

THE
TRANSACTIONS
OF THE
ROYAL HAWAIIAN
AGRICULTURAL SOCIETY:

AT ITS SECOND
ANNUAL MEETING IN JUNE, 1852.

VOL. 1. NO. 3.

HONOLULU, H. I.
PRINTED FOR THE SOCIETY.
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PROCEEDINGS
OF THE
ROYAL AGRICULTURAL SOCIETY,
SECOND ANNUAL MEETING,
HONOLULU, JUNE 1, 1852.

The Society met in the New Court House, at 10 o'clock, A. M., according to adjournment.

The minutes of the last session of August 15th, 1851, were read.

Art. 9 of the Constitution of the Society was read, by which it is made the duty of "the retiring President to render a report of the proceedings of the society for the current year, and deliver, or cause to be delivered, an address at the annual meeting of the society."

In conformity with this requisition of the constitution, the President, Hon. Wm. L. Lee, read his Report, as follows :—

Gentlemen of the Royal Hawaiian Agricultural Society :—

We meet under the most trying circumstances. The last twelve months have been the most critical ever known in the agricultural and commercial history of our Islands, and are marked by ruin to many, and misfortune to all. The sudden check of our trade with California—the consequent fall in the prices of our products—the lack of the

necessary capital to meet reverses—and the unparalleled drought, which has shriveled and blasted our coffee—scorched and withered our verdant cane-fields—turned our pastures into ash-beds—dried up our kalo patches and blighted our vegetables, has been an accumulation of misfortunes which has overcome some of our strongest hearts, and which none have been wholly able to withstand. We meet I say under the most trying circumstances—not prostrate, but crippled—still moving, but under a staggering load of depression. Allow me then, before proceeding to a detailed report of our transactions since the last annual meeting, to take a brief survey of some of our troubles, that you may make suggestions and take measures for their future remedy.

In the first place, the great obstacle in the way of agricultural success in these islands is the want of capital. We have land enough and to spare—good land—and a climate that knows no equal ; but what avails all this so long as we have no money with which to improve our lands ? We cannot carry on farming in the Sandwich Islands as in England and the United States, with nothing but our hands to aid us, for here we must have capital in the outset, and that too in no small measure, or behold our labors end in disappointment and ruin. All who have had any experience in plantations, I think will bear me witness, that to carry on a coffee plantation, successfully, requires in the commencement from ten to twenty thousand dollars, and a sugar plantation from twenty to one hundred thousand dollars. There may be exceptions to this general statement, but I know of only one in all the group, and I believe it is the universal opinion, that he who has begun with nothing, has undertaken the task of Sisyphus, to roll a huge stone up hill, which in nine cases out of ten will eventually get the start of him, and carry the poor struggler to the bottom. I am pained to make this statement—deeply pained—but with the past and present before me, how can I say less. From the earliest days of planting in these islands, when the plough was drawn by a team of natives, down to the present moment, the way of the planter has been clogged with this great difficulty—his path has been clouded with darkness, and many a strong arm and brave heart after toiling on for years, under a constantly increasing mountain of debt, has gone down in despair. Money !—money !—money ! is the constant cry of

our planters, and their appeal is to the winds, for we have no capitalists to lend or invest. But where is the remedy for this paramount want? I confess myself unable to answer, and I turn to our committee on capital in the hope that its collective wisdom may have devised some means for the solution of this important problem. It is a subject that calls for our most earnest attention, for though I would not color the picture darker than it really is, yet I am constrained to say, it is my solemn conviction that, unless we can obtain assistance from some quarter, we shall soon see ruin resting upon nearly every plantation in the land. My faith is not shaken in the *final* success of our plantations, for now, as ever, do I firmly believe that there is no business in these islands that will better or more surely reward capital and industry than agriculture, provided that capital and industry be expended with judgment and economy.

But money is not all we require to prosper, for combined with this want is the almost universal lack of *system and economy* in the expenditure of our labor and the little capital we possess. Since our last meeting my judicial duties have called me to nearly every part of the kingdom, and, with very few exceptions, I have observed on all the plantations I have visited, a disregard of system, and want of economy in the application of labor, that has filled me with equal surprise and distress; and I believe there is no planter on the islands that has not deeply felt the truth of what I say, in his own individual case, and remarked the same lack of good management in others. I know it is far easier to preach than to practice order and economy, but still I think we can improve on this score, and that, with the aid of Chinese laborers, we can perform our work more systematically, thereby saving great loss, together with any amount of vexation and wear and tear of body and mind.

Another thing we need, as I had occasion to remark at our last meeting, is better machinery. It is in vain for us to hope for success so long as we continue to express our cane juice by wooden mills worked by cattle, and to boil it in try-pots, heated by furnaces which more nearly resemble caverns in the rocks than the work of a skilful mason. I am aware that great advances have been made in this respect within the last year, especially on the islands of Maui and Kauai, and these improvements are worthy of all credit, yet this work of

reform is but little more than begun. The past year has brought us one improvement worthy of particular notice, namely, Mr. Weston's "Centrifugal Separator," which has worked wonders in improving the *quality* of our sugars, without producing a loss in *quantity*. But this machine, valuable as it is, in giving us a better article in a shorter time than the old system of draining, by no means supersedes the necessity of erecting bins on the old plan; for it will not separate bad sugars, which must be thrown into these wooden boxes to drain by a slower process. No one who has visited the sugar regions of East Maui within the last year, can fail to have had his heart sickened with the sight of three or four hundred acres of the finest cane, going to ruin beyond the hope of salvation, all for the want of proper and sufficient machinery for its manufacture. But this appeal for more and better machinery will be met by the great prime question raised in the outset: "Where is our capital with which to make these improvements?"

On the subject of labor, I am happy to say there is less to fear than formerly. The enterprise set on foot by our society for procuring laborers from China, has at last met with success, and much credit is due to Capt. John Cass for the faithful manner in which he has carried out the experiment of introducing coolies. The Chinese brought here in the "Thetis" have proved themselves quiet, able and willing men, and I have little doubt, judging from our short experience, that we shall find Coolie labor to be far more certain, systematic, and economical, than that of the natives. They are prompt at the call of the bell, steady in their work, quick to learn, and when well fed will accomplish more, and in a better manner, than any other class of operatives we have. The cost of importing coolies is fifty dollars per man, and it has been estimated by those who employ them, that their wages and support amount to a trifle under seven dollars per month. They are great eaters, but their food, chiefly composed of rice and a little meat, is of the cheapest kind, and to make them profitable they should never be stinted in their allowance. To all those planters who can afford it, I would say procure as many coolies as you can, and work them by themselves, as far as possible separate from the natives, and you will find that, if well managed, their example will have a stimulating effect on the Hawaiian, who is naturally jealous

of the Coolie and ambitious to outdo him. There is still a deficiency of labor in some islands, but I believe the door of relief is open to us and that we can procure laborers at a cheaper rate than any other sugar or coffee growing country, except those in the extreme East, or more properly speaking in this longitude, the Far West.

A serious drawback to the progress of agriculture during the past year has been the want of a ready market for our produce, especially for sugar and potatoes. California now raises her own vegetables, and the low price of sugar in San Francisco, produced by overstocking that market from Manilla and China, united with the heavy duty on sugars, has nearly stopped our shipments until within the last few weeks. The Board of Managers of this Society has put forth an effort to obtain the abolition of that duty, and the Hawaiian Government has seconded that effort by the enacting of a law removing all duties on Flour, Fish, Lumber, etc., imported from the United States, provided our Coffee, Sugar and Molasses, is admitted into that country duty free. I confess I am not very sanguine of success in this measure, yet I have hopes.

Let us now pass to a brief notice of our grazing interests.

This interest has suffered in common with all others, owing in a great degree to the drought and low prices, but to some extent from bad management. The day has gone by when our graziers can look to the markets of Honolulu and Lahaina to consume their cattle in the shape of fresh beef; for the increase of our herds is so great, that the competition will soon become ruinous. Within the last year good cattle have been sold by hundreds on the island of Kauai for prices ranging from one and a half to two and a half dollars per head, and yet they are increasing with alarming rapidity. Many of our pastures are overstocked—the supply of fresh beef exceeds the demand, and the time has come when our cattle growers should turn their attention to packing beef for a foreign market. Salt beef commands high prices, but we have none to sell, except a few barrels occasionally received from Hawaii, and why? It is said because our salt is not good, and will not preserve beef. If so, then why not make our salt better, and encourage and assist Mr. Vincent to put in practice the knowledge he is said to have obtained on his recent visit to the United States respecting the improved manufacture of this important article?

I believe we can make as good salt here as any where in the world, with the requisite care and skill, and I have sufficient faith in Mr. Vincent to think that what can be done in this way he will accomplish. I repeat it, we should become not only *growers but packers of beef*.—And this is not all, we should be extensive makers of butter and cheese. We have, it is estimated, about forty thousand head of cattle on the islands and yet do not make enough butter and cheese to supply the wants of some 1500 foreigners. This is a subject of equal astonishment and regret ; and I trust that the exertions and premiums of the Society respecting cattle, will, for the future, have a special reference to the improvement of our milch cows. The breed of our cows so far as their milking properties are concerned is miserable, and I have never seen a real good milch cow in the islands, though I am told they are to be found. The Hereford Cows are said to be good milkers, and I am glad to have it in my power to inform the Society that this breed, imported by Mr. Hopkins I believe, is doing well, and promises a great improvement in crossing with our native stock. The Ayrshire Cows are generally esteemed as the deepest milkers, in climates suited to their constitution, but they are small, and whether they would do well here remains to be seen. One great obstacle in the way of dairies in these islands is the wild state of cattle, arising mainly from the barbarous practice of hunting them with horse and lasso, and tying their heads down to posts and cording their legs whenever they are milked. It is a mistaken opinion that our cows cannot be tamed and rendered docile and kind, as has been proved by some of our most intelligent dairymen on each of the islands.

Intimately connected with this subject is that of raising sheep, which I would recommend to the earnest attention of the Society as worthy of particular encouragement. It is said by those competent to judge that it can be made a profitable business in the high waste lands of the islands, and the report of last year on sheep will well repay a perusal to all interested in this subject. Our mutton is superior, as all who have tasted it can testify, and yet it is the dearest and scarcest meat the market affords. Of our wool I know nothing except that little or none is exported, and learn that not a fleece is clipped on this island, though it numbers some 5000 sheep.

In reference to our horses I take pleasure in remarking that great

improvements are taking place in our mongrel breeds, by the importations of stallions and mares from the United States and Sydney, and much credit is due to our valuable committee on horses for their efforts in this line. The suggestions of this committee respecting inferior stallions is now receiving the consideration of the legislature, and I trust their recommendation will soon become a law, and these vagrant nags be rendered harmless.

In the way of obtaining new plants and seeds little has been accomplished by the Society since our last meeting beyond writing for them to Oregon, Sydney and other quarters, from which we have as yet received no returns ; but individual enterprise has added quite a stock to our fruit trees, and it is hoped that to many of them our soil and climate will prove congenial. Among these new comers I may name the plum, pear, apple, quince, cherry, currant, gooseberry, and a new variety of fig. I am sorry to report that we have not as yet been able to locate the land granted to the Society for a public nursery, owing to the delay in settling the native claims therein, but we hope to be able to do so before our next annual meeting.

A new enterprise has been recently undertaken in the systematic cultivation of the tobacco plant, and for its encouragement the Society has offered premiums. During the year 1851 there were imported into the Kingdom, through the Custom House of Honolulu alone, upwards of three millions of cigars, which have been mostly consumed here, say at the average price to the smoker of ten dollars per thousand, which makes the neat sum of thirty thousand dollars paid for cigars alone, to say nothing of the amount expended for chewing tobacco. It is said by those experienced in the cultivation of this plant, that our soil and climate are well adapted to its growth, and that we are not here as elsewhere subjected to the ravages of the tobacco worm. If this be true, why should we not save the thirty thousand dollars annually expended for cigars, and moreover, as I heard a gentleman remark a day or two since, export half a million's worth every year. I know this plant is abhorred by many as a disgusting and poisonous drug, and volume after volume has been written, sermon upon sermon, and lecture upon lecture delivered, by monarchs, doctors and divines, to exterminate it from society, but all to no avail, for in spite of this general crusade, it has not only held its ground, but eaten its way into the

ranks of its bitterest enemies, and smoked them out of their strongest citadels. There can be little doubt that this delectable weed is on the whole injurious, but not so much so as to induce men to forego its use ; and judging from the past, the hope of diminishing its consumption is an idle one. Dr. Venner in a work published in London as early as 1663, denounced it in the following terms :—" It drieth the brain, dimmeth the sight, vitiatheth the smell, hurteth the stomach, destroyeth the concoction, disturbeth the humors and spirits, corrupteth the breath, exsiccateh the windpipe, lungs and liver, annoyeth the milt, scorseth the heart, and causeth the blood to be adusted." But while learned doctors have condemned, scholars and poets have extolled it, as the soother of trouble, the collector of thoughts, the looser of tongues, the wings of imagination, the warmer of hearts, " the gift of Heaven and the ornament of the Earth." Without stopping to discuss the merits of these contrary opinions, I will simply say that I trust the Society will give a cheering word to those engaged in its cultivation. Mr. Opitz, and Messrs. Bucholtz and Wundenburg, of Kauai, are devoting considerable attention to the growth of this plant, and I learn that the former gentleman is now ready to manufacture 200,000 of the best Hawaiian cigars.

On the subject of wheat, oats, and Indian corn, I must refer you to the report of the able committee on those grains, but I cannot forbear to mention the delight I recently experienced as I cast my eye over the waving fields of wheat and oats at Makawao, so pleasantly recalling the dearly cherished memories of harvest and home. Mr. Green, whose specimens elicited such general admiration at our last exhibition, has some forty acres of beautiful wheat now ready for the sickle, and I can testify to the excellence of his grain, from having eaten many a savory loaf made of it during the last few months. Makawao now has the honor of owning the only threshing-machine and flour-mill on the islands.

The committee appointed to procure the Honey Bee has taken the necessary steps to obtain them from Australia, and I hope we may soon have these busy little workers humming in our gardens, and gathering their now wasted sweets. Mr. H. A. Peirce, one of our life members residing in Boston, sent us a fine hive by the clipper ship R. B. Forbes, but unfortunately they were lost in crossing the tropics, notwithstanding the precautions that were taken to preserve them.

The financial condition of the Society is sound, and we now have one thousand dollars permanently invested on good real estate security. Five hundred dollars have been sent to the United States within the last few months by Mr. James Makee to be invested in premiums for distribution at this meeting, but we regret to say that they cannot be expected to arrive for some time to come. Besides this sum two hundred and seventy-five dollars have been expended for printing the transactions for 1851, and for a full and detailed account of our receipts and expenditures, I beg to refer you to the report of our efficient treasurer.

Our Society is prosperous, and notwithstanding the severe pressure now resting upon every branch of business, we have before us the most flourishing prospects. For our liberal support we would make our grateful acknowledgments, not only to those directly interested in agriculture, but to our merchants, mechanics and professional men, who have so cheerfully contributed their money, their labor, and their influence, to the promotion of our cause. The vicissitudes of trade during the last year have awakened an interest in agriculture never before manifested, and all seem to feel the weight of the great truth, that the cultivation of the soil is the only solid foundation of our commercial and national prosperity. All must be aware that unless our imports can in some way be balanced by our exports, we shall constantly grow poorer and poorer, and from what source can we derive those exports if not from the products of the soil? We have no mines, we have no heavy manufactures, except the single one of salt, and our main reliance is in the plough. Let us continue then our exertions in this important field with zeal and diligence, with perseverance and determination, let us "look not mournfully back upon the past," but continue to plough and to till, to sow and to plant, trusting in Heaven for a blessing on our labors and an abundant harvest.

On motion of J. Montgomery, the report of the President was accepted.

On motion of R. W. Wood, a vote of thanks to the President was passed, for his able address.

Reports being called for, the Treasurer then read his annual report, which is as follows .

SECOND ANNUAL REPORT.
OF THE TREASURER OF THE ROYAL HAWAIIAN AGRICULTURAL
SOCIETY.

During the period between August 11th, 1851, and June 1, 1852, (the second year of this Society) no life members have been added to the thirteen who subscribed in the previous year, but one hundred and twenty annual members, at five dollars each, have subscribed, which is three more than in the first year; so that while the amount received for certificates of annual membership is fifteen dollars more, the whole receipts from subscribers, is six hundred and thirty-five dollars less, than in the first year, from which difference, deduct the five hundred dollars appropriated by the government and the 108 and 48-100 dollars received for interest on last year's investment, and it leaves the total receipts for the second year, 26 and 52-100 dollars less than the first, as will appear by the account of receipts and disbursements herewith submitted.

By an act passed June 18th, 1851, the Society is entitled to receive annually from the Hawaiian Treasury the sum of five hundred dollars, provided the Society raise from contributions the like sum to be expended for "Premiums or otherwise for the encouragement of agriculture," and that the Treasurer make an exhibit in the month of January to the Minister of the Interior, of the receipts and disbursements, and prove to his satisfaction that the required sum has been raised, and expended according to the provisions of said account. Therefore it is highly important for the pecuniary interests of the Society that subscriptions for at least five hundred dollars, be procured, the money collected and duly appropriated before the month of January expires, for by neglecting to do so, the Society would forfeit its right to the five hundred dollars from the Treasury. Through the liberality of the patrons of this Society, notwithstanding the close times for money, I was enabled to raise the sum of five hundred dollars, which was paid over to James Makee Esq., by order of the Board of Managers, to be invested in premiums. I made an exhibit to the Minister of the Interior, and received on the 21st of January, five hundred dollars from the Treasury.

At the close of the last annual meeting there were twenty-three premiums due to seventeen different persons, remaining unpaid for want

of the proper articles to deliver. The list was placed in my hands, with directions to pay cash to such as chose to accept it, in lieu of the medals etc. to be ordered. Notice was published in the Polynesian newspaper for four weeks requesting all those who wished for the money to call for it. In December six premiums belonging to four persons, and amounting to twenty-three dollars, were paid within the time limited in the advertisement. The balance, sixty-six dollars was provided for in the order delivered to James Makee, Esq., to purchase medals etc. in the United States.

Agreeably with instructions from the Board of Managers, I loaned on the 22d March five hundred dollars for one year, and took a mortgage on Real Estate as security ; which sum added to the five hundred dollars invested in 1850, makes one thousand dollars thus secured to the society.

The account current hereto annexed, together with the vouchers for the expenditures, are all respectfully submitted.

CHAS. R. BISHOP, Treasurer.

Dr. Royal Hawaiian Agricultural Society,

		In acc't current with Chas. R. Bishop.		Cr.
		Dr.		Cr.
1851.				
Aug. 11.	To Cash paid for paper.	50		
16.	" " Dr. Rae, (Lecturer on geology.)	30 00		
Nov. 7.	" " A. Bolster for lighting the chapel for Address and lectures.	3 00		
13.	" " Duties on 1 box books from Eng. and 1 from the U. S.	10 15		
Dec. 3.	" " Rev J. S. Emerson amount two premiums.	8 00		
13.	" " Mr. A. Paki	5 00		
13.	" " Miss M. M. Smith one do.	5 00		
13.	" " Rev. J. S. Green one do.	4 00		
20.	" " James Makee Esq., to be invested in the U. S. in premiums for the Society.	250 00		
23.	" " Ditto do do do.	250 00		
1852.				
Jan. 1.	" " Messrs. Lafrenz & Fisher for case for Library.	25 60		
Feb. 19.	" " Rev'd S. C. Damon for seal and Dies purchased by him in the U. S.	25 00		
Mar. 22.	" Loaned Stephen Reynolds, Esq., for one year on Note and Mortgage.	500 00		
Amount carried forward			\$1116 15	

	Amount brought up	1116 15
Mar 22.	To cash paid I. R. Mitchell, (Express Ag't) for carrying parcel of books from S. Fran. to Honolulu.	3 00
Apl. 12.	" " for acknowledgement and re- cording Mortgage f'm S. R.	4 00
May 28.	" " Polynesian Office for printing 500 copies of No. II, Transac- tions, including Binder's bill.	275 36
June 1.	" " Cash balance on hand, c'd down	101 59
		<hr/>
		\$1500 10
1851.	Cr.	
Aug. 11	By cash on hand, (bro't from old acc't)	\$291 62
1852.		
Jan. 21.	" " Received from the Hawaiian Treasury by order of the Min- ister of the Interior.	500 00
May 27.	" " Received for interest up to June 7th 1852 on Thomas Brown's Note and Mortgage.	108 48
June 1.	" " for 120 Certificates of Annual Membership at \$5.	600 00
		<hr/>
		\$1500 10
1852.		
June 1.	By Cash balance bro't down.	101 59

On motion of Mr. Castle the Report of the Treasurer was accepted.

A Committee to examine the articles exhibited at the fair, and to award premiums, was appointed, consisting of Messrs. Janion, R. W. Wood, Meek, Bishop and Hopkins.

Mr. Wyllie, from the committee on CAPITAL AND BANKING, read a long and valuable report, which was on motion accepted.

R. C. Janion, Chairman of the committee on POULTRY, read a Report, which was, on motion, accepted.

A. B. Bates, Chairman of the committee on Horticulture, read a report, which, on motion, was accepted.

J. F. B. Marshall, Vice-President for Kauai, reported in regard to the agricultural state of that island, which report was accepted.

R. W. Wood, from the committee on sugar and its manufacture, read a report which was accepted.

Adjourned to the chapel at half-past 7 P. M.

Evening Session, June 1, 1852.

The Society met, according to adjournment. The exercises commenced by the singing of "Old Tubal Cain," a song of Russell's, by a select choir which was executed in a highly creditable manner, and to the evident delight of the audience.

The President then introduced to the Society E. H. Allen, Esq., who had kindly consented to deliver the Annual Address. This address which occupied 50 minutes in the delivery, was one of sterling merit, and was listened to with unabated interest by a crowded audience, embracing the elite of Honolulu, and Sandwich Island Society.

At the conclusion of the address a vote of thanks was unanimously passed by the Society, to Mr. Allen, for his able address, and a copy requested for publication in the Transactions.

The following original ode was next sung by the choir, in a most effective and spirited manner.

ROLL ON! ROLL ON!

1.

"Roll on! roll on!" proclaimed the Power,
That spake this planet into birth,
"Roll on! and beast, and bird, and flower
Shall wake to deck and bless thee, Earth."
'Twas done! with life and beauty glowing,
It lay beneath its Maker's view;
Then higher life on man bestowing,
He bade him labor, and subdue.

2.

On! on! speed on! to man was spoken,
When Eden far behind him lay;
And in the cloud was placed that token,
Which promised blessings on his way;
Which told that while the earth remaineth,
Seed-time and harvest shall endure,
And he who sows, the pledge retaineth,
That maketh his reward secure.

3.

Then on! bear on, the plough is ready,
With which to turn the waiting soil;
The torch of science now burns steady,
To light you on your chosen toil;
Then swerve not from the path before you,
But onward with unfaltering tread;
Success shall wave her banner o'er you,
And Hawaii rise, as from the dead.

On motion the thanks of the Society were voted to the choir for the valuable service they had rendered, and the happy manner in which they had added so materially to the enjoyment of the evening.

A vote of thanks was also unanimously passed, to Miss Reynolds who composed the fine original ode just sung by the choir, the appropriateness and merits of which had been so highly appreciated by the audience.

On motion, voted, to adjourn to Thursday morning, June 3rd, at 10 o'clock, at the chapel.

Honolulu, June 3d, 1852.

The Society met, according to adjournment. The minutes of the last session were read and approved.

The Society proceeded to reports of committees appointed last year.

G. Rhodes, Esq., chairman of the committee on COFFEE, read a report, which was accepted.

R. C. Wyllie, Esq., from the committee on STATISTICS, reported, at great length, which report was accepted.

Also, a report from B. Pitman, Esq. of Hilo, one of the committee, was read by Mr. Wyllie, giving a statistical account of Hilo, for the year ending May 20th, 1852. The report was accepted.

S. Reynolds, Esq. from the committee on LABOR, read a report, which was accepted. As a part of the report of this committee, a communication was read from Jas. F. B. Marshall, R. W. Wood, and R. J. Hollingsworth, which were accepted as a part of the report.

Mr. Bishop, from the committee on STATISTICS, read a report, which was accepted.

W. Newcomb, from the committee on WORMS AND OTHER INJURIOUS VERMIN, reported, and produced drawings to illustrate the subject. The report was accepted.

C. G. Hopkins, Esq. from the committee on NEAT CATTLE, read a report, making many valuable suggestions, which was accepted.

The report of the committee on HORSES was read, and accepted.

The committee on SWINE reported through P. J. Gulick, which report was accepted.

C. J. Hollingsworth, chairman of the committee on FENCES, read a report, which was accepted.

A report from the committee on the HONEY BEE was presented by Baron de Thierry, read by the President, and accepted.

On motion of J. S. Green, seconded by R. W. Wood, Resolved, That this Society petition the Legislature for the protection of such birds as are of value in devouring insects. Carried.

On motion of J. F. B. Marshall, voted that a committee of three be appointed by the chair to draft a petition to the Legislature on the subject of the preceding resolution. Dr. Newcomb, E. Whittlesey and W. H. Rice, were appointed.

The committee on WHEAT, CORN, OATS, AND OTHER GRAINS, reported through J. S. Green, which report was accepted.

Adjourned to half-past 7 o'clock, at this place.

Evening Session, June 3rd.

The Society met according to adjournment. The minutes of the last session were read and approved.

The reports of committees were called for, and Mr. Duncan read a report on the subject of insects, the prevention of their ravages, &c., which was accepted.

Mr. Bowlin, from the committee on GARDEN SEEDS AND FRUITS, read a report, which was accepted. Mr. Montgomery from the same committee made a verbal report, principally on the subject of seeds.

Mr. J. H. Wood, from the committee on MANUFACTURES, in the absence of Mr. Weston, the chairman, made a report, which was accepted.

Dr. Newcomb, from the committee on SALT, read a report on that subject, and also embracing remarks on the pearl oyster, which was accepted.

A brief report from the committee on the VINE AND FIG, from Mr. Bailey, was read by the President, which was accepted. This report enclosed a report from Mr. Emerson, on the object of curing the fig.

Adjourned to 10 o'clock to-morrow.

June 4, 1852.

Met according to adjournment. Minutes read and approved.

E. P. Bond, from the committee on roads, reported ; which report was accepted.

Mr. Torbert, from the committee on SUGAR AND ITS MANUFACTURE, read a report which was accepted.

Mr. Montgomery, Corresponding Secretary, read a report, as Secretary and Librarian, during which he read an interesting letter from J. E. Chamberlain, on the subject of Bees. The report was accepted.

The report of the committee on PREMIUMS, was then read and unanimously adopted, and is as follows :—

GENTLEMEN :—Your committee, in offering a brief summary of their observations on the various articles contributed at the meeting of June 2d, 1852, cannot help expressing a regret, to wipe away, if possible,

all future cavilings, that the duty of awarding prizes—that is to say, of deciding which were the superior specimens contributed in their different kinds, was not divided among four or more separate committees. This, therefore, must be the excuse of your committee, that, as a general thing, each member was an exhibitor, and felt himself bound to say as little as possible in regard to the specimen brought forward by himself, and articles exposed in competition with his own productions.

It happened, in consequence, that those who, from familiarity with the productions under discussion, ought to have been prominent in giving an opinion, were silent from delicacy. The amount of labor, in order to do justice to the articles contributed, was too much for one committee to perform, with benefit to the cause in hand, or satisfaction to themselves.

Your committee beg to report the following premiums as having been awarded to the following exhibitors.

SUGAR :—1st premium to R. W. Wood, for specimens from East Maui plantation.

2d premium to A. B. Howe, Hana plantation.

3d premium to L. L. Torbert, Honuaula plantation.

SYRUP :—To L. L. Torbert, Honuaula plantation.

COFFEE :—1st premium to B. Pitman, Hilo.

2d premium to G. Rhodes, Hanalei, Kauai.

WHEAT :—To J. S. Green, Makawao, East Maui.

INDIAN CORN :—To J. S. Emerson, Waialua.

OATS :—To J. S. Green, Makawao, East Maui.

SALT :—To C. W. Vincent, Puuloa, Oahu.

ARROW ROOT :—To B. Pitman, Hilo, Hawaii.

CIGARS :—For the best 100, to J. R. Opitz, Waiawa, Kauai.

FRUITS :—For best figs, to J. Piikoi, Oahu.

For best Oranges, to A. Adams, Oahu.

For best Peaches, to J. S. Green, Maui.

For best Mangoes, A. Adams, Oahu.

For best Strawberries, to C. W. Vincent, Oahu.

For best Alligator pears, to A. Adams, Oahu.

For best Lemons, to A. Adams, Oahu.

For best Bananas, to C. Sineathman, Oahu.

For best Pine Apples, to B. Pitman, Hawaii.

For best Olives, to A. Adams, Oahu.

For best Raisins, to H. M. Whitney, Kauai.

FLOWERS :—1st premium to Mrs. Penhallow.

2d premium to Mrs. Janion.

BUTTER :—1st premium to J. Booth, Oahu.

2d premium to J. S. Emerson, Oahu.

CHEESE :—To H. M. Whitney, Waimea, Kauai.

LEATHER :—To specimen exhibited by J. H. Wood, Oahu.

SUGAR CANE :—(Best 10 sticks,) to B. Pitman, Hawaii.

TOBACCO :—(Best 2 lbs, cured,) to J. R. Opitz, Kauai.

STALLION :—(Imported,) to J. Meek, Oahu.

MARE :—(Imported,) to G. P. Judd, Oahu.

BULL :—(Imported,) to C. G. Hopkins, Oahu.

COW :—(Imported,) to C. G. Hopkins, Oahu.

STALLION :—(Native,) to J. Meek, Oahu.

GELDING :—(Native,) to J. Meek, Oahu.

MARE :—(Native,) to J. O. Dominis, Oahu.

BULL :—(Native,) to J. Meek, Oahu.

COW :—(Native,) to S. C. Damon, Oahu.

HEIFER :—(Native,) to R. Armstrong, Oahu.

OXEN :—To J. Dowsett, Oahu.

HOG :—To J. Meek, Oahu.

SOW AND PIGS :—To J. Meek, Oahu.

SHEEP :—To H. Sea, Oahu.

FOWLS :—To R. C. Janion, Oahu.

GEESE :—To J. Meek, Oahu.

DUCKS :—To G. P. Judd, Oahu.

