a standstill during the summer, not so much because of the supply of green fruit—for that is always very dear in the larger towns—but simply because there is so little dried fruit to sell."

The above extract applies to Hawaii most singularly. If any other tropical country can be found which produces so little and of such poor quality as this, it is a *terra incognita* to us. It is not for want of good soil and good climate, but for absolute lack of attention. The kanaka need not be looked to for any fruit except such as a kind nature produces.

—The *Michigan Farmer* says: "Water alone, if still and pure, will serve as a bed in which to secure the rooting of green cuttings from growing shoots. A single cutting, or two or three, may be set in a bottle of water as soon as taken off, and held in place at the neck by a bit of cotton to support the cutting, so that its base may be in the water, and the top, with its two or three small leaves, exposed to the air. As it will not be safe to disturb the cutting by changing the water, it is a good plan to put a few small bits of charcoal into the bottle. A simpler method still is to put an inch or two of sand into a saucer and fill to the same height with water. The sand serves to hold the cuttings upright in the saucer, and quite a number can be set in one saucer. No covering will be needed in ordinarily genial June or September weather, and the plants will not flag in mild sunshine if they are from sun-loving plants. As soon as rooted they must be changed and tenderly planted in good, mellow, sifted soil."

—The *Farm and Garden* says: "Most crops seem to have a special fertilizer adapted for them—as plaster for clover, lime and potash for potatoes, and nitrogen and phosphoric acid for wheat. The peach tree has a special fertilizer also, one which combines a great many ingredients, but the most suitable for the purpose—it is the cleanings from the privy. This refuse will show in comparison with anything else that can be tried, as it gives quicker growth, increases the fruit, and colors the foliage to a deep green. The discovery was made by a New Jersey fruit-grower who experimented for the purpose, and the most casual observer could easily discern the difference in the appearance of trees treated in this way from those treated in any other manner."

—Kohala reports abundant and well distributed rains very much after the old-time fashion. The fields are looking well and promise large yields for the next crop.

—Oahu, especially Honolulu, has not had its fair allowance of rain so far this season. Enough has fallen to clothe the plains and hills with green; cane looks well and the prospects for a good crop are encouraging.

—Planters are earnestly requested to carefully fill out the blanks sent to each, giving statistics regarding labor, &c. Full returns will be of great use hereafter.

—It was intended to publish the labor returns so far as received, but as others will probably be received very soon, publication is deferred till a larger number can be presented together from which comparisons can be better made.

—The Hutchinson estate has done good work since it started with the new machinery at Naalehu. The change made in the old works was the putting in of a large triple effect, which has 6,000 feet of heating surface and an additional vacuum pan, making two, which are now used for boiling the juice, one being used for first and the other for second sugar. Previous to the introduction of the triple effect a large quantity of coal was being used by the plantation, but since the new works have been placed not only is the trash made quite sufficient for the use of the plant, but the manager writes that in good weather it accumulates. The average work of the mill has been 40 clarifiers per day. The capacity of the works is much larger than this, but is at times limited by the supply of water in the flume. The coolers used are both the old style combination, which set in pairs, and the Hutchinson Combination Boiler, of which a number have recently been turned out by the Honolulu Iron Works Company.

—Hilea Plantation has recently commenced work and expects a 1,500 ton crop. They have a double effect connected with their works. The heating surface of this is rather small for the capacity of the mill, and consequently in bad weather some coal is required; but in good weather, with fair cane, none is used.

—The new landing recently completed at Honuapo at a cost of \$10,000, for the use of the Naalehu and Hilea Plantations, is proving itself a great success. The wharf is built on a system of "shears," which carries a tramway track over the breakers into deep water where the boats can load without trouble. The material is placed so that the water has comparatively little power on it, and it is thought that even in the event of a storm the resistance of the waves will not be sufficient to destroy the structure. Good photographs of the wharf may be seen at the office of W. G. Irwin & Co.

—Mr. C. C. Kennedy, Secretary to the Hilo Planters' Society, writes to ask for further information in regard to rat killing, and with regard to a notice of the *Mongoose* in our last number, desires to signify the willingness of the Society to co-operate with other parties in bringing them here, and so lessen the expense, and the Society will thankfully receive any information that may be furnished to them, or us.

