



# SUGAR PLANTERS

## SUGAR MOVEMENTS TAKE ON GREATER SPEED AT LENGTH

Total For First Half of Month Indicate Last Year's Average May Be Reached

### PROSPECTS BRIGHTEN FOR MORE SHIPPING

Thirty Thousand Tons Said To Be Going By Canal And First Cargo Has Departed

Movements of sugar in the past two weeks have attained a speed that is highly encouraging to Hawaiian shippers. Shipments thus far in July have been at a rate almost equal to the average monthly shipments of last year and indications are that the rate may be kept up and that certainly the shipments will be in excess of June which was the best month of the present sugar year and was 10,000 tons above the average for the past seven months.

For the two weeks from July 3 to July 17 shipments of sugar were 29,000 tons and last year, with more shipping available than thus far this year, the average of monthly shipments was 60,000 tons. There is the probability of that figure being equaled or exceeded this month. June shipments were 50,000 tons.

Indications are not wanting now that a speed of 60,000 tons a month may be maintained and even surpassed for the rest of the sugar year. If it is maintained it will mean that the last of the sugar, except for any late grind there may be resulting from labor shortage, will have been moved by the middle of November. This would be two or three months earlier than has been indicated by the slow movements of the first seven months of the present sugar year.

Reports are here, and these reports seem to be fairly well authenticated, that a considerable quantity of sugar is to be moved east by all water routes. Thus again there comes a change in announced plans which have been changed from time to time, back and forth, for months past. First sugar was to move east by the canal, then all were to go overland, then again the canal was proposed and again that plan was abandoned. All sugar was to be refined on the Pacific Coast and on top of this announcement sugar cargoes were diverted to the East and sent overland. Then came an increase in rail freight rates and now, once more, comes the report that shipments are to be by the canal and that at least 30,000 tons are to be moved by that route.

Already one cargo of raws has left Hilo for Philadelphia, between 7000 and 8000 tons in the shipment. Other large sized cargoes are expected to leave the islands at an early date or dates.

Eastern shipments when the sugar goes to San Francisco and thence overland, are costly to the Hawaiian grower and especially so since a twenty-five percent freight increase went into effect. With profits none too large each dollar of cost or of saving in cost on each ton shipped is magnified beyond ordinary proportions. Thus the news that sugar is to move east by way of the canal instead of by rail, is of a gratifying tone to local growers and to the news from the mainland the prospect for sugar movements late this year and through next year are much brightened. Building is going on rapidly and there is every reason to hope, even to expect, that an ample supply of bottoms will be ready for the movement of the last of this crop and the first of the next. It is not to be expected that these vessels will be fast and large but the shippers here will not be particular and if sugar can be moved with the usual total of shipments each month a few days more or less in reaching destination will be of no great importance.

## BIG LAND PURCHASE MADE BY SPRECKELS

SAN FRANCISCO, July 15.—John D. Spreckels of the Hawaiian Islands yesterday bought six blocks or parts of blocks on both sides of Twenty-fourth Street from Louisiana Street to the waterfront. They paid \$100,000 for the property. About 150,000 square feet of land is included in the transaction. The property is immediately to the south of the Western Sugar Refinery and California Barrel Factory. The property is tideland. The deal goes in the name of the J. D. & A. B. Spreckels Security Company, in which much other realty owned by the brothers is carried. Word was sent out at the office of the company that the purchase was to extend the business of the Spreckels brothers.

## ARGENTINE SUGAR

During the sugar harvest of 1917 Argentine produced 88,076 metric tons of sugar from 1,132,229 tons of cane, according to the figures presented to the minister of agriculture, by Dr. Emilio Lahitte, director of rural economy and agricultural statistics, a translation of whose report appeared in a recent issue of the Review of the River Plate.

# Nitrate Problem May Be Solved By Manufacturing New Fertilizer Here

(By E. J. MOOKLAI)

Referring to recent comments in The Advertiser on the subject of the nitrate problem and to a statement attributed to a prominent man in the fertilizer business that the goal office of Secretary Lane should be sought for aid in offsetting the threatening nitrate shortage in these islands, the following official facts in the premises may be of interest to your readers.