GUINEA FOWLS :—To W. H. Rice, Oahu.

POTATOES :—(Irish,) to L. L. Torbert, Maui.

POTATOES :—(Sweet,) to R. C. Janion, Oahu.

ONIONS :—To B. Pitman, Hawaii.

CARROTS :—To A. Adams, Oahu.

BEETS :—To R. C. Janion, Oahu.

TURNIPS :—To J. Montgomery, Oahu.

SQUASHES :—To W. H. Rice, Oahu.

PUMPKINS :—To C. W. Vincent, Oahu.

CABBAGE :—To R. C. Janion, Oahu.

LETTUCE :—To R. C. Janion, Oahu.

ASPARAGUS :—To G. P. Judd, Oahu.

GREEN PEAS :—To C. W. Vincent, Oahu.

BEANS :—To W. H. Rice, Oahu.

KALO :—To G. L. Kapeau, Oahu.

TOMATOES :—To C. W. Vincent, Oahu.

CUCUMBERS :—To C. W. Vincent, Oahu.

Your Committee cannot help observing, that the coffee for which the first premium was awarded was the product of a single tree ten years old, (this fact was substantiated by the evidence of several certificates,) which yielded this year the immense quantity of *forty* pounds in the parchment.

The best butter exhibited, it should be observed, was, perhaps, that made by G. Harbottle, but that gentleman not being a member of the Society the committee were unable to award the premium in his favor.

Good specimens of cocoa were produced by Mr. Pitman, of Hawaii, and P. Manini of Oahu ; others exhibited samples of the Mamee apple (indigenous to South America,) and the Feei of the Society Islands. Bread Fruit, Papaw Apples, Grapes, Granadilla and the Water Lemon, were also exhibited with other fruit, but no premiums having been offered, your committee can only mention the fact of their having been shown.

A great variety of excellent garden vegetables was exhibited by R. C. Janion, C. W. Vincent, A. Adams, W. H. Rice, and Jno. Montgomery, amongst which were several for which no premiums were offered. Several native gentlemen also produced specimens of fine melons, squashes, sage, etc., which showed that they were active in the cause of improving and adding to the productions of their native soil.

Two samples of wool were exhibited,—one by C. W. Vincent, of Oahu, and the other of better quality, by Mr. Sparke, of Hawaii, which demonstrated that a very superior quality of that article can be produced on these islands.

Of a vast number of articles shown, your committee can do no more than mention some of the names, as no prizes were offered for

those that excelled in their several kinds. Amongst them were specimens of embroidery by Mrs. Dudoit, Mrs. Crabb, Miss Corney, the Misses Judd, Mrs. Hackfeld, Mrs. J. Ladd, Mrs. Armstrong, and Mrs. Dominis ; of paintings and drawings, by the Misses Judd, Miss M. C. Dimond, Miss S. E. Hall, and R. W. Andrews ; of cotton cloth by Miss L. Brown ; of many varieties of flowers by Mrs. Judd, Mrs. George Harris, Miss Severance, Mrs. C. R. Bishop, Mrs. Jno. Ladd, Mrs. E. H. Rogers, and many others ; of gold-fish, by Messrs. Samsing & Co. ; of guava jelly by Mrs. E. O. Hall, and Mrs. J. Ladd ; of canary seed by E. H. Rogers ; of work boxes and picture frames, made of Hawaiian woods, by Mrs. Dominis, Mrs. J. Ladd and G. S. Kenway ; of rare fruit trees by Mrs. Dominis ; of fine boots made of Hawaiian leather by J. H. Wood ; a rotary pump by R. A. S. Wood ; a lamp shade, and easy chair, by Mrs. A. B. Bates ; a boquet of Artificial flowers made by Miss C. P. Armstrong ; and various other articles by ladies and gentlemen. Several Chinese gentlemen added much to the show of flowers, by sending in their pots, which they cultivate with much care and success.

The imported Stallions of S. Thompson and J. Meek, and the native Bull, (Angus breed,) 18 months old, of C. G. Hopkins, were considered as superior of their kind ; and the committee were divided between their merits and those of the animals to which the premiums were awarded. Had there been a premium for the best imported draft horse, the competition would have been between J. T. Waterhouse's grey, and J. Dowsett's brown, both geldings.

J. MEEK.

R. W. WOOD.

CHAS. G. HOPKINS.

CHAS. R. BISHOP.

ROBT. C. JANION.

A general conversation took place on a variety of topics, when the Society proceeded to the election of officers for the current year. Messrs. C. R. Bishop and S. G. Dwight declined a re-election Whereupon the following persons were duly elected.

HON. WM. L. LEE :—*President.*

G. S. KENWAY, Hawaii,

BENJ. PITMAN “

L. L. TORBERT, Maui,

C. B. ANDREWS, Molokai,

S. REYNOLDS, Oahu,

J. F. B. MARSHALL, Kauai,

Vice Presidents.

R. G. DAVIS, *Treasurer.*

JOHN MONTGOMERY, *Corresponding Secretary.*

EDWIN O. HALL, *Recording Secretary.*

W. NEWCOMB,

R. W. WOOD,

S. N. CASTLE,

R. C. JANION,

B. F. SNOW,

Executive Committee.

The Society proceeded to the choice of the standing committees for the ensuing year.

It was Resolved,—That the committee on Statistics confine their reports to the agricultural, mechanical and commercial statistics of these islands. The following committees were then appointed :

ON POULTRY.—E. Whittlesey, *chairman*, E. H. Rogers, T. Metcalf, R. C. Janion.

ON STATISTICS.—C. R. Bishop, *chairman*, R. C. Wyllie, B. Pitman, George D. Gower, J. F. B. Marshall, Wm. Baker, A. G. Thurston.

ON HORTICULTURE.—J. Montgomery, *chairman*, Wm. Duncan, C. W. Vincent, G. P. Judd.

ON SUGAR AND ITS MANUFACTURE.—J. F. B. Marshall, *chairman*, R. W. Wood, L. L. Torbert, G. A. Lathrop, A. H. Spencer.

ON COFFEE.—B. Pitman, *chairman*, E. Bailey, G. Rhodes, P. Cumming, T. C. B. Rooke.

ON LABOR.—G. A. Lathrop, *chairman*, J. F. B. Marshall, S. Reynolds, G. Rhodes.

ON ANALYSIS OF SOILS.—W. H. Pease, *chairman*, W. Newcomb, T. C. B. Rooke.

ON WORMS AND INSECTS.—W. Newcomb, *chairman*, Wm. Duncan, J. S. Emerson.

ON ROADS.—T. Metcalf, *chairman*, Wm. Webster, E. P. Bond, G. M. Robertson.

ON AGRICULTURAL IMPLEMENTS.—R. Armstrong, *chairman*, W. H. Rice, Wm. Duncan, E. H. Rogers.

ON NEAT CATTLE.—Robert Moffat, *chairman*, P. J. Gulick, T. Cummings, G. S. Kenway, S. C. Damon.

ON HORSES.—G. P. Judd, *chairman*, T. Cummings, J. O. Dominis, J. I. Dowsett, S. Thompson.

ON SHEEP.—J. Meek, *chairman*, H. Sea, T. Cummings, J. I. Dowsett, C. G. Hopkins.

ON SWINE.—R. J. Hollingsworth, *chairman*, A. Paki, J. Meek.

ON SEASONS.—E. G. Beckwith, *chairman*, T. Coan, J. S. Green, J. S. Emerson, G. B. Rowell.

ON FENCES.—R. G. Davis, *chairman*, E. Bailey, Wm. Miller, L. L. Torbert, R. J. Hollingsworth.

ON TREES.—T. E. Taylor, *chairman*, Wm. Duncan, E. Bailey, G. P. Judd, B. F. Hardy.

ON GARDEN SEEDS AND FRUITS.—S. C. Damon, *chairman*, T. Cleghorn, Wm. Duncan, R. H. Bowlin, H. Kinney.

ON PRODUCING SEED FROM SUGAR CANE.—E. P. Bond, *chairman*, D. Baldwin, G. A. Lathrop, B. Pitman.

ON THE HONEY BEE.—Baron de Thierry, *chairman*, R. C. Janion, J. Montgomery, H. A. Pierce.

ON BIRDS.—L. Severance, *chairman*, W. Newcomb, A. B. Bates, E. Whittlesey, R. Moffat, J. Ladd.

ON LEATHER AND TANNING.—J. Hardy, *chairman*, J. H. Wood, B. Pitman.

ON MANUFACTURES.—R. A. S. Wood, *chairman*, J. H. Wood, R. W. Wood, J. F. B. Marshall.

ON GRAINS.—W. H. Rice, *chairman*, J. S. Emerson, J. S. Green, T. E. Taylor.

ON CAPITAL AND BANKING.—L. Severance, *chairman*, E. H. Allen, S. N. Castle, R. C. Wyllie, G. P. Judd, B. F. Snow.

ON BUTTER AND CHEESE.—T. Brown, *chairman*, J. S. Emerson, J. P. Parker, J. Booth.

ON THE VINE AND FIG.—T. E. Taylor, *chairman*, R. W. Wood, H. M. Whitney, H. Rhodes, D. Baldwin.

ON TOBACCO.—R. C. Janion, *chairman*, J. R. Opitz, Wm. Baker, S. Reynolds, D. Adams, C. W. Vincent, A. B. Bates, D. Baldwin.

ON SALT.—C. W. Vincent, *chairman*, W. Newcomb, E. W. Clark, A. Bishop.

ON SALTING BEEF.—W. H. Rice, *chairman*, T. Brown, S. Reynolds, G. S. Kenway, E. Miner.

ON THE BURR.—S. Reynolds, *chairman*, Wm. Duncan, R. C. Janion, J. S. Emerson, J. Piikoi.

ON KALO AND POTATOES.—L. L. Torbert, *chairman*, C. Smeathman, Jas. Robinson, Kaauwai, G. L. Kapeau.

ON PREPARING AN ADDRESS TO THE HAWAIIANS.—J. S. Green, *chairman*, L. Andrews, R. Armstrong.

On motion, voted that the board of managers be instructed to offer a premium for the best manual on Agriculture in the native language, not exceeding 50 pages.

On motion, voted that the following gentlemen be requested to use their efforts to form local Societies, auxiliary to this Society, on their respective islands, viz :—On the island of HAWAII, T. Coan, L. Lyons, E. Bond, A. Thurston, J. D. Paris, H. Kinney. On MAUI, E. Whittlesey, J. S. Green, D. T. Conde, D. Baldwin. On MOLOKAI, C. B. Andrews. On OAHU, W. H. Rice, L. Smith, A. Bishop, J. S. Emerson, B. W. Parker. On KAUAI, G. B. Rowell, J. W. Smith, E. P. Bond, E. Johnson.

COMMITTEE ON PRINTING.—T. E. Taylor, S. C. Damon, E. O. Hall, H. M. Whitney.

A vote of thanks was passed to Mr. Damon for the use of the Chapel, also to the President for the able and satisfactory manner in which he had discharged the duties of his office.

On motion of R. W. Wood, it was Resolved,—That a vote of thanks be presented to the Hawaiian Government for the use of the new Court House during the late exhibition, and for its friendly co-operation in promoting the interests of our Society.

Resolved, That the thanks of the Society be presented to all those Ladies who, by their contributions and presence, added so much to the pleasure of our exhibition.

On motion, adjourned to the first Tuesday in June, 1853.

ADDRESS

Delivered by the HON. E. H. ALLEN.

Mr. President and Gentlemen of the Royal Hawaiian Agricultural Society :—

How beautiful the idea that here, in mid-ocean, there should be an assembly convened for the purpose of giving an impulse to the improvement of that noble art which is the parent of all others ; that here a Society should have arisen, the transactions of which would be creditable to far older states, where but a few years ago no art of civilized life was cultivated. It is an illustration of the Anglo-Saxon Mission in its progress round the globe, that it should pause here for a day, and make a garden in the sea, which should attract and cheer, and cherish all who are voyaging on its expansive waters. Here is a resting place for the dove, from which he will go forth carrying light and knowledge to the distant Isles, and to the still remote Continent, of the increased facilities of cultivating that art which is so productive of comfort and refinement at home, and commerce abroad. It is not for yourselves alone that you are acting, in combining and disseminating agricultural knowledge, important as that may be, but it is for civilization. Its influence is not limited like the Society of a single county, but it will be an example and an impulse to this noble art in the Pacific Isles, which if followed, will be more valuable to them, than all the sands on their shores, even were they gold. It is somewhat singular, in reviewing the history of states, that navigation, commerce, and manufactures should have commanded more attention, more encouragement, more incentives to genius and enterprise than the parent of them all. What a garden the settled portions of the earth would be made, if genius was stimulated in the investigation of the principles of culture, as it has been in the mechanic arts. In agriculture you have no magnetic telegraph, but you must make one for all other isles, by making this group a garden. Neither have you the mariners' compass, but you have the north star and you must invent one. Agriculture has not until recently inspired its votaries, but on they went, ploughing with a stick, and harrowing with a bush, and even these rude implements were drawn by the tail or the horns of its unfortunate victims. But mechanical genius inspired by the rich lux-

ury of invention, has given its handmaid a plough that developes riches which for ages have laid dormant, and a harrow that mellows and enriches, and a yoke that is a mercy to the willing ox. The whole catalogue of agricultural machinery is of recent date and so is chemistry as applied to agriculture, and its advance may be said to have just begun. You then live, so far, at least, as your favorite pursuit is concerned, at an interesting period in the world's history. Invention has not ceased to aid you and will not to the end of time. Even the last year has been productive of improvements in the growth and manufacture of sugar. The cotton gin has saved from oppressive toil, has imparted value to millions of acres, useless before, and given comfort and ornament to a world. Hitherto it has not been the man that hoed and ploughed that has done the most for his art, but it has been him who has invented the implements by which you could work the soil, and manufacture its products, and of the Chemist who has informed you of the composition of soils, and what would enrich them, as well as the plants adapted to them. But now your time has come to make the richest culture, and the richest production from the smallest amount of land, and labor. The materials are furnished, the principles of science are now to be applied to your art. For ages the son followed the system of the father, and in a large portion of the world, it is the same now, but this inaction and lazy principle of imitation is giving way to the intellectual energy of the age. The principle of action for all men to consider is, the amount of production from a given quantity of land, for the least labor, and expense. I do not deny but what the system of culture should be modified by the density of population, and the value of land. The cheap lands of the United States will enable the farmer to let a portion lie fallow, when in England, from its high price, it must produce its annual return, and hence a more accurate attention to the best system of culture. But in the United States it is admitted that great loss has been incurred by taking the cream of the soil, and leaving it in its poverty. It is equally an admitted truth that too much land has been run over, as the saying is. Concentrate your culture to a limited space and you will raise more with the same means. It requires as much labor to raise a small crop on poor land as a great crop on rich. To this principle in a given place, good judgment and experiment are wanted to decide. But as a general

truth, applicable to all countries, cultivate thoroughly, and remunerate the soil for what you take from it.

Agriculture has not been made as interesting as it should have been. It has been considered a mere drudgery, whereas it is capable of imparting more physical and intellectual enjoyment than any other pursuit. Air and exercise are necessary for health. Nature is full of cheerfulness and all her votaries participate of it. No strife, or conflicts, or envyings ever disturb them. They have no warfare but to subdue the earth, and make the elements subject to its culture. Consider your plantation a laboratory, where the mind can be interested by the application of science to the arts, and it is made so practical now that no one need be deterred from listening to its teachings. Agriculture wants more application of mind, and this only it demands to make it the favorite pursuit of mankind. Honor, renown and popular favor have been won on other fields, left bleaching with the bones of the victims of a battle, or rendered barren by the iron heel of a tyrant's war-horse.

"What millions died to make a Caesar great!"

It is not strange that we linger around these scenes of conflict with admiration, when liberty and the rights of man were staked on the issue; but for the opposite purpose it is a scene of woe and sorrow to any reflecting mind. But the day has come when those who enrich a field and make it bloom with a product, and those too who lighten the burdens of labor, and make it more intelligent, shall have their reward.

The necessity of success in any pursuit is *to think*. *This is the want*. The man who deliberates well will usually succeed, but we go blundering along through life, guided and controlled by its circumstances, wafted on any coral reef or sand-bar that intercepts our thoughtless course. If your lands are improved by deeper ploughing, your minds are by deeper thinking. The mechanic has furnished you with the plow. The man of science has instructed you how to think and to reason. If the land requires ammonia, the mind requires more discipline; if the soil requires more general drainage, the mind requires a more thorough cleansing from all impurities. Let the field be the laboratory and the mind the instrument directing the experiments, and both will be cultivated.

But the practical man will say "How can I do this? I am not at

home in the study. I am not learned in the sciences." Let him get Johnston's lectures on the application of Chemistry and Geology to Agriculture, and try the experiments that are applicable to his situation ; also study Leibig, upon Organic Chemistry applied to Agriculture. Skinner's Journal of Agriculture, the Farmer's Book, the Cultivator, Coleman's Agricultural Tour in Europe, are, as you well know, valuable and interesting and ought to be well studied.

The best periodicals should be taken by your society. You should have a vehicle of information passing round the group, leaving its periodical intelligence of all the improvements. In the United States, there is a strong effort making for an improved agricultural education, and it is remarkable that it did not earlier arrest the attention of the public mind, especially when you consider how far above all others in numbers are those who are engaged in its pursuits. By the last statistics that I have seen there are of the learned professions in the U. States 65,225 ; Internal navigation 33,076 ; in navigating the ocean 56,021 ; in manufactures 791,749 ; in commerce 117,607 ; and in agriculture 3,719,951. It not only affords subsistence to every class, but most of the elements of employment, and it is estimated that they pay four-fifths of the taxes. Yet the farmers, with the power in that country, have not established for themselves the schools which they have contributed to sustain for other pursuits.

The colleges, schools for the army and navy, have been liberally sustained, and now agricultural schools are being established, which will disseminate a general knowledge of science in its most plain and practical application. You will derive benefit from the writings of foreigners, yet it requires a good degree of knowledge in the application of their teaching to your situation. Difference of climate, and soil, and production, require material modifications of practice. But in the transactions of your association you have already shown the determination and ability to disseminate a sound practical knowledge of your pursuits. This society can not fail to be of the highest benefit. It animates the minds of all its members, and diffuses through the community intelligence and taste in your pursuits. The age is full of intelligence ; mind is active in every art of life ; science is not confined to the University, or to the royal Societies. " Its portals are no longer guarded by a dark phraseology, which to the multitude is a

foreign tongue." The groves of Academus are far more numerous in many states, than the groves of Oranges in the Pacific Isles. The highest interest of life is to labor in the development of the resources of nature, and by her laws to cultivate and adorn the earth.

It has been thought that there was no other pursuit of such perfect combination for the development of the intellectual, the moral, and the physical man. It is a laboratory in which the chemist will revel, and when his labor is rewarded by an increased production, it will give him an encouragement, higher and better, than high prices without it. It ensures success, where a blundering husbandry would fail. It has no false pretence, no injurious device, but it is the study of Nature's law leading the mind to Nature's God.

There ought to be an agricultural literature. Other pursuits have their libraries, reading rooms, and lectures. The commercial man is watching with an eager eye for the best markets—trying to introduce new crops, and new manufactures. The mechanic has sleepless nights in his efforts at invention, and richly enjoys a discovery that makes the laws of nature subservient to useful purposes.

There should be an agricultural survey of these Islands. It would aid you more than all other means of knowledge, if made by a scientific man. The nature and qualities of your soils should be carefully analyzed—the best means to sustain their fertility, and the most productive manner of culture. It saves, to a great extent, individual experiment, and imparts to you a confidence and strength in your mode of operation. Every doubt on every farm could be solved : regarding its power of production, and the combinations that make that power. You must, to be successful, understand the component parts of the soil, and the action of different plants upon it. We want such a teacher in agriculture as Bowditch is on the unknown seas. The sailor feels a confidence in *his* principles as much as he does in the north star itself.

Agriculture has its laws, as well as navigation—and although not to know them is not fatal to life, as it may be in the other, it makes a stupid, lingering existence unworthy of an immortal mind. The rotation of crops is an interesting study. One plant exhausts certain properties of the soil—another very different. Some for example take from the soil silecia so important to the grasses and cane plants—

others for the potash they consume—and still others for the lime. Vegetables will consume certain elements—corn and tobacco very different. Now the farmer should know the elements which certain plants take up, and then plant on the soil that contains them. There are certain elements common to all, and the success depends in adapting the seed to the properties of the soil. This saves the necessity of letting the land lie fallow. The land will recover to a great degree from the exhaustion of one plant, while it sustains another. The mechanic works by certain laws, as accurately defined as mathematics can make them. The farmer can calculate by equally definite laws modified occasionally by extraordinary phenomena ; and the culture, which by these laws you will give the soil, will not be equalled by that which the mind receives by their study. But I see no means by which the great purpose can be accomplished except by an agricultural survey—by some one like Johnson of England, or Jackson of the United States. This is an appropriate place to try the experiment of devoting your whole energies to peaceful pursuits. You have no army, or navy to provide for—no fortifications to build or repair. Let your motto be, “ Let us adorn our beautiful islands by the richest culture.”

In the past year you have gained much in the manufacture of sugar by the application of the centrifugal separator. It is this improved process which alone sustains a remunerative price in a general market. Let others introduce it, and you omit to do it—and you would be under-sold in your own market. This is an illustration of the necessity of keeping up with the world in improvements, if you expect to compete in its markets. The effect of machinery is to perform the work better, and to lessen the severity of labor—although it frequently produces occasion for it in new and untried fields. The steam engine, so potent for usefulness and with all its power of labor, has still been the cause of introducing as much perhaps as it has saved—but the comforts of life have been greatly promoted, and indeed, the great principles of civilization have been very much extended.

It is a comforting reflection that machinery performs the severest labor—not that it lessens its demand. Other wants arise when the present are supplied. The coal-mines would probably have rested in their beds till consumed by the great fire, if the steam engine had not been made.

The rail-road, if not unknown, would have been limited without it, there would have been no competing power with wind and tide. The wants of civilization increase in the ratio of the ability to supply them. A century ago an American clock would have been an article of extravagant luxury : now the richest manufacture graces every mantle ; so on, still on, is the motto of the world,—every improvement creates more comforts, and more wants. What has changed the condition of the world from what it was fifty short years ago ?—It is mind, invention, intellectual power. Labor on ordinary principles could not have done it, even if all the sinews of man had been sacrificed.

The time will soon come when you will need to devote attention to the making of manures, and in their application. It is a proverb with the Flemish farmer, that manure is the god of agriculture, and with the Scottish farmer, that “ muck (manure) is the mother of the meal chest.”

In many countries attention to this most important subject is usually too long neglected. The virgin soil will produce good crops for a series of years—but the earlier the debt due the soil is paid, the less will be compound interest. I am told that in the Island of Barbadoes which produces the largest amount of sugar to the acre, perhaps, of any on the Globe, that the most judicious, and careful attention has been paid to the manufacture, and application of manures, and that the system of agriculture as practised there is the result of science, and a careful experience—and that the business of sugar-growing has been very profitable, and of course the plantations are in demand at high prices, and show, no doubt, that a correspondence with some of the intelligent men would be of great practical benefit. The Consul of the United States at that island gave me a brief description of their pre-eminent success ; and as most of the books and papers on agriculture are especially applicable to the products of more northern climates, I respectfully suggest whether a committee of correspondence with gentlemen residing in the tropics would not procure most valuable information as applicable to the cultivation of sugar, coffee, and the tropical fruits as of the animals most profitable to the mountain ranges. Knowledge acquired by the studies and experience of others may save you great loss, and disappointment.

Your agriculture is more interesting than in older countries where

the precepts and practice have been so fully tested. Here you can learn the science, but the application is not written and your own judgment must direct it. It requires more examination, more vigilance, and hence will quicken the powers, and excite a deep interest—and although we have the perpetual warmth of summer, yet the seasons here are to be especially regarded. The principle of the adage, “hoe cabbages while the dew is on, and make hay while the sun shines” is as applicable here as where those products are extensively raised. It is said the sugar-cane is an exception, but as a general rule I have no doubt that attention to the time of planting as in setting out trees, is as important here as in countries marked by a decisive change of seasons. This can only be ascertained by careful observation, and hence if every farmer will record his own experience, and have it published, this branch of information would soon be most satisfactorily ascertained. It is important in reference to temperature, to moisture and to insects. Your “transactions” will be a perfect text-book on all these important matters. To dodge the grub-worm and the caterpillar is essential—and to know accurately how to prepare the seed, and when to plant, in order to avoid their destructive attacks is among the important subjects of inquiry.

I hope you will bring within your inquiry the subject of fruit trees. There is now in the United States a Society called “The American Pomological Congress of fruit growers.” It is a national Society, and doing immense service. The associating principle is the most active, and it seems to be necessary to accomplish any general good. Trees on these islands combine beauty, profit, comfort. The coffee, the fig, the breadfruit, the tamarind, and the orange afford a handsome remuneration, and are an ornament and a refreshing shade around your dwellings. Every one who has a rood of land can cultivate some of these trees, and it would add immensely to the revenue of the islands, if they attracted general attention, although small, for each individual.

You are better situated to command the markets of the American coast in all the tropical fruits than any other islands in the Pacific.—Your proximity gives you a decided advantage, and when the day of steam boats arrives, and you see them passing along to your wharves with hundreds of people bound to the Oriental world, your fruits will have a home market, enriching you for all your labor. Fruits and

flowers will be equal to a golden mine. This culture is appropriate for woman at least to ornament her own grounds, and furnish her table with this luxury. There is a beautiful fitness for woman in the garden amid flowers and fruits, especially when the product of her own direction. It is better exercise than riding on horseback, at least for a change; for the mind is as pleasantly and more usefully employed. Honolulu can be made the city of gardens, water is the only want, and I have no doubt that as soon as the rights of all parties can be fully protected, the beautiful stream from Nuuanu will be conducted over this whole plain, fertilizing and enriching till its productions and its beauty will be the attraction of every traveller. The day has passed when water will run idly to the ocean. It must either furnish power for machinery or at least leave its fertilizing qualities on the earth. There are numerous beautiful vallies on the group which need the ornament of the fruit tree, and the vine, and the good people had better be preparing them, for in a few days you will see the inter-island steamer visiting every inlet to purchase their fruit.

Remember, that to make a rich return of fruits, the soil around the trees must be well supplied with the requisite manure, they must be well fed. Montreal is in latitude 45° north, and is distinguished for good fruit, and it arises from its limestone formation. The root of the tree wants a large, soft bed. How can you expect a tree to grow, unless it has sympathy with the soil, and "how can you expect that, unless the heart of the soil is moved."

In Florida the orange has been cultivated with success, but there has been an occasional frost, as in 1845, which did great injury. It is estimated that fifty good orange trees will produce at least \$1000,—\$20 per tree—sometimes twice that amount. In the United States, fruit has paid better than any other product of the farm; and I have no doubt it would here, but the obstacle is that it requires so much time to bring the trees to bearing, that the impatient American can not give so long a credit. But I have no doubt that every planter had better appropriate a few acres for fruit growing, even if he is obliged to purchase the iron fencing. Naples and the Azores have a volcanic origin, and their mountain slopes are planted entirely with oranges and lemons. The olive tree was in high repute with the Romans. Poets have sung its praises—Neptune smote the earth with

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his trident, and the war-horse sprang forth. Minerva caused the peaceful olive tree to sprout from the ground—and to whom do you suppose was awarded the palm of victory, by the twelve divinities, who sat in judgment—to Minerva or Neptune ? to the goddess, of course ; and the same partiality has continued in all gallant nations. Mr. Jefferson urged its introduction into the northern portions of the United States. He says “ that it is the highest gift of heaven, I can scarcely except bread.” It is singular that in the northern portion of the United States fruit has received the most attention. In sending to Amoy for Coolies, you had better include some fruit trees—such as the camphor, the cassia, and you will find it advantageous to import a variety of trees as you have opportunity.

The introduction of Cooly labor is as yet an experiment, but a very important one. It promises well, and its success depends on the judicious management, and comfortable treatment they may receive. It is an entire change—in language, manners, dress, modes of living, and of doing ; and your own good sense will teach you to forbear, and while it requires patience on your part, it can be no less trying to them untaught as they are. You must have sympathy with honest labor. It is not enough that you fulfil the contract to the letter, but the relation to them should be parental—mind always governs—and where there is a drop of the Anglo Saxon blood it is sure to rule. This Chinese race next to our own are destined to figure in the drama of the Pacific ; and I regret that the authorities of California should undertake to make any discrimination between them, and other foreigners. They are industrious, economical, and careful, filling a space for which our people are not adapted. That they can be made useful on the continent and here, there can be no doubt, and to accomplish this the only sure way is so far as compatible, to exercise a parental control over them. They should not be left to the care of indiscreet agents. They will obey one master cheerfully, more they dislike ; not differing in this particular from all the rest of the world. It is an interesting combination of the ancient nation, with the new. In reflecting on the probable destiny of the Pacific, the mind is dazzled and almost overwhelmed ;—with the American Continent on one side, with a country full of resources, and a portion at least being developed by a people of enterprise—and on the other with India, China, Japan, and

Russia, rich beyond compare in the precious metals, and in all the manufactures and arts attractive to our people—and on the south backed by a continent, sustained and controlled by a powerful and enlightened government which is destined, especially if its rich mines continue to yield abundantly, to attract very soon a large European population. Added to these empires, there are myriads of fertile islands convenient for the navigation, which is so rapidly increasing between them. But your situation, above all others, has this advantage. It is a sort of half way house of this great sea—no matter whether vessels are bound from the golden shores of California to the rich warehouses of China—from the rising state of Australia, and the fertile isles of the Pacific to the Coast, this will be the place of supply, and of trade, if art and industry will accomplish what nature has invited you to do, this great prize of trade may be yours, but your ambition must be something more than to have it a calling place for wood, water, and vegetables. Let your Sandwich Island sugar, coffee, tobacco, and fruits and wool be known in the markets of the world, and commerce and navigation are sure to be attracted here. The age requires of all governments an enlarged and liberal policy, conducive to the prosperity of the whole people. Attract navigation by light expenses, and aid every enterprise calculated to enrich the people, even if it does not the government. In this age nature herself meets a competitor in art. It does not follow that superior natural advantages unimproved will triumph over those inferior, when science, art, and enterprise are in aid of the latter ; and if you expect to reap the harvest that the national laws would indicate, you must be up to the demands of the age. In the history of agriculturists few, if any, are worthy of more credit for intelligence and enterprise than the late Earl of Leicester. He inherited a large estate, but of its poverty it was said, "That there were always two rabbits contending for one blade of grass." He offered it at 2s. 6d. per acre, but without success, and he borrowed the money to improve it ; and in a sketch of it some years since it appeared that he had 345 acres of grain cut, carted and stocked in six days, and he also had 450 acres of turnips and mangel wurzel, in the highest cultivation. Science and system, with practical knowledge must have been exercised in producing such results on an impoverished estate. Gen. Washington was one of the best farmers we ever had in

our country, and as you visit the beautiful Mount Vernon, on the fertile banks of the Potomac, you will see the vestiges of his taste and industry. History has found many of its noblest subjects, who preferred the field of culture to the field of battle, although the bravest and ablest when there.