—The Mongoose is easily domesticated and may be made a household pet, no more offensive to touch, eye, or other senses than the "harmless, necessary cat." He is a voracious destroyer of reptiles, insects, vermin of all descriptions, "rats, mice and such small deer" he extirpates. The only drawback is that he is as fatal in a poultry yard as in a rice or cane field—eggs of all kinds and young chicks are irresistible temptations.

There should be no difficulty in procuring a few pairs from Jamaica, via Panama, or even from the East Indies, via Hongkong.

—Waianae Sugar Plantation makes a good showing for the crop of 1881-2. The total crop amounts to 1439 tons and 365 pounds divided thus:

1st Sugar, pounds.....	2,375,849
2d Sugar, pounds.....	407,180
3d Sugar, pounds.....	95,336
Total.....	2,878,365

Number of clarifiers 3660, of 500 galls; pounds of sugar to clarifier, 786; molasses 31,400 galls. The item wanting to make a perfect report of this is the expenditure for the crop, together with the gross proceeds. Objection is made that the expenses for a year will not show the true rate, this may be so for any one year, but a list of expenditures for a number of years with the list of crops for each would furnish a nearly true statement.

—Attention is called to a communication from Mr. S. N. Castle on the Treaty. The views presented are worthy of consideration. The difficulty is that we are all of one way of thinking on this side of the water, and those who ought to have facts logically presented will not see this publication probably. The commercial editor of the *Christian Union* of New York says: that if the present Congress adopts the recommendation of the Tariff Commission, taking the tax from tobacco and some other luxuries, leaving it on sugar and other commodities consumed by the working-man, in the interest of monopolies, it will give the death-blow to a party which has already received by the November elections, a terrible evidence of popular displeasure.

—Do planters realize the importance of changing seed? It will pay for the expense and trouble incurred in the improvement to quality and quantity of juice yielded. The subject is allied to that treated by Hon. W. L. Green in the January number. It is expected that one of our thinkers, who also has had experience, will present views upon this subject in a coming number.

—The non-arrival of the steamer *Suez*, besides causing great anxiety in the community, especially among those who have friends on board, is of interest to this journal; because Mr. W. O. Smith, the Editor, took passage in her. As the steamer is comparatively new, having been launched in September, 1874, and a staunch vessel, rating A1 at the London Lloyd's, and has a careful and experienced commander, nothing more serious than a break in her machinery need be apprehended. This might delay her arrival a month, as she does not spread much sail. Meantime the prompt action of Mr. Wodehouse, seconded by the Hawaiian Government and community in sending out the *C. R. Bishop*, is re-assuring even if she does not meet the disabled vessel. Since the above was written news comes that the *Suez* was met January 15th, returning to San Francisco, disabled in part.

—Paauhau Plantation has started grinding, and is now transporting cane to the mill by means of a wire tramway, similar to that used at Kealia. It is proving itself a success, and the line, which is now one mlle long, will be extended to a much greater distance. Mr. Otto, the manager, has added to the works a pair of his vacuum evaporators, and writes that with the assistance of these he is not only able to do a much greater amount of work, but has also dispensed with all fuel except trash. The following is extracted from his letter: "The new evaporating pans work very satisfactorily, just as I expected. We are not using a stick of wood under the boilers, nothing but trash; and the trash houses keep full and trash is gaining upon us. We are grinding rattoons, however, but we expect not to use much wood, if any, when we grind plant cane. When the rollers stop in the evening, firing stops. The apparatus will pay for itself in one season by saving fuel."

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*FRUIT ITEMS.*

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Does any one know that the raspberry of our mountains can by cultivation become quite equal to the berry of other countries?

The ohelo in its varieties exactly resembles the blueberries and huckleberries of the United States. It is the same in manner of growth, nature of the plant, requirement as to soil and general conditions.

The custard apple was originally introduced into the country. It seems to have found its natural home in Kona, Hawaii. Those who eat the fruit in Hónolulu can form no idea of its truly delicious qualities. To eat them

in perfection they should be taken ripe from the trees in Kona. Birds are very fond of them, consequently they are spreading like the guava on the slope of Hualalai.

