SUGAR and PLANTATION NEWS

PLANTERS MAY GET NITROGEN FROM AIR

Renewed Interest In Scheme To Develop Hawaiian Electric Power Resources

Processes Now Used In Europe May Be Installed By Local Engineer

Cyanamide is a product resulting from the artificial fixation of atmospheric nitrogen by means of the electric furnace. Cheap electric power is one of the necessary factors in its manufacture, and the primary materials required are limestone, coke and nitrogen gas. As a fertilizer, cyanamide holds a place intermediate between nitrate of soda and ammonium sulphate. The possibility of its manufacture on a more extensive scale has been given prominence through the lack of nitrogenous fertilizers since the war.

J. T. McCrossen investigated the possibilities of cyanamide manufacture at the time the Hamakua Ditch proposition was put through eight or more years ago and visited some of the German and other European cyanamide plants. Water power is one of the essentials for producing electric energy at a low cost and it was then thought that the great waterfalls along the Hamakua and Kohala coasts might be harnessed and their power used for this purpose.

Process Invented in Germany

The manufacturing of cyanamide was developed by two German engineers, Frank and Caro, about ten years ago, and they hold the basic patents covering the process. The first operation is to make calcium carbide by heating a mixture of burned lime and coke at very high temperatures in the electric furnace. The carbide is then finely ground and placed in closed retorts, and again heated to very high temperatures in an atmosphere of pure nitrogen. The nitrogen gas is obtained pure either by passing air through a hot tube containing copper shavings, or by the liquid air process.

The cyanamide manufactured in this manner contains thirty to thirty-five per cent nitrogen. It absorbs water from the air and gives off ammonia gradually. The best way to ship it long distances is to transform it further into nitrate of ammonia.

Cheaper Nitrogen

Cyanamide heated with water under pressure, splits up into ammonia gas and lime carbonate, and the neutral salt, ammonium nitrate, is formed by washing the ammonia with dilute nitric acid which in turn is also made direct from air by electric power. Ammonium nitrate does not change or deteriorate in shipment, or in storage.

At Niagara Falls a factory is producing cyanamide at a cost of about ten cents per pound of atmospheric nitrogen fixed. Recent newspaper reports state that the Niagara Falls plant is being enlarged and that a number of new companies are being formed to manufacture cyanamide there and at other locations where water power is available. A factory to produce ten thousand tons per annum would cost in the neighborhood of half a million dollars, it has been stated.

Patents Soon Expire

This renewal of interest is also due in some measure to the fact that the basic patents held by Professor Frank will soon expire by time limitation. Mr. McCrosson visited the great cyanamide factories at Ludwigshafen on the Rhine in 1908, and after investigating the process endeavored to secure the patent rights for Hawaii.

Professor Frank at that time refused to grant the use of his process to any concern which was not equipped to produce at least 25,000 electric horsepower. His observations had led him to believe that atmospheric nitrogen could not be economically fixed except by the use of giant installations. As the highest development of electric power at that time considered feasible by Mr. McCrosson and his associates did not exceed 2000 h.p., Professor Frank strongly disapproved the proposition and the idea was abandoned.

Direct Current Used

Only direct current is utilized in the atmospheric nitrogen transformation process of Frank and Caro. The primary installation must be one capable of developing a tremendous volume of power, but in its application the power is split up into small units. There were a thousand or more small electric furnaces or retorts in use at the Ludwigshafen factory, and this plant was much smaller than the great factories that had been built in Norway.

One factor in the problem at that time was that one man could care for a very large number of retorts or furnaces during the process of manufacture, while smaller plants with less power and fewer furnaces had to have just as many laborers.

Many Improvements

In the last eight years there have been many modifications and improvements in the process so that smaller power installations can be economically used.

Calcium nitrate is also manufactured by direct current electric power under a process patented by Birkeland-Eyde and there are a number of factories in operation for the manufacture of this fertilizer, chiefly in Germany and Norway.

Mr. McCrossen said yesterday that there are a number of undeveloped sources of cheap electric power in Hawaii that might be utilized for cyanamide and lime nitrate manufacture, and something may be done in this direction after the expiration of the basic patents covering the two processes.