Many have no doubt read what you have thus far presented—some (in the agricultural industry) with deep interest, while others may have viewed the matter with only a superficial concernment, and still others may not have caused a reflection at all.

The nitrate problem affects not only Hawaii but the whole civilized world, for example, the successful production of our ships in this war against the Hun, must depend upon this same nitrate problem. And so for the future of agriculture throughout the world even if the present war had not occurred, it is almost certain that about the year 1920 there will be a nitrate shortage and a year or two after that, for some reason, will have the lands of civilized men. Our government's need of nitrate in the present conflict makes the situation the more critical.

Known Supply Limited

At the present time the world is dependent upon a narrow strip of land between the Andes and the coast hills of Chile for its nitrate. Chile produces or exports about 1,000,000 tons annually, and a year or two after that, for some reason, will have the lands of civilized men. Our government's need of nitrate in the present conflict makes the situation the more critical.

So the question is, and has been, "Must we die by and about the fate that threatens us, or shall we arise and diligently scour the earth, sea and sky in search of possible means of our salvation?"

Since the first day dawned upon living man, necessity has ever been the mother of invention, and the following is an attempt at the recital of one of the latest chapters in the long and interesting story of man's never-ceasing struggle for existence.

Nitrogen Essential

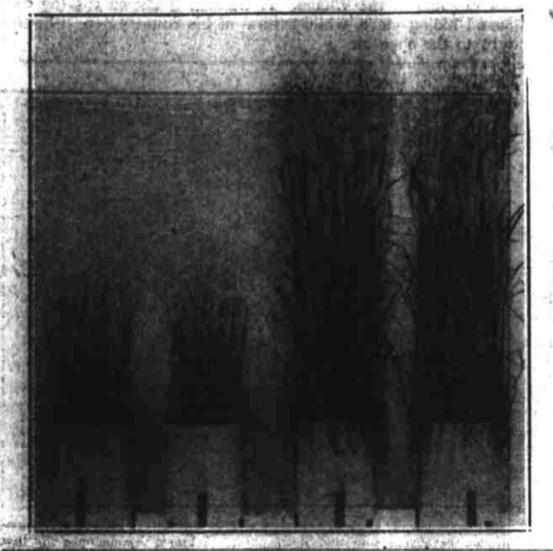
Among all the chemical elements there are four which are very intimately associated with life, and these are: nitrogen, oxygen, hydrogen and carbon. In the phenomena of life and death, of growth and decay, these four elements play the most important and the most mysterious part; but most conspicuous among them is nitrogen. There can be no life without it. This seems paradoxical, since in its solid, related state, nitrogen is the very quintessence of lifelessness and unproductiveness. It is a colorless, odorless, tasteless gas which, in an undisturbed atmosphere, it is not possible to live without. It is the gas which, in the form of nitrate, is the total bulk of the earth's atmosphere. It is estimated that the atmosphere consists of this gas, while on every acre of the earth's surface there rests a mass of 3,500 tons of it. And yet we are dependent upon its extermination for the most of nitrogen to grow the crops we plant for food. The "why" of this anomalous situation is, that atmospheric nitrogen in its elementary form is not available either to animals or the higher order of plants. Animals require their nitrogen in the organic form, as in the readily made tissues of other animals or plants. Likewise, most plants are unable to feed upon, or assimilate, atmospheric nitrogen in its free state, being dependent upon nitrogenous substances contained in the soil, such as nitrates of potash, of soda and of calcium, and ammonium salts, etc. Among the very lowest forms of vegetable life, however, there are fungi which are capable of absorbing and assimilating nitrogen directly from the air, and of storing it up within their tissues as organic matter on which higher organisms may feed. Besides these, there are nitrifying bacteria which act upon decaying animal matter, such as urine and dung, and, by a series of oxidations, convert it into nitrates, in which form it may serve as plant food.