As growers and eaters of fruit we degenerate, if Honolulu presents a type of the realm. In days gone by bananas of many varieties could be had, ripe and tempting, for a moderate price. To-day our intelligent Chinese and Hawaiian producers have discovered that the time to cut the fruit for home consumption is at the same stage at which it is cut for export, consequently if one wants ripe bananas here they are found in about the same condition as in California, wilted and unripe. As to oranges, the least said the better, except that it might pay to import them from London or New York, for quality and price!

The lime is a much esteemed fruit; it possesses many qualities entitling it to rank with the lemon. It grows well and naturally with us, and that without cultivation. So far very little is known here of the lemon. Occasionally the grocers keep them for sale, importing them from San Francisco, but domestic production supplies none of the demand. Lemons, however, will grow and do well at the Islands. They have been raised for a number of years at Koloa, Kauai, and at several other points, but not in quantity. A few days ago Rev. H. H. Parker handed us a fine stem with six ripe lemons, large, well developed, juicy and perfect. They were grown in the grounds on Nuuanu street from seed planted there a few years ago. The trees appear to be healthy and bear well, and may become a source of income if desired.

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### THE SORGHUM INDUSTRY.

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Dr. Loring, United States Commissioner of Agriculture, has received from Professor O. C. Marsh, President of the National Academy of Sciences, a report from the Academy upon the "scientific and economic relations of the sorghum sugar industry" made in response to a request presented by him on January 30, 1882. The report is very elaborate and will fill forty closely printed pages of the forthcoming annual report of the Department which will be laid before Congress early in the next session. It is signed by Profs. Brewer, Johnson and Silliman, of Yale College, Profs. Chandler and Moore, of New York, and Prof. Smith, late of the

University of Kentucky. Prof. Goessman, of Amherst, Mass., resigned his place on the committee on Sept. 12, 1882.

The committee find as the result of their investigation that all the analyses made in the Department of Agriculture not only confirm the well known fact of the presence of sugar in the juices of sorghum and maize in notable quantity, but they also establish the fact that the sorghum yields in its juice, when taken at the proper stage of development, about as much cane sugar as the best sugar cane of tropical regions. An examination of the analytical tables submitted to them shows that the juices of sorghum

in certain exceptional but not isolated cases were remarkable for the amount of cane sugar they contained. It is ascertained by these analyses that as an average of them all there was obtained 58.57 per cent. of the weight of stripped stalks in juice. Of the weight of this juice 16.18 per cent. was crystallizable cane sugar, and it was learned that 11.30 per cent. of the weight of the juice may be obtained as sugar by the ordinary processes of manufacture.

It also appears that three varieties of sorghum gave over 13 per cent. of sugar, seven varieties 12 per cent., seven 11 per cent., seven 10 per cent., and seven 9 per cent., of sugar; and that of the varieties of maize grown in 1880 ten varieties gave over 9 per cent. cane sugar, ten varieties 10 per cent., nine varieties 11 per cent., nine varieties 12 per cent., four varieties 13 per cent., one variety 14 per cent., and one 15 per cent. The committee state that in 1880 over 62,000,000 acres of land, or 28 per cent. of all the cultivated land of the United States, were in maize. The amount of the sugar thus apparently lost, calculated by the results obtained by the Department of Agriculture in the last three years, is equal to the present product of the entire world. A remarkable uniformity has been discovered in the several varieties of sorghum of sugar producing plants when fully developed, but it has also been learned that the different varieties vary widely in the time required for their full development, varying, as has been shown, fully three months between the earlier and the later maturing varieties.

"No conclusion," says the report, "established by the work of the Department of Agriculture, practically considered, is of greater importance than the positive ascertainment of that period in the development of the several varieties of sorghum when the juices contain

the maximum of cane sugar. On this point there has existed during the past twenty years or more the greatest discrepancy in statement, and the general opinion prevailing has been very wide of the truth as established by all these experiments."

The investigations of the Department prove to the entire satisfaction of the committee that after the cutting of the cane it "should be immediately worked up" for the production of sugar. The results submitted to the committee also indicate that the exclusion from the matured cane of all immature cane is of the greatest importance if the manufacture of sugar is contemplated, and show the importance of an even crop with no suckers in its manufacture for sugar. The committee also find that "prompt working of the cane so soon as cut is always safe, and any delay is fraught with unavoidable risk of loss." This conclusion is established as well by the work of Dr. Goessman as by that of the Department of Agriculture. The statements submitted by the Department also show that sugar has been made, from sorghum and corn stalks. "It will be seen from the reports of the past three years of the Department of Agriculture, as well as from a wide range of experience elsewhere, that sugar in large quantities has been shown to be present in the juices of sorghum, and maize also, which is of the first importance from the economical side. High grade marketable sugar in considerable quantity has been successfully made from sorghum juice, comparing favorably with sugar from the true sugar cane or sugar beet."