Necessary for Munitions

In this connection it is well to remember that nitric acid is the base of most of the modern high explosives and if the United States is to be fully prepared for war the manufacture of nitric acid is a necessary step toward full preparedness.

A New York despatch of December 29 states that "nitric acid, obtained by extracting nitrogen from the air will be put on the market shortly, according to a statement today by James B. Duke, one of the officers of the company owning the process.

"This announcement follows close upon a recommendation of Brigadier General William Crozier, chief of ordnance of the United States army, who in his annual report urged that the nation take steps to be independent of the Chilean beds for the nitrates used in making gunpowder.

"General Crozier is also the inventor of the Crozier-Buffington disappearing gun.

"Mr. Duke's company expects to turn out four tons of nitric acid a day from its works at Great Falls, South Carolina."

The manufacture of nitric acid in Hawaii would be one more step in the direction of defense. Such a plant would, therefore, serve the double purpose of supplying necessary fertilizer ingredients in peaceful times and the primary source of gunpower, should Hawaii be blockaded in war time.

TO REPEAL FREE SUGAR

Senator Broussard of Louisiana on January 5 introduced the following joint resolution No. 67, which was read twice and referred to the committee on finance:—

"**JOINT RESOLUTION** To suspend the final proviso of paragraph one hundred and seventy-seven, Schedule E, of the Act of October third, nineteen hundred and thirteen.

"Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That the final proviso of paragraph one hundred and seventy-seven, Schedule E of the Act of October third, nineteen hundred and thirteen, entitled 'An Act to reduce tariff duties and to provide revenue for the Government, and for other purposes' (commonly known as the Underwood bill), and reading as follows: 'Provided further, That on and after the first day of May, nineteen hundred and sixteen, the articles hereinbefore enumerated in this paragraph shall be admitted free of duty,' be, and the same is hereby, suspended."

WAS RECIPROCITY TREATY ABROGATED BY UNDERWOOD ACT?

Senator Broussard has introduced a joint resolution No. 68, which, if passed, will permit the state of Louisiana to enter suit in the United States Supreme Court to determine whether the Underwood tariff act "is being properly construed and executed by the secretary of the treasury of the United States, all as set forth in the petition filed by the attorney general of the state of Louisiana with the clerk of said court on the third day of march, nineteen hundred and fourteen."

The Louisiana contention is that the Underwood act abrogated the Cuban reciprocity treaty and it is this cause that the southern planters ask permission to try.

When Cane Is Ripest

From records kept by the plantations during the last ten years it is plainly evident that the period from February 1 to April 1 covers the time during which the cane is at its best condition of ripeness. At this season it takes fewer tons of cane to make a ton of sugar, and both purity and sucrose are at their highest. On some plantations and in some years the period of maximum ripeness may extend another thirty or sixty days, but almost everywhere the two months from February to May are the period when the cane is at its very best.

Hence there should be very little floating labor in Hawaii, because there is abundant work for all. The planters are all laying plans to put their properties in such a fine state of physical development that the lion's share of the crop can be harvested during this period. It will be a number of years before this is accomplished, but all are moving in that direction. Ten thousand more laborers than are now available could find steady work from now until September.

Wool Prices Soar

Wool prices are up to thirty five to thirty-nine cents for grade and pure Merinos. A series of public wool sales have been held in Sydney and Melbourne this month, and it is anticipated that new price levels will be reached. Hawaiian ranchers are getting splendid returns for their clip.

REFINED EXPORTS STEADY THE PRICES

New York Brokers Report No Change In the Market Outlook

About 210,000 bags of raw sugar were sold at New York during the week ending January 15. Willett & Gray state in their summary, in part, that stocks in the United States and Cuba together were 170,564 tons against 142,600 tons last week and 241,216 tons last year, a decrease of 70,652 tons from last year.

The only change for the week was in Cubas, which declined slightly.

The business of the week mostly in futures, and quotations for such have been at 4.45c for January, 4.39c for February and 4.33c per lb. for March.