But these natural processes are too slow and the operations too isolated to be especially useful in the scheme of modern intensive agriculture. Man has, however, benefited immeasurably by the expanding of this hypothesis of nitrification, as it has given positive knowledge to him of the efficacy of manure as a fertilizer and of the virtue of legumes in rehabilitating worn-out soils. Good as these have been, we need something that is quicker in action and under better control, so the quest for a nitrate substitute has been going on assiduously, and for the purposes of this article, the solution of the problem and results attained might be told in this manner:

Answer In Skies

Old Dame Necessity, put to her wits' end in this nitrogen crisis, decided to call upon her good friend Mother Nature. It was on a dark, forbidding night in the depth of winter. Rain fell in torrents, and the sky was fairly shattered by thunder and lightning. Mother Nature was "at home," and when the problem was submitted to her she quickly pointed to a flash of lightning more vivid than the flashes that had preceded it and explained: "You will find your answer there!"

CYANAMIDECAS, a fertilizer for oats. At the left are shown two pots of oats grown without fertilizer while at the right are two pots grown with the use of this new fertilizer. The oats were all planted at the same time and the pots stood side by side making growing conditions identical except for the fertilizing of the soil.



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Following this lead, it has been discovered that in the manmade imitation of lightning, the electric arc, a certain percentage of oxide of nitrogen is formed when the electric discharge takes place in a mixture of oxygen and nitrogen (or plain air) in a specially constructed sparking-chamber. This oxide is caught in absorbing towers in water, in the formation of nitric acid, or in lime or soda in the formation of artificial nitrates of lime and soda.

From data based upon the actual running of such a plant, nitric acid has been produced from the atmosphere (and water) at a cost of about two and a half cents a pound.

Nitrate Made Here

In far away Norway an anhydrous nitrate of lime (calcium nitrate) containing 13 percent of nitrogen is being manufactured along these lines, the particular plant turning out from 3000 to 5000 tons of nitrates per annum. And it is estimated that nitric acid can be manufactured from air in Norway at a cost 30 percent below that of nitric acid made elsewhere from Chile salt-petre.

Nitric Acid

There are various methods used in making this atmospheric nitrate, which, while similar in principle, vary in application, and more particularly in the character of the electrical discharge. Some use arcs of great intensity and small volume and others use arcs of great volume and small intensity, but both yield per unit of plant is claimed to be found in the Fleming arc, which is employed in its scope of capturing a maximum of oxidation. An absorbing current of from 3000 to 4000 volts is used and the diameter of the flame produced is about six feet. By means of blowers about 3000 cubic feet of air are forced through these furnaces every minute. After leaving the furnace this air contains one percent of nitric oxide. The heat of the air leaving the furnace is utilized to raise steam in boilers before it enters the absorption towers, which are about fifty feet high, built of granite slabs and filled with lumps of nitrates, over which the water trickles. From tower number 1, fifty percent of nitric acid is drawn off; from number 2, twenty-five percent; from number 3, fifteen percent; and from number 4, five percent. Tower number 5 contains milk of lime and tower number 6 beds of lime. The nitric acid is added to lime sludge and the solution is concentrated until it can just be poured into copper tubs, and it is almost anhydrous nitrate of lime, containing, as before stated, about thirteen percent of nitrogen.

In Italy still other methods are followed, and improved results are claimed by oxidizing air under heavy pressure.

Experiments At Home

Coming back to our beloved United States we find the Atmospheric Products Company at Niagara Falls working on the same problem. Here operations are carried on in a sparkling-chamber which consists of a large cylindrical metal box lined with vertical rows of contact points, each one of which is in connection with the positive pole of a dynamo generating a direct current of about 8000 volts. Inside the chamber is a central shaft provided with a similar set of negative contacts in the form of long rods, all connected with the negative pole of the dynamo. This cylinder rotates at the rate of 500 revolutions per minute, and as each negative contact comes up to a positive one, an arc is produced, and in the course of a minute, 400,000 such arcs occur. In this apparatus about two percent of the outgoing air is converted into oxides.