The committee have also found that the hydrometer and ripe seed are sufficient to indicate the proper time for working up the crop. It is shown, moreover, by the investigation at the Department, that the idea that the effect of rain would be manifest in the diluted juice and

that conversely a prolonged drouth would result in a concentration and diminution of the juice, is utterly unfounded and incorrect. It has been shown that when fully matured the sorghum stands even hard frosts without detriment, but if immature the effect is most disastrous.

With regard to the manufacture of sugar from sorghum, the experiments of the Department have shown that the statement of Dr. Goessman that "in sight of these facts it will be quite generally conceded that the sugar production from syrup like the above must remain a mere incidental feature in the amber cane industry in our section of the country" is entirely unfounded, and that the relative loss of sucrose in the syrup was only 5 per cent. of that present in the juice, instead of being, as Dr. Goessman found, 30.85 per cent.; and was no more than usual with sugar cane juice—a fact of the utmost importance to the farmer as well as to the manufacturer. With regard to the so called gum, a product of the manufacture, the committee say that in the purging of sorghum and corn-stalk sugar it happens very often that this operation is of unusual difficulty owing to the presence of a certain gummy substance, and this practical difficulty has been by some so magnified that the economical production of sugar from these two plants has been confidently declared impossible. In the experience of those in Washington as well as that of many other observers, this peculiar substance has been found often to be present in quantity so small as to offer little if any resistance to complete purging in the ordinary centrifugal. It appears to be formed by transformation of other constituents of the juice in the process of syrup production.

The committee recommend a still further investigation into the effect of fertilizers upon the growth of the sorghum and maize, variety of

soil best adapted to the production of sugar in these plants, the methods of defecation, and the processes of manufacture and use of lime or some other alkaline agent. The committee express the opinion that the fruits of the encouraging "policy of the Government towards the sorghum industry are already beginning to show themselves in the decided success which has attended the production of sugar from sorghum on a commercial scale in the few cases in which the rules and good practices evolved, especially by the researches made at the laboratory of the Department of Agriculture, have been intelligently followed. Sufficiently full returns from the crop of 1882 have already come to hand to convince us that the industry will probably be a commercial success." The report concludes with the suggestion that the "sugar-producing industries of the whole country, both that of the tropical cane at the South and the sorghum over a far wider area, will be vastly benefited by further investigations similar to those that have already been submitted to them."

The conclusion arrived at by the Department in the laboratory and mill as its special contribution to the sorghum industry, and the conclusions obtained elsewhere, are in the opinion of the committee as follows:

1st. Cane should be worked up as soon as cut.

2d. That suckers should not be allowed in the crop.

3d. That the exclusion of all immature cane is of the greatest importance in the manufacture of sugar.

4th. Sugar has been made from sorghum and corn stalks.

5th. Ripe seed will indicate the proper time for working the crop.

6th. Rain and drouth do not affect the quality of the juice.

7th. Mature sorghum is not injured by frost.

8th. Loss of sucrose in sorghum syrup is no greater than that in syrup from sugar cane.

9th. That the presence of gum in the syrup of cane and maize is

the great obstacle in the way of sugar manufacture.

These are the discoveries claimed by the Department.

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### SCIENTIFIC FORESTRY.

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Prof. Youman's views on what he calls the scientific cultivation of forests appear eminently sound and practical. All that is needed, he says, so far as the tillage of the crop is concerned, is to observe the action of nature in the forest, and follow it, or utilize it advantageously when that can be done. The object of the cultivation should be to obtain the utmost possible advantage from the soil by keeping it always covered with a growth of trees; and, when the trees arrive at maturity, to remove them in such a manner that the smallest possible interruption may be caused to the productive work of nature. When the time has come for the removal of the timber, the ground should on no account be cleared of trees at once; but a beginning should be made by felling a tree here and there, and so breaking the thick cover of the forest as to allow sufficient light and air to reach the ground and cause the seed which has fallen to germinate. In this way about one-fifth of the mature trees should be removed every five or six years, never by making large gaps in the cover, but taking a tree here and there, and always leaving the finest and most vigorous trees till the last, so that in about thirty years the whole of the old trees will be cleared off, and a new forest established in their place. Thus the seeding of the wood will be effected by the agency of the finest trees, which will be themselves all the while increasing in bulk, and the productive power of the soil

will be utilized to the fullest possible amount.