Market Is Steady

With increasing numbers of Centrals working on the Cuba and Porto Rico crops, the tone and tendency is naturally towards some reduction in prices, but thus far other circumstances have intervened to keep the price comparatively steady, such as the quantity of Cuba sugar already for Europe and awaiting shipment, and also the difficulties which still exist in the securing of tonnage for the United States, even at very high rates. In this connection one Cuba freight line has issued some new and strict regulations to facilitate the quick unloading and return of the steamers to Cuba, which may help matters somewhat.

Conditions point to a continued steady market for the coming week or with small reductions in futures of February-March shipments.

Atlantic Port figures for the week were, receipts 22,702 tons, meltings 37,000 tons, stock 61,086 tons, against stock last year of 116,74- tons.

Cuban Mills Grinding

Receipts for the week ending January 8 are 61,551 tons, against 40,000 tons and 58,000 tons for the corresponding weeks of the two previous years, respectively. This shows that the crop is progressing in good shape and is as must be expected if a 3,000,000 ton crop is to be made this season.

Exports of new crop sugars for the week were 25,610 tons, of which around 8,773 tons are destined to Europe, and the balance, 16,837 tons, to the United States Atlantic Ports. New crop stock is increased to 77,941 tons. There were no old crop receipts or exports, and the old crop stock remains unchanged at 475 tons. January 10 there was 135 Centrals grinding, against 113 last year and 143 in 1914.

Visible Production

Visible production to January 8 is 152,400 tons, compared with 99,674 tons to same time in 1915, and 196,181 tons in 1914. The weather has continued favorable for harvesting throughout the week, although a few light but unimportant rains occurred, according to our special cable, and at latest report 143 Centrals are grinding.

A special cable from Batavia gives exports during December of 54,000 tons to Asiatic ports and 23,000 tons to Australia. There were no shipments to Europe during the month, although 40,217 tons were shipped to Europe in December, 1914. Total exports out of this crop to Europe have been 353,291 tons, against 627,463 tons to same date last year. Total exports to all countries compare, 1,020,000 tons, against 1,153,446 tons last year.

Refined For Export

The change of the week has been the reduction by all refiners to 5.75c, less 2%, for Fine Granulated. This reduction does not represent fully the normal difference between raws and refined, and further reduction in refined is quite likely when the next change comes.

Business in Granulated for export has shown quite an increase since the turn of the year, and most refiners report a very steady business in moderate-sized lots, which amount to considerable in the aggregate amounts. In fact, total business has reached such proportions that it is now difficult to secure January shipments for export.

Some February Orders

Besides January shipments, the business has extended into February. Another important part of the refining capacity was taken up by the confirmation of the 25,000 tons of refined sugar, which has been taken by England for January—February shipment, in exchange for an equal quantity of raws owned by the United Kingdom, plus a refining toll.

Gypsum At Waikiki

Deposits of selenite, or crystalized gypsum, which is nothing more than sulphate of lime, are very often found in the stiff, adobe clays in the vicinity of Honolulu. The "salt" deposited on the surface of the Waikiki flats after heavy rains consist mainly of selenite. Crystals of common salt glitter in the light. Gypsum crystals do not.

Kohala Will Grind Soon

Kohala Sugar Company will commence grinding the 1916 crop next Monday, January 31. The 1915 crop was 7600 tons, the largest the plantation has ever harvested.

PRESENT DUTY CERTAIN: MAY BE INCREASED

Direct word has been received by The Advertiser from Washington from a source that is authoritative, that the finance committee of the house has already definitely decided upon one phase of its tariff program as it relates to the sugar duty, and the Gore resolution and the other attempts on the part of the refiners to have an excise duty substituted for a tariff duty are not to be considered.

The duty as it exists is to be extended and congressional action will be taken not later than April, while there exists a strong possibility that when the final action is taken the rate of duty will be increased and brought back approximately to the old figure before the Underwood Tariff came into effect.