It has been considered a great desideratum in our country from the days of Gen. Washington to the present, to have a "home department of agriculture," established and sustained by the Government, and the head of it to be one of the Cabinet. His views on this subject are characterized by the same enlightened liberality and forecaste, as upon every other subject to which his mind was applied. "Among the means," said he "which have been employed to this end, none have been attended with greater success than the establishment of boards, composed of proper characters, charged with collecting and diffusing, and enabled by premiums and small pecuniary aid, to encourage and assist a spirit of discovery and improvement, by stimulating to enterprise and experiment, and by drawing to a common centre the results every where, of individual skill and observation, and by spreading them thence over the whole nation. Experience has accordingly shown that they are very cheap instruments of immense national benefit." This Society, in some degree at least, will accomplish the same purpose. Indeed if all the suggestions incorporated in the several reports are analysed and judiciously practised upon, I have no doubt there will be pre-eminent success in the different branches of agriculture. And I trust the same gentlemen will continue to give their views from year to year, and induce every new comer to do the same. This will distribute throughout the group many valuable suggestions of practice. This is the more requisite from the fact that there are few agricultural publications suited to the soil, climate, and culture of the products here. In the application of science to the arts you must be your own teachers for the present, with less aids than in older countries.

I think I have noticed in some minds a doubt about the success of planting here. That you have suffered by the drought in some sections is nothing more than what all planters in all countries have done. Cotton, corn, and potatoes are sometimes severely injured, but it is not a cause of discouragement.

Louisiana suffers by frost, so that there is a necessity for planting every year. An intelligent writer, and practical sugar grower in that state says:—"Thorough draining and subsoil ploughing is being rapidly introduced into the British West Indies, and it has proved as beneficial there as in Europe, so much so that by the present mode of cultivation the average of ratoons and plants is seldom two thousand pounds per acre. It is confidently believed that in lands thoroughly drained and subsoiled the average will be 5000 lbs. per acre. I have no doubt of it, and when that system is introduced here, the produce of a depth of sixteen inches of dry alluvial soil cannot but be productive. Nobody knows to what size cane can be made to grow, and how much sugar it can yield." Ploughing has not generally been to a greater depth than six inches and they have yielded "*disintegrated alkalis*" sufficient for cane crops for years; why will not the next six inches afford as good production if brought to the air, and well cultivated. The history of subsoil ploughing most fully shows its value in all situations, but when it requires drainage it is frequently too expensive. But here you are not under this necessity which is the great expense and drawback in Louisiana. That your crop may be made larger by this process there can be no doubt.

In reference to the market, experience has shown that there will always be a time in the twelve months when your products will command a remunerating price. You can supply California quicker than any other country, and this is a material point. You have cheap labor, cheap land, and a genial climate. You want more capital, which could be induced here, only convince the people abroad that it would be safe. You cannot expect men to come here and establish a permanent business, who have large means at home. The older portions of the country have too many attractions, so in order to secure the enterprising man, you must offer him inducements. To the planter, temporary loans are important in securing and exchanging his crop, and he should not be subject to the usurer. A well regulated bank based on the precious metals would furnish all the facilities wanted here.

This subject has been under the consideration of an able committee, the chairman of which is a high officer in government, one who has been distinguished for his ability, and industry in business affairs, and whose whole powers are devoted to the prosperity and honor of this

kingdom, and who, I am informed has given an able report, otherwise I might detain you with a few practical remarks on this subject.

I do not believe in a hot-bed principle, but I do believe in having all the necessary machinery with all the modern improvements, for the success of any business. You must demonstrate that gold, or its equivalent can be gathered from these mountains and vallies, and you will at least have more of the universal Yankee nation ; still the appearance of affairs is, at this moment, stupid indeed, but the world is moving on, and with courage, and with hope, all will be well again. Let us learn "to labor and to wait." But labor we must, or this city may go back to a fishing town, instead of its being occupied by a wealthy and refined people. You must remember that the arable land bears an unequal proportion to the whole ; estimated variously from 1-5th to 1-8th. Now it is very evident that the richest culture must be applied to it. What then will you do with the vast amount of mountain land ? Can you do better than to cover it with bleating herds and cheerful shepherds ? The golden fleece is as good as the golden ore, and why not gather it ? While the former has certainty, the latter is hidden beneath the earth, and its development frequently requires a waste of health which its glittering treasure cannot restore. The expense of producing wool in the southern portion of the United States is but eight cents per pound, while in the north it is twenty-seven cents, and strange to tell, it is but recently that the attention of the South has been directed to it. I am satisfied that it is a staple that should demand your attention. The temperature and hard soil of the mountain is healthful to the sheep and you have the green herbage for the whole year ; while in northern countries it requires the labor of the summer to supply food for the winter, and yet in these very countries this husbandry is profitable. It is clearly proved that the south produces a larger and finer staple.

Send to Sydney for the best breed, and put your shepherds on these mountains with their flocks. They are better than fences. And you cannot well build these expensive fences, till you have something for market to pay for them. And if it is contended that you cannot have sheep until you have fences, it is equally clear that you cannot have fences until you have sheep. This state of affairs reminds me of a remark of a mountaineer who resided near one of those lofty mountains

in the north, which for months wears its white mantel to the sky, on being asked when it would be warmer, he replied :—"When the snow from the mountains has melted away." "And when will that be?" said his neighbor. "Why, when it is warmer weather, to be sure." Instead of sending to England for the iron fence, or to the United States for lumber for the same, plant the Osage Orange, and in five years you will have a hedge, hardy and impregnable.

There is every inducement to cheer you in the course of improvement. You have prospective markets greater, far greater, than your prospective products. And this will continue, although you make every field wave with luxuriant cane, and wheat; and every valley ornamented with the burdened fruit tree, and perfumed with the casia, and the camphor, and the various flowers of your clime. Let there be one paradise, one oasis in this desert of waters. Nature has given you a healthful climate; no miasma, no desolating fever; and I have no doubt of the fact that the European race can do more work here in twelve months than in their own native land; for the reason, that here there is no long winter to pass without employment, and labor here, as there, is invigorating. The navigators will not visit your harbors for your mountain water and a few vegetables only, but *will* seek your burdened warehouses, your teeming vallies, and your mountains vocal with flocks and herds, to supply the wants of a population on the western coast of the United States, which has increased and will increase faster, by a thousand fold, than any colony in the history of the world. You now supply their wants only to a limited extent. You may give them a cup of coffee for a week, and sugar to sweeten it; but you seldom ornament their fruit dishes with the orange and the grape. The eye of *the world* is directed to the Pacific. Every steamer is crowded with efficient, intelligent emigrants from the United States and Europe, and Asia is already beginning to pour in from her laboring millions those who will help on the unprecedented growth of this rich empire. Remember that a year there makes the change of a generation in any other country. And have you been preparing yourselves to profit by this great advance in the settlement of that country? It is no time to be depressed; "on, still on," should be your motto. "But we have no means," say you. Well; command them. Combine your influence; get the government to aid

you by its liberal measures. And can you seriously entertain the belief that the 12 per cent will not induce some of these Anglo-Saxons, in their adventurous voyage around the globe, to pause here and drive a bargain with you *which shall at least pay their expenses*. You want more men, more means, and you can offer profitable inducements. You must not rest on your oars, wafted as the gentle waters may take you. Intelligence and enterprise can alone command success. Linger not too long under the beautiful shade of the tamarind, the bread-fruit, or the orange, fanned by the balmy breeze of the mountain or the sea. Take not the flattering unction to your soul that a tropical clime is an apology for indolence. Why not make one grand effort to advance the arts of civilization higher, nobler, purer, than any where else? Your physical advantages are ample for this purpose. In religious and moral teachings the foundation of your nation is securely laid; for it rests on the eternal principles of the bible, which will last after the pillared firmament shall have crumbled and fallen into chaos. Education too is progressing, and I hope that the youth of this nation will be taught to know *something of the earth*, which sustains them. It is for you to develop the resources of wealth, so that institutions of learning, and benevolence can be established; the beautiful garden, perfuming the air, cultivated; and all the other arts which adorn the characters and manners of a people. One would have supposed that the mother of all the arts would have attracted the first attention everywhere, but, perhaps for wise purposes, it was postponed till genius, cultivated by every art and every science, would bring her richest treasures to the richest subject. And with all these treasures of earth at home, let your islands be as the rock of the Pilgrims in the Pacific, upon which a light will go up to the sky, to cheer and animate every heart, on the shores washed by its moving waters.

ON CAPITAL AND BANKING.

READ BEFORE THE ROYAL HAWAIIAN AGRICULTURAL SOCIETY, ON TUESDAY,
JUNE 1, 1852, BY R. C. WYLLIE, ESQ.

When I had the honor to address you, at one of your meetings last year, I stated my fears that a severe crisis in the money market was approaching, and that some of your number would have to succumb under its pressure, from the want of that Banking accommodation, which, in other countries, enables the man of enterprise and good character to command cash, so long as he can give good security for it. Unfortunately, my predictions have proved too true. Since that period, several industrious and well deserving men, largely engaged in planting, have been unable to meet their liabilities, though possessed of assets greatly exceeding the amount of those engagements. As the best preventive of such evils, in the interest of the planters, I suggested to the meeting, the urgent necessity of establishing a Bank in Honolulu, with branches in the principal islands. The idea was so far entertained that a committee was appointed to enquire into the subject of capital and the establishment of a Bank of deposit and discount. Mr. Severance, Mr. Bates, Mr. Castle, Mr. Makee, and I were appointed from that committee. All these gentlemen being from the United States, are better qualified than I am to show you how Banking has promoted its agriculture generally, but more particularly in its two great staples of Cotton and Tobacco. They can show you also the great evils arising from banking when it departs from those true and correct principles by which it ought to be regulated, and which, since 1836, have been more generally and severely felt in the United States than perhaps any other country.

It must have been visible to every man of reflection, several years ago, that these islands had arrived at that stage, when a more abundant supply of capital and labor was indispensable to their prosperity. I called the attention of the King's Government to this important subject in 1847, laying down three fundamental elements as essential to our progress, viz:—*Cheap land, cheap money and cheap labor.* Providence has given us the great advantages of a productive soil, a genial and healthy climate, an exemption from droughts and hurricanes and a proximity to markets capable of consuming more than our surplus produce. But all these natural advantages we will lose if from the

dearness of land, capital, or labor, we cannot place our produce in those markets cheaper, or at least as cheap, as other countries producing the same commodities. At the period referred to, (1847), several enterprizing individuals were going deeply into plantations, and, it appeared to me, without due regard to those most important considerations. It is altogether impossible that our agriculture can flourish through the mere consumption of our scanty population. Our planters must look to foreign consumers ; but they will look in vain, unless they can supply them with produce as good, and as cheap as any one else. With the experience of late years, I believe no one will controvert these positions ; but they were not foreseen in 1847, and hence the suggestions which I have alluded to, founded on the conviction that without an improved agriculture, the islands could never prosper, and that, agriculture could not exist, except in compatibility with remunerative profits to those who engage in it.

Will any one tell me that the planters on these islands can look to anything but certain ruin, with labor at 50 cts per day, and money at 3 per cent per month ? To avert that fatal consequence both to individuals and to the nation, I can conceive of no expedient equal to the establishment of a Bank. As such an institution would be a great novelty in this young Kingdom, it may not be out of place for me to explain, here, a few of the advantages which are believed to flow from Banking in older and more advanced communities.

1. A Bank, *where there is an adequate police and military force, under proper subordination*, affords a place of security for the deposit and safe-keeping of money. It is much more easy to render one building strong and secure for such a purpose, than to fortify and guard the house of every merchant and private capitalist. Every one who has had the charge of large sums of money knows the great anxiety that the responsibility creates. That was my lot in 1826, as may be seen by referring to page 441 of the second volume of Ward's History of Mexico. I had then seldom less than \$500,000 in bars of silver and *oroche** ingots of gold and coin, under my charge. The whole deposit was in my bed-room, where doubtful of the fidelity of clerks and servants, I barricaded myself in, every night, with sufficient fire-arms to fire 22 shots without reloading. Such was the life that I led for five

* Silver and gold combined.

years, in health and sickness, without ever allowing any one to sleep in the same room with me, except a young man, WILLIAM MONEY, (late of Los Angeles, in California,) during some months of severe intermittent fever. During all that time it would have been an immense relief to me to have been able to deposit the funds of FLETES & WYLLIE, in such a place of safety as a Bank.

What was my case from 1825 to 1830 in the "Presidio of Mazatlan," is more or less the case of every merchant, now, in Honolulu.

2. A Bank as above described affords another great advantage as a place of safe deposit for jewels, plate, bills, valuable deeds and other papers. Banks usually afford such facilities to customers, even without excepting the Bank of England. Any one who will take the trouble of calling at my office, can see the identical box that I was allowed to keep in that bank. To escape the damage of fire, it is usual in London for solicitors and others who have valuable papers, to deposit them in the vaults of some bank, during the night, and to send for them in the morning.

3. A bank by allowing interest to depositors, draws into it the various small sums of money which individuals can spare from their necessary expenses, and which, otherwise, would remain unproductive in their hands. These small sums, accumulate, in the bank, in large amounts which are employed in discounts and other facilities to trade and commerce. Every \$100,000 so brought into active circulation, is just so much added to the capital of the nation; for money hoarded is dead, and, for all useful purposes, the same as if it did not exist.

4. A bank saves a vast deal of time, trouble and expense to its customers; to a merchant who has to pay \$10,000, there is a wide difference between drawing a *cheque* for the amount, and counting down the cash, and so also between receiving \$10,000 in coin, and receiving it in a simple draft on the bank. Where a merchant keeps an account with a bank, he accepts all bills drawn upon him payable at the bank, which pays them, without advice, charges the amount to him, and returns them cancelled with his Passbook; and where the merchant has bills to collect, however numerous they may be, he pays them into the bank which takes care to present them when due, to collect their amounts and to credit them to him in account. If the bank receive any bad or counterfeit coins or notes, it, and not the merchant, bears the loss.

5. A bank benefits society by making advances to persons who want to borrow money, whereby persons engaged in trade and commerce are enabled to augment their capital, and consequently their wealth. Its advances are made, by discounting bills upon personal security, upon mortgage of real estate, upon policies of life insurance, and sometimes upon the joint security of the borrower and two or three of his friends. The diffusion of money thus supplied, stimulates production, and enriches the inhabitants of the locality. This principle is so well understood in Scotland, that it is recorded by the select committee of the House of Commons on banking, page 43 of their report, that it is not unusual for the Scotch banks to establish branches in poor districts with the view of enriching them, and of future profit, from that enrichment.

6. A bank benefits a nation, also by transmitting money, expeditiously, safely, and cheaply, from one part of the country to another. If we had a bank at Honolulu, with a branch on Hawaii, and others on Maui, Molokai and Kauai, it would seldom or ever be necessary either for individuals, or even for the government, to send the money from one island to another; the proceeds of the sales of goods, of duties and taxes, and even the school funds might be paid in to such bank and its branches, and might be drawn for, in payment of local salaries, advances to planters, payment of produce, labor done on public works, &c. To any one wishing to travel over the Islands, it would be no small advantage for him to be able to pay in a given amount to the bank in Honolulu, and take a letter of credit with him to receive it, at the branches, as he might have occasion to spend it.

7. A bank affords to all respectable customers a continual reference as to their respectability. Bankers usually, for their common safety, communicate confidentially with each other, and they possess means of ascertaining character, without resorting to invidious enquiries. The man of honest industry, who is punctual to his engagements, is sure to meet his reward, in the increased facilities which bankers afford him, while the credit of the profligate, the spendthrift, the cheat and the gambler is limited to the amount of his available cash or securities that may be in hand. It was one of the many wise sayings of Franklin, *that credit is money*. No man engaged in business ought ever to forget *that maxim, nor this other, better throw away a pound of gold than an ounce of credit, at any time or under any circumstances*.

8. A Bank is of great advantage to all who either from incapacity, carelessness, or want of time, do not keep their accounts regularly. With all such if they pay in all their yearly income to their banker, and draw on him for all the payments they make, they will find their accounts accurately kept in his Pass-book, which they can call for, at any time. They can thus know both what they have spent during the year, and at any time during its course, so as to avoid the evil of spending more than their income. Besides by paying every account by cheque, that in itself is proof of payment of the account for which it was given, if the same bill should be presented twice for payment.

9. Not the least advantages of a Bank, are the habits of frugality and saving which such an institution tends to create. These, as yet, hardly exist among the Hawaiian people; they are improvident and wasteful, like all other people in a state of incipient civilization; they require to be taught to look beyond the moment of present enjoyment to that of future comfort; and nothing will do this, so effectually, as a Bank, where they can deposit their money safely, and receive for its use some interest.

But to accomplish all these and other benefits which might be mentioned, a Bank must have its sources of profit to itself. Such an institution cannot be conducted without great expense in the form of rent, taxes, repairs of the house in which the business is carried on, salaries of the officers, stationer's bill for books, paper notes, stamps, postages, &c. Its profits are its discounts, interest charged for money advanced, dividends on stocks held, and commission on business transacted.

To realize these profits a Bank must possess ample means which consist of:—

First, The capital paid down by the partners or share-holders.

Secondly, The amount of money lodged by their customers.

Thirdly, The amount of notes they are able to keep out in circulation.

Fourthly, The amount of money deposited to be repaid, in some distant place, at a future day.

These disposable means are employed:—First, in discounting bills. Secondly, in advance of money in the shape of cash credits or over-drawn accounts. Thirdly, in the purchase of government or other

securities. Fourthly, a part is kept in the Banker's till, to meet his current demands. Of these four ways of employing the capital of a Bank, three are productive, and one is unproductive. The discounting of bills yields interest; the overdrawn accounts yield interest; the Government securities yield interest; but the money in the till yields no interest.

An important question naturally arises:—Is there scope for a Bank on these islands? By the returns of the late, and of the present Collector General of Customs, it is shown that the consumption of commodities for the last five years was as follows:—

1847	. . . . .	\$653,930
1848	. . . . .	572,067
1849	. . . . .	622,637
1850	. . . . .	1,066,528
1851	. . . . .	1,442,419

in all \$4,357,581, leaving an average of \$871,516 yearly for the five years. It is not *unreasonable* to presume that our future consumption will not be less than the average of the three last years, which was \$1,010,528; but for the greater precaution, I shall take the average of five years, namely, \$871,516. Allowing one fourth or \$217,879 to be paid in cash, and three fourths, or \$653,637, to be paid in notes at 4 months; these notes at the legal rate of interest of 12 per cent per annum, would afford discounts to the amount of \$78,436. It would be a great advantage to commission merchants to be able to discount their sales and remit promptly to their constituents, so as to place the latter in a position to renew their consignments; and to the merchant who does business, on his own account, it would be quite as great a convenience, to be able to obtain the means of repeating his speculations, in place of waiting four months. Nevertheless, it is not to be expected that all mercantile notes would be offered for discount; I shall therefore take only one half, say \$326,818, producing discounts to the amount of \$39,218.

I do not think that it can be beyond the mark to assume that \$20,000 a year might be employed in discounting notes to tradesmen and mechanics at 12 per cent, producing \$2,400. Neither does it appear to me extravagant to suppose that \$50,000 might be advanced to planters in the discount of bills secured by good mortgages, producing at the

same rate of interest \$6000 * In Bank commissions the Bank might annually gain \$1000 and it would certainly be worth the while of the Government to pay the Bank \$3000 (if found to be absolutely secure and well managed) for receiving and disbursing the public monies.

Under these suppositions, the Bank might have a yearly revenue of \$51,618, which at 20 per cent interest would represent a capital of \$273,090 without allowing any thing for expenses or bad debts. Although these calculations are necessarily vague, I think no one can doubt that a Banking capital of say \$200,000 might, at present, be advantageously and profitably employed on these islands.

As the rate of interest for money has ranged for the last twelve months, I might have assumed a much higher basis on which to calculate the profits of a Bank ; but is my belief that any rate higher than 12 per cent per annum, while it might benefit the few capitalists among us, would ruin our agricultural and commercial interests, on which, and *not* on the usurious gains of a few monied men depends the prosperity of the nation.

In the foregoing remarks I have confined myself chiefly to a Bank of deposit, loan, and discount, as by far the safest with which to commence banking in this young Kingdom. In the PROSPECTUS of the London and Dublin Joint Stock Bank with a capital of £1,000,000 sterling, brought out, in 1841, under the auspices of the Most Noble the Marquis of Ormonde, the Right Honorable the Earl of Mountcashel, the Right Honorable the Earl of Kingston, the Right Honorable the Viscount Lorton, the Right Honorable the Lord Carbery, the Right Honorable the Lord Dunally, Sir Charles Henry Coote, Bart., M. P., and Lesley Alexander, Esq., and of which I had the honor to be one of the nine directors, one of the chief securities held out to the public was *its not being a bank of issue, and consequently not so exposed to runs and panics, nor obliged to keep so large a stock of gold at the branches, or to invest large sums at a low rate of interest in government securities.* This feature was suggested by one of the Directors, William Medley, Esquire, who had grown old as a Banker

* Permanent loans are contrary to the principles of sound banking ; but it is believed that such might be made through the agency of the bank, on account of small capitalists living on the interest of their money, to a much larger amount than \$50,000.

at Uxbridge, and as a bill-discounter in London. Another feature of security in the Bank referred to was the following :—

The Bank will be established under a deed of settlement with a power of suing and being sued, in the name of one of its officers, and with effectual provisions for limiting the liabilities of shareholders, by rendering it imperative on the part of the Directors or Auditors, or a majority in value of the Proprietors present at any meeting convened for the purpose by public advertisement, to dissolve the bank, in the event of one third of the subscribed capital being lost." Both these features I would recommend in any Bank that may be established in Honolulu.

No doubt one great source of profit to banks is in their issue ; and an issue of paper to the extent of one fourth of the paid up capital would be a very safe one in other countries ; but here, where the natives are so suspicious about what coins they take, that fourth part of notes would be returned so rapidly for gold or silver, that the Bank would have to keep constantly in its vaults an equal value in metallic currency to redeem its paper circulation, and thus the latter would leave no profit whatever. To introduce a paper circulation into these islands, always convertible into gold or silver on demand, would require much time and careful management. An experiment might perhaps be made with an issue of notes to the amount of say 5 per cent on the paid up capital, and if that succeeded it might be followed up by an equal issue every year, till the whole issue amounted to 25 per cent upon the whole paid up capital. But for Honolulu, as I have before said, I would prefer, for safety, a Bank purely of Deposit, Loan and Discount.

There are two kinds of Banks, viz : private and public. A private Bank consists of but few partners, who supply the whole capital from their own resources. It is the cheapest, because the partner's attend to its management, without any salary. A public Bank is one where the capital is divided into shares and raised by subscription. The shareholders, for its management, elect a certain number from among themselves, as Directors, who are paid for their services. Such a Bank is called a *Joint Stock Bank*. A Bank of the latter description although more costly, would, I think, be most acceptable in this community, as it would give to all, natives and foreigners, an equal opportunity of participating in its profits.

The next important question is :—Could an adequate capital be raised in this community, and in what manner ? I think it could, and in some such manner as that shown in the following supposed PROSPECTUS :

HAWAIIAN BANK

OF DEPOSIT, LOAN, AND DISCOUNT.

CAPITAL \$500,000 !!!

In 5000 shares of \$100 each. Deposit \$10
per share, and afterwards not more than
\$40 per share, will be called for in
the first two years, payable by
Instalments of \$10, at in-
tervals of not less than
three months.

_____, President.

Six Ordinary Directors. To serve gratis for the first year and thereafter to be paid moderately for their daily attendances.

One Managing Director of Banking experience, to be always on the spot and well paid.

Three Auditors.

One Solicitor or Attorney.

San Francisco Agents,	_____
Hong Kong do.	_____
New York do.	_____
London do.	_____

1. The shares of the Company will be issued in two series of 2500 each. The second series shall not be appropriated until the business of the Bank require their allotment. The holders of the first series, will have a preference, pro rata, in their distribution.

2. No one shall be eligible to the office of President or Ordinary Director who shall hold less than 100 shares, nor for that of Auditor or Solicitor who shall hold less than 30 shares ; nor for Managing Director who shall hold less than 50 shares ; any of said officers in default for non-payment of any call, for more than three months after it is due, shall forfeit his office ; and all calls must be paid in hard coin.

3. Each series of shares shall have a portion reserved for distribution abroad, where the calls can be paid to the agents of the Bank,

and where the dividends may be received at the option of the shareholders.

4. The provisional directors shall hold office only till the first general meeting, but then, and afterwards, they, and all other officers of the Bank, shall be elected by the shareholders, by ballot. Directors and other officers shall be indefinitely re-eligible ; and absent or foreign shareholders may vote at all general meetings, by proxy.

5. A general meeting of the shareholders will be held annually, at which a full report of the affairs of the Company and a balance sheet will be submitted to the shareholders, thereafter printed, and a copy sent to every shareholder.

6. The qualifications for voting at the yearly meetings for the election of officers, shall be 5 shares one vote ; 15 shares two votes ; 25 shares 3 votes ; 40 shares 4 votes ; 60 shares 5 votes ; 80 shares 6 votes ; and 100 shares 7 votes, and in the same proportion for any additional number of shares.

7. The shares shall be transferable without endorsement, but the dividends shall only be paid to the parties in whose names the shares may be registered, at the time when the dividend is due.

8. In the absence of a charter limiting responsibility, the Bank will be established under a deed of settlement, which shall contain the most effectual provisions for the discharge of all its debts, and yet protect the shareholders, by rendering imperative the dissolution of the institution, in the event of one third of the subscribed capital being lost.

9. The operations of the Bank will be confined, to those of Deposit, Loan, and Discount, dealings in Exchange, Bullion and Coins.

10. The general management of the Bank will be vested in the Managing Director, and the ordinary Directors, under the supervision of the President, all of whom shall be accountable to the shareholders in their general meetings.

You are requested to bear in mind that the foregoing is a mere imaginary PROSPECTUS, open to improvement, by those who might take part in the undertaking. But I may add that with such a PROSPECTUS, or an improved one on similar principles, as might be agreed upon, under a better security for the preservation of the public peace, I should be willing for myself to take 100 shares, which would be an

interest of say ten thousand dollars, and to pledge my best exertions to dispose of another hundred among my personal friends abroad.

As the money market now is in the United States and Europe, and as it is likely long to be, if peace be preserved, from the great influx of gold from California and Australia, there would be no difficulty in obtaining a large subscription by foreign capitalists, if we could only convince them that the Banking House would be *safe*, that their capital would be *safe*, and that it would yield a dividend twice or three times the interest that they could make at home. Capitalists are essentially the friends of order ; nothing would tempt them to risk their money here, if they thought the Government had not a sufficient force to protect the Bank from being plundered. For this purpose a small, well-organised force would be sufficient in such a place as Honolulu.

There is no country in the world where Banks have done so much good, and been so well managed as in my native country, Scotland. The Bank of Scotland, chartered in 1695, is still in prosperous existence, and its shares of £100 are worth £183. The Royal Bank of Scotland, chartered in 1727, is in the same condition, and its shares of £100 are worth £135. The Bank known under the name of the British Linen Company, chartered in 1746, is also flourishing to this day, and its shares of £100 are worth £199 10s. Besides these which are the most ancient Banks in Scotland, there are numerous others, such as the Aberdeen Banking Company, the Aberdeen town and county Bank, the Arbroath Banking Company, the Bank of Ayr, Carrick and Company's Bank of Glasgow, the Commercial Banking Company of Scotland, the Commercial Banking Company, the Dundee Banking Company, the Dundee Bank, the Dundee Commercial Bank, the Dundee Union Bank, the Exchange and Deposit Bank, the Falkirk Banking Company, the Fife Banking Company, the Greenock Banking Company, the Glasgow Banking Company, the Leith Banking Company, the National Bank of Scotland, the Montrose Bank, the Paisley Union Bank, the Perth Banking Company, the Perth Union Bank, Ramsay Bonar & Co's Bank, Edinburgh, the Renfrewshire Banking Company, the Shetland Bank, Sir William Forbes & Co's Bank, Edinburgh, the Stirling Banking Company, the Thistle Bank, the Ayrshire Banking Company, the Glasgow Union Banking Company, the Western Bank of Scotland, and the Central Bank of Scotland, all of which pay large dividends ; and their shares sell at a premium.

All these Banks, so far as I know, issue their own notes as low as 20 shillings, and act liberally upon the plan of granting credits, on cash accounts, which was introduced by the Bank of Scotland in 1729. The nature of these cash accounts consists in a credit, given by the Banks, on loan, to the extent of any given sum, to any one that can produce two or more persons of undoubted credit and property to become sureties for the repayment on demand of the sum credited, with interest. Any person having obtained this credit, may employ the amount in his business, paying interest not on the whole amount, but upon the sums which he actually draws for ; and obtaining interest on the smallest amount he may pay in, in satisfaction of that credit. These loans are advanced in the notes of the Bank which are equal to gold, which is the chief advantage of the Bank in giving such credits. These cash accounts have greatly advanced the prosperity of Scotland since the system was commenced. They enable any young man of good character, who enjoys the confidence of his own friends, to commence business, without any Capital of his own, and often to rise to a condition of great opulence.

In 1793 and 1825, when so many bankruptcies took place among country bankers in England, not one Scotch bank failed to make good its engagements. The committee of the House of Lords, which sat in 1826, reported that the banks of Scotland, whether chartered or joint stock companies, or private establishments, had for more than a century exhibited a stability which they believed to be unexampled in the history of Banking ; that they supported themselves from 1797 to 1812 without any protection from the restrictions by which the Bank of England and that of Ireland were relieved from cash payments, and that there was little demand for gold in Scotland during the great embarrassments in the circulation which prevailed in England, previous to 1826. The same committee further reported that as, during the whole of that period, a large portion of their issues consisted almost entirely of notes not exceeding £1 or £1 1s, there was the strongest reason for concluding that as far as respected the Banks of Scotland, the issue of paper of that description had been found compatible with the highest degree of solidity. The Act of 1826 which put an end to the circulation of notes under the value of £5 in England, did not extend to Scotland, where, to this day, a large portion of the circulation of the country, always at par with gold, is of £1 notes.