Where lime and carbon are plentiful and electricity is cheap it matters not whether the Chili salt-petre beds become exhausted in 1925 or sooner. The price of the new compound depends upon the cost of the electric current used in producing it. It is estimated that the horse produces 21,230 pounds of manure yearly, containing 150 pounds of nitrogen, while the steers have in the same period will fix more than 550 pounds of nitrogen in the form of calcium cyanamide, which is considered equal to Chili salt-petre, or nitrate of soda, weight for weight of the nitrogen content, and is considered even superior to nitrate of soda as a fertilizer.

In certain of the sugar cane districts of these islands, and on Oahu in particular, there is talk of reduced yields per acre due to an increasing amount of alkali found in the soil. As the fields are not being low-lying it seems reasonable to assume that these fields are becoming more and more impregnated with salt-water from more elevated fields with the residue of the sodium nitrate fertilizers so plentifully used at the present time. In the new lime-nitrogen compound we may find a blessing in disguise, as lime is of acknowledged virtue in agriculture, whereas soda is more or less toxic in its effects.

It had hoped to settle all preliminary matters today as that the form of contract might be placed before the public for its suggestions. It is now planned to make the contract public after I have returned from Kauai. Thus we can assure the conscience of public opinion on this matter. I want to see it settled to the satisfaction of all concerned.

Formula Given

The formula for making this new fertilizer is: Ca C2 plus 2N equal Ca. N2 plus C. which, transcribed into plain English from the chemist's shorthand, reads: One part of Calcium Carbide and two parts of Nitrogen yield the compound Calcium Cyanamide and Carbon.

Besides the electrolytic methods of obtaining nitrogen from the atmosphere there are two other very novel methods, to wit: (1) By liquefying air and then distilling off the nitrogen, the boiling point of which is higher than that of the associated oxygen; (2) by means of the centrifuge. Most everybody knows that atmospheric oxygen and nitrogen are not in chemical combination, but are in what is called a "mechanical mixture"; a crude example of such a mixture would be fine sawdust and sand, a separation of the two being easily accomplished by throwing the mixture into water, where the difference in specific gravity causes the one to sink and the other to float. In the nitrogen separator advantage is taken of the fact of difference in specific gravity.

Highly Explosive

To illustrate the sensibility of iodide of nitrogen, an experiment was conducted in a large empty hall. Two bascule valves were selected for the experiment. One was placed at each end of the hall, and both were tuned in unison. The experimenter then rubbed one of the strings of one instrument with wet iodide of nitrogen (it is too sensitive to handle in this manner when dry), and when it had dried he went to the opposite end of the hall and plucked the corresponding string of the instrument there. The viola at the other end of the hall was shattered into match sticks by the explosion which followed. As another example of the explosiveness of nitrogen compounds, the writer has a friend who is claimed for life as the result of shaking in the sunlight a bottle of specially prescribed eye medicine, containing a chemical incompatible mixture.

Supplies At Hand

But in this regard we are concerned only with the fertilizer compounds of nitrogen. It has been discovered that calcium is one of the few elements which will unite directly with nitrogen under certain conditions, and if calcium could be procured at a sufficiently low price the problem of a nitrogenous manure would be solved, and as an "aside" the writer would say that if there is any country in the world where high grade "calcium ore" is more plentiful than in the Hawaiian Islands he knows it not. Common limestone is said to contain nearly forty percent of calcium. This metal is manufactured commercially by the electrolytic decomposition of the molten chloride. So, to produce it, a high-power electric current is required. And to produce it cheaply the power of waterfalls must be utilized in general, which will unite directly with nitrogen, the last named requisite, the agricultural industry of these islands need have no alarm over the nitrate situation except as to obtaining supplies for immediate requirements, as the problem is capable of being solved right in Hawaii here.

Calcium Cyanamide

And we had the necessary carbon, there is a compound of calcium which is cheaper to manufacture than pure calcium. This is calcium carbide, which all are familiar, and from which acetylene gas is produced. Calcium carbide, it has been found, will react with atmospheric nitrogen to form the new substance known as calcium cyanamide or lime-nitrogen.