The Administration, says the Washington cable, is trying to avoid a further increase in the tariff, "but the general opinion is that this cannot be avoided." The government is under heavy pressure because of insufficient revenues to carry out the preparedness program, and this pressure is such that "it is almost certain that the duty will be increased under the new tariff."

This information is direct and authoritative and may be so regarded.

SULPHURIC ACID MAY CURE LAHAINA DISEASE

That alkali lands may be reclaimed by treatment with sulphuric acid is pointed to very strongly by experiments of the University of California.

These new hopes of alkali-reclamation are based on investigations carried out in pot experiments in the greenhouse in Berkeley, and in field experiments in small plots at Kearney Park near Fresno. The field experiments, used to confirm the pot experiments, are even more striking in their results.

The action of the sulphuric acid is three-fold: it entirely neutralizes sodium carbonate, the corrosive "black alkali" salt; it shrinks the jelly-like, easily-swelled materials in the soil, known as "colloids," which are put into a very badly diffused and swollen condition by the washing out of salt by the winter rains or by irrigation; it sets free some chlorine, from the common salt, therefore changing all alkali that does remain into sodium sulphate.

Sodium sulphate is the least harmful of the three salts common in alkali land. Plants can stand very much more of that salt than of the others, and because sodium sulphate is less soluble than the others, and besides, sodium sulphate is less soluble than the other salts. Not only sodium sulphate, but also calcium sulphate, magnesium sulphate, and other metallic sulphates are formed, and these have been found to have the power to prevent the poisonous action of sodium sulphate and of other salts.

Therefore, through changing the corrosive "black alkali" salt into sodium sulphate, driving off chlorine from the common salt, and making that into sodium sulphate, by shrinking the "colloids" (or jelly-like, easily swelled materials), and by producing calcium and magnesium sulphates, the soil can be changed into one containing only one kind of salt, and by the shrinkage of the colloids can be made much more pervious to air, and therefore a more favorable place for the necessary bacteria and fungi to live in.

The immediate application of this practise would be to cure the conditions which are supposed to cause Lahaina disease of cane. Manager G. F. Renton has experimented with sulphuric acid in the irrigation water at Ewa and by the end of 1916 will have something to tell either in favor of or against this method of controlling Lahaina disease.

That One-Cent Tax

William G. McAdoo, secretary of the treasury, on December 17 made categorical reply to the questions asked in Senate Resolution No. 21, December 16, as to "an estimate of revenue to be derived from duties and excise taxes on tea, sugar and horsepower of automobiles."

The reply reads:

"First—A duty of ten cents per pound on tea would produce $9,412,901.50;

"Second—A duty of 1½ cents per pound on sugar would produce $74,016,990, and with a twenty per cent reduction on the Cuban sugars it would be $60,946,000;

Third—An excise tax of one cent per pound on sugars produced in the United States and its island possessions would produce $41,378,733; and

"Fourth—An excise tax of twenty-five cents per horsepower on the production of automobiles, to be paid by the manufacturer, would produce $5,250,000.

"Respectfully, W. G. McAdoo,
"Secretary."

Barrels Replacing Bags

The shortage of jute burlaps and bagging is more serious on the mainland than here, and many industries are turning to other forms of containers, both for handling and marketing their products. Barrels are being used more extensively than for many years, the mainland trade papers state.

It has even been suggested that raw sugars may again be shipped from Porto Rico and Cuba in hogsheads instead of in burlaps, while the refiners, the Louisiana factories making direct consumption white sugars, and the domestic beet sugar mills are all using barrels and boxes more extensively than ever before. Letter advices from the Orient state that large supplies are offering in the Indian markets. The difficulty is to get ships to carry the freight to market. The question of getting the 12,000,000 or more new bags needed for Hawaii's 1917 sugar coffee and rice crop will soon be taken up in earnest by the agencies. Most of them have all they need for 1916.

WHY IS OLAA STOCK WORTH MORE MONEY

Efficiency In Production With High Prices Has Carried Plantation To Success

One reason why Olaa stock values have jumped during the last twelve months is because of the steady material improvement in the physical condition of the plantation.