All of the Scotch Banks take deposits and allow interest upon very small sums lodged with them. Gilbert in his "History of principles of Banking" states "*The Deposit system of Banking is universally considered to be one cause of the prudence and frugality by which the lower classes of the people of Scotland are distinguished.*"

I see no reason why a Bank in Honolulu, adopting a similar deposit system should not produce the same moral results ; nor is there any good cause, beyond the suspicion and distrust which characterise the natives, as I have already mentioned, why a well-regulated issue of £5 notes, should prove less safe here, than £1 notes have done in Scotland for more than a century. Of course, in so saying, I suppose an equally correct and discreet management. But, for the reasons which I have before stated, I consider that a Bank of Deposit, Loan, and Discount, and not of *Issue*, would be the *safest* in these Islands.

R. C. WYLLIE.



REPORT OF THE CHAIRMAN OF THE COMMITTEE ON POULTRY.

To the President and Members of the R. H. A. Society.

GENTLEMEN :—So much valuable information has been published on the subject of "The Rearing and Management of Fowls, and other Description of Poultry," by persons in every respect better qualified than I feel myself to be, that I fear in bringing it again before the notice of this Society, I shall be but trespassing upon its valuable time, and were it not that the climate of these Islands differs so very materially from those where this subject has been so much discussed, I should refer the members of the R. H. A. Society to the very interesting work, now in the hands of the librarian, entitled :—"Dixon & Kerr's Ornamental and Domestic Poultry," which, containing, as it undoubtedly does, the experience of many well-known Poultry Breeders, both in England and the United States, would, but for the difference of climate, seem to make quite superfluous any thing further that could be written on this topic.

In order, more clearly, to make myself understood, I will call the attention of those about to engage in breeding Fowls, to the necessity of first providing a suitable house for them, which should be on quite a different principle to those constructed in colder climates; here we have warmth, consequently with a tight roof so as to ensure dryness, we have, by building the sides of laths, so as to admit air, a cheap and suitable Fowl House. I would recommend its being divided into four partitions, say, half for roosting, the other half into three parts, one for laying, which should be provided with boxes, chalk nest eggs, and darkened, another for setting and the third for the hens and chicks to gain strength prior to being turned out into the Fowl yard.

There ought not to be any communication for laying or other fowls into the setting house, and the entrance into the laying house might either be from the roosting department, or by sliding doors from outside. The entire floor should be tiled, so that by raising the setting and laying boxes a few inches from the ground, the whole house might be washed daily, a plan which would effectually banish lice, at present the great plague of our Fowl Houses. Where this cannot conveniently be done it would be very desirable to water the entire fowl house after it has been carefully swept out, at least once a day with lime-water.

The next important consideration after having built the house, appears to me to be that of stocking it with useful birds, and this has not hitherto been found a very easy matter, at all events many with whom I have conversed seem to have had but partial success and others have been quite unsuccessful. I should infer, however, that the principal difficulty has arisen from the attempt having been made to obtain cheap stocks by sending to Kauai, or Hawaii, which on arrival here, half dead from exposure, and sea sickness, have been turned into the fowl yard, most likely into quite a different climate, the result of which has been, that in the course of a month out of one hundred head, not twenty-five have remained alive. I have found by experience that it is quite far enough to remove young birds even from Honolulu to Nuuanu Valley, and I would suggest that the house be stocked if possible from its immediate neighborhood, even if a commencement should have to be made with the common native hen, which for laying, setting and bringing up her brood is superior to any ever yet imported, although she is small and lays small eggs of an inferior flavor.

There can be no doubt but she is a native of these Islands, since Captain Cook was supplied with fowls at Waimea on Kauai, when he first discovered that Island on the 19th of January 1778.

In order to increase the size of the fowl and the flavor of the eggs, Shanghae, Cochin China, and Spanish fowls might be introduced, as well as Dorkings from England ; a few Polish hens would likewise be very desirable additions, owing to their great prolificness.

It would not perhaps be judicious to have more than three coops, as it frequently happens that too great a mixture increases the weight to the prejudice of the incubating qualities, and care should be taken always to set the largest eggs ; by this means the stock in the second year, would be an excellent well acclimated mixed breed, useful for all domestic purposes. It would be well to avoid setting the large Shanghae hens (excepting those of the pure white breed,) as I have invariably found them restless and disposed to leave their nests after the 14th day, whilst on the other hand, hens crossed between Spanish and Native, or Shanghae and Native, have proved excellent incubators; none can however in this respect, excel the pure Native hen.

Great care should be taken to keep the setting hens free from lice, this important object so desirable both for the comfort of the old hen, her young brood, and the man in charge of the stock, will be partially if not entirely gained, by tiling and washing the house with lime water: in addition to these precautions, I would recommend that fine lime be mixed with the straw in the box before setting the hen, and should lice appear a few days prior to her hatching the eggs, she ought to be removed with her eggs into a clean box similarly prepared, carefully rubbing her head and neck with a little whale oil, which will effectually prevent any lice she may have upon her, from annoying her head and neck, and will most probably drive them away altogether.

If however oil be used too freely it will most likely find its way down to the eggs and hermetically seal them, I have lost whole broods by using oil incautiously, but have had the satisfaction of saving the hens. Many persons adopt the plan of having rows of boxes. It may answer very well in cold climates, but here where the heat stimulates the breeding of lice to an enormous extent, it would seem desirable to have separate boxes well whitewashed, in order that when a hen has hatched her brood, the box may be removed and washed.

It will hardly be necessary for me to remind those who have paid any attention to the rearing of fowls, that the best time to raise stock is early in Spring, when the hens begin to lay. Sometimes they commence in January and continue to lay freely until the end of April, when in a great measure they cease ; during these months a large quantity may be reared, and I think it will be found that chicks hatched in these months are less liable to disease, and prove finer and stronger birds, than those hatched afterwards and will be ready for the table in September, whereas those hatched during the hot months of June, July and August, frequently become sickly, and are carried off by an eye disease which those having had the advantage of the spring months generally recover from.

A great many experiments have been tried to cure this disease, without any apparent success. On examining the cancer I have observed it to contain small worms, and have frequently watched the natives wash the chick's eyes, after squeezing the worms out, but perhaps the best remedy would be to separate the sick chicks from the sound, carefully wash the cancers once a day, with any common eye-wash, as sulphate of zinc, or nitrate of silver, very weak, and give them small doses of Jalap, say 6 grains each, once a day. Prevention however is better than cure, and it is the opinion of many, that a clean house, wholesome food, and cool water, with a large range having plenty of shade and grass, will in a measure prevent sickness.

Regarding the best descriptions of food for poultry, and particularly for fowls, all concur in recommending grain of some kind, and whether it be Indian Corn, Barley, Oats, Paddy or Millet, matters little, so long as any one of these can be procured at a moderate price. Any of these productions could be raised here to an extent far exceeding our necessities, but the want of energy on the part of the great landed proprietors, few of whom, it seems, are willing to rent their tracts, or cultivate them themselves, and the high price of native labor, which, besides, cannot be depended upon, compels us to look abroad for supplies which are always dear, and uncertain. Millet or brown corn grows here in great perfection, and to those who have land I would strongly recommend the planting of this grain, as I know of no grain which contains so much nutriment, and its long stalks make both excellent fodder and food for horses or oxen.

Indian Corn never having been lower at this port than \$5 per barrel, which is far too high for feeding fowls, many have looked to China in the hopes of procuring Paddy, and in the absence of Millet, it is probably the best thing that can be given to fowls, inasmuch as it being a smaller grain than Indian corn, the same weight will be more fairly divided amongst the stock.

As to quantity much will depend upon the extent of range allowed the fowls, as well as what vegetable matter they can pick. I have been in the habit of giving my stock consisting of about 70 laying hens and some 150 chickens, from 10 to 15 pounds of Paddy per day, besides lettuces, cabbages, and the melon and other peelings from the kitchen, and as they are in excellent condition I infer I give them enough. Paddy has generally cost from 2 to 3 cents per lb.

Cool water is an essential requisite for fowls; water heated by the rays of the sun is apt to occasion disease. I would therefore suggest a self supplying machine placed under cover, where there is no stream running through the yard, which may be made at a very small cost by inverting a demijohn filled with water on a stand with the neck touching the receiver which can be made of a few tin plates, by this means the supply will be constant, the water cool and clean, and labor saved.

Gravel, lime, sand, and ashes are essential requisites in a fowl-yard, and where a garden is cultivated, the manure bed should be there also, particularly if composed of stable dung.

I would here remark that sea sand has an immediate and very destructive effect upon fowls, and must therefore be avoided.

A few geese might be allowed to run in the fowl yard, but I would most certainly exclude turkeys and ducks, the former are constantly picking the young chicks, and the latter cannot defend their ducklings from the attacks of the hens and turkeys. Ducks besides are very voracious, and prevent chickens from getting a fair share of their daily allowance of food.

From seventy laying-hens, not more than an average of 30 eggs daily can be expected, and this quantity decreases gradually as summer advances, it must be remembered that some will be setting and others not allowed to sit, will not commence again for several days, it is probable that the receipts during the few summer months will be very small, but they will increase in the fall of the year.

The principal stocks on these Island are composed of crosses between the native hen, Shanghaes, Malays and Spanish fowls, and it will be seen from comparing the following weights of fowls taken indiscriminately from my stock, with the stocks of the best breeders in the U. S. as extracted from Dixon and Kerr's volume already alluded to, that our stocks are quite equal, if not superior to theirs.

I will commence with my own—

Cock, $\frac{3}{4}$ Shanghae, $\frac{1}{4}$ Native, weighed alive, 3 years old	8 lbs.
" Native, Spanish, and Shanghae, 18 mos.	6 $\frac{3}{4}$ "
" Pure Shanghae, imported, 16 mos.	6 $\frac{3}{4}$ "
" do. do. do. 16 mos.	6 "
Hen, Pure do. do. full-grown	5 "
" do. do. do. do.	5 "
" Malay, imported, full-grown, with a brood,	5 $\frac{1}{4}$ "
" Sydney, do. do.	6 "
" Shanghae $\frac{3}{4}$, Native $\frac{1}{4}$,	5 $\frac{1}{4}$ "
" do. do.	5 $\frac{1}{4}$ "
" Frizzled, imported from Valparaiso, full-grown,	4 "
" Pure Game, do. do. do. do.	3 "
" Native Hen, full-grown,	4 "
" Spanish, pure, and Shanghae, the progeny of 14 mos.	4 "
Chick from mixed breeds, 3 mos.,	2 "

I will now quote from Messrs. Dixon and Kerr's volume, pages 153, 154, and 155, the following—

"The reader will be better able to judge what weights fowls may be reasonably supposed to attain after the inspection of the following lists of live weights of various poultry with which we have been obligingly favored. But as the birds were generally out of condition in consequence of their being mostly at that time on the moult, and also from the previous wet season, the weights are less than they would be under more favorable circumstances. One list gives

	lbs. oz.		lbs. oz.
Black Polish Cock, 3 years old,	5 3	Black nondescript Hen,	4 10
Do. do. Hen, do. do.,	3 4	Globe-crested Polish Hen,	3 9
Do. do. Pullet,	2 6	Silver Polish Hen,	3 4
Golden Polish Cock,	5 0	Game Cock,	4 10
Do. do. Hen,	3 8	Do. Hen,	3 0
Another Hen,	3 10	Young blue dom. Cock,	3 6
Golden Polish Pullet,	2 8	Do. do. Hen,	3 0
Malay Hen,	3 12	Large dom. hybrid Hen,	3 8
Creole (silver Hamburg) Hen,	3 1		

Among these the Malay hen was moulting, and not up to her usual weight by nearly a pound."

It will be observed there is a great relative difference between the Pullets and the grown hens of the Polish breed. All the Polish increase much in size and beauty the second month.

"Another list readily furnished by Mr. Alfred Whitaker gives

	lbs oz.		lbs. oz.
Pheasant Malay Cock, 2 years old, average each	7 0	Spanish Hen,	5 0
Do. Do. Cockerel, 5 mos old,	7 0	Two Dorking Cocks, each	7 0
Do. Do. Hen,	5 0	Do. do. Hens,	6 8
Do. Do. Pullet, 17 mos. old,	5 3	Do. do. do.,	6 12
Do. crossed with Dorking Hen,		Cock Turkey, 2½ years old,	17 12
4 years old,	5 8	Hen do., 1½ do.,	10 0
Speckled Surrey Hen, 2 yrs old,	5 12	Do. do., do., do.,	9 9
		Musk Drake, moulting,	9 12

"The Dorking hens belong to a neighbor and are very fine ones. The hens it will be seen, approach nearer to the weight of the cocks than is the case with the Pheasant Malays. The Spanish hen is about to moult, and is rather under weight."

"Our own poultry yard furnishes these—

	lbs. oz.		lbs. oz.
Turkey-Cock, 16 mos. old,	16 0	Cochin China Cockerel, 6 mos.	4 14
Do. Hen, 3 or 4 years old,	8 0	Another, do.	4 13½
White China Gander, 6 yrs. old,	12 13	Silver Hamburg Cockerel, after traveling, about 5 mos. old,	3 1
Do. Do. Goose,	11 13	Do. Pullet, do. do. do.,	2 8
Common " do., 6 yrs. old,	10 11	Black Polish Hen, moulting,	3 0
Cochin China Cock about 16 mos. old moulting,	6 5	Golden Hamburg, do.,	2 3
Do. do. Hen, do. do.	4 6	Andalusian Cockerel, 4 mos.,	3 8
Malay Cock, do. do.	6 14	Do. Pullet, do.,	2 6½
Do. Hen, do. do.	4 8	Black Spanish Cockerel, do.,	2 11
Pheasant Malay Cock,	5 7	Do. Do. Pullet, do.,	2 11
Do. do. Hen, moulting,	3 8	Silver Polish Cockerel, 4½ mos.,	2 14½
Game Cockerel, abt. 5 mos. old,	4 2	Golden Poland Pullet, 5 mos.,	2 8
Golden Hambg. Cockerel, after a voyage, 5 mos. old,	3 8	White Crested Golden Poland Pullet, do.,	2 3
Do. do. Pullet, do. do.,	2 4		

I will make another extract from this interesting works which will prove of use to those about to commence keeping poultry ; respecting the number of days requested for different descriptions of poultry to bring out their broods, the author says :

"Great mistakes are sometimes committed by writers on poultry, in regard to the various periods of incubation of Hens, Ducks, Turkeys, &c. I have taken some pains to ascertain the time of each, and I will give you the result :—

A Hen, under ordinary circumstances, sits	20 days.
A Guinea Fowl,	25½ do.
A Duck,	26 do.
A Turkey.	27 do.
A Goose,	29 do.
A Musk Duck,	32 or 33 do.

In this report I have taken little notice of Turkeys, Geese, Ducks, or Guinea Fowls, as I possess too little information regarding their habits and domestic qualities, with reference to profit on these islands to venture upon any remarks worthy of record, but from the trifling experience I have had I should say that Turkeys were the most unprofitable, and that the breeding of Ducks and Geese, would on the contrary, with due care and attention to their habits, be more profitable than the rearing of any other descriptions of Poultry.

Turkeys attain a very respectable weight here ; a few weeks ago I weighed a Cock bird, of my own rearing, ready for the spit, and to my surprise he weighed 17 lbs ; he might have been 2 years old, and had not been put up to fatten.

The following are the weights of English Ganders, Geese, and Goslings running in my Fowl yard :—

Gander, 14 months old	9 lbs.
Gander, do. do.	8½ "
Goose, do. do.	8½ "
Goose, do. do.	8 "
Gosling, 3 months old,	6½ "
do. do. do.	7 "
do. do. do.	7 "

It must be borne in mind that this report more particularly applies to the "Rearing and Management of Poultry," where the vicinity to a town requires the erection of Fowl houses, and the enclosing of Fowl yards, and does not apply to those extensive farms on these Islands where fowls are allowed to roost out, and forage for their own food, being merely called together once a day to satisfy the proprietor that the whole have not been stolen, or that they have not become the prey of wild dogs, hawks, owls, or rats of two or more legs. But whilst it may answer the purpose of the Cattle or Sheep Farmer, the Sugar or Coffee Planter, to allow his Fowls to increase or decrease

so long as he finds a constant supply for his table, such a system cannot answer the purpose of the Fowl Breeder, and he may rest assured that without cheap food, cheap labor and constant attention, he cannot make it a profitable business, whilst on the contrary, with these requisites, and a ready market, he may make a very profitable business from it.

It is a matter of doubt however, in my mind, whether these Islands, at present, can furnish a market for the disposal of large quantities of Poultry and Eggs, and whether they are not quite abundantly supplied at present, by the Poultry of the Natives. It is true California will most likely require supplies from Foreign countries of Domestic Poultry for a few years to come, but it would not be wise for a Poultry Breeder to look to Foreign markets for the sale of his stock; and so long therefore as trade languishes here, and vessels do not enter our ports in greater numbers, for supplies, than they do at present, the result of this branch of business must be doubtful. With regard to the necessary labor required to carry on a large establishment of this description I imagine one Chinese Coolie is all that would be required, and I have no doubt, whatever, but that he could be made just as valuable a domestic in a Fowl Yard, as he has proved himself to be on a sugar or coffee plantation, where he has been strictly though kindly and humanely treated.

REPORT OF THE COMMITTEE ON HORTICULTURE.

BY A. B. BATES, ESQ.

To the Members of the R. H. A. Society.

Why your humble servant should be charged with the duty of furnishing a Report as chairman of the committee on Horticulture, I am at a loss to understand, unless upon the assumption that my continued neglect of the application of the principles of the science, is regarded as an evidence they are so familiar to me, as to render their use a drudgery. But be that as it may, having as yet since my resi-

dence upon these islands, neither supplied my table with ordinary culinary vegetables, or any of my friends with a bouquet of annual or perennial flowers from my own garden, my experience, whatever may be my taste or skill, must necessarily be very limited and not enable me to profit you by any practical remarks upon the subject of gardening.

Ornamental and useful Horticulture are themes of wide range, which merit a description from an abler pen than mine, to present to you the various reasons that should commend them to your favorable regard. But, as a duty is to be performed, I shall discharge it as I have ability, asking in advance, your kind consideration of my inexperience and limited knowledge.

"Home, Sweet Home," are familiar words, but have they ever been uttered without causing a pleasurable emotion and exciting agreeable recollections of the scenes of our childhood ?

Our fathers and our mothers, our brothers and our sisters, (have we ever sustained these relations,) are called to mind by those oft-repeated words, but they alone do not occupy entirely our memories when the scene of home is presented to us. How often have we all thought of the rose bush growing by our mother's bed-room window, from which we have plucked a bouquet for those we have loved in our youth ; of the crotched apple tree in the orchard from which we have gathered a sweeting or a pippin to gratify our uncorrupted tastes when a boy ; of the melon-patch back of the barn from which we have tasted the nutmeg and cantelope with a relish not familiar to us now ; and are not these recollections of the limited horticulture of our parents essential elements in the pleasurable emotions called into action by the recollections of our homes ? If so, is it not among our first duties to our children that they shall not lack the pleasures we enjoy, when in after years they listen to the ever endearing words "Home, Sweet Home."

When the work of Creation was completed, "And the Lord God formed man of the dust of the ground, and breathed into his nostrils the breath of life, and man became a living soul. The Lord God planted a garden eastward of Eden, and therein he put the man he had formed."

Perchance, then, that all of us cannot realize that additional pleas-

ures have been secured to us, by our immediate ancestors in the cultivation of fruit-bearing trees and vines, and flower-bearing shrubs and bushes. We all are participators in the kindly feelings produced by the reflection that the ancient homestead of our common ancestor was a garden, and that "Out of the ground made the LORD GOD to grow every tree that is pleasant to the sight, and good for food," and who among us would forego the delight produced by the recollection that the original homestead of our race was the garden of Eden?

It would seem therefore that it was the design of our Creator that a taste for Horticulture should originate with the creation of our being and that it should accompany the development of man down to the present period. Let us, therefore, encourage and foster it as an art sanctioned by Holy Writ, in that, "The LORD GOD planted a garden eastward of Eden," before general agriculture was known.

But aside from the example of our Creator, who to imitate, it is always our duty, whether we can appreciate the motives of his acts, or they are hidden from our limited understandings, it seems to me there are many reasons that may be apparent to us all, why a garden should have our first attention. As an utilitarian as well as a lover of pleasure, I hesitate not to declare, that upon these islands horticulture should command the first consideration of all who desire their agricultural prosperity.

It is known that the soil of this kingdom, by the generous liberality of our Sovereign and the Chiefs has been apportioned between them and the people, and that much the largest proportion of our population are now the owners of only small tracts, without the pecuniary ability to increase their possessions. And it has also been assumed by those more familiar than myself with the cultivation of the present staples of the country, (with how much truth is yet to be proved,) that large estates can alone be made profitable to the farmer. Conceding this assumption to be true, much the largest class of our agriculturists are necessarily compelled to become Horticulturists, or labor without gain.

Besides, large estates, without the necessary capital to improve them, in whatever hands they may be, must remain waste land. It will be conceded that there are but few foreigners among us who have the pecuniary ability to make sugar or coffee plantations, and that the

natives are without the capital or credit to erect sugar-mills, or wait the return of their labor if bestowed upon growing coffee. Planters, therefore, they cannot become, and the only field open to them is the garden. They can only be interested in the horticultural products of our soil, and constituting a majority of the community in which we live, their interests should receive the prominent attention of this society.

But there are yet other considerations commending Horticulture to our especial consideration.

All political economists, and especially those of the free trade school, recommend the fostering care of a people to be bestowed upon such articles as are seen to find a ready and continued market. The products of our planters are seen to come into competition with similar staples of other countries, not only in domestic consumption but when they seek a foreign market. Sugar and Coffee are safely transported abroad, and Manila, China and Central America are all now competitors for the trade of the Pacific in those articles, and however great may be the consumption in districts where they cannot be produced, the supply is likely to be equal to the demand and furnished by cheaper labor and from countries where capital is more abundant than on these islands. A ready and continued market for the present staples of the islands is not, therefore, surely within the reach of our planters.

Now, how is it with regard to the Horticultural products of our soil ? Are they as yet in abundance for home consumption, and are the markets in California, to which they can safely be transported, supplied ?

Whoever has paid his "quarter" for less than a half-pound bunch of grapes, and a real for two small, sour oranges ; and a like sum for a small and half ripe pine-apple in the Honolulu market, can answer as to the domestic supply ; and the prices current of the same articles, from San Francisco, afford abundant proof that they are in demand in California.

I mention only these varieties of fruits that can and should be produced in our gardens, but there are many others, that could be cultivated at a profit that cannot be had at any price, here or in San Francisco, except in packages that have doubled Cape Horn or Cape of Good Hope. Almonds, Tamarinds, Prunes, Olives, Lemons, Pome-

granates, Dates, Figs, and many other nuts and fruits can be profitably cultivated in our tropical climate. And as yet California and our own people are dependent for the supply of most, if not all of them from ports beyond the Capes. Articles of like kinds, could they be had fresh plucked, or within forty days from their gathering, even at an advanced price over those that are brought from abroad, would command the market ; and were the utmost energy and consummate skill of our entire population, (were they proficient in the art of producing them,) to be entirely devoted to their production, the market here, and in California, is, and is likely to continue wide open for all the results of their labors. A successful competition is not to be anticipated from any quarter, and the demand is likely to increase beyond any possibility of supply from the limited area of arable land on these islands. Such being the fact, political economy would direct that the growing of fruits and nuts should receive the first considerations of this Society, if its object is to increase the agricultural wealth of the people at large.

Thus far I have endeavored to commend the subject of my report to the consideration of all, thinking myself without the ability to furnish any thing from experience or knowledge of the art of gardening of value to the Horticulturists, if any, of the Society.

Practical gardening is a science without its votaries among us. Beyond the cultivation of a few beans and tomatoes, and a few other common culinary vegetables, I know but few who have progressed in the application of the principles of the science, and those are gentlemen without the leisure to give personal attention to the subject, who have been dependent for their labor upon men entirely ignorant of the duties they were expected to perform. The necessary consequence has been, as yet, but little advance has been made in testing the capabilities of our soil to produce culinary vegetables and table fruits, and and at a cost within the reach of the community. Whenever a well directed and persevering effort has been made to produce any particular vegetable or fruit grown in tropical climates I believe it has been successful and I doubt not it always will prove to be.

If so, the only obstacle in the way of these Islands becoming, indeed, the garden of the Pacific, is the want of skillful gardeners ; and

how they are to be procured is worthy of the consideration of this Society.

The natives are now entirely ignorant, not only of the first principles of the art of making a garden, but of the use of the necessary implements of cultivation, and they must remain so without teachers. There may be a few foreigners among us capable of instructing them in the theory, but I have inquired in vain to find one who was willing to exhibit to them a practical illustration of his skill for hire.

Such being the fact, an effort to induce a few intelligent German gardeners to emigrate to our shores, (who would find immediate and profitable employment, I feel assured,) I would suggest, as a partial remedy for our present wants. They would enable those who have the taste and the pecuniary ability, without leisure to bestow personal attention upon a garden, to experiment with skillful labor, wisely directed, upon the capabilities of our soil, and their example, in preparing the earth, and planting seeds, and cultivating plants would be imitated by those who are ignorant.

There are few of the natives, even, who have not a natural taste for the cultivation of flowers and plants, as is manifested in the dwarfish specimens of geraniums and annuals that are seen near to and about their huts, and they are apt to imitate, as is apparent by their rapid conformity to the habits and tastes of a foreign race, and could they but see the results that would follow the skillful cultivation of a garden, I doubt not they would profit by it. Human nature is the same the world over, and remembering, as I do, the effect of the introduction, by myself, of several varieties of flowering shrubs and bushes into a district where they were not common, in inducing others to cultivate similar plants and improve their qualities and varieties, I cannot doubt the result would be the same here. Teachers who would instruct by example would soon furnish the islands with skillful Horticulturists.

Other committees of the Society, who are expected to report "on Analyses of Soils," "on Worms and other Injurious Vermin," "on Seasons," "on Trees and Grasses," "on Garden Seeds and Fruits," will probably enlarge upon the details of practical gardening, and I would not trespass on the ground assigned to them. The nature of our soil, its deficiencies and peculiarities; the kinds of noxious ver-

min that trespass on our plants and shrubs, of which we are all comparatively ignorant who have emigrated from northern climates ; the seasons, which are as marked here as where the thermometer ranges down to zero ; the trees and grapes, that can successfully be cultivated in this latitude and upon our soil ; and the seeds and fruits that are indigenous and which can be successfully imported, all merit the careful investigation of the practical Horticulturist, and it is to be hoped that from year to year individuals will be found ready and willing to enlighten us upon those subjects. Without a knowledge of them all the practical gardener, however industrious and skillful in the use of tools, will labor without profit.

REPORT OF THE COMMITTEE ON COFFEE.

BY G. RHODES, Esq.

MR. PRESIDENT,—I thought that in my essay on coffee read before the last meeting of this society, I had communicated the whole of my experience, and having been of late particularly engaged, I neglected to respond to your friendly call, a few weeks since, reminding me of the near approach of the meeting, and of my duties as chairman of the committee on coffee.

Within the last few days I have received a communication from my esteemed friend Mr. Pitman of Hilo, and as I consider that the subject is possessed of considerable interest, I shall endeavor to reply to it before this society. Mr. Pitman, says “There is one matter for remark in connection with our coffee trees, and I should be much interested in learning whether yours on Kauai are similarly affected. “What I allude to would take the shape of a blight, did I perceive “that it influenced the health of the plant, which I cannot say it appears “to do—this is a smut which crusts on the leaves, in appearance similar to what may be observed on the leaves of trees in a manufacturing district, where the appearance is easily accounted for. Although this visitation may not injure the health of the plant, it is a

"decided eye-sore to me, as it detracts greatly from the beauty of the tree, and I should feel thankful for any suggestion, which, in application would tend to the removal of this blemish."

The smut alluded to by Mr. Pitman, is very common on Kauai, and I have observed that evergreens, whose leaves are generally very dark, are much more subject to it than plants whose foliage is of a bright or light green. I speak especially of trees of the citrus or orange tribe, bread-fruit, coffee, common hau, *nereum splendens*, or oleander, and other trees having very dark leaves. Whenever this smut appears to any extent, it must injure the tree, and shorten its life, by filling the pores of the leaves, and thereby preventing them from fulfilling their natural functions of procuring sustenance for the tree from the atmosphere.

It is a species of fungus, and I attribute its appearance in the first place to great moisture, and noxious vapors occasioned by excessive vegetation, and an imperfect circulation of air. When it has once attacked any plant of the darker-leaved tribes, it will, from it, extend to every other plant, of every description, in its vicinity; all of which will droop and suffer, whilst the plant on which it originated remains among them; but should it be removed, plants with light colored leaves, which do not appear to be predisposed to the disease will generally soon recover. This fungus will most frequently be found where the trees are very crowded, and in situations where this is the case, I should advise the sacrifice of a few of them by way of benefiting the rest.

If a thorough circulation of air can be preserved, the weeds buried at the roots of the trees by the frequent action of a small plough and the excessive moisture that accumulates from heavy rains, be carried off by drainage, I apprehend there would be little necessity for any unusual or particular treatment. A free circulation of pure air, I consider of the first importance in preserving the tree in a healthy condition, and if this be not provided, all other attention will be but labor lost.

I once tried to remove this fungus from a half grown orange tree, by watering the leaves with very weak brine, but to no effect, the leaves of the tree all fell, and those that succeeded them were in a very short time in as bad a condition as the old ones. In some wheat

growing countries I believe it is customary to steep the seed-wheat in a weak solution of lime and salt to prevent a disease in the wheat also called smut ; but not knowing whether there is any affinity between the two diseases, I cannot say that there would be any good effects derived from watering trees on which this fungus had made its appearance with a similar solution ; even should such treatment be beneficial, it could not be practised on an extensive scale.