## LABOR PROBLEMS NEAR SETTLEMENT

### Announcement of Terms of Contract For Continued Sugar Cultivation Coming Soon

Hawaii's home-steading problem, as it affects the continuance of cultivation of the sugar lands on which leases have expired, or are expiring, enters upon its final stages with the receipt of the text of the presidential order or proclamation. Governor McCarthy has said plainly he will tolerate no unreasonable delay and he is now starting his own survey of the situation by going to Kauai with Land Commissioner Jivonburg. On his return it is expected that the proposed contract, with plantation companies will be made public, having been already tentatively drafted.

Representatives of sugar companies met at the office of the Governor yesterday on behalf of Kakaia, Waialea, Hawaiian Sugar Company and Lihou. Thus we can assure the conscience of public opinion on this matter. I want to see it settled to the satisfaction of all concerned.

After yesterday's meeting the Governor said: "I had hoped to settle all preliminary matters today as that the form of contract might be placed before the public for its suggestions. It is now planned to make the contract public after I have returned from Kauai. Thus we can assure the conscience of public opinion on this matter. I want to see it settled to the satisfaction of all concerned."

## NETHERLAND'S BEET INDUSTRY GROWING

Sugar from beets has been produced in the Netherlands for more than a century, with varying fortunes until 1870, when a growing began which has been unremitted up to the present time.

In 1870 about 16,000 acres were planted to sugar beets; there were 18 sugar factories, which produced 11,000 metric tons (metric ton equals 2,204.6 pounds). By 1914 the area had increased to 160,000 acres, the number of factories to 28, averaging 10 times the capacity of those of 1870, and the production of sugar to 247,299 tons. In 1917 a State law resulting from war conditions reduced the area sown to sugar beets to 116,000 acres. The product of sugar therefrom is not yet officially published, but it was probably about 160,000 metric tons—practically the quantity of sugar annually consumed by the Dutch people.

The sugar content of the beets has ranged from 15.5 to 16.25 percent in different years; the average yield of sugar per hectare (one hectare equals 2.47 acres) of beets, from 4.2 to 6 metric tons.

Exports—Sugar-Beet Districts

Just before the war and up to 1915 the exports of beet sugar from Holland were between 100,000 and 150,000 tons a year, most of it going to the British Isles. In 1916 the quantity was about 70,000 metric tons, and in 1917 about 30,000.

CAPTAIN TUOHY WEDS MISS GLENNA THOMAS

At a military wedding last evening at the Catholic Cathedral Miss Glenna Thomas became the bride of Capt. Frank P. Tuohy, U. S. A., who is on duty with the Thirty-second U. S. Infantry at Schofield Barracks.

The wedding party entered the cathedral at eight o'clock and was met at the altar rail by Rev. Father Valentini of the Catholic Mission, who is also chaplain of the First Hawaiian Infantry at Fort Shafter. Attending the groom was Capt. Phil Coniston, and the bride was attended by Miss M. O'Donoghue. The bride was given away by J. F. Bowler.

## APPLICATIONS FOR LABOR NOW EXCEED TWO THOUSAND MEN

### Workers Not Employed in Essential Occupations in Islands Appear To Be Practically Sole Source of Supply

As applications for labor continue to pour into the labor bureau of the Hawaiian Sugar Planters it becomes more than ever evident how acute the situation is growing. Thus far the plantations have sent in to the bureau applications for considerably more than two thousand laborers and the end is not yet in sight. From no outside source does it appear possible to fill the more than 2000 vacancies in the ranks of sugar plantation labor. The labor bureau says there is no shipping available for transportation of such labor. Under those circumstances no better suggestion than that of The Advertiser, utilizing labor from home of the islands, now unemployed, has been the only one that seems to the labor bureau to in any way meet the situation at home. But just before Mr. Mead left for the mainland he said no organized effort to secure such labor had been started.