The company controls an area of 22,090 acres, of which a third, 7174 acres, is cane land, and of this 2970 acres is owned, the balance being leased. It has an excellent mill and is well equipped in production and transportation facilities.

Olaa has steadily increased "tons of sugar per acre" each crop since 1913, and has also advanced in "total recovery" and "factory efficiency" until it now stands ninth in the list of Hawaiian sugar producers. It is the realization of this fact that Olaa has permanently entered the ranks of the leaders that has caused a change of public sentiment as to the actual value of that plantation.

Performance Counts Most

"Performance" would have carried the value of Olaa stocks to par inevitably and irrespective of all other considerations. The high selling prices received for sugar since August, 1914, has brought immediate realization of the successful issue which was inevitable but which at low prices would not have come for several years.

Small volumes of Olaa stocks are widely held. Nevertheless the public who speculate through buying and selling do not realize that by far the larger proportion of the stock has been closely held by its original owners from the beginning. The larger shareholders have not "unloaded," although the larger speculators have perhaps done so.

Faith and Works

Olaa shares have increased in value because the actual and potential value is there. "Tons per acre," "factory efficiency" and "total recovery," with "costs per ton," are what fix the actual market value of all plantation stocks. Another year of high prices for raw sugar will make Olaa stock worth its face value irrespective of its dividends on the common stocks or use the profits for bond redemption or for betterments and improvements.

Speculators will be carried along by the tide, but the chief gainers are the men who paid $20 a share for their stock and have stuck by their proposition from the very beginning because they had the supreme faith that moves mountains or creates new industries.

TERRITORIAL TAX RATE PRACTICALLY SETTLED

The territorial tax rate for the current year will be either 1.27 per cent or 1.275 per cent. Information from Maui received by the territorial treasurer, Colonel McCarthy, yesterday, enabled the treasurer to complete the estimates which he has been making for some time.

The formal announcement would have been made yesterday but for the difficulty caused by an item of $3500 in the expenses of this city, which had to be referred to the attorney general for an opinion.

This sum is interest on the $105,000 turned over to the city by the territorial loan fund, and a part of the interest on the sinking fund, which was held out of the 1915 taxes by the auditor.

SUGAR ON HAWAII

Sugar reported by the Manna Kea as awaiting shipment at Hilo, is as follows, by bags and plantations:—Olaa 7590; Wainkea, 2000; Hawaii Mill, 2500; Hilo Sugar, 7200; Onomea, [illegible]; Honomu, 400; Laupahoehoe 660; Kaiwiki 1200; Honokaa, 5100; Paauhau, 3375; Kukaiau, 100.

ROTTING THE TRASH SAVES THE POTASH

More Good Reasons Why Planters Are On Right Taek Now

There is enough potash in Hawaiian cane fields to produce many annual crops, if it can only be made available. Green manuring and burying the trash are, together, the key to unlock these enormous stores of unused potash. When organic fertilizers are turned into the soil the soil bacteria begin to destroy them, or, in other words, the fertilizer "rots."

In the course of the rotting process enormous volumes of carbonic acid gas are set free in the soil. It is now known that this gas is produced by soil bacteria, because many investigators have proved by experiment that earth artificially sterilized does not give off carbon dioxide. It has also been proved by scientific experiment that certain groups of soil bacteria produce organic materials direct from inorganic, using the carbonic acid gas in the soil as their source of energy.

Soil Becomes Laboratory

When the gas is superabundant in the soil, as it is during the decay of green manures and trash, the gas is dissolved by the soil water, making a weak acid. This weak acid, it has also been discovered, is a powerful solvent of the potash and phosphoric acid that has been "fixed" by the iron, silica and other mineral elements, and which would otherwise remain insoluble, and unavailable to the roots of growing crops.

Hence the use of green manure crops like san hemp, and plowing under the trash will help solve the immediate problem caused by the world's shortage of potash fertilizers. There is enough potash in some fields for a hundred crops of cane.

A Full Cycle

Rotting organic matter incorporated in the soil produces carbonic acid gas which in turn mixes with the soil water to make a weak acid, and this acid breaks in to the locked stores of mineral plant food and makes them available.