A prevention of the evil I consider much easier and better than a cure, and this I think will be effected by attending to the foregoing observations ; I will add that pruning will also act as a preventive of the disease, if it be practised at its proper season, especially in crowded situations ; all the dense and matted foliage, especially near the heart of the tree, and when the wood has done its work, should invariably be taken out ; by this means alone, I have no doubt, in many cases the blighting effects of the parasite may be stopped, and the health of the tree preserved.

REPORT OF THE COMMITTEE ON LABOR.

BY S. REYNOLDS, ESQ.

Labor has been a subject of much anxiety with planters on the different islands. The planters had long foreseen that laborers would have to be brought from foreign countries ; their anticipations are now matters of fact. Sugar plantations find it difficult to engage natives for any long term of time, a few only are willing to engage for more than three to six months. Importation is the only reliable source for permanent labor. Importation has commenced, and thus far promises to be satisfactory. Since our last meeting, the ship *Thetis* has arrived from Amoy, China, with about two hundred Coolies, which were distributed among the planters, as by contract entered into with the master, John Cass, before sailing from Honolulu.

They have proved, thus far, diligent, but not swift ; obedient, but require looking after. Planters have different views as to the relative

value, as laborers, between Coolies and Natives. Some think four Coolies equal to five Natives, in amount of labor ; others reverse the matter by placing three natives against four coolies. On the plantation of H. A. Pierce, & Co., there was some apparent jealousy by the natives when the coolies first arrived among them. At Koloa, some little skirmishing at first, but it soon subsided ; peace and harmony soon produced the kindest feelings. The coolies are far more nice in doing their labor, of which they feel a pride over the natives, calling them "Wahine ! Wahine !" ("Women ! Women".) On Doct. Wood's plantation coolies are considered far superior laborers to the natives, they perform more work, and do it better and handsomer.

The wages of the cooley is, by contract, three dollars a month, then the passage from Amoy, advance wages, and outfit, amount to nearly four dollars, which added to the wages make nearly seven dollars, this sum includes the board on the plantation. Natives have six dollars a month and find themselves.

On Mr. Charles Titcomb's coffee plantation the coolies are said, by Mr. Titcomb, to be much better laborers than the natives ; they take much pains in cleaning the coffee, as well as all their various employments. Thus far the experiment of introducing laborers from China, has exceeded the most sanguine hopes of the planters. A second lot is expected in all June, by the Thetis, Capt. Cass, by which nearly 200 more will be added to the number employed. They seem to have but little value for life ; one on Mr. Titcomb's plantation cut his throat ; one on Hale Maile plantation, East Maui, cut his throat, and one died of a fever ; one, a domestic of R. C. Janion, in Honolulu, Oahu, cut his throat. So that three have committed suicide.

It has been suggested that a tariff of labor will produce more labor than the common method of drudging through the day, at a snail pace, and an indifference whether work be accomplished or not. Regularity in daily labor will, beyond a doubt, bring out more work, than promiscuously setting the people to their daily tasks. The natives are stronger, and for heavy work, in getting timber from the mountains, or working in the water, are the better help. At this time the ability to procure help from China is a subject of vital importance to the present planters, as well as the future. The voyage may be perform-

ed in four or five months, wages are low, food cheap, and people, as a whole, industrious. Foreigners, Europeans or Americans, are very expensive; quite too high wages are demanded, and in a plurality of cases are paid. Overseers ask the highest wages, from eight hundred to fifteen hundred dollars a year, with board and lodging; far too high, considering the nature of his services: merely carrying on a large farm, for which, in the New England States, very few receive more than four hundred dollars a year. The best overseers are from the northern and middle States, so far as experience has gone upon these islands. Yankee perseverance and go-a-head character, bear down many difficulties, which most persons, who have long served on plantations, in the West Indies, where every facility is at hand, would consider impracticable, if not irremediable.

A sugar boiler is necessary for making good sugar. The art is not difficult to obtain, as is evident, from the fact, that the plantations, have, on a plurality of them, been their own self-taught manufacturers. Those who call themselves "Boilers" call for salaries much too high for their practical services. The future looks bright, so far as procuring labor is concerned. With prudence and economy, energy and perseverance, the planters may look forward to the supplying California, Oregon, and Russian settlements on the Asiatic and American shores of the Pacific.

ESSAY,

ON THE PREVENTION, AND ERADICATION OF WORMS.

BY WM. DUNCAN.

MR. PRESIDENT—: I consider the safest guide we can make use of in conducting an enquiry into the best means to be made use of for the extirpation of those insects which are found feeding upon plants and young crops, will be to examine the practice that has been so successfully followed in the old countries. It seems to me possible a principle might open out, which would tend considerably to diminish the evil complained of, if not exterminate them.

In all new countries, particularly in the warmer latitudes, the destructive effects of insects have been a great loss to the first cultivators, and have often interrupted the progress of cultivation; still we find in proportion to the quantity of land brought into cultivation, the evil diminishes, and when the heavy expenses, consequent on the breaking up of new ground has passed away, and a better state of culture goes on, the devastation of insects is scarcely known of. In developing the views I hold on this important subject, I make use of no reasoning, that has not been fully borne out by their results, or my own experience in new countries would not justify. In reference to the various recipes that have been recommended for the destruction of insects lime, salt, soot, phosphate and carbonate of lime, have been held up as the most efficacious.

I believe, at the present time, their application is confined to solitary cases, and it is a matter still doubtful, if any advantage is obtained from their use, unless as manures, and then subject to the nature and properties of the soil.

I can with great certainty say, as far as the experience of a garden goes, no advantage appears from their application. The first person who commenced the extirpation of insects upon principles which subsequent experience proved to be the most correct, was MR. BALDWIN, the author of a Treatise on the Pine Apple. Horticulture in those days, was in its infancy, compared to what it is seen at the present time. In those days I speak of, science had not mixed in the professional education of gardener; the nature of soils was little understood by them, and their amalgamation less.

Before Mr. Baldwin's time, and long afterwards, so strong is prejudice, the practice followed in cultivating the Pine Apple, was growing it in a sandy soil, in a dry atmosphere, dipping the entire plant two or three times a year in a mixture of oil, soot, sulphur, and soap-lees for the purpose of keeping down the insects, which to exterminate in those days, was not hoped for, much less expected.

Mr. Baldwin initiated a practice just the reverse, and may be considered the father of Pine Apple growing in Europe: his practice was to grow the pine apple in a strong loam mixed with as much sand only as admitted a free passage to the waterings, in a moist atmosphere induced by steaming.

Mr. Baldwin's was kept free from insects, and its fruit would average from eight to ten pounds, instead of two and three, the weight of the former culture. Now here was a principle made clear, that plants in a bad condition were infested with insects produced by a certain culture, and the same plants in a good condition were kept free, and this change brought about not by favorite nostrums, but by cultivation alone. Before I proceed any further with my observations upon this interesting and important subject, permit me to explain to the Society my own views. I speak advisedly, I speak from the experience of new countries, from the experience of practiced agriculturists in them, that in no possible way can insects be destroyed, but by cultivation, though the contents of Apothecaries' Hall should be emptied upon the land. But on the contrary, I am certain, from constant watchings, that any material that will destroy insects, will destroy vegetation first. I have mentioned the case of the Pine Apple, as being continually infested with insects, when under artificial cultivation, as was followed before Mr. Baldwin's time, in order to show that good husbandry alone is required to stay the progress of insects, if not ultimately to exterminate them.

The plan I have laid down for the exposition and elucidation of my observations is the following.

1st: I aim to prove by practical illustrations, that any practice which is not based upon good husbandry is ineffectual in diminishing, or in destroying insects.

2d:—I aim to prove by similar reasonings, that good husbandry alone is sufficient both to destroy, and effectually exterminate them.

In Great Britain, that the table of the wealthy may be as well supplied in the winter as in the summer months, fruit trees and vegetables undergo what is termed, artificial cultivation. Now it might be supposed, that plants, within the limits of a small Hot-House could be easily kept free from insects by manual application; but the case was the reverse, it seemed to increase them, and subsequent experience proved, that such really was the case. Before the introduction of hot water into forcing houses, they were heated by coal fires through the medium of brick flues. Now the advantages appertaining to the hot-water pipes, over the old brick flues are these:—The former gives out a moist temperature, which is of the first importance to healthy

vegetation ; it is regular, and under control, while the latter gives out dry, harsh heat, ever varying, subjecting the plants to sudden overflows of sap, and at other times, to an insufficiency ; consequently, the health of the plant was impaired, and became immediately infested with those insects which are fostered in a dry atmosphere, such as the scale and the red spider, so prevalent on these islands. Plants growing in a temperature produced by the hot water, arrive to a better condition, and give out no food to insects. Thus the practice as introduced by Mr. Baldwin, in the case of the Pine apple, was found fifty years afterwards to be applicable to all the departments of gardening, with the same success as regards the destruction of pernicious insects.

About forty years ago, the Apple orchards of the cider counties of England, felt severely the ravages of what is termed American blight, having obtained that name from the supposition of its having originated in that country, identified as the *Aphis lanigera* of naturalists. This insect in a few years reached every apple tree in the country. The means made use of by the proprietors and others, was to have the trees well washed and anointed with a mixture of train oil, soot, soap-lees and sulphur. As long as the trees were laboured on, they were kept clean above ground, but they simultaneously appeared on the disuse of the brush, the trees sickened, the fruit becoming smaller, flavorless, and speckled, certain indications of diseased roots. It became necessary to investigate more closely, to find out the habits of the animal, and to learn its habitats. It was ascertained to make its appearance first at the roots, causing large nodes at every joint, stopping the free circulation of the sap ; hence the smallness and diminishing flavor of the fruit. Now here was a disease threatening the existence of every apple tree in England, every garden and orchard being more or less infected, every known means was exhausted, and of no avail in counteracting this scourge. It was advised, that the most affected trees should be removed and many proprietors, acting upon that advice, destroyed some of their most valuable trees ; still the insect was on the increase. In Great Britain, that a full dessert should be afforded throughout the year, the apple is grown against walls and espaliers ; consequently to fall in with the higher state of cultivation, four things were essential, flavor, size, form and color,

to obtain which all depends upon cultivation. Gardeners when compelled to the enquiry by the failure of what may be termed local application, discovered, like Mr. Baldwin, with the Pine Apple, that means that will assist the growth of a plant, are the only means that will destroy or prevent the attack of insects.

Apple trees against walls and espaliers were found unaffected or in some cases only slightly, while the orchards within a few yards were becoming annihilated. Here was the remedy found, apply the same cultivation to the one as you have done to the other and the result will be the same.

Now it appears to me, the inference to be drawn from the fact of the trees being more or less infected in the one case than in the other are these, that vegetation carried on under impoverished circumstances, which is tantamount to bad cultivation, induces ultimately, disease, and it is proved by innumerable examples that insects are only found upon sickly and bark growing plants as they are only found upon sickly animals. It will be easy to trace out the causes of the appearances of insects, by tracing out the causes which induce disease. Then if these conclusions are correct, the same remedy will apply to every department of the vegetable economy.

If we examine the cultivation of the orchards of England in former times, the above reasonings will be further illustrated. We find the practice to be the following. The land was constantly under green crops, for six or seven years, or until the trees began to shade, when it was laid down, or allowed to go into grass. They received no pruning, unless thinning, or lopping off some strolling branches may be called pruning. Now as soon as the trees received any check from a dry season, or exhausted soil, (brought on by coarse and heavy cropping,) they would bear beyond their power, disease would ensue, then the insects would appear.

The insects were already there, the long grass and weeds were their nurseries, and what better habitat could the insect require to shelter and sustain its progeny than decaying and decayed vegetation could afford? Such was orchard culture in former times, when insects were doing well. Returning to the means gardeners made use of to destroy the apple blight the orchards were placed under cultivation, they laid bare the roots of the trees, as much as was safe; cut them

back to increase their fibres, in order that the sap should be better distilled, added more food by annual coats of manure, and above all, placed the land in fallow. In a few years, the trees recovered from their consumptive condition, and the insects disappeared. My observations hitherto have been confined to the management of the Aphides as being one of the most destructive family of insects Pomerian vegetation had to contend with, and which had baffled for so many years the most skillful and experienced, but at the present time, offers no resistance to a judicious and well managed husbandry. Two other families of insects known to cultivators, by the name of the Thrips, and Red Spider. These insects are endowed with a constitution suitable to all climates. They attack the leaves of the plant, destroying its essential qualities and bring on a state of vegetation favorable to the appearance of others.

Leguminous Plants are subject to these destructive insects more than other family of Plants. Peas and beans in their commencing stages of decay are never in any country free from them; wherever the bean and pea will grow there will also be found the Red Spider; the peach and vine are also their favorite food.

The practice of cropping the peach borders, went on as long as the sorts cultivated were confined to the Royal George, and others of equally as coarse a kind, but as soon as the French Peaches were introduced, being more delicate in flavor, more tender and fine in growth, the insects attacked them with such force, that it was impossible to mature a crop. The Garden Engine was set to work, lime water, and tobacco water were worked over them but were ineffectual in clearing them away. As soon as the fruit was advanced, the engine could not be used. They again would appear destroying the bloom of the fruit, and rendering it colorless, small, and of no flavor.

The practice of cropping fruit borders has been abandoned for some time. They are kept free from weeds, periodically trenched, manured, and thrown into fallow, the whole of the winter months; and that husbandry has worked out every insect of those families from the Land End to Johny Groats.

Before the time the knowledge of the influence the atmosphere had upon soils had reached gardeners, they allowed their lands to rest, and

the weeds to grow, believing their being dug in was highly enriching to the soil, never dreaming of the fertile nurseries of slugs and bots it was fostering. In those days, nothing was heard of but the destruction of spring crops, and often lucky was that individual, who could obtain a sprinkling of a crop, if the season was unfavorable. After repeated sowings and plantings, if the season was wet, the bots and slugs would prevail; if a dry one, the plants would be devoured by the caterpillars and fly. Then the favorite remedies might have been seen: lime half an inch thick spread over the land, and soot if obtainable used equally as liberal. The animals would retire till the rain came on, and soon made the crops reward them for their fasting.—Such was gardening years ago; now we will look into the practice of horticulture at the present time, under which practice, insects of every destructive kind—have disappeared from all well managed gardens. Cross cropping has been entirely abandoned. Young crops are kept clean from weeds, flat hoed two or three times during their growth, for the purpose of destroying all insective larvæ that may be buried, the exposing of it to the atmosphere seems to destroy its vitality; therefore, the constant moving the surface of the soil to about four inches, is of the greatest importance, independent of its other benefits. As soon as the crops are removed, the land is immediately cleaned, and all decaying vegetation burnt or removed, not dug in, and if not immediately required, the land is thrown into fallow.

I will now enter into the practice of the flower garden which affords a field of detail, under a variety of circumstances, and where opposite culture will show both the bane and antidote. It often happens, for certain ends, it is necessary to throw a plant into a diseased state, for the purpose of originating a different coloured, or variegated foliage. As soon as the plant is brought from good cultivation into bad, on comes the insects, and the injury the plant sustains from their attacks confirms often the tendencies of the plant. If we look into the three divisions of plants usually appropriate to the flower garden, we find flowering shrubs more subject to insects than herbaceous plants, and herbaceous plants more than annuals; and again, we find single flowering plants more disposed to insects than double; and without entering into the physiological cause, it is sufficient to seek the solution in

the difference of the vegetative energy of the three structures, and the high cultivation bestowed in bringing out a double flower.

Thus for example, to obtain a double flower, high cultivation changes the stamens into petals, still higher changes the entire organs of the flower into petals; it then becomes what is termed a double, flower and from that cultivation insects are not seen; relax the cultivation, the plant becomes again single and the insects may appear. Thus a single rose plant, surrounded with doubles, will be covered with insects, and the double perfectly free. I allude to the stock; the same circumstances may be noticed in the wall flower and many other plants. I consider these examples will go far in proving that insects are to be destroyed and prevented by cultivation. It is the practice in raising plants for the flower garden, by cuttings, by layers, or by seeds, to be two or three-times transplanted before final planting, and where pots are to be obtained, to have them potted. The practice will appear judicious when we consider the purposes aimed at. It often happens, that a plant is required to have its locality changed, and by having it transplanted, which we are enabled to do without danger of its dying, we have fibrous roots instead of tap roots.

Fibrous roots act more freely, and quickly recover from the exhaustion consequent on removal, while on the other hand a plant having its roots to form before the sap elaborates, loses its acidity, becomes sweet and immediately infested with insects.

It is often found in practice, that some plants will not flower under the ordinary treatment, particularly tropical plants. And when bending and twisting the branches, or cutting the roots will not bring on flowering, the general method used, is to check the growth of the plant, by impoverishing the soil, and to keep it under that treatment, till estivation does appear.

If the insects are in the neighborhood they will be on the plant, but as soon as the plant is returned to its former treatment and recovers from its exhaustion the insects will leave it. It appears to me highly important in keeping a flower garden free from insects, to have the plants transplanted before final planting, and to have the soil flat-hoed. I believe it can safely be predicted by such management here as in other countries, insects will be kept from being very troublesome in flower

gardens. I will now enter into the practice of the nursery department. That portion of it which is devoted to the sowing of seeds and their first year's growth of seedlings.

The insects which formerly were so destructive to nurseries in former times, also submitted to the same management, as was found so well to answer in the kitchen garden. This insect is called the Black Bot, in the common language of trades. These insects are never seen above ground, and only work in the night. They retire during the day deep into the soil. They bite off the young plant at its collar, and draw the tops into their holes. Nurserymen in the neighborhood of pasture land could not raise seedlings; but were compelled to purchase them from nurseries free from them; such as light, sandy soil; thus losing a very profitable part of the business.

The following means were used and were found perfectly successful. The land intended to be used for seedlings, was first green cropped, the hoe liberally used and kept free from weeds, and thrown sharp and well hollowed, furrowed by the spade, during the autumn and winter months, and in sowing in the spring the seeds, and ultimately been cleared away.

Some years ago, a great difficulty was experienced in Great Britain in keeping lawns free from the working of worms, which gave to the grass an unsightly appearance. Lime water was used with some success, its application was attended with too much labor. The brush, harrow, and roller, answered the purpose much better. Their use not only kept the grass clean, but it was discovered it brushed up the larvæ of insects, which soon would have found their way into cultivated land. It gave a hint to the farmers in the management of their pasture lands; at present, they are used on all grass lands, producing important results in invigorating the grass, and keeping it free from the lodgements of insects.

I have gone through the several departments of horticulture, giving general illustrations of means used in clearing of insects, all leading to one specific principle, namely, cultivation; and though some insects might appear not included in the rule, I do not conceive there can be an exception.

I allude to the insects that infest the hop, and the one that injures

the bean. They confessedly are insects which the best husbandry has not reached. We find their appearance is consequent on wet seasons; in the average seasons no injury is sustained. The causes I conceive are these; the plants subject to vicissitudes, brought on by variable and chilly seasons, lose their full condition, and become predisposed to routine attacks, and the impracticability of working the land, favors their increase. Again the fly in turnips may be considered not controllable by cultivation.

Cropping is a remedy. No gardner or farmer would sow turnips after any green crop.

Phosphate of lime however is used with eminent success. I have in the above observations confined my remarks to the several departments of gardening, as the operations carried on there seems to me more tangible, and would enable us with some certainty to deduce inferences, from which a practice might open out if not to the wishes of the society, at least ameliorate the evils complained of. The best cultivation that lands devoted to agriculture can receive, compared to what can be devoted to horticulture, must of necessity be in favor of the latter, and from that circumstance, many difficulties in regard to insects, more accessible in the garden than in the field. Yet on the other hand, we find the insects of the field less persistent, and the ganera more limited, than in the garden, and if the garden can be kept clear, and I have attempted to show the possibility reasonable, hopes may be indulged that it is as possible in the field.

In the first few years of the colony of S. Australia a small martis cleared every thing before it, scarcely a vestige of vegetation was left above ground. Those who have never seen, can have but a meagre idea of their quantity by comparing them in numbers to the Locusts of Egypt. As cultivation went on, the plow and tormentor destroyed their nurseries; and at the present time, if they were not fully exterminated, they are only partially felt. In bringing the practice that has been so successful in clearing away insects from the garden to bear upon the cultivation of the two staple crops of these islands; the coffee and the sugar cane, I feel it necessary to explain briefly, what I mean by cultivation. I conceive a plant to be under cultivation, when its organic structure is perfect; and to surround the plant

with the requisite conditions to reach its maximum development, the art of cultivation.

Mr. Rhodes, in his able paper on the coffee tree, states he might recommend the sowing of a coffee plantation, if the insects did not prevent him. I do not call that cultivation. I believe it is impossible to surround the plant afterwards, with its maximum condition; it is the plant still in a wild state, without the essential properties which cultivation gives. Mr. Rhodes dwarfs his plants by the knife, but the roots ought to do it. The gormandizers are to come off by the same means. Surely that is not cultivation. That is simply trimming your plant, lest the strong shoots should underdrop the weaker ones. The structure of the plant is still the same; its tendencies are not changed; the maximum development the plant reaches is still the condition of the wild plant; it is not the condition of an organic structure resulting from cultivation. Mr. Rhodes recommends suckers to be planted, as they will be too far advanced to be in danger of insects. I doubt much the judiciousness of planting a spurious production such as a sucker, seeing it is a formation resulting independent of the proper organs of the plant.

Thus time must be lost in bringing cultivation to bear upon it, and at all times will be disposed to throw up similar spurious productions. The best method appears to me to get up a coffee plantation without the fear of insects, is to have your plants three or four times transplanted; but a much better plan is to have the plantation formed from cuttings, as is practiced in the Brazils. The structure of the plant is already formed in the cutting, and there is little danger of running wild. But without entering into the reasons of either method, let it be sufficient to say, by transplanting you bring the plant to the organization of a cutting, though much time is lost in sowing the seed, you can never reach it, and never perfectly obtain it from a seedling. The following numbers will show the value of transplanted plants over a seedling. We take five as the seedling which will be its commercial value; once transplanted seven and one half, twice transplanted fifteen, three times transplanted forty-two, which is the valuation, independent of size or age, but more to the purpose. The ground being prepared after Mr. Rhodes's method, as soon as the functions of the colyde/bns have ceased, prick them out two inches apart, allowing six inches be-

tween the rows; if the land is not adhesive add lime. When the fibrous structure has commenced which will be in about eighteen days, transplant them four inches apart and eight inches between the rows, water the night before. In three or four weeks the fibrous structure will be confirmed. In taking them up a third time a small spade or gardener's trowel may be used. In transplanting a third time, plant six inches apart and eight inches between rows. In six weeks if a little spade is used, they will be ready for planting, and if care is used in preserving the balls of earth, no deaths will occur particularly if you watch, and they will be too far advanced to be in danger of insects.

By such a practice you will have brought the plant out of its wild state.

You have a cultivated plant to cultivate, and in proportion to the facilities you afford to the plant by cultivation will be its maximum development.

In the observation which I have to offer upon the sugar cane, I do not feel myself empirically confident, and tho' this paper set out ostensibly suggestive of means to be used for the destruction of insects, it turns out rather means suggestive to be used as preventatives, and as cultivation seems to me the very means that can contend with those evils, in presuming to offer observations on the sugar cane in the face of so many practical cultivators of that plant, I wish it to be my apology.

The first operation I would suggest in ploughing a plantation would be to have the land worked by the skim plow, say to the depth of four inches, for the purpose of turning up all larvæ of insects which are generally found at that depth below the sedge. I then would have the tormentor follow instead of the harrow; by using the tormentor instead of the harrow much labor is saved in burning. I then would commence burning, making my fires from six to eight feet apart. I shall by that process not only destroy a vast quantity of insects, but also a large quantity of weeds and their seeds. Other advantages are obtained by the burning the sedge and weeds. It appears to me land that has never been under cultivation requires some stimulant to bring on active vegetation, which can only be done by the atmosphere, a process of time, or by the addition of manure.

If young plants are planted or seeds sown on ground newly broken

up, that is to say virgin land, the young plants wither and exhibit symptoms of ill health. The chlorophyle of the leaf does not form in sufficient quantity, on which depends the health of the plant; and it is only after the soil, sun and air have exerted some influence that the plants are enabled to commence growing. It is at this stage that the insects are most destructive. The ashes of the sedge by being strewn over the land previous to ploughing, sets the soil to work at once and the young plants, finding sufficient food, are soon pushed out of danger of caterpillars and earth-worms; and moreover start with a good constitution, healthy and strong. I am well aware of the objections to burning and of the advantages of ploughing in green manures, but these objections do not appear to me to bear upon the soils of these islands under these present circumstances.

The ashes being strewn over the land, I would use the subsoil plow if the land would bear it, to give a bottom to the soil. I then would fallow my land and keep it in fallow till broken up by the hoe.

In planting I would open my furrows with the subsoil plow, and have it so managed that no furrow should be left unplanted that day. The advantage of single drill planting over all other methods is so well understood that it is unnecessary to explain it here. On these islands it seems to me more urgent as a matter of economy with regard to labor and as a means of destroying insects.

In open lands commencing growth is exposed to too much light, and from that circumstance the strength of the plant is retarded, the crop does not cover so soon, drought is sooner felt. In drill planting the young cane has more shelter; if the land is light and dry you can plant thicker; if seasons turn out to be wet you can thin out, in fact you can work the crop according to the means the seasons afford you.

In drill planting you have a more even moisture. The crops will be more even instead of having large and small plants indiscriminately mixed as is the case generally in the other method. But no less useful is the drill planting: you will clear your ground sooner of its insects and a great deal of labor will be saved in keeping down the weeds and those circumstances alone will give a greater bulk and a better material for the manufacture of the sugar.

The consequence is that any land that is brought to the surface is immediately covered with earth.

After the same manner seeds just bursting, instead of perishing, are simply lifted from one spot to be deposited in another without materially injuring them.

The labor of keeping drill planting would stand seven and one half and equal distance planting ten and one half, which is a practical fact. The hoe in drill planting works in a straight line; the earth is not curled up and any larvæ of insects that are brought to the surface, die by exposure, and by the same means any seeds just opening that are brought to the surface are destroyed. Thus two crops are destroyed by one operation, and if the circular hoe was used instead of the square clogging up hoe now in general use, the work would be done much better and last longer. In planting the cane, it occurred to me it would be a good plan to prevent the cutting of the earth-worm to have the cuttings hardened by a previous cultivation. I mentioned the suggestion to a gentleman who had been largely engaged in the cultivation of the sugar cane on these islands. It was that gentleman's opinion it was practicable, and would be of eminent service in stopping the depredations of the worm. I am pretty certain it would do much in strengthening the crop and would make it more hardy. Puddling the cuttings in a mixture of lime, oil, sulphur, and strong soap suds and earth would keep off the insects for a time, and would be of great advantage in pushing on the plant, and more so if a small quantity of guano could be added.

In keeping a sugar plantation free of insects, the adjacent land requires to be attended to. Caterpillars travel for their food. They seem to issue from the cocoon at an orifice and travel in a straight line till they find something to eat when they spread. I have seen the caterpillar travelling nearly a mile in length over a clean fallowed land without deviating from a straight line. They found nothing to eat, and on they went. They all perished before they reached any cultivated land. They do not appear to have the organs of smell very strong, or they would have fell upon a springing crop of wheat which was about 12 yards parallel to their line of march. I would recommend the land surrounding a sugar plantation to be either kept in fallow or to be burnt and when the caterpillar is expected, I would torment the grass to some distance, brush harrow and roll it while they were in the neighborhood. Insects should have no peace or rest from


me. I would keep my land as a good housewife keeps her house. I would brush out every hole and corner. I have mentioned the disuse of the common harrow in preparing land for cropping. It seems to me totally unfit for working land of these Islands, and does a great deal of harm in preparing land for a second ploughing, or in covering in seed. Porous lands in all warm countries particularly in countries subject to drought, by being harrowed, lose sooner their moisture and from the smooth surface it brings on, affords no shelter to the piercing rays of the sun; consequently shoots are weak and spire up without stooling; whereas land worked by the tormentor or plough, locks up in the roughed surface moisture already prepared for the young springing plant without the means of escape. The young shoots penetrate these rubbly clods and draw out their moisture which by being worked has been rubbed down by the harrow and have escaped. For those reasons it is the practice in many countries to plough in all grain crops instead of harrowing them in again. On these Islands the land cakes and receives little benefit from the slight showers when the rain patters against hard ground which the harrow brings on. The drops of rain burst before they can penetrate the ground and their constituents escape again into air. Although moisture may be afforded still it has to be prepared before the plants can use it.

In concluding my observations permit me to bring once more to your notice the following facts. I have endeavored to prove in the case of the Pine Apple that there is a state of vegetation highly favorable to the appearance of insects. I have also endeavored to show in the case of the Apple-blight a similar circumstance, and both cases by changing the mode of cultivation has brought on a vegetation which afforded no inducement.

It occurred to me since I wrote these observations that it would be well to explain the theory of transplanting when a plant is produced from a seed. The rhizoma or root descends deep into the soil and the sap it sucks up is not acted upon by the atmosphere. It ascends the plant in a crude state; it is distilled by the leaves and descending forms wood. The returned sap is excrementitious and is exhaled from the roots by the knobs; it is again sucked up slightly modified by additional matter. In course of time this sap becomes too impure and too strong and is one of the principal causes of the diseases of plants,

their premature decay, and originates those gormandisers mentioned by Mr. Rhodes.

Transplanted plants have a fibrous structure and act upon the atmosphere in the same way as the leaves; they distil the sap before it enters the plant, consequently take up less of foreign matter. The plant is increased by double distilling, the sap is of a finer quality, contains better sugar, hence its increase specific proof and the essential oil which gives flavor is more perfect. Plants also exude this returned fluid from the stem branches and leaves, hence the insects crawl up the stem branches in search of it and as long as the plants furnish them with food they remain, stop the supply and they are off; from the same cause the smutty appearance of the leaves and stems of plants. This matter vegetates a minute fungus which may be brought on the plant by insects and they are always found together or by the atmosphere the spongy places are full of them; it submits to the same treatment as the American blight. Dark leaves being more subject to them than light is easily accounted for by the difference of energy of chorophly of the colors. Thus leaves in shady situations have this powder in greater quantity. The faculty that plants have in expelling the returned matter by the roots is the theory of Ranton crops and many other beautiful arrangements of the vegetable world.



REPORT ON STATISTICS.

HILLO, HAWAII, 20th May, 1852.

R. C. WYLLIE, Esq., Chairman to collect Statistics.

SIR:—As one of the committee on Statistics I have the honor herewith to transmit you a report of our proceedings in this district for the year ending with date the which should it serve no other purpose will at least I trust be admitted as proof that notwithstanding the insignificance of our ways and means, and the numerous disadvantages we labor under the charge of slothfulness cannot be laid at our door.