Stevedoring work is not sufficient to keep the stevedores busy continuously in and out of the lull in road work leaves another supply available, a larger and more certain supply than that from the ranks of the stevedores. The putting into effect of the work or fight rulings after the registration of the new possible draftees should furnish another source of supply. It is another in the yard boys who can be believed for plantation service as soon as the citizens of Honolulu are willing to do something for themselves and thus release labor needed in essential pursuits. From these sources a considerable supply could be gleaned, even though it would not fill all of the vacancies.

Meantime the Hawaiians want to know about pay. They want a figure named for the type of labor that they can furnish. The same is true of the Japanese now employed doing odd jobs around residences and securing \$1.75 a day for their work. Hawaii should be able to solve for itself the problem of the job and the man as mainland states are doing. The Sugar Planters have their machinery practically ready made in their labor bureau and if they cannot solve the question for themselves it may be necessary for the federal government to undertake the matter to operate a federal labor bureau here.

It will not be long before the present shortage is acutely felt and the next crop and the 1920 crop after according. The Planters appear to have no other definite plan. Deaf is given to the report that the purpose securing a suspension of some of the immigration laws so as to bring in Russian refugees. It is also denied that the labor situation is more than an incident in the visit of the planters' committee to Washington and it is reiterated that the planters have not sought legislation to bring in Chinese labor. Under these circumstances the home supply of labor seems to be about all the planters can secure.

## HAWAIIAN COMMERCIAL GRIND NEARING END

The Hawaiian Commercial and Sugar Company will probably end its grinding season on July 27, over a month later than usual on account of labor shortage. The crop will be close to 58,000 tons, or one of the largest in the plantation's history. However, next year's crop will doubtless be very short, owing to the drought last summer.

## BREAKWATER COMPANY SUEED BY HACKFELD'S

Thompson and Cathart, acting on behalf of the United States and for Hackfeld & Company, now suing the Breakwater Company, filed an action yesterday in the circuit court against the Breakwater Company and the American Surety Company of New York to recover \$293,181, said to be a balance due Hackfeld & Company for materials supplied for construction work on the breakwater before the company, doing the work, defaulted on the contract.

## STAINBACK HANDY WITH THE WORD 'SLACKER'

"Any man who employs a chauffeur to drive his wife around the streets of Honolulu is a slacker, and a yellow slacker at that," was the assertion of Major Ingram Stainback at the Rotary Club luncheon yesterday.

While the Rotarians were still gasping over the astounding declaration, for not a few of them think enough of their wives to employ chauffeurs for them, Stainback took a wallop at the women themselves.

"Any woman able to do her own kitchen work who employs a servant to do it is not a patriot," he declared.

A talk on prohibition was given by Dr. John W. Wadman, with special reference to his work in Washington for prohibition for Hawaii.

## THINK CANE SUGAR IS TO SHARE WITH BEET

### Louisiana Factors Gain That Impression From Rolph

NEW ORLEANS, June 29.—While nothing definite has come from Washington the delegation of sugar factors which was composed of J. A. Scherck, E. A. Rainold and B. C. Perkins, and which was sent there to line up the situation for those back home, has returned. Mr. Rainold said Thursday that the delegation called on Mr. Rolph, and also on Chairman Mayfield of the New York office of the international sugar committee before whom they presented data showing that the international sugar committee was setting raws to manufacturers and others who formerly bought Louisiana seconds and for that reason the manufacturers of Louisiana were unable to dispose of their second sugars. Mr. Mayfield expressed his willingness, it is said, to see that the sale of raws to these buyers would be stopped, and already there is heard a more active inquiry for second sugars, because of the favorable action taken by Mr. Mayfield.

The impression which the committee gathered while in the East was that whatever increase was granted the beet people could be granted to the cane producers also. The beet people are understood to be asking for an increase of a cent and a half. The beet interests were to have held a meeting in Atlantic City this week, but it has been postponed indefinitely. Reports based on Rolph's statements, so the informants say, are to the effect that the beet decision will be made in the next three or four weeks.