It is not only in the removal of the timber and the reproduction of the forest that we ought to study the action of nature, but it is equally necessary that we should do so in the felling for the improving of the growing crop, or, as it is commonly called, the thinnings. Little is to be done in the earlier stages of a forest's growth except to keep the heads of the most valuable species from being overtopped by those which stand near them; this can be done best, not by removing the others, but by cutting off or breaking the tops; for it is desirable at this stage, for the sake of the natural pruning, to have the trees growing as thickly together as possible. At a later stage, thinnings can be judiciously arranged so as to pass through the entire forest at intervals of from ten to fifteen years, enabling the whole area to be operated on in turn. In executing these, the most difficult of all forest operations, it will be well to remember that the object is to give room to the heads of the trees, and not to their stems, for the stems will never be too close together as long as the heads have room properly to develop themselves. The favoring of the most promising trees, and the removal of the weaker ones, together with the preservation of continuous shade to the surface of the ground, while all the trees have sufficient room to grow, should be the particular ends aimed at.—*The Sugar Planter (La.)*.

**DO NOT WASTE BONES.**—The bones of fish, bones of fowls, the large and small pieces of bones which are purchased with beef steak and mutton, constitute the very best food for fruit trees and grape vines, if the fragments are only placed where the roots can lay hold of them. Instead of allowing pieces of bone to be cast into the back yard as food for stray dogs and strange cats, domestics should be directed to deposit everything of the sort in a small tub provided with a lid. As soon as only a few pounds have accumulated, we take the tub to some grape vine or fruit tree, dig a hole, three or more feet long, a foot or two wide, and not less than a foot deep, into which the bones are dumped. Spread over the bottom of the excavation, and covered with the soil. The more the fragments can be spread around, the better. But they should be buried so deep that a plow or spade will not reach them. The roots of growing vines or fruit trees will soon find the valuable mine of rich fertility, and will feed on the elements that will greatly promote the growth of strong and healthy wood and the development of fair and luscious fruit.

Many horticulturalists and farmers purchase bone dust, costing not less than two cents per pound, simply to enrich the soil around and beneath their trees and vines. Fragments of bones are just as valuable as ground bone, although their elements of fertility will not be found available in so short a time as if the large pieces were reduced to small atoms. Nevertheless, if large bones be buried three or four feet from a grape vine, the countless numbers of mouths at the ends of roots will soon dissolve, take up, and appropriate every particle. When cast out of the kitchen door, bones are like a nuisance; whereas, if properly buried, they become a

source of valuable fertility. Let every person who owns a grape vine or fruit tree save all the bones that pass through the kitchen, and bury them where such worthless material will be turned to some profit.—S. E. T., in *American Garden*.

**ALUMINA FOR REFINING.**—Juenemann announces that he has succeeded in the preparation of a third modification of soluble alumina at less cost than that at which the other modifications of alumina can be manufactured. Moreover he claims that this modification of soluble alumina precipitates all coloring matter, salts and other substances from saccharine liquids with great readiness, without in the least attacking the sugar. This solution of alumina forms a colorless liquid, which is not affected by time and transport, and, according to its discoverer, it is up to the present time, doubtless, the most available and most effective substance for the refining of saccharine liquids of any kind. However, the inventor does not desire to publish the process of its manufacture until he has made a practical demonstration of the same, and secured his invention by patents.—*Organ des Central Ver. fuer Rubenzucker Industrie*.

The other two soluble modifications of alumina referred to, are the one discovered by Graham, and obtained by dialyzation of chloride of aluminum, and the one discovered by Crum.—*The Sugar Planter (La)*.

A new filter press for sugar manufacturing purposes, recently invented by Mr. Charles de Zafra, of Cuba, is being highly spoken of by all the planters and other parties who take an interest in sugar making; the yield of the juice in sugar, it is said, will be increased by 3 per cent. or more by the use of this new and valuable apparatus.