During the past year we have had but one arrival from the coast of

California, the reason for which I presume may be attributed to the fact of there being scarcely sufficient inducement for visits from that quarter until about the ensuing month and as we are yet unable to compete with the northern quarter of our Island in its attractive trade of Irish Potatoes. We cannot consequently for the time being allow ourselves to hope for an extension of our export trade in that quarter. But I am sanguine enough to look forward to a time when through the desirable medium of good roads and various other embryo improvements together with an addition to our foreign population of some intelligent and enterprising men our district may so far out rival the various others of the Island as its magnificent harbor and prolific soil fairly entitles it to do. In saying this much in its favor I would not be understood as conveying any depreciation of the various districts in question; doubtless they are blessed by the same beneficent Providence with their several natural advantages and combined render the Island of Hawaii as a whole one of the most valuable of the Sandwich group. While its scenery, its subterranean fires and its variety of climate are so well and widely known as to stand in no need of comment from my unworthy pen.

Since the Report which I had the honor of laying before the Society last year no material change has occurred in the district if I except the addition of a sugar plantation commenced lately under the auspices of some ploddingly industrious Chinamen. The fact is, no material improvement can reasonably be expected to take place until our roads be rendered more suitable for the transmission of produce and the numerous ravines which lay between the most prolific portion of the district and the harbor are made available to this end. This most highly important object is in a small way and after a fashion in course of accomplishment and I earnestly trust that the present session of the Legislature will not terminate without due consideration being extended to our wants on this head.

I have taken the liberty to forward to Stephen Reynolds, Esq., sundry samples of a variety of produce which I have requested that gentleman in his capacity of Vice President for Oahu to lay before the Society at the approaching meeting.

Though somewhat tardy and out of course in compliance with the Resolution stating that "it shall be the duty of the several Committees

“to communicate to the Chairman of such committee an individual report &c., at least *one* month before the annual meeting of the Society,” I trust I may be pardoned on the score of the irregularity of our Coasters, the arrivals and departures of which admit of no calculation.

Begging reference to the enclosed Report,

I have the honor to be Sir,

Very respectfully

Your obedient servant,

B. PITMAN.

STATISTICAL REPORT FOR THE DISTRICT OF HILO, ISLAND OF HAWAII, FOR THE YEAR ENDING WITH DATE.

Amount of goods imported by whaleships and admitted free of duties,	\$8711 47
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Amount imported by whaleships subject to duties,	2775 67
	<hr/>
	\$11487 14

Amount transhipped being products of the whale-fishery, on whalemen's privilege free of transit duty,	\$7484 40
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Total number of whaleships for the year commencing with October 1751, to date,	74 vessels.
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Memoranda of Produce furnished them.

149 Cords of Firewood	\$ 1191
1350 Barrels Irish Potatoes	3375
1750 do. Sweet do.	3500
3700 Pumpkins	370
1550 Bunches Bananas	387 50
2900 Gallons Molasses	522
3000 lbs. Sugar	150
31,200 lbs. fresh Beef	2184
1000 lbs. Coffee	125

\$ 11805 50

Exported Coastwise for the year ending with date

640,000 lbs. Sugar
45,000 Gallons Molasses
74,000 lbs. Coffee
7,500 Goatskins
22,000 lbs. Arrow Root.

Total number of foreign arrivals at the Port of Hilo for the year ending with date—

American Whaleships	73.
Bremen do.	1.
American schooner from San Francisco,	1.
"St. Marys," Sloop-of-War,	1.
	—
	76.

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### STATISTICS.

As a member of the Committee on Statistics, I beg to offer the following statement of the principal articles of domestic produce exported as cargo, from 1844 to 1851 inclusive; and a calculation of the number of Cattle, Horses and Sheep on this group, made up from information received from persons residing upon the different Islands, and engaged in grazing.

The tables from which the following statement of exports has been made up, have already been published here, but have not been put together before in such form as to admit of an easy comparison of one year with another.

In consequence of the annual meetings of the Society being held at different times of the year, it is impossible to give the amounts of exports between the times of the meetings in such way as to be satisfactorily compared, therefore I have chosen to give them for each year commencing with the 1st of January.

|                  | 1844.   | 1845.   | 1846.   | 1847.   | 1848.   | 1849.   | 1850.   | 1851.  |
|------------------|---------|---------|---------|---------|---------|---------|---------|--------|
| Sugar, lbs.      | 513684. | 302114. | 300000. | 594816. | 499533. | 653820. | 750238. | 21030. |
| Molasses, gals.  | 27026.  | 19353.  | 16000.  | 17928.  | 28978.  | 41235.  | 53855.  | 13631. |
| Syrup "          | 3026.   |         |         |         |         |         | 75577.  | 60111. |
| Coffee, lbs.     |         | 248.    | 10000.  | 26243.  | 58065.  | 28231.  | 208428. | 27190. |
| Salt, bbls.      | 2810    | 1272.   | 8500.   | 15549.  | 4570.   | 2866.   | 6000.   | 3719.  |
| Irish Potatoes " |         |         |         | 545.    | 147.    | 858.    | 51957.  | 43923. |
| Sweet " "        |         |         |         |         |         | 306.    | 9631.   | 7217.  |
| Onions, "        |         |         |         |         |         | \$1246. | 1858.   | 2315.  |
| Arrow Root, lbs. | 6200.   | 43863.  | 10000.  | 6411    | 1413    | *       | 9632.   | 12499. |
| Hides, no.       | 2536.   | 940.    | 2000.   | 3452.   | 1927.   | 2512.   | 20241.  | 2172.  |
| Goat Skins "     | 30837.  | 9918.   | 35000.  | 20360.  | 31180.  | 31488.  | 24983.  | 26717. |
| Tallow, lbs.     | *       | 4000.   | *       | 17236.  | 4180.   | 17403.  | 3703.   | 4588.  |

Total Values, \$49,187 90. 31,390 85. 46,525. 68,418 58. 66,819 43. 89,743 74. 380,322 63. 197,888 94.

\* Note. The amounts being small were not given by themselves, but were included in the value with sundry small articles.

The exports of sugar in 1851 were *very* small, amounting (as you see by the table,) to only 21,000 lbs. against 750,000 lbs. for the year before, owing principally to the excessive quantities and low prices of sugars in California, whither nearly all our exports look for a market. The severe drought in some parts of the Islands, and the embarrassed finances and failure of some of our planters in other parts, in 1851, has very much lessened the amount of sugar and molasses which would otherwise have been in market now, and for which fair prices could now be obtained in San Francisco. The quantity of sugar exported in 1852, thus far, amounts to about 250,000 lbs.

The exports of Coffee in 1851 were small also, owing to the same cause which affected the trade in Sugar; but we hope for a larger export this year, though the quantity on hand is rather small.

The exports of Potatoes and other vegetables, which previous to 1850 were next to nothing—during the years 1850 and 1851, were our most valuable product, but have now dwindled down to a small figure again, and unless the crops of California and Oregon should be destroyed by drought or some other improbable cause, our vegetable trade with California will henceforth be trifling. Let us at least, try to produce an abundance of *good* vegetables for our own consumption, and to supply, at fair prices, the vessels that visit our ports.

About 5000 bbls. of salt have been exported since January 1st '52, and the quantity for the whole year will probably exceed that of any year since 1847.

Wool is an article which might be and ought to be produced in considerable quantities on these Islands. According to the outward manifests, the whole quantity exported during the last eight years does not exceed 2000 lbs.

There are a number of articles not included in the above table, of which considerable was exported during the years 1849, 1850, and 1851, but, little, compared with what there might be, and probably will be, when we have the advantages of steamers to ship by, viz: Fowls, Swine, Pumpkins, Melons, Bananas, Pine Apples, Oranges, Lemons, Limes, and, (if we can learn to cure them properly,) Figs.

The number of Cattle, Horses and Sheep, of all ages, upon this group, as nearly as I can ascertain, is as follows:

|                 | Cattle.       | Horses.       | Sheep.        |
|-----------------|---------------|---------------|---------------|
| Hawaii, (tame)  | 8000.         |               |               |
| “ (wild)        | 12000.        | 1200.         | 3000.         |
| Maui,           | 3500.         | 2500.         | 1000.         |
| Molokai,        | 200.          | 200.          |               |
| Oahu,           | 12000.        | 6500.         | 5500.         |
| Kauai & Niihau, | 5000.         | 1300.         | 700.          |
|                 | <hr/> 40,700. | <hr/> 11,700. | <hr/> 10,200. |

The cattle known as “wild cattle” on Hawaii are estimated by different individuals at from 10,000 to 20,000. I have put them down at 12,000, which is probably less than the actual number.

It is stated by graziers that the natural increase of the heads of cattle on these islands is at least thirty per cent. per annum. Taking 40,700 for the basis of calculation and it gives an increase of 12,210 for the present year. The whole number slaughtered and sold fresh will not exceed 3,210, (judging from the number of hides exported yearly, the number slaughtered altogether appears to be less than 2500,) leaving a net increase of 9000. The quantity of beef sold fresh has probably been as great during the two years last past, as it will be for a number of years to come, so that unless there be a decided check put upon the increase, or large quantities of beef packed for exportation, the cattle, together with the large herds of horses, will soon overrun the islands, put an end to the cultivation of the soil, and render the herds themselves, of little value.

Since writing the above, I have heard the very interesting and comprehensive report of our Hon. President, and find myself in part forestalled; and having for chairman of our committee a gentleman notorious for his ability and industry in collecting and arranging statistical information, I did not expect to have even a corner of the subject left

for me to occupy, but fortunately he has directed his forces to another and much more important part of the field.

Respectfully submitted by

CHAS. R. BISHOP.

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#### REPORT OF THE COMMITTEE ON NEAT CATTLE.

The Committee appointed to report on Cattle, beg leave to submit the following observations and notices of the past year to the R. Hawaiian Agricultural Society. The committee feel much pleasure in remarking an improvement in this department since last year. A very considerable number of cattle have been slaughtered during the last twelve months in Honolulu, of which the unusually large proportion of females must of course have a tendency to keep the decrease more on a par with the increase than it has hitherto been. Several of the large stock owners have very considerably reduced the number of their bulls, the consequence of which will be that a great number of the cows now in their herds, after having reared the calves now at their feet or of which they are now heavy, will become fat, fit for the butcher, and when they are gradually slaughtered off will leave about an equal number of young stock to supply their places. The advantages of this system must be obvious, inasmuch as without any sudden diminution of the herd, the old stock becomes gradually marketable while its place is being supplied by the young stock. If the stock owners who are adopting this plan will, after a year or two, select their best heifers and procure good bulls for them, they will in a short time have herds superior to any now on these Islands.

The committee have much pleasure in noticing that during the past year two young Hawaiian bulls have been shipped from Honolulu to China and hope that Hawaiian cattle may hereafter be exported to other countries to improve the breeds now in existence in such countries. With such good pasturage and a climate so favorable to cattle,

it depends only on the exertions of the cattle owners here to render their stock worthy of being so sought for.

The foreign cattle alluded to in the report of last year have continued to thrive and increase in number. Although producing and rearing a calf each year the cows are fat enough for the butcher.

The committee have to express their earnest desire that the Legislature will enact some regulations compelling those cattle owners who are too indolent, too ignorant or too careless to castrate their bulls at a proper age, either to do so or to keep their bulls on their own land. It is hard on a man who spends time and money on the improvement of his herd to have all his work undone by the laziness or mismanagement of his neighbors. If there were a penalty of Twenty dollars for every stray bull, half to go to the general Revenue and half to the party who suffered the damage it would probably be an inducement to cattle owners to cut their calves, besides conferring a boon on the residents of Honolulu and the shipping taking in supplies there, because most people have a prejudice in favor of ox-beef or heifer-beef over bull-beef.

The arrival of steamers at these Islands will be a benefit to cattle owners as creating a demand for their Tallow, at present an unvalued article here. It is an indispensable article for machinery and sells for that purpose in San Francisco at from 15 cents to 20 cents per lb. As bulls, no matter how good their condition may be, never carry kidney-fat, those stock owners who supply Honolulu with bull-beef will be spared all the trouble of rendering or disposing of their tallow.

In conclusion the committee would earnestly inculcate on all cattle owners the necessity of improving the breed of cattle and of cautiously abstaining from the too prevalent error of overstocking the land. If any one who is in possession of a land capable of carrying five hundred head in good condition allows his herd to increase to six hundred head, it must be obvious that he cannot do so without reducing their condition in a corresponding degree. The food sufficient for only five hundred head cannot keep six hundred in good order. He has consequently fewer beasts which he can turn into cash. As all these Islands are stocked, the only purchasers to be calculated on are the slaughterers, and as it costs more in men and horses to look after a large herd than to take care of a small one, and as hungry cattle from

an overstocked land commit more trespass than well fed cattle who have abundance of feed on their own run, it must follow that the expenses are increasing while the proceeds are diminishing. And yet there seem to be stock owners who think that wealth consists in the number of their cattle, without taking into consideration their quality, condition or capability of being converted into cash.

JOHN MEEK.

CHARLES GORDON HOPKINS.

H. SEA.

R. MOFFITT.

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REPORT OF THE COMMITTEE ON WORMS AND OTHER INJURIOUS VERMIN, BY W. NEWCOMB, M. D.

The examinations of your Committee have not resulted in the classification of the various worms destructive to vegetation, nor to a full investigation of their habits. To make a satisfactory report would require a very large amount of labor and study; more than your committee have had time to devote to this department, far more than a superficial view of the subject would indicate.

Most of our worms so called, are removed from the class Vermes and belong to the true insect tribe, though in their larvæ caterpillar or grub state they produce their destructive ravages on vegetation. It is well known that the moth sphynx and butterfly, previous to becoming perfected, have existed in no less than three other forms, viz: the egg, the larvæ, and the pupa or chrysalis, all of which require to be carefully studied as well as the perfect animal.

An accurate drawing of each species should also be made in their various forms by which uniformity of names could be obtained and the ravages of one species not be ascribed to another; nor half a dozen different species receive one name. No correct or authentic information of the habits of a species can be obtained but by extensive observation at distant points and on different Islands simultaneously. These

observations to be reliable must be certain to be made upon the same species of animal; and their results might then lead to the most successful plan of checking their increase and destructiveness.

We have but *two* species of butterfly—a large and small one—the first (*Venessa cardui*) was introduced it is said at the same time with the *Argemone Mexicana* (poppy or thistle) and is too uncommon to produce much disturbance to the agriculturist. The smaller species is more common but has not yet been examined.

There are three species of *Sphynx*—the largest the *Sphynx pungens* is common in the neighborhood of Honolulu. The smallest has been noticed only on Molokai. A drawing of the larvæ and pupa of the other two species has been made and will be recognised by those present. Of the smaller *moths* seven species have been noticed and to these the most careful attention should be given as they form the true enemies to the agricultural interests. They have not been studied with care nor their transformations noticed.

#### VERMIN DESTRUCTIVE TO VEGETATION AT HAWAIIAN ISLANDS.

WORMS. I. The cut-worm—called by natives Pokoenuhe or pelua. (There seems to be no specific names among the Hawaiians for the different sorts of worms.) On Maui the term pelua seems to cover the whole tribe which contains many species.

On Hawaii, poko is perhaps a worm which burrows and pelua is one which does not.

I. One species of cut-worm—the most destructive—is striped, about one and a quarter inches long. It is either found coiled up in the earth by day or immediately coils itself on being discovered. It comes to the surface to feed only at night, and is found most abundant at 8 o'clock P. M. It usually cuts off young vegetation, but does not seem to devour while any remains standing—or perhaps it lives principally on juices.

II. Another species whose habits are much like the above is black and about the same length but less destructive and less frequently found. It frequently cuts off young plants in the day time beneath the soil.

-III. Another species more abundant than either of the above in the districts which it inhabits works incessantly, it would seem, day and night, eating indifferently almost everything which comes in its way,



stripping off leaves and bark, and sometimes even the stalk itself of herbaceous plants. This worm is about the size of the two former. It is this worm which does so much damage to cane.

IV. Is a black worm with a white stripe underneath about the length of the three kinds above but more slender. It lives entirely above the surface and cuts off the grass while in season, but its season is very short.

A long storm sometimes effectually destroys nearly the whole of these so that for years they do not recover their numbers.

The above I consider the most important as obstacles in the way of successful agriculture at the Islands, but a vast number remain which are more choice in their selection of food and oppose less serious obstacles.

**CORN FLY.** This is a small fly or louse which insinuates itself between the leaves of corn and similar plants and appears to effect the partial or total destruction of the plant by sucking its juices.

**RED SPIDER.** This is an almost microscopic insect which covers over the leaves of many plants and either effects their entire destruction or causes them to fade and become useless to the plant. Many thousands sometimes inhabit the same leaf.

A microscopic fly called by the natives Ponalo, is very destructive to melons, leaves and many other plants which seem to fade away without any cause. A very close inspection with the naked eye will discover the little white active thing flitting about among the fine down of the leaves. In a still time it may be seen floating about in the sunbeams.

Were the above all removed from the islands nothing serious would remain to obstruct the labors of the farmers.

A light vegetable or alluvial soil is much more troubled with the worms above described than a harder and more compact soil.

In addition to the above there is a small worm of about one inch in length, which in the rainy portions of Kauai infests the Tobacco plant and often proves quite destructive, eating its way into the centre of the stalk and producing its death.

From the samples of Tobacco and cigars the produce of that Island, no doubt need be entertained of its becoming a profitable and successful staple of the Islands, in which case too much care in studying the habits of this insect cannot be employed.

The sweet potato is occasionally drilled by a *true worm* corresponding to our ideas of the wire worm of the United States and excites disease in this vegetable that destroys it for culinary purposes. It is however not common. I have not been able to detect a true *aphis* so destructive in Europe and America to fruit trees, upon these Islands.

The introduction of insectivorous birds into the country would doubtless tend to repress the excessive multiplication of many of the worms named. They find in the domestic fowl and Turkey a formidable enemy at the present time. I noticed the past summer at the residence of Mr. J. H. Brown on Waikiki plains the activity of a large number of fowls which found steady employment in destroying millions of moths constantly alighting within his enclosure. For every moth thus caught, some thousands of the cane worm were destroyed in their embryotic state.

It is a wise provision in nature that when a destructive animal or insect becomes so prolific and numerous as to endanger vegetation to any very alarming extent, a compensating conservative power is provided for repressing their numbers.

The numerous ants filling our soil are found by the experiments instituted by Mr. Sawkins to play an important part in the destruction of the larvæ and pupa of some of our moths—and compensate in this manner for their trifling depredations upon the sugar bowls of our industrious housewives.

Scarcely a new plant or tree can be introduced into the country without introducing one or more new species of insects; so that should our horticulturists be eminently successful in beautifying our scenery by the introduction of new shrubs and trees, new materials will continue to be furnished for the researches of our successors in the entomological department of the Royal Hawaiian Agricultural Society.

## REPORT ON WHEAT, CORN, OATS, AND OTHER GRAINS.

BY J. S. GREEN.

MR. PRESIDENT and Gentlemen of the Royal Hawaiian Agricultural Society:

To those of you who have resided at the islands more than twenty years, I need not say that the article which we once used as bread-stuff, was of an inferior quality. You recollect that there was often a scarcity of flour, and also that from some cause, what reached us from the U. S. was barely tolerable, occasionally too poor for feeding swine. On opening a barrel stamped "*Flour*," a chisel and mallet were always put in requisition to prepare the way for sifting, and these even were so ineffectual oftentimes that a pick-axe or crow-bar seemed necessary for the work. In those days the demand for *Saleratus* was imperious—the constant and free use of it indispensable. If one found on removing the head of his barrel that the flour was not musty, he felt quite satisfied, though he might marvel that bugs and worms could have had patience to perforate so hard a substance, and though he might find his flour well nigh sour enough to set on edge the teeth. In this case a double dose of *saleratus*, when we could obtain it, was the only remedy. I have little doubt that the ill health of many of the early residents at the islands had its origin in the character of the flour which was imported from abroad. Indian corn was raised at that time by the Hawaiians, but sold commonly and eaten green. I do not recollect of seeing corn meal in any considerable quantity during the first ten or twelve years of my residence at the islands. Neither oats, barley, nor any other grain, so far as I know, up to 1832 cheered the eye of the traveller as he made his way over the plains of Hawaii. Up to this time no experiments in this line had been made, and the general opinion seemed to be that neither the soil nor climate of the Sandwich Islands was adapted to the raising of cereal grains. It seemed likely that we should always have to depend on foreign lands for our bread. To this supposed necessity all of us became more reconciled as our foreign flour has improved in quality from year to year till it is now very good. Still there was no ground to hope that the people of the islands could ever use foreign flour, for hitherto some, if not many of the poorer foreigners have obtained only a partial supply.

Not far, I think from 1835, while I was living at Wailuku, a native of Kula, near the base of Haleakala, came to me one day with a Hingham box, and removing the cover he asked me to see and tell him what he had there. I looked into his box, and great was my pleasure on seeing some two quarts of fine looking wheat which he had raised. I told him its name and value; purchased it, and charged him to sow again, also to tell his neighbors that they too might cultivate it. This, I believe, is the brief history of the introduction of wheat into the Sandwich Islands. I regret that it cannot be known to whom the natives of Kula were indebted for the few grains of wheat which enabled them to bless the country with so useful a product.

It was several years after I purchased the few quarts of the Kula native before wheat became so abundant as to be sold by the barrel, or even by the bushel. I used occasionally to see it growing in small patches, and I observed that it was of large growth and of excellent quality. The grain was sometimes carried to Lahaina. This I learned when travelling on a particular occasion through Kula. I sought a little seed, wishing to try the experiment of raising it at Wailuku. All I could find was a small quantity, say about a peck, which enclosed in a strong cloth was used as a *uluna* or Hawaiian pillow. It was then introduced at Wailuku, Mr. Bailey raising two or more crops. It grew very well, the berry was fair, but for some reason, the flour was decidedly inferior to that raised in Kula. Of late years none has been sown at that place.

When in February 1843, I removed to Makawao, the pledge having been given me by the people of a support so far as anything they could produce from the soil was concerned, I told the Kula people that I should need ten bushels of their good wheat for my family use. This they furnished for two or three years. I soon found, however, that the raising, or rather the cleaning of wheat, was a costly service. The grain they rubbed out on rough lava stones, and the chaff they blew off with their mouth. As they could earn much more by cultivating the Irish potato, even when sold at one dollar per barrel, I concluded to try the experiment of wheat-growing at Makawao. I planted in drills about one acre, and though I lost some of it by the wind throwing it down, and by the rats, yet I gathered twenty-seven bushels of excellent quality. Finding that I could raise the grain easier

than they, the people of Kula began to relax their efforts in this department of labor. In the winter of 1846, some eight or ten of my neighbors living near the borders of Makawao united in planting a field which they called "Palaoa Mahina Hou," or monthly concert wheat, being planted and tended on portions of the first Monday of the month, the proceeds of which being devoted to benevolent objects. When this was ripe I called out the cultivators, and introduced the sickle. Most of the wheat I reaped, but I allowed all who wished, to try their hand at this novel business. The women then rubbed it out, and being cleaned, we obtained some 12 or 15 bushels, if I rightly remember, of superior wheat weighing 62 and even 64 pounds per bushel. These were the last wheat cultivators in Kula with a single exception, and this one I deem worthy of particular notice.

An old gentleman by the name of Kupanihi, an uncle of Mrs. McLane, a man of indomitable industry, formerly a head man on the land now owned by the Rev. D. Baldwin of Lahaina, became famous for the cultivation of wheat. His place being in sight of my house, I used frequently to visit him, and feast my eyes with the sight of his beautiful patches of grain. The cultivation of wheat was admirably adapted to the declining strength of this old man. He had youthful hands about him to aid in breaking up his "fallow ground" which he planted in furrows. His wife aided him in keeping it clean from weeds, the remainder of the labor he could himself perform. And such wheat I have seldom seen. When ready for market it was well nigh as free from foreign mixture as Genesee wheat descending into the hopper of some Rochester flouring mill after having ascended five stories, and having been through as many sifting and cleaning operations as Yankee ingenuity ever devised. His patience and perseverance were above all praise. Well, after the old man had cleaned awhile, he would fill a couple of small calabashes, measuring a peck each, and staff in hand, would make his way for Mr. McLane's or my house to dispose of his load. I always purchased whether I had a supply or not, giving him three reals per peck. Thus Kupanihi toiled till about 1849, when the increasing difficulty of obtaining aid to prepare his grounds, and his increasing debility of body and mind caused him to drop from his feeble hand. I scarcely need add, that this Hawaiian hero of 80 years did not long survive his useful labors as an agri-

culturist. He went down to the grave-like one of his own shocks of wheat, fully ripe. Honor to the memory of good old Kupanihī the indefatigable agriculturist and wheat grower of Kukuiaeo. I may as well add here that this man raised sugar cane, and had manufactured at his own door the first molasses made on Maui.

Excuse this long story. I continued to raise wheat in small quantities, but I found much difficulty in threshing and cleaning it. Messrs. McLane and Gower, Mr. Miner also have raised excellent wheat, but neither of them, I presume, have realized much profit, having neither threshing machine, barn-floor, nor fanning mill. Hitherto, after the wheat has been cleaned, it has cost more than its value in dollars and cents to grind it. I think I may safely say that up to this date, no foreigner has raised a bushel of wheat at less cost than \$4.00. I trust this will not be true in time to come.

Mr. Edes introduced the cradle in 1848, and assisted me in harvesting my wheat in the summer of that year. Ere the season of sowing returned he was off for California. During 1849 and 1850 I raised but little more than we needed for seed. In the autumn of the latter year, a farmer from New Hampshire came down from the coast and took up his residence at Makawao. He wished to purchase land but as there remained none unsold in our neighborhood, he concluded to occupy a portion of my land for raising sugar cane, Syrup and Sugar at that time commanding a great price. He put in some twenty acres of cane, and eight or ten of oats, of which we had a large crop in 1851. Finding that sugar and syrup were not likely to command so high a price as he had expected, the farmer commenced last November sowing wheat, and continued to sow and plant up to March. He thus put in some 25 acres of this grain, 5 or 6 of which are harvested, a specimen of which I presented you yesterday. I think there will be 400 bushels of the wheat, perhaps more. But for some circumstances over which I had no control, and in consequence of the destruction of some portion by the pelua, we shall not probably realize so much by 100 bushels as we otherwise should have done. Much of it is of large growth, and some portions are what a western farmer would call *stout*. Indeed so heavy is the grain in spots that it has fallen down, and we shall obtain only 20 of the 40 bushels which an acre would probably produce.

One of my neighbors, a Dane, has about two acres of the same grain from seed which we furnished him, and he will have a respectable crop. He has also a patch, say one eighth of an-acre, of barley which promises fair, and from which we all hope to obtain this useful grain. Another neighbor has about one half an acre of wheat, which, though once eaten down by the pelua, is now nearly ripe, and is as even and beautiful as any half acre in the place. Mr. Miner also has two or three acres planted in drills principally, which looked well when I last saw it. I know of no other wheat in Makawao at present.

Of oats I cannot speak so favorably as I did last year, though the partial failure has no connection with the soil or climate. On commencing plowing the field where the last year we raised a heavy crop, the farmer found that the land was well seeded, and he concluded to try the experiment of raising a second crop without re-sowing. The result was we had a heavy *body* of oats, but comparatively small crop of the *grain*. Of these oats I gave you a specimen yesterday. This grain can be produced in our region of country in any quantity.

In the raising of corn I have been less successful, the difficulty, however, is not in the soil. The season proper for planting is so uncertain, and the ravages of the pelua so great, that I sometimes well-nigh despair of ever succeeding in cultivating this important grain. True, I have for many years obtained corn enough for our table, boiled or fitted up into that most delectable of all dishes, succotash; and I have sometimes cured a little for hasty-puddings, johnny cakes, and brown bread. In 1849 I succeeded in obtaining several bushels of corn with which I *feasted*, not to say *fatted* the largest crop of weevils I have ever seen at Makawao. Still I cannot boast of success in raising Indian corn, and I must refer you to other members of the committee. Mr. Rice of Punahou has more than once succeeded in raising fine corn at that place. He tells me, however, that of late corn has not done as well as formerly; and he is not sanguine as to entire success. He is still making experiments as to the season of planting, destruction of the pelua and other things connected with corn growing.

Mr. Emerson has probably more experience in the business of raising corn than any one of the committee. His report is as follows:

## CULTIVATION OF INDIAN CORN:

BY J. S. EMERSON.

The Indian corn crop succeeds the best, so far as my experience and observation go, in a hard tenacious soil. This soil holds moisture much longer than a light vegetable or alluvial soil. It also gives less chance to worms of all descriptions for burrowing and depositing their eggs than is found in a lighter soil. Also, in case of a high wind it holds the roots of the corn much more tenaciously than the lighter soil.

The season for planting is from the 1st November to the 1st of February or March. Except in very low and wet, or rainy situations, the sooner corn is planted, after the first rain in November, the more sure the crop. But in very rainy situations or in low lands exposed to be inundated by the usually heavy rains in December or January it may be safe to delay planting till the heavy rains have fallen.

PREPARATION OF THE GROUND FOR PLANTING.—Let the land to be planted be plowed deep and fine, if may be, in midsummer, and let fowls and pigs scratch and root it as much as they please, to destroy roots, worms and insects; and to facilitate their operations an occasional harrowing would not come amiss.

When the season for planting has arrived a second plowing would be beneficial. Then furrow the land both ways in drills, about  $4\frac{1}{2}$  feet apart, and plant the corn in the checks. Four or five grains should be planted in each hill, with the expectation of leaving only three or at most four stalks, when the corn may have passed its danger from the grub-worm.

The danger from the grub-worm is less in November than in the two following months; and corn that has been growing a month or six weeks has generally passed the season of danger from this insect.

If the corn to be planted is soaked twelve or fifteen hours in a strong tobacco juice it will hasten its germination and may protect it from the attack of the worm.

About twelve or fifteen days after the corn is planted it is usually fit for the cultivator, which should be passed between every two rows in one direction and one week later in the other direction. But if the land is not in good condition a light plow is better than the cultivator; and in using the plow the soil should be turned from the corn into the middle of the space between the rows.