It has been the habit to look on green manuring from simply the nitrogen point of view. The advantages of using trash and green manures are wider and more far-reaching. Lime must always be used with either the trash or the green legumes. Lime greatly enhances the rapid decay of all organic substances in the soil.

COUNTING THE COST AFTER THE STORM

'It Might Have Been Worse' Is Verdict On All Plantations

Damages from the late storm appear to have been confined almost entirely to the central Maui plantations and Kaeleku. There was not a quarter as much rain on Kauai as on Maui, and the only loss was the lowering of the juice. The worst effect of the storm in that part of the group was all at sea. The Oahu plantations report more gain than loss from the heavy soaking. The rain stopped the harvest but all mills are now again grinding.

From Maui, H. Hackfeld & Company report the loss at Pioneer, practically nothing. A scow loaded with sugar was swamped and 166 bags of the sweet stuff got a wetting. A few bags of feed were soaked in one of the warehouses. Total storm damages at Lahaina will not foot up over a thousand dollars, they state.

Central Maui Hit Hardest

C. Brewer & Company have little further information to give as to the plantation losses at Wailuku. George H. Robertson said yesterday that fifty thousand dollars will cover it. The repairs to buildings, flumes and bridges will not cost $20,000, at the outside.

The biggest loss is the invisible loss, from broken cane which will stay in the fields at harvest, and the extra expense of hoeing and cleaning out the water courses. The extra labor bill for again putting the fields in condition where they can be irrigated is the chief expense resulting from the storm as far as Wailuku Sugar Company is concerned, he said.

Invisible Losses Largest

Alexander & Baldwin place the total H. C. & S. Company damage bill at not to exceed $200,000. Twenty-five per cent of this will cover the cost of repairs, while $150,000, at the outside, will cover the invisible losses, which are of the same nature as at Wailuku. The full fury of the storm swept Kula, and the Kihei cane fields. Maui Agricultural and the Haiku section lost very little. In Kula the gale was almost a hurricane and the small farmers were hit a good deal harder than their bigger neighbors on the lowlands. Trees were blown down, buildings unroofed or overturned, roads gullied, and reservoirs washed out or choked level full with soil and boulders. It was the worst storm that has hit Kula in sixty years.

Theo. H. Davies & Company have not received a full report of the losses at Kaeleku. Mr. Swanzy said yesterday that the mill is uninjured. The wharf is gone, labor camps pretty generally smashed up, and the cane badly damaged in places, but no estimate of the cost can be made until a full survey has been made.

Hawaii Was Lucky

Hawaii got off almost scott free. The storm which hit Kau was a private affair that did not reach to the other districts. The blow was sharp and short and repairs were soon made. The mill at Pahala is grinding again at full capacity.

Olaa is having fair weather, the main flume is running full, and harvesting is proceeding rapidly. North Hilo mills report a shortage of water for cluming and only water enough to grind during the daytime. Hamakua is having fair weather. Kohala got the rain, but no wind, and no damage has been reported.

Taken as a whole the storm did the plantations more good than harm and if nothing worse comes along between now and April no one will have much to complain about.

NEW MOUNTAIN KING LEAD SHOWS UP WELL

December Cleanup Was $18,716, With $9234 Net Profit

Good news has come for the stockholders of Mountain King mine. The new 1100-foot level has been found to carry the same quality of ore that the 1000-foot level did, which confirms the belief of the continuity of the ore body between the two levels.

The December cleanup of the mine was $18,716, of which there was net $9234, after deducting all expenses including taxes and insurance. At a price of $6.56 a ton received for the ore, 2850 tons were milled. This was with twenty stamps running all but two days of last month.

The ten extra stamps have been installed and they will be in operation now that the new level has produced the same quality of ore as the other.

Having no quorum the public utility commission did not meet yesterday as scheduled. Commissioner J. N. S. Williams is still in the island of Hawaii and Chairman Forbes has not returned from the mainland. Both are expected to arrive shortly, however.