When the corn has been six weeks in the ground it is usually a foot high as it stands and is sufficiently strong to endure a slight shock from falling dirt. It is now time to re-plow, turning the soil towards the corn. Let it be plowed both ways, two furrows between each two rows, a boy always following the plow to relieve any corn that may have been crushed or buried up by the plow. When this moulding process is completed the hoe may be taken up.

Pass through the field removing every weed that may be among the corn, and every poor blade of corn where there are more than three in the hill. If there chance to be four good stalks in one hill and four only, let them all remain. At this time let the hill of the corn be shaped and the ground be left fair and in a condition to impart its greatest amount of nourishment to the corn. The hill round the corn should never be high, but large and flat. This one hoeing is all the corn will need, in case weeds do not spring up.

If the manienie grass or the seeds of noxious plants are in the soil when planted you will find it out and meet them as the case may require.

The manienie grass, the best friend to the grazier, is a potent enemy to the agriculturist, and must be met and fought in the hottest and driest weather, or the plow and the hoe will avail but little in a tenacious soil and wet weather.

The expediency of topping the corn before it is ripe depends entirely on the desirableness of the food for your cattle or horses. It is no benefit and but very little, if any, harm to top the corn after the tassel begins to dry and the husks of the corn to whiten.

A good crop of corn at these islands is from 30 to 40 bushels to the acre. I have raised at the rate of 50 bushels to the acre.

Corn that is acclimated I think does better for seed than that which is newly imported from the Northern States.

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Craving your patience a little longer let me now speak on some things connected with the general subject.

I. On the adaptation of our soil to the raising of such grains ; a question which, as a committee, we were instructed to examine. There can be no doubt so far at least as Makawao and Kula are concerned, the raising of wheat and oats is no longer to be regarded in the light of an experiment. Through all Kula, and in the hill coun-

try of Honuaula and Ulupalakua, on the potato land above Mr. Torbert's plantation, wheat would unquestionably richly reward the labor of the cultivator. If cereal grains are not grown at the islands in sufficient quantities for home consumption, to say nothing of a moderate exportation if needed, let it not be said that it is from want of adaptation of the soil.

2nd. Time and manner of preparing the ground, planting, &c. As the experiment of raising wheat may be made on other islands than Maui, allow me to give you the result of my experience as to *time and method*. I think it well to commence sowing or planting as early as November or December. Sown thus early, wheat will have time to take root, and will become large tall and hardy. If occasionally fed down in early winter, by calves, no great harm will be done. I would not, however sow a great quantity thus early, but continue to sow at my convenience up to the end of March. The growth will all be respectable. The portion sown in November will probably be ripe early in May, so that by sowing every week during the winter the work of harvesting will extend through July and August. As to preparation and manner of planting, I remark that there is little danger of plowing the land too thoroughly. The crops so far as I have observed amply repay all the labor bestowed by the plow. In regard to the manner of committing the seed to the earth, I am partial to the method of planting it in drills. At the outset it will doubtless cost more labor, but that it will ultimately cost more is not clear. The land will of necessity be better plowed, the seed will lay deeper, and be more certainly covered. The body of the grain will be stouter, the heads better filled, and there will be much less danger of the wind and rain which frequently throw the grain down or entangle it. The drills on rich land may be about as near as a horse followed by a small plow, can make them without walking in the furrow last made. By planting thus, one can walk through the length of his field, prevent weeds from choking his grain, and the rats from making unreasonable depredations; and finally, the grain is more easily and cleanly harvested. Since writing the above, I find the following remarks in the "Pictorial Cultivator Almanac," for 1852:—"The practice of sowing wheat in drills, is every year gaining favor, and this system of sowing is destined to become general. In England the system is already so well

established that it has been pronounced the 'sheet anchor of husbandry.' " Those however, I will add, who are disposed to cultivate wheat can try both methods, the broad-cast and the drill, and decide for themselves which is on the whole, the best.

I for one, earnestly desire a change of seed, for though our wheat which is the bearded kind is good, still I have no doubt that a change would be beneficial. Cannot seed be obtained from the coast, or from the United States? If from the Northern States, the first crop or two might yield less than our Hawaiian wheat, but as soon as acclimated, we should probably have larger crops, and grain of a better quality.

3rdly. Obstacles to wheat, oats, and corn growing and preserving.

These I have shown are not found in the soil of Hawaii nei, though some or all of them may be with the climate. Nowhere probably can wheat and oats be more easily raised than on many parts of the islands. Obstacles however exist; for to success in what business are these not found? We might about as well murmur against Providence for not giving us our bread baked and buttered, without the toil of oven heating, dough kneading and churning, as to complain that we cannot obtain our wheat and corn without toil and vigilance in warding off and destroying the enemies of vegetation. Of these enemies, the pelua I have already mentioned. We all know the character of this insect, and have most of us been tried by its ravages; but 'tis one of the trials incident to the labors of the agriculturist in an untried climate. We need the influence of a New England winter to check the ravages, or to rid the country altogether of this and other insects. But as the remedy in this case would be worse than the disease, we must bear the trial as patiently as possible, till in good time some one shall discover the method of destroying so dire a foe to agricultural, and especially to horticultural pursuits.

Another enemy to grain of every kind we have in the *weevil*. This will cause us more trouble I fear than the pelua. I need not say that the weevil attacks the grain after it is garnered, and it will find its way through a hogshead, a barrel, or a bag of wheat or corn, in an incredibly short space of time. I know of no method of preserving our grains from the ravages of this insect. Caution in curing and putting them up will do something. They should be most thoroughly

dried, and put up in small containers or bags. The wheat which I formerly obtained from Kula, I used to put into bags containing from a peck to a half-bushel each, and these I hung in the cook room near the stove pipe. I think no weevils were seen in one of these bags unless it became wet from the rain through the roof. If any member of the Society can suggest a method either of destroying this insect or of preserving our wheat and other grains from its ravages, he will confer a great favor on us all.

The rat, too, means to show us wheat growers, that this grain is sweet to his tooth. I hope this vermin will not increase upon us, and rival the pelua and the weevil in destructiveness. As he condescendingly waits till the grain is nearly ripe before he attacks it, I think he will harvest but a small part of our fields. After all, we have fewer foes to our garden vegetables and grains than our friends of other countries have, and we may well endure the ills of this sort which we cannot cure, or endure them till a cure can be effected.

4th. Finally, allow me to say that we all have occasion for gratitude to God in view of the multiplication of physical comforts within a few years; and we should be stimulated by this consideration to encourage, both by precept and example, a more thorough and systematic cultivation of the soil till the best resources of the islands shall be fully developed.

To feel the force of this appeal to our gratitude, let me take you back with me to 1828, the year in which some of us landed at Honolulu and commenced our residence on these shores. Here was our work, and those of us who came to toil for the people, looked for our reward in the coming world. And well we might, for we had little prospect of obtaining it on earth. The fact is some of us were for several years put on short allowance, and I may add, no more *sweet* than *short*. I will not particularize, for no one wishes to talk or hear of such things. Suffice it to say that during some part of 1829 while I was absent on the North West Coast, there was great suffering in Honolulu for want of the comforts of life. Mrs. Green speaks of those days with thankful emotions that she did not die outright of starvation. Mr. Richards and his family, then at Honolulu, suffered also exceedingly as he informed me on my return. I admit that this season was an extraordinary one; still those of us who were on the ground at that time can

testify, that for several years, we needed a good appetite to enable us to keep soul and body together. I refer to those days to remind myself and you also of the multiplication of physical comforts since those years of scarcity. Of the change of living I have often been reminded of late years, when I have seen the well spread table loaded with comforts almost entirely the product of the islands. The well baked beef, roasted turkey, or broiled chicken, with excellent Irish potatoes; the coffee with its rich trimmings, the golden butter, and the cheese fresh and palatable, if not the richest; and the rich wheaten loaf, together with various inexpressibles all Hawaiian and—good enough for any man! Well may we be grateful to Him who enables us to spread such a table. Thousands of such tables might be spread on these charming islands, and I call upon every member of the Royal Hawaiian Agricultural Society to encourage both by precept and example, a more systematic and thorough cultivation of the soil till the best resources of the islands shall be fully developed. For this purpose, let parents who profess to desire the prosperity of the islands, give now and then a son to the ennobling work, the God given employment of tilling the earth, rather than as heretofore, devoting so many of them to the belittling business of measuring tape, and weighing sugar and nails. I mean no reflection on the regularly educated merchant. Such an one, it seems to me, has ground to complain that so many whom God designed for farmers, have with little or no preparation engaged in mercantile business. "Every one to his trade," the old adage hath it, and there is good sense in this saying. Had there been more agriculturists at the islands for the last few years, and fewer merchants, the depression of the times would have been less severe. I am astounded when I look around for the young farmers among the families devoted to the special work of elevating and saving the Hawaiian race. Who can tell me where *one* even, can be found? Not many months since, we on Maui, welcomed such an one as we supposed, one too who had taken lessons in New England on agriculture, who had studied practical farming. Some of us fondly hoped that our sons would be benefited by his example and instructions. Most earnestly did I beseech him to hold on to his purpose of cultivating the soil of his island home, though strongly advised as he assured me he had been by all his friends at the metropolis, to engage in mercantile business. As this

young *farmer* is a member of our Society, and may be present at some of our meetings, he can tell us in what business he is now engaged. One of two things is true in relation to us as a foreign community. Either first, according to the old adage, "Misery loves company," so some of the elder children of foreign residents and missionaries having become merchants or clerks, they encourage their juniors to imitate their example, and thus keep them in countenance; or secondly, practical farming is in low repute. The latter is I fear, the true cause. that while merchant's clerks, and young traders can be counted by the score, scarcely an individual of this class seems to think even of the plow. Need I say that while things continue thus, while public sentiment discourages youth from engaging in husbandry, the father who would rejoice to train his son to the honorable business of an agriculturist will have his own trials—will be likely to fail. 'Tis easy, on an occasion of our anniversary, to talk and say many fine things; 'tis easy also to write commendatory of this sort of labor, to praise the giant of the "brawny arm," and "huge fist," but 'tis quite another thing to consent to hold the relation of *pater vel mater* to such an un- gainly, plainly clad, sun-burnt, rough-handed offspring. Am I not right, gentlemen, in supposing that labor of the agricultural sort is held practically in low repute? If so, pardon me while I solemnly pledge myself to belay you soundly till you shall be ashamed of cher-ishing any thing like secret contempt for the *primary*, God appointed occupation of man, even in his state of innocency and dignity; and till you who have sons, shall plant one of them, at least, on the Hawaiian soil as a tiller of mother earth. This I shall do the more earnestly as there can be little hope of the perpetuity of good institutions among the Hawaiians unless they become an industrious, agricultural people. In proportion as I see evidence of the nation's improvement in this respect, in the same proportion is the strength of my hope in regard to the future temporal, political, and moral state of Hawaii. And need I say that an *ounce* of example, especially with this people, is worth a whole *pound* of precept. There have been *tons* of the latter bestowed upon the Hawaiian race, to how little purpose the neglected fields around us too plainly tell. Now then for a little increase of good ex-ample. If this would not change the whole country, I am greatly mis-taken. Is not the experiment well worth trying?

Again I call upon every member of the R. H. A. Society to aid in every possible way in developing the best resources of which the country is capable. With the blessing of God which is never withheld from those who seek it, we might soon see "the fruitful field laugh with abundance." Let us see that these fields be not fertile in their own disgrace. Let them groan with the weight of the luscious sugarcane; be turned into a wilderness of our unequalled coffee; let the plains wave with the golden wheat; with barley, oats and corn let the valleys be filled; while clover, herd's-grass, and other species shall crown the mountains to satisfy the lowing herds, and the bleating sheep; while the grape, fig, guava, orange, lemon, mango, chirimoya, tamarind and peach, filling our gardens shall well nigh make us forget our father's house and the luxuries of our own country. In a word let the experiment be made of causing to grow on these delectable isles, so far as man can cause to grow, "every tree, and every plant, and flower, and grain, that is pleasant to the sight, and good for food." And though we shall not find "the tree of life in the midst of our gardens," yet who can say that in the enjoyment of these earthly fruits and flowers we shall not find awakened in us the desire of tasting of that "tree which bears twelve manner of fruits, and yields her fruit every month, and whose leaves are for the healing of the nations?" Especially let us determine that "bread," which, gentlemen, we have from high authority, "is the staff of life, and in which is contained the quintessence of beef, mutton, veal, venison, porridge, plum-pudding and custard, and through which is diffused a wholesome and fermented liquor;" I repeat let us determine that nothing on our part shall be wanting to make bread abundant among all classes, not only of the foreign residents but of the native Hawaiians. I am of the opinion that the free use of bread would give stamina and character to the people. Quite a number at Makawao and Kula have engaged wheat for sowing, and they seem determined to re-engage in its cultivation, not only for traffic, but for their own use. My people have lately formed an Agricultural Society, and as the rage for speculation seems to have spent itself, I may be able by another year to communicate on their behalf something of importance. Some of them may possibly compete with us for premiums. May I not suggest to the Society the propriety, not to say, justice of increasing the number

and value of premiums on wheat and corn. Only a single premium, I perceive is offered for each of these grains, and this no more than is offered for a hundred cigars, or for 5 pounds of cured tobacco. Could I offer an amendment to the report of the committee on premiums, I would recommend the putting of TOBACCO with the CUT-WORM, and offering \$40 for the destruction of both. If any of us shall be permitted, as was predicted at a former meeting of this society, "to sit under our own vines and fig trees," it will be I trust, for a very different purpose than "to smoke Hawaiian long nines." Most earnestly do I pray that no part of the soil of these lovely islands may be impoverished and polluted by the growth of this loathesome, and deadly weed, nor the balmy air tainted by the poisonous fumes of tobacco.

As I hope to have many a competitor soon in the growth of cereals permit me to suggest that for wheat and corn there be offered a premium, 1st. On the best bushel ; 2nd. On the best acre ; and 3rd. On the best 25 acres. A premium also on oats and barley. I would also recommend a change in the kind of premiums, a substitution of the plow, the sickle or the hoe, for the medal, which, pardon me when I say, has no particular use. Let the growers of *flowers* have the medals, but let the growers of *flour* aspire to something higher—more substantial. Our farms are ill supplied with implements of husbandry, and we need help in this department rather than in the ornamental. Our agricultural libraries are small and need replenishing. Would not the "New England Farmer," or the "Cultivator," or some other agricultural periodical be an acceptable and useful premium.

The state of the highest prosperity which God promised to His ancient people in case of obedience was indicated by reference to agricultural products. God prepared for Isreal a land "flowing with milk and honey," i. e. a country admirably adapted to agricultural pursuits. When obedient, his Creator declared "thou shalt be blessed in the fruit of thy ground, the fruit of thy cattle, the increase of thy kine, in the flocks of thy sheep, in thy basket and in thy store." In the fulfillment of this promise, "He made him to ride on the high places of the earth, that he might eat the increase of the fields, and He made him to suck honey out of the rock. Butter of kine and milk of sheep with the fat of lambs, and rams of the breed of Bashan, and goats, with the fat of kidneys of wheat, and thou didst drink the pure blood of the



grape." Had they been uniformly obedient, it is said, "He should have fed them also with the finest of the wheat, and with honey out of the rock should I have satisfied thee." And in a season of prosperity it is said "He maketh peace in thy borders, and filleth thee with the finest of the wheat." Let all labor and pray, that as we have peace in our borders, we may experience the fulfillment of the entire promise, all have a full supply, from our own soil, of this heaven bestowed, life invigorating nutriment.

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#### REPORT ON HORSES.

*To the members of the Royal Hawaiian Agricultural Society:*

Since the last annual report we have but few statements to make. We would reiterate our opinion that there should be a limited number of stallions allowed to each district, to be selected by men appointed for that purpose, who are capable of judging of the qualities of the horse—impartial and independent in their choice without regard to the owners. This in our opinion will have a great tendency to improve the breed and at the same time relieve us of the wretched specimens of horses now to be seen on these islands, without apparently strength and spirit enough to take them to their stalls.

We would advise that every licensed stallion should be advertised by its owner through the newspaper, giving his name and the place at which he will stand. Three years is a good age for stallions, and from that to fifteen or twenty. Many think it is far safer on the score of profit to breed from an old stallion, who has uniformly proved himself a getter of valuable stock, than from young stallions who are entirely untried as to the qualities of their progeny—others again prefer young stallions. But we have noticed that both in England and the United States some of the best horses have been from old stallions—and likewise the same with old mares which have bred much, being more roomy for colts.

We are of opinion that the large breed of Sydney cart horses are

not the description of horses required here. They may originally have sprung from the English draft horse, but from breeding in and in, they have come to be miserable long legged, small carcassed animals without any muscle, requiring two or three acres to graze them on, and neither fit for draft or saddle horses; and you have only to notice some now going about our streets with their hind legs going in a contrary direction by compass to their fore, to give you an idea of the worthlessness of these animals.

The proper horses for this place would be the *best breed* of the Canadian horses. They are good for the saddle and draft, and are generally fast trotters. They make an excellent family horse, and will thrive on much less food than the horses which we now have. This breed have sprung originally from Norman mares crossed with the English blood horse. The former were rather small and tough, but by crossing with the English blood, have brought a staunch, strong horse of good bone and muscle from 15 to 15½ hands high, and which are now being imported into all parts of the United States.

We would add that at present there are two good foreign stallions in this place, known as "Oregon" and the "Admiral."

THOS. CUMMINS.

JOHN MEEK.

JNO. O. DOMINIS.

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## REPORT ON SWINE.

BY P. J. GULICK.

Although the subject of this report is rather repulsive than inviting, yet so long as pork is worth a real per lb, the grunter is by no means an object to be sneered at.

I shall, therefore, to the best of my ability, endeavor to point out some prominent characteristics of what is deemed the most desirable breed of hogs, and the best method of fattening them.

The opinion seems to be entertained by some that swine of the lar-

*gest frame*, or at least such as when full-grown and well-fattened will *individually* weigh most, are of course to be preferred. But it is believed this is a mistake.

If our theory is correct, that breed which will produce most pork of good quality from a given amount of food is most profitable, and therefore most desirable. Now it is fully believed that swine of very large size not only eat more food, in proportion to their weight, than those of middle size, but that their flesh is of a coarser quality and less savory than that of the latter. So far as the writer's observation extends the mass of swine on these islands are long-limbed, with long slim noses, and seem rather adapted for the race-course than for slaughter. There are, however, a considerable number of a better stamp, and some very good.

From what I have said it may perhaps be inferred that I deem the no-bone breed, as it is sometimes called from the smallness of the bones, superior to all others. But such is not the fact ; for they are very uncertain breeders and have small litters. I am not sufficiently versed in pig-ology, to give the name of the breed I prefer ; but will give the prominent characteristics, which may be a surer guide, than a name would be. These are, briefly, a frame of medium size, weighing scarcely 300 pounds when full grown and thoroughly fattened ; short neck, head and nose ; the last, thick, and deeply concave, viz : well scooped out between the eyes and the end of the snout. Lastly, white skin and hair. This last specification may be deemed whimsical ; but I think, though of less importance than the others, it will be found worth some attention. The skin and hair are usually of the same color, and the white skin is commonly, if I mistake not, thinner ; and it certainly has a much pleasanter aspect, on the dish, than the black skin.

One important advantage of swine of the above description is, they will fatten at any age ; whereas the very large, and the slim-nosed races cannot easily be fattened until they are full-grown.

Now, as to the method of fattening. And here let me premise, that *shelter* is a matter of no small consequence, in fattening swine, in order to secure a *dry and cool bed*. It might be thought that in such a dry and mild climate as this, care on this head was superfluous. But such is not the fact. A friend of mine lost a valuable fat sow, merely,

as he thought, from neglect in this matter. Another hog in the same pen was nearly lost from the same cause, but was saved by a free application of cold water. But even where it does not prove fatal, exposure is often injurious. An intelligent man, who resided some years at Kealakeakua, told me that all the hogs which he had known to be grown and slaughtered there had the liver complaint; and this he attributed to the heat to which they were exposed. The liver becomes enormously large, and very tender, and when this is the case the whole system is deranged, and the animal more or less diseased.

Cases of this kind I have frequently observed in other localities, and deem them attributable to this cause. And there can be no doubt but that exposure to a scorching tropical sun must retard, materially, the process of fattening; to be confined day and night in mud and mortar, as is sometimes witnessed in the rainy season, must have a like result. A dry and cool bed should therefore be provided for swine; and of this the more intelligent natives seem to be aware.

Now in regard to *food*; were a choice allowed, I know of none preferable to Indian corn. But while corn will command the price it now does, or even three dollars a barrel, it is believed it would be a *losing concern*, to feed it to swine. Kalo also is good food for hogs; but except in places remote from market is liable to the same objection as corn, it is too expensive.

As we were informed incidentally at our last meeting, and as the writer has witnessed, the *skinmings* and other refuse of the sugar-house makes excellent pork, and is probably more productive when used for this purpose, than any other of which we have any knowledge.

But neither this, nor any other cooked food, should be eaten while hot. This is said to render the flesh soft and measelly, (as it is called,) which destroys its pleasant flavor. Probably, in these islands, sweet potatoes, pumpkins, and squashes, are the articles which can be most easily and economically grown for this purpose. In one locality potatoes would be most profitable; and in another, squashes, according to the adaptedness of the soil to the growth of each. In order to secure the whole benefit of either they should be cooked. They may either be baked in a native oven, or boiled. Those who use cooking stoves could, perhaps, usually, while cooking for the family, boil a pot of squash for this purpose, without any additional expense.

A word in regard to the *manner* of feeding. Whatever be the *kind of food*, it is wasteful to deal it out, as it were, by wholesale.

No more should be dealt out at once than will be consumed at once. A little observation will enable the feeder to ascertain the proper quantity. And if it is desired to fatten as quick as possible, it will be found advantageous to feed five times in 24 hours, making the intervals as nearly equal as convenient.

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#### BARON DE THIERRY'S REPORT ON BEES.

I have the honor to inform the President and members of the Royal Hawaiian Agricultural Society, that in compliance with the promise given by me last year, I have made every exertion to obtain the Honey Bee for these Islands, and have the satisfaction to state that by letters from New Zealand, received on the 10th of last month, I am promised three hives, by the first vessel direct to Honolulu. I most sincerely hope they will arrive free from injury, and secure all the beneficial results which are anticipated from their introduction. But, in inviting those interesting guests to these Islands, something should be done for their reception, and some pains should be taken to raise plants of which the flowers yield the greatest quantity and best description of wax and honey. Of these none are greater favorites with the dainty Bee than that sweet little flower, the Mignonette, which grows so well here, Lemon Thyme, and Garden Thyme which latter makes beautiful borders to flower beds, and if properly attended, blossoms almost perpetually. They are also fond of the flowers of the cabbage, turnip, and mustard, and particularly so of those of the different sorts of edible beans—the broad bean being a great favorite. Of aromatics there is none so beneficial to the Bee as Rosemary, which thrives well in hot countries. The fame of the honey of Harbourn is due to this valuable plant. The honey of Majorca and Minorca is equally celebrated for the flavor it derives from the Orange and Lemon blossom. The Jassamine and the Heliotrope, which grow so well

and blossom so profusely on these Islands, are much sought by the Bee. Indeed there is scarcely a flower, however small and unpretending, but from which it derives food. The cultivation of every description of flower bearing plants should be distributed amongst the natives, to whom necessary information on their cultivation should be imparted. From the Strawberry and the Raspberry, from the Hollyhock and the Tree Mallow, much excellent honey is derived, as from every sort of melon and pumpkin. Who that has travelled in England and the United States has not noticed the villa of the affluent and the cottage of the sober and industrious with the honey bearing Woodbine overhanging the neat porch—the white and yellow Jasmine and the Passion flower, covering the white walls, and the garden filled with many well cultivated and lovely flowers—in the corner, sheltered from the bleak winds, are the hives, with their busy colonies in active employment, formerly doomed to destruction for their honey, but now by the modern improvements in the construction of Hives easily removed without the sacrifice of their valuable lives.

The Bee from sipping the sweets of flowers takes nothing from their beauty, and if we should benefit a neighbor who has bees, whilst we have none, we know that even in so small a degree we are contributing to the welfare of our fellow creature. The cultivation of flowers promotes domestic happiness, soothes the mind, and richly repays for the trouble bestowed upon them. The wealthiest, accustomed to the glare and glitter of state, are prouder of a fine nosegay than of their massive plate and costly silks, and the mightiest of Queens would scarce appear in festive attire without a boquet in her hand or a rose in her bosom, emblematical of the purity of her mind, and homage to the exquisite works of a greater Being above. But, whilst the palace and the cottage—the dwellings of the richest and the poorest, are so eminently improved by this most attractive of nature's vegetable works the indefatigable bee collects tribute from every flower, and hoards its treasure with equal fidelity for the cottier as for the magnate, adding to the comfort and profit of both by its unceasing industry. The little stranger, perhaps at this moment on her way, will be the means of bestowing upon you an important and inexpensive article of export, and in return for such a service, and for the additional comfort which families will derive from that healthful article of diet, and the wax

which she so abundantly produces, I trust that some exertions will be made to raise flowers for her support.



#### REPORT OF THE COMMITTEE ON THE VINE AND FIG.

BY E. BAILEY.

Your committee on the Vine and Fig have not been able at all to satisfy themselves in relation to the subject assigned to them.

The experiments hitherto made are too few and too little diversified to be relied on as a guide in extensive operations.

We have also as yet been unable to procure from books the desired information.

Figs and grapes have been dried in small quantities at the islands, and are reported to have kept well through a voyage to the United States.

From the Rev. J. S. Emerson we have received the enclosed description of his process of curing the fig—which is all we have to offer.

From a conversation with Dr. Hildebrand I am led to think that the process described by Mr. Emerson is the true process for curing the fig, but he says we are too far south to cultivate successfully the more delicate kinds of Vine.

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**DRYING FIGS.**—This cannot be done with any certainty of success except in the dry season, generally between May and October. The length of time requisite for the completion of the process of drying is six or seven days—a dry atmosphere and a good breeze, are important in facilitating the work, which may most economically be done as follows:

1. Erect a platform in some airy situation where the sun will shine upon it at least 8 or 10 hours of the day. Let the platform be so high that the Chinese or half Chinese fowl, if well fed, will not be likely to trouble it; say  $5\frac{1}{2}$  feet from the ground. Let this platform be not over 3 or  $3\frac{1}{2}$  feet wide, as it will be requisite to reach from either side daily

to turn the figs on the board, or change their location to facilitate drying.

2. Let the figs for drying be picked before they are so soft as to crush each other in the bucket when picked, and yet they should be fully ripe. Let them be placed on the platform one or two inches apart to increase the power of the sun and air upon each fruit. After the first day each fig should be moved from its location to the intermediate space between it and the next so as to occupy a dry and hot place, and this change should be made in the hottest part of the day.

3. There should be a set of spare boards or some other covering that may be thrown over the platform at night or in case of a rain, that will exclude dew or rain, but not air. This covering should always be put on at night, or in case of rain.

The heat of the sun only is adequate for the process of drying the fig. An oven has been tried but without success, except that figs for exportation may be made to keep longer by completing the drying in an oven after baking bread in it.

Figs have been dried here and exported to the United States in a perfectly good state. They also have been kept here one year perfectly good.

Yours truly,

J. S. EMERSON.

REPORT OF THE COMMITTEE ON SALT, BY W. NEWCOMB.

According to Marcet, sea water contains in 1000 parts

|        |                                             |
|--------|---------------------------------------------|
| 26.66  | Chloride of Sodium,                         |
| 4.66   | Sulphate of Soda,                           |
| 1.232  | Chloride of Potassium,                      |
| 5.152  | Chloride Magnesium,                         |
| 1.5    | Sulphate of Lime, and small traces of other |
|        | [compounds.                                 |
| 39.204 |                                             |

In the manufacture of salt it is of the first importance to clear the water from all the foreign constituents except the Chloride of Sodium.



By the ordinary process of solar evaporation as conducted here, this is not effected, and the whole of the solid constituents of sea water are obtained as the result of the solar evaporation. Not possessing the necessary re-agents for a complete analysis of Chloride of Soda, I can but give an approximation to the constituents of the commercial article manufactured at Puuloa.

The test for sulphuric acid (existing in the sulphates of soda and lime,) gives a smaller quantity than the fine table salt introduced for our consumption, and usually esteemed as far more pure.

This unexpected result is highly complimentary to the manufacturer at Puuloa, who has succeeded even better than others in clearing his salt from these impurities.

The Sulphate of Soda is mostly left in the form of bitterns which might perhaps be profitably manufactured by condensation and farther evaporation into Glauber's salts.

The chloride of magnesium is a more difficult substance to get rid of, and we find that in 120 grains of the commercial salt of Puuloa, the amount of this earthy substance thrown down in the form of a carbonate, together with the lime amounts to a fraction short of 3 grains. In the test applied to the foreign article, less than half a grain was obtained from the same quantity.

The experimental tests which I have made leads me to the conclusion that to perfect this important manufacture, we have but to apply the proper remedy for the removal of the chloride of Magnesium, when our salt will be found equal to any manufactured at Turks Island, Liverpool, or on the continents of Europe or America. Fortunately the carbonate of Magnesia resulting from this process will probably meet all the expense attending the separation.

The quality of the salt from Puuloa exhibited yesterday commanded the admiration of all who examined the beautiful samples.

The large chrystals surpassed in beauty and regularity any specimens of West India salt that your committee have ever met with. An analysis of these chrystals give but three eighths of a grain of magnesian and calcareous earths in 120 grains, *or one quarter of a pound in 300 lbs.*

The comparative amounts of the sulphates of soda and lime can be seen by the precipitates thrown down by our imported fine table salt,

the chrystals from Puuloa, and the ordinary Puuloa salt from saturated solutions of the several articles.

In the last named there are other matters precipitated besides those tested *for*.

From the above evidence I do not hesitate in asserting that no salt ever introduced upon these Islands for consumption from abroad equals in purity the large chrystals exhibited at our Agricultural fair.



REPORT OF THE COMMITTEE ON PROCURING SEED FROM  
THE SUGAR CANE. BY E. P. BOND.

Hon. WILLIAM L. LEE, President of R. H. A. Society.

SIR.—The Committee appointed at the first annual meeting of the R. H. A. Society, to institute experiments with a view to obtain plants from the seed of the sugar-cane, would report that, although some experiments have been attempted for the purpose proposed, yet that, owing to the lateness of the season of their appointment, and the want of facilities for conducting the experiments, they have not yet been successful.

Measures have been taken to import the needful manures for conducting the experiment, and your committee hope that they may at some future time be able to present a more satisfactory report, should it be deemed advisable that they should continue their efforts.



REPORT OF THE COMMITTEE ON SUGAR.  
BY L. L. TORBERT.

*Gentlemen of the Royal Hawaiian Agricultural Society:*

Hoping that I may throw out a few hints which may be useful to

those engaged in sugar plantations, I beg your attention for a few minutes.

Although at the present day the properties of cane juice are pretty well understood, and the process of reducing it to sugar is rendered very simple, yet there are so many things, any one of which neglected, that injure the quality or reduce the quantity of the article, that many if not all of us come far short of perfection in its manufacture.

In working our common cattle mills, it is found, by repeated experiments, that we obtain about sixty-three pounds of juice from one hundred pounds of sugar cane.

The converting this juice into sugar is the most interesting and difficult portion of the planter's labors.

The first step in its manufacture is to mix a certain quantity of lime with it for the purpose of separating the impurities from the saccharine fluid.

In ascertaining the proper quantity of lime to be mixed with the juice consists one of the great difficulties which the sugar boiler has to encounter.

If too little is used the syrup does not grain well, if too much, it darkens the syrup and forms an imperfect grain in which the molasses becomes tangled and cannot be separated from the sugar; so that it is a nice point to get the right proportion; and when you have found the exact measure for one lot of cane it may prove to be too much or too little for another lot. There is scarcely any two day's grinding which yields the same richness of juice. But if the juice should always be the same, the quality of the lime used is not always the same; so that it is impossible to come at any rule which will be right in all cases.

There have been several ingenious methods invented for the purpose of adjusting the temper, but none of them as yet are perfect. We have, however, a general rule which comes pretty near the mark.

Put five ounces of common coral lime into 100 gallons of juice as soon as it is pressed out and stir it well. This quantity will be found sufficient unless the juice is very rich, in which case add a trifle more, or if the juice is weak do not put in so much.

After the juice is limed bring it to within about five degrees of the boiling point over a slow fire, then let it stand fifteen or twenty minutes and scum it. Then give it a quick boil for about ten minutes, scum it

again and stop the fire. Now let it settle which it will do, if boiled right, in thirty or forty minutes.

Many planters object to *boiling* the juice before it is settled, but there is a second dirt in cane juice which only separates at a degree of heat a little above the boiling point, and if this is not separated before the juice is settled, a portion of it cannot be got out except by filtration, which is a very objectionable process, but goes with the sugar rendering it of a darker color and poorer grain.

In well appointed boiling houses the juice is first boiled in large vessels over a separate fire and left to settle in the boiler from whence it is drawn by a cock near the bottom into the pans. But in small works it is bailed off into tubs and left to settle, after which it is run back again into the pots and boiled as fast as possible, skimming it all the time, until a thermometer immersed in it stands at  $288^{\circ}$ . As soon as it is boiled up to this mark skip it off into a cooler. The shorter the time of boiling, the greater the quantity and the better the quality of the sugar.

After the juice is boiled to  $288^{\circ}$  and is bailed off from the pans, it is put into a tub or box to cool and grain. As soon as the grain begins to form on the sides and bottom of the cooler, give it a gentle, but thorough stirring, and then let it rest until cold.

After it is cold separate the sugar from the molasses. This may be done in a variety of ways. The simplest method, and which, next to the centrifugal separator, is the best, is as follows. There must be four or five holes one inch in diameter in the bottom of the vessel in which the sugar is put to cool. Stop these with sharp pointed plugs, about eight inches long, leaving about three inches of the big end outside. After the sugar is cold, withdraw the plugs, and the molasses will run off and leave the sugar in the cooler.

These coolers may be boxes containing about 15 cubic feet\* or they may be casks of any size, with one head out, and should be set over a drain, in order that the molasses may run to the tank.

When the plugs are removed, if the sugar runs off with the molasses you must insert tapering tins of the same size of the plugs, having their small ends pierced with little holes.

Another method is to put the sugar, after it is cooled, into vats or

\* See Dutrone's method in a work by George Richardson Porter.

boxes about six feet long by three high and three wide having slat bottoms, with wheat straw spread over the slats. The straw prevents the sugar from running out with the molasses. This is a bad fix, for the straw soon breeds a small insect which has the appearance of mould, or fine dust, in such quantities as to hurt the sale of the sugar; besides the straw gets mixed with the sugar.

Another method is to put the sugar after it has grained and is cold, into a barrel or tub, the sides of which are made of fine wire, and giving it a quick rotary motion, the centrifugal force carries off the molasses.

This is the best way of all others, but caution must be had in buying a machine. If the inside coat of wire is not very fine it will let the sugar out. The wire should be brass so as not to rust.

I have tried some in bags and find that they answer the purpose as well as wire, but it requires care to get an equal weight on opposite sides of the machine, otherwise the rapid motion will shake things loose.

For a plantation that makes one ton per day the barrel of the machine should be three or four feet in diameter, and eighteen or twenty inches high, and should not have less than twenty revolutions to the second. One of this size and speed, with two men to tend it, is capable of drying one ton of sugar in two or three hours.

This machine is not only one of great utility, inasmuch as it enables the planter to dispense with long drying houses, and rows of boxes and tubs; but its chief excellence consists in returning to the boilers, within forty-eight hours after first boiling, all of the syrups and molasses that do not grain, consequently the sugar of the second boiling is not injured by fermentation, as it invariably is when drained in any other way.

After the molasses is separated from the sugar put it back again into the boilers and mix with it five gallons of settled juice and five gallons of limed juice to one hundred gallons of molasses.\* Boil this down again to 228 degrees, and go through the same process with it in cooling and separating the molasses as before, and you will obtain about the same quantity of sugar, in proportion to the syrups, as at the first

\* The limed juice should be prepared in this way. Mix up some fresh cold juice with lime as you would mix it with water for white wash, and after it has settled, which it will soon do, use the clear liquor.

boiling, and of almost as good a quality. In this way you may reboil the molasses three, four, or five times, each time adding less lime and boiling lower.

It may be said by some that 228 degrees is not high enough to boil the sugar, as it leaves too much molasses. I am well aware that good juice will bear boiling as high as 240 degrees, and the French even boil as high as 246 degrees, but it makes the sugar dark and heavy and the grain imperfect. 228 degrees gives a perfect grain, and light color, and the second boiling is almost as light colored as the first.

Persons who have large plantations will not be likely to receive much information from these remarks. But the new beginner in a small way, who is obliged to do all parts of the work himself, may perhaps be benefitted by them. The principle of sugar making is the same in large establishments as in small ones. We can make as good sugar in a dinner pot as we can make in a large battery.

But whilst the man who works with a mill of two horse-power and makes only 200 lbs. per day affords his sugar in the market at 6 cts per lb., the planter who works with a steam-mill of 40 horse-power, other things corresponding, can afford his sugar at three or four cents per pound.

It seems to me that the most essential qualification for a planter, especially in this country, where we are one day up, and another day down, and the next day we hardly know where, is to be able to adapt his means to circumstances. Although I would not advise a man in carrying his wheat to mill to put his grain in one end of the bag and a stone in the other, because his father did so, yet sometimes, when I have seen a native carrying a stone on one end of a stick to balance a load on the other end, I have thought that, under the circumstances, perhaps, it was the best way.

So let those who have been brought up in sugar making countries, not condemn a way of working because it is different from what they were learned ; neither let those despair who are new beginners, because they do not know all the established rules in old countries, but let each man learn the point to be arrived at, and use his wit and ingenuity in getting there.

## REPORT ON SHEEP.

BY G. S. KENWAY.

*To the President and members of the R. H. A. Society.*

GENTLEMEN:—Although I profess to feel as anxious as anybody that each member of this Society should do his duty, especially when some particular duty is pointed out and assigned to him, by the general wish, I felt a good deal puzzled on seeing my name placed a second time at the head of the committee to report on sheep, and it occurred to me that the infinity of other subjects embraced by the science of agriculture might (with all respect I say) have been taken better advantage of. For although in Nature there may be nothing new under the sun, “age cannot wither her nor custom stale her infinite variety,” and the charm of novelty might have been as agreeable and possibly as instructive to our present meeting. I had determined not to report this season, and incur the charge of neglect rather than *twice* essay to entertain or instruct a company amidst whose intelligence mine must needs shine with a very smoky light, by the wonderful things that might be said on the stupidest animal in all creation.

But the exhibition on Wednesday and a slight circumstance attending it, coupled with a very friendly request from our untiring president, have prompted me at this late hour, and in the absence of any communication from my comrades whose deplorable forgetfulness I cannot account for, to offer a few remarks—on one single point only connected with the subject.

*Three sheep only*, very young ones, were exhibited in the early part of the day, owned by Mr. Sea. Two Merino ewes imported from Sydney, and one half breed, reared near Honolulu. These poor unconscious little things, standing there almost unnoticed by the crowd, damned with faint praise if praised at all, and dripping wet with the salt water they had passed through, looked and doubtless felt little and humble enough in the presence of those illustrious bulls and so forth who carry away prizes with such monstrous ease and indifference as to astonish the Judges themselves almost, and could not have presumed to entertain the remotest idea that *possibly* (and without profanity,) in them and their seed might all the flocks of Hawaii be blessed.

Mr. Sea comforted himself delightfully on being at least quite sure of *one* prize, *because* there happened to be no competition. It was

quite a pleasure to hear him. Yet his confidence might have stood on higher ground, for as far as I am able to judge, his sheep had finer wool and prettier forms, and were better bred than any I have seen before on the Islands. But to his sudden consternation, there appeared later in the day two large black beasts of a foreign breed and very mysterious pedigree, intending of course to compete for the prize. They reminded me of many things, but chiefly of that serious and quaintly proposed query in the old nursery rhyme which I could not help repeating to myself—"Ba! Ba! black sheep—*have ye any wool?*" Something of the sort covered their big carcasses, and very likely enclosed the making of capital mutton.

Now this is the point I am striving to come at. Are we going to raise sheep on these Islands for mutton alone, or for mutton *and wool*? That is the question. For we *can* have good wool, and good mutton, *first rate* mutton inside it. And we can raise enough sheep on these Islands to make mutton a drug, which *wool never can be*. And we can set heads to plan and hands to work, as well as mouths to feed on the produce of our pastures, and point to our stock not with the grunt of an alderman gloating over a turtle, but with the pride of intelligence endeavoring to approach perfection.

Wool from Waimea has been sent to Sydney during the last year and with very good result. It is the opinion of an old colonial wool grower, Mr. Sparkes, that finer wool can be raised here than in Australia, and that the pasturage and grounds, though limited, are better. And I know that he speaks from the trials he has already been able to make in improvement by care and breeding.

Then, let us not "yield the easily persuaded eyes" to the charming visions of mere huge *mutton*. But, beginning at the beginning, let us ascertain and *acknowledge* our true deficiencies and set about repairing them in such a way that it shall not be said in after years we started on the wrong road and got so far that we don't know our way back.

*Now* is the time to consider and determine what we ought to do and *can* do, for

"In the morn and liquid dew of youth  
Contagious blastments are most imminent."

P. S. In speaking of Mr. Sea's sheep, I do not wish it understood as my opinion that they are the best on the Islands. Other parties,



Mr. Moffit for example, have imported pure breeds, doubtless as good. Mr. Sea's are the best I have seen.



REPORT OF THE CORRESPONDING SECRETARY.  
BY J. MONTGOMERY.

*To the President and members of the R. H. Agricultural Society:*

In submitting my report for the past year as Corresponding Secretary of this Society, I think it more conducive to convenience, to include the result of my duties as librarian also, because much of the duties which have devolved on me have relation to the library.

Shortly after the last meeting of this Society, the brig "Usk" arrived from Liverpool bringing the box of Books for the use of the society, forwarded by Messrs. Dickson & Co., of London, in fulfillment of an order from my predecessor, Mr. Bond. The amount remitted for purchase of these books was £12 10s. English currency, but which left a balance due of £1 13s. 4d. which I have requested a friend in London to pay.

By the "Andes," from Boston, which arrived here in the month of September, I received another box of books, also ordered by my predecessor from Mr. G. W. Bond of Boston U. S. The length to which your proceedings this year are likely to extend induces me to forbear adding a catalogue of these books to my report.

By the direction of the Executive Committee I have procured a suitable book case to contain these books, and they are now at the service of the members of the Society in my office.

From the Secretary of the Van Diemen's Land Royal Society I received a long and very interesting letter expressive of the anxious desire of that society to co-operate and reciprocate with this society, and to render us any assistance or facility in their power. He also forwarded the transactions of the society for the three previous years which contain much valuable and interesting matter. He promises to send us a swarm of Honey Bees when a suitable opportunity should offer,

but from the cessation of intercourse between that Island and this for many months past, I presume no such opportunity has since presented itself.

Mr. Berthold Seaman, the naturalist of H. B. M. S. "Herald," who visited this place in 1850 and was appointed a corresponding member of this society, has written to your corresponding secretary stating that he is now resident at Kew, near London, preparing for the Government the result of his labors and promises to aid the views of this society which it seems to me his position will enable him to do.

Mr. W. Hooper of San Francisco, has forwarded a splendid work on Cottage Architecture, in two volumes, published by H. Ranlett, Esq., and by him kindly presented to this society, which he desires may be open to the inspection of all who feel any interest in the subject.

A few days ago I received a letter from Mr. J. E. Chamberlain of William's College on the subject of the introduction of the "Honey Bee," into these Islands, which seems to me so interesting and important that I feel called on to subjoin the following copy of it.

WILLIAM'S COLLEGE, March 22d 1852.

*Sec'y of Hawaiian Agricultural Society.*

SIR:— I learn that the attempt to introduce Bees, by the "R. B. Forbes," has proved abortive.

That Bees can be introduced into the Islands, by taking advantage of their natural characteristics, I think not only possible but very probable, and shall, sir, with your permission, proceed to give that peculiarity, by taking advantage of which I think you will attain the desired result.

Bees *hibernate* in the winter. When the thermometer has fallen below a certain temperature (45 or 50 degrees,) they lie dormant and eat no honey. But when it rises above, they must consume sufficient food to raise the temperature of their bodies to about 70 degrees of Fahrenheit.

Some farmers observing this peculiarity take all the honey from the hives at the commencement of the cold season and place them where they will be continually below the first named temperature till spring opens and the Bees can again make honey.

Applying this to the case in hand, let a hive be placed in a water-

tight box, then packed in ice and thus conveyed to the Isles. As soon as the artificial winter has been removed, the Bees will awake to their accustomed industry and activity. The effect on them will be no more than of a long winter.

This seems to be the most feasible plan of procuring Bees from the United States, by way of Cape Horn. It seems to be the best way to obtain them from any country. Packed in ice they feel none of the changes, constant changes, which occur on shipboard. They fall asleep in America—they awake in Oahu—they are transplanted and that too, in entire unconsciousness. It may be a question whether they ever perceive the change.

Aside from its importance to the Islands, this object has great interest for the naturalist, and the Bee, from the moment she spreads her wings in the Hawaiian breeze, should be watched, her vagaries noted, that thus a new chapter may be added to our national science, and that the Islands so lately a blot on creation, may become a star, from whence shall radiate the light of knowledge, science and religion.

I am Sir, yours truly,

J. E. CHAMBERLAIN.

I have forwarded suitable replies to these several communications, and in consequence of the crowded and voluminous amount of reports about to be submitted to your notice, I shall best consult your interest by brevity, and therefore conclude, having alluded above to the most important matters in my department.



#### REPORT ON ANALYSIS OF SOILS.

BY W. H. PEASE.

The task imposed on your committee, would require, if properly executed, the assistance of material and apparatus not within their reach. Analysis of soil, from which the true, and generally speaking therefore, the most profitable mode of culture can be adduced, should be accurately minute; as several of the most valuable and important

constituents of the soil, being required by plants in small quantities only, are distributed accordingly. The state of combination, in which the elements of soil exist, should also be known. Whether they are in a state fit for assimilation, which depends in a great measure upon the stage of decomposition the rocks from which they are derived may have arrived at and consequently their state of solubility, for instance, of those which abound in our soil, as the whole class of silicates, oxides of iron, &c. In view of these considerations your committee forwarded to the United States specimens of our soils and rocks for examination and analysis, from which, they very much regret, no return has been received. As all the information of any practical value they have it in their power to furnish the society, must be based upon correct analysis, the few observations your committee herewith present, they wish to be considered, therefore, merely as a substitute for a more full report to be rendered hereafter.

The practical relation of science to agriculture, need not be advocated. Were proof required, the rapid advance made in England and on the continent, within a few years past, would furnish sufficient. After several centuries of cultivation, the capabilities of the soil in those countries are, to all appearance, being just developed. Its resources not only sustained but increased to such an extent as to do away with any fear of over-population. Several of the most highly-gifted scientific men of our day have devoted themselves to the investigation of agricultural science, and been rewarded with the most brilliant results, particularly in the branch of organic chemistry. The laboratory of Nature has thus been opened up and entered, her processes been followed out and imitated, the true mode and object of pursuit in all science. There is in fact no pursuit more closely connected with science, more dependant upon it for successful operation and progress than agriculture. There is no pursuit, therefore, which requires an acquaintance with so many different branches of science, or so many of the laws of nature to be understood; for every department in both the organic or inorganic kingdoms, must be consulted in explanation of the growth and development of plants, their successful treatment and culture. It is not asserted that every planter and farmer should be a scientific man; a certain amount of information on scientific subjects is however indispensable. He must know

something of the nature of the plant he cultivates, the treatment of his land in manuring, &c. Neither will it be asserted that scientific theory is infallible or should take the place of practice. They should on the contrary support and confirm each other. Agriculture is and must continue to be in a great measure an experimental science. We can never hope to reach that point, predicted by enthusiasts in the science, when all vegetable products are to be manufactured out of the simple elements without the assistance of Nature in their growth. What experimental science has accomplished in England and Europe can be realised here.

The general theory and practice of agriculture and the experiments made in support and illustration of them as published in numerous works and proceedings of Agricultural Societies at the north, serve as little or no guide to us. Science has done very little as yet to assist the tropical agriculturist. The greater part of the information to be obtained lays scattered through the transactions of the different agricultural societies of the English colonies and possessions in the East and West Indies. Your committee would respectfully and urgently recommend that measures be taken to obtain complete files of such volumes. They probably embody more information, useful to our members than all other agricultural works besides. For several reasons, however, it will be found limited. Science has not been consulted to any extent in the cultivation of tropical products. The want of scientific taste among the planters; the amount of land uncultivated; the natural fertility of the soil; the cheapness of labor, and the non-residence of scientific men at the south are a few of them.

The field as it lies open now is a most inviting one. Are not our fruits, for instance, as susceptible of improvement as those at the north. By a study of their habits, the selection of proper location, varying the mode of culture and also the soil cannot new and valuable varieties be obtained?

The same may be said of all our produce. The competition between slave and free labor consequent on the passage of the English Emancipation Act stimulated the planters of English colonies to attempt in many instances a reduction in the cost of the production of sugar by the introduction of a more perfect system of agriculture. The quality of their labor however failed. In our case the climate is not

warm or enervating ; the native laborer is capable of learning any agricultural operation, under proper discipline. But, unfortunately, our natives hold entire control over their masters. The subject of labor, however, is set apart for the consideration of a separate committee. The observation of your committee has been confined to one island, that of Kauai, on which they submit the following remarks :

Kauai has the reputation of being the oldest member of the family group, of which, however, no very convincing proofs have been advanced. It is true, without dispute, that a longer time has elapsed since volcanic action has taken place, than on either of the islands ; in proof of which the argument usually made use of in regard to its age may be adduced. We may also in addition remark as evidence, the great number of rivers which find their way to the sea. Upon the windward side averaging one per mile, on the leeward, one for every three miles. They are evenly distributed and several of considerable size. The inference to be drawn is, that the decomposition of the rocks must have progressed farther, and the quantity of soil formed greater, so as to cover more evenly the surface and prevent the water from escaping through the veins and caverns, as it must undoubtedly do on the other islands.

There appears to have been on Kauai but one centre of volcanic action, from which all the ridges of hills, with their enclosed valleys and rivers diverge regularly to the sea, with the exception of one or two low irregular spurs. If the accounts of the natives can be relied on, the larger rivers such as Hanalei, Makaweli and Hanapepe, have their source at the same spot, on the ridge called Waialiali at a wet place called the "black waters," from whence within a few feet of each other, they start on their way to the different sides of the Island.

The whole geological formation of the Island is basaltic. Near the sea in several places, the beach sand has become hardened and cemented by the action of the sea water, assisted perhaps by the heat of the underlying lava, so as to admit of being cut and quarried for building purposes, but not to any extent. In several places the basalt has taken a regular columnar structure, the crystals as perfect as those of the far famed Giant's Causeway. In diameter about one foot. The terminal planes are even however, and perpendicular to the axis.

Their regularity in shape had attracted the notice of the natives, as our guide informed us they were the Kapa sticks of their old Gods.

The basalt is usually of light color, yielding readily to disintegration by the action of the atmosphere and moisture. Its constituent parts and their relative quantity we are unable as yet to furnish. With their chemical character you are no doubt acquainted. They contain more of the fertilizing elements of soil than any other class of rock. In fact it would appear as though they were the result of the boiling together, most of the other rock formations, the granitic, syenitic, limestone, sandstone, &c., containing greater or less proportions of all the alkaline salts, more particularly in the form of silicates and nitrates. Their agricultural capabilities depend in a great degree on the quantity of lime they hold.

In caves on different parts of the Island, on which there is an extent of overlying rock, the carbonate of lime is found encrusting the roof to the depth of one or two inches, associated with several varieties of zeolites. On breaking open the harder varieties of the basaltic rocks, it is also found lining the vesicular cavities, together with stilbite, apophyllite, and other varieties of the zeolite family; forming small geodes. From the rapid and luxuriant growth of tobacco, the presence of nitrates, more particularly that of potash, must be inferred. The oxide of Iron is everywhere abundant. It exists in the soil originally as a protoxide, soluble and of course injurious to all vegetable growth. It will be noticed, particularly on our plains, that the soil undergoes a change in color, soon after being turned up, becoming a brighter red, which is occasioned by the absorption of about 9 per cent. of oxygen from the atmosphere, which changes also its properties, being now an peroxide, and insoluble, and thus rendered innocuous. Thorough cultivation, pulverizing the soil well, will therefore obviate any injurious effects from the super-abundance of iron.

The silicates also, which are the source of the most fertile parts of our soil, must have the benefit of thorough cultivation and exposure to the atmosphere, before they become fit for assimilation by the plant. By such treatment they are disposed to combine with the carbonic acid of the atmosphere, forming carbonates, and are thus rendered soluble, with the exception of the silicate of alumina which remains unchanged. On Kauai, this salt is much more abundant than either of the others.

On those parts subject to drought, its value is very great. It not only has a tendency to absorb moisture from the atmosphere, but also appropriates every drop it gets hold of to the best advantage. In the case of occasional showers, it stores away a supply in the sub-soil, which cannot escape until the plant has need of it. During such seasons as the two last, its effects are very perceptible, for without its agency, little or no cane could have survived. On soils where it abounds to the injury of the plant, an application of lime will correct it, in the shape perhaps of beach sand, if most convenient, which is made up of comminuted shells and corals. It will not take proper effect under 3 or 4 years probably, after it is applied.

On the subject of manures no reliable advice can be given, until the deficiencies of the soil or excess of certain parts is known. It is evident however, that on exposed situations, animal or vegetable manure can render but little service. On coffee plantations for instance, where the trees have arrived at a size sufficient to protect and shade the soil, the application of suitable vegetable or animal manures may be advisable, but generally speaking, the fertilizing qualities of animal manure, which consists in its ammonia or nitrogen, will be dissipated by the strong heat of the sun, and the rapid decay of vegetable matter, prevents any part of vegetable manure uniting with the soil. The addition of vegetable matter to our soil, must be therefore very slow even where the ground is heavy.

This statement would hardly seem to agree with the occurrence of what appears to be deposits of vegetable matter on our plains here and there. But it is no doubt the case, that the growth of trees has been greater, covering over more of the Island formerly, than at present. The kukui groves of Huleia, were united at one time with the woods mauka. At Makaweli also, the growth of trees and underbrush extended very nearly to the sea. Now they are confined to the hills, a distance of three miles inland. They were destroyed by fire. The remains of large trees are now to be found charred. In the valleys they have been met with at the depth of six or eight feet below the present surface.

From the shade and shelter of trees, our planters and farmers might derive great assistance, in the growth of all our crops. They deserve more attention than they have heretofore received. Affecting the tem-



perature of the atmosphere in their neighborhood, they favor the deposit of moisture, as well as shelter plants from the drying winds.

On manures in general, your committee would remark, that it would appear as though the want of proper effect in their use, was compensated for in some measure, by the greater richness of the soil in tropical countries, possessing in their volcanic formations all the elements of fertility in abundance.

In conclusion your committee would express their conviction that experimental research, guided by science, is the true basis of improvement in agriculture. They would therefore respectfully recommend, that a standing committee on soils be appointed, whose duty it shall be to report to the Society, a plan of a series of experiments on all our crops and products, adapted to different soils and localities; after passing the consideration of the Society, to be given out to those members for trial, to whom they are now particularly suited. Should they involve any considerable expense, it should be borne by the Society. It should also be the further duty of said committee, to collect the result of such experiments, whether successful or not, and report them in detail to the Society, together with such other information as they consider of value.

All of which is respectfully submitted by your committee.



#### COMMUNICATION UPON THE SUBJECT OF CAUSING THE SUGAR CANE TO BEAR SEED.

*To the Royal Hawaiian Agricultural Society:*

GENTLEMEN,—I feel much honored by having my name enrolled amongst the earliest corresponding members of the Royal Hawaiian Agricultural Society; it is agreeable to me to take my stand in the dawn of knowledge, anywhere. You request from me a communication, if possible, touching tropical agriculture; a subject which—from having, nearly all my life, resided in northern countries—I have not much studied. There is, however, one point which appears to me of some importance, to which I wish to draw your attention; and for the

elucidation of which, your climate is, probably, better suited than any other.

It is the idea of causing the sugar cane to bear seed, that some endeavors may be made to raise better varieties than those now in cultivation.

The state of knowledge, on this subject, at the present time, is as follows:

There are only about from five to seven varieties now in cultivation, in all parts of the world. I will not enumerate them, because there are many doubts respecting their identity. The Tahiti cane seems to be one of the richest, and most productive in juice, but is not well adapted to every country.

Like almost every plant which undergoes the same process, and which, like the sugar cane, has two methods of propagation—seed and offsets—the constant propagation by the latter method has obliterated the faculty of seed. No variety can be originated by offsets, it must be by seed; and as there are varieties, there must once have been seed.

If the arrows of the sugar cane are examined with a lens, the seed will be found dried up, or abortive, incapable of vegetating. There may be two reasons for this—first, the want of pollen, to fructify the seed; and second, the want of the proper materials in the earth, to furnish the ingredients necessary either for the seed or the fruitful pollen.

An attempt has been made to supply the first deficiency, by using the pollen of the Guinea corn and the maize, under the idea that, all being grasses, the pollen of the latter might render the seed fruitful. The attempt, however, as might have been expected, failed; the Guinea corn and the maize being too widely separated in their natures, from the sugar cane, to produce this effect. The only chance of success would have been with the pollen of a grass called *Erianthus*, growing in New Holland and Oceania; or another, *Pleuropilis*, growing in Japan.

As neither of these can be obtained, the second method is the only chance of obtaining seed. I will therefore give my ideas as to how the experiment should be conducted:

A piece of sandy poor soil should be chosen, which should be manured with finely ground bone dust, in small quantity, about 1-20th of

that quantity of salt, and some wood ashes; this should be incorporated into the soil, and, after the plant has grown pretty strong, say about three or four feet high, a slight top dressing of the same (but less salt) should be stirred up into the soil; all the offsets, or suckers, excepting one, should be cut or pinched off. Guano which has been washed with cold water, say one pound left three hours in two quarts of water, the water poured off, the guano dried, and applied to about twenty-five plants, top dressing as before.

It is right to give the reasons on which this mode of proceeding is founded. Phosphate of lime, as well as other phosphates, are an indispensable ingredient both of grass seeds and pollen; this is to be supplied in excess by the bone dust or guano. Salt gradually dissolves the phosphates, so that they can enter into the plant. The wood ashes supply the potash, to dissolve the silica from the sand; as all young grasses require much silica. The reason for the poor soil and the wasted guano is, that it is not desirable to have, in this experiment, a large or luxuriant growth of leaf or stem, such as is produced by rich or ammoniacal manure. The object is to concentrate the juices containing the excess of ingredients of seed and pollen, and not distribute them through a large mass. If a single good seed is produced on a plant, at first, it is enough. Destroying the offsets, which should be removed as early as possible, needs no reason; it is obvious.

Now, the great point is, to produce one, two, or more seeds that will germinate and produce plants, no matter how small or poor these plants may turn out; the object is, to make the cane revert back to the power of producing seeds, which it will soon do if raised from seed. After this, any quantity of seed will be easily obtained, and success, in raising finer varieties, certain, by subsequent proceedings.

One more remark is requisite: disappointment must not be felt, if seeds be not produced the first year, or even the second; in all these experiments patience is required. The double flowers, which were originally obtained from wild single ones, have taken many years of patient perseverance.

The importance of obtaining seed is manifest, from the facts that seedling plants, or varieties, are very frequently better adapted to the climate in which they are raised than any other; and that many years having elapsed since any new varieties of cane have been rai-

sed, the probability is great, that, with the progress now made in agriculture, much better varieties may be obtained than those now cultivated.

With respect, I remain, Your obedient servant,  
JAMES E. TESCHEMAKER.

# **NAMES**

OF MEMBERS OF THE

## **ROYAL HAWAIIAN AGRICULTURAL SOCIETY.**

### **LIFE MEMBERS.**

|                                             |                                              |
|---------------------------------------------|----------------------------------------------|
| Hubertson, Geo. Fred.                       | Pierce, Henry A.                             |
| Janion, Robt. C., act'g Consul<br>of Chile. | Pitman, Benjamin, Vice Consul<br>for Bremen. |
| Kenway, Geo. S.                             | Wood, R. W.                                  |
| Lee, Wm. L.                                 | Wyllie, R. C., H. H. M's Min.                |
| Makee, James                                | of For. Rel.                                 |
| Marshall, J. F. B.                          |                                              |
| Miller, Wm., H. B. M's Consul General.      |                                              |

### **ANNUAL MEMBERS.**

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