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THE
TRANSACTIONS
OF THE
ROYAL HAWAIIAN
AGRICULTURAL SOCIETY :
AT ITS FIRST
ANNUAL MEETING, IN AUGUST, 1851.

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**VOL. I. NO. II.**  
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HONOLULU, H. I.
1851.

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HONOLULU, H. I.
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1851.

PREFACE.

In presenting to the members of the Royal Hawaiian Agricultural Society the Transactions during the first year of its existence, it is due to its members to say, that the First Annual Meeting took place under circumstances of peculiar depression to the agricultural interests of the islands. Under the influence of an active demand, and high prices for the staples of the islands, during the years 1849-50, the hopes of the planters had been raised to a high point, and anticipations for the future, based upon the continuance of those prices and that demand, were of the most brilliant character.

Unfortunately, for a few months before the Annual Meeting, the causes which had operated so favorably upon those interests, ceased to exert their influence. Demand was limited, and prices were not remunerative. The planters, generally, and all that class of agriculturists, not properly called planters, but who depended upon the productions of the soil, in all their variety, felt a degree of solicitude and were so much occupied with their own anxieties that they could not devote the time and attention necessary to drawing up reports, or to preparing contributions for the Exhibition.

It is hoped that these causes will not continue to operate, but that all the committees, officers, and members of the society, will, in future years, make a special effort to contribute; for the information of the society, all the facts, which, although they may appear of trivial importance in themselves, will yet be of value, as the result of actual experience, to those who are still prosecuting their enterprises under the disadvantages of a lack of practical knowledge.

PROCEEDINGS
OF THE
ROYAL AGRICULTURAL SOCIETY.

The society met on Monday, August 11th at 10 o'clock, A. M., in pursuance of adjournment last year ; the President, Hon. WILLIAM L. LEE, in the chair.

After reading the proceedings of the last session of the society in 1850, the president submitted a brief report of the proceedings of the society during the year, which was as follows :

GENTLEMEN :—Agreeably with the ninth article of our constitution, in which it is made my duty on this occasion to render an account of the proceedings of our society for the current year, I beg to submit the following report.

One of the most important subjects brought before the society for its consideration, has been that of labor. Under the present system of agriculture in these islands, there is nothing that offers so great an obstacle to success, as the want of a sufficient number of good, faithful laborers. Every plantation requires from thirty to one hundred men, in constant employment, and the impossibility of obtaining the requisite number, has been to many, a serious injury, to others, almost absolute ruin.

To remedy this evil, to a certain extent, the committee on labor, consisting of Messrs. R. W. Wood, J. F. B. Marshall, and Stephen Reynolds, immediately after the last meeting, entered into a contract for the hiring of two hundred Chinese coolies to be delivered in Honolulu, and advanced between nine and ten thousand dollars to ensure their speedy and safe transportation. Unfortunately, the coolies have not arrived, and the experiment of introducing laborers from China, yet

remains to be tested. More labor we must have ; and it is clear that we cannot depend upon the islands for an increase. It only remains then, for us to look abroad ; and I am happy to inform you that a new enterprise to procure coolies is under way, which it is confidently believed will not, like the first, prove a failure. Another branch of this subject of great importance, is the *economy* of labor. This must be accomplished mainly by the introduction of new and improved implements and machines—new modes of cultivation, and a proper and systematic division of our labor. The division of labor in all the arts is found to be of the greatest value, and the same principle holds good in respect to agriculture. I have no doubt that by a judicious division of labor ; by the assigning of certain kinds of work to different classes of operatives, our sugar and coffee planters would save one fifth of all their expenses. It is painful to observe throughout the islands, the general want of *system* in all our agricultural labors. Our operations are irregular ; our implements in many respects unsuitable ; and our machinery, especially our sugar mills, rude and insufficient. In this respect we have not kept pace with our cultivation, and at the present time, I am told there are hundreds of acres of cane going to decay for the want of sufficient machinery to grind and manufacture it into sugar. This is a sad spectacle, and calls for prompt reform. Our little wooden mills—what are they ? A constant aggravation—a screeching nuisance. In many respects some of our boiling houses are but little better. While prices were high, our planters were enabled to make money, notwithstanding these rude structures ; but they will not meet the demands of the future. It will be answered “ We have not the capital to remedy this evil.” This is true, and I deeply mourn the fact ; but nevertheless, the deficiency must be supplied in some way, either by increased industry and economy, or by importation from abroad, else the cultivation of our fields will be in vain. The whole subject of the economy of labor, by the improvements of our machinery, our implements, and otherwise, has occupied the attention of the Board of Managers to some extent, and yet little advance has been made in this line, beyond the exertions of individual members of the society. Horses and mules, ploughs and cultivators have, to a considerable extent, taken the place of the native and his hoe, and it is hoped that this reform will speedily become more general.

The introduction of new seeds and plants, and of extended information respecting agriculture, has received a large share of consideration. Several boxes of seeds have been received and gratuitously distributed, and the amount of two hundred and seventy dollars has been sent abroad for agricultural books and periodicals. Some of these works are on their way, while others, of much value, have already arrived, and are now in the hands of our corresponding secretary.

One of the most important interests under the care of the society, is that of grazing. Our high lands are peculiarly well adapted to pasturage ; and I doubt if the graziers in any part of the world have been more successful than in these islands. With no winters to contend against, their labors are comparatively light—the increase of their flocks certain and rapid—and the owner of a small herd is sure, with a reasonable degree of care and attention, to become wealthy in a few years. Beyond question the raising of cattle, has, thus far, been the most successful pursuit connected with the soil, yet undertaken in the islands. The several members of our committees on neat cattle, horses, sheep and swine, have made creditable exertions to improve our stock, by the purchase of animals imported from the British Colonies and the United States, and, I trust, our exhibition of animals will show, with some success. It is a source of great pleasure to me to be able to say, that some of our best graziers have begun to introduce the English and American system of penning and domesticating our cattle, and training them for labor and the dairy. This is the commencement of a most desirable reform, and I hope ere many years, to witness the entire abolition of the brutal old Spanish system, of hunting our cattle to death with the horse and lasso. Another great evil, in connection with this subject, both as it regards graziers and planters, is the overstocking of our pastures, and the almost universal want of fences. Instead of keeping our herds reduced to a reasonable number, they are in some instances allowed to increase to an alarming extent, and thousands of half-starved creatures are seen ranging over the country destroying everything within their reach. All interests suffer from this evil, and he who shall discover a remedy by introducing some cheap and durable fence, or otherwise, will prove a public benefactor.

The Legislature has responded to our call for assistance, by granting us a portion of the fort lands in the vicinity of Honolulu, not to exceed

fifty acres, for a public nursery for plants ; and by appropriating a sum for premiums equal to that raised by the society ; provided, however, that not more than five hundred dollars shall be drawn from the Treasury for this purpose in any one year. This liberality on the part of the government, deserves our thanks, and we must not suffer these benefits to go unimproved. A public nursery, where new and valuable plants could be raised and sold, or gratuitously distributed, would be a great blessing to this country ; and I doubt not, but we shall be able to procure the services of some person to undertake the enterprise, by giving him the use and profits of fifty acres of land in the immediate vicinity of our great market.

The donation for premiums, is as politic as it is liberal ; for by encouraging agriculture and increasing the products of the soil, the government swells its revenues, more than it adds to the stores of the cultivator. What is appropriated for premiums as a means of stimulating the exertions of our agriculturists and graziers, is but money loaned at good interest, and on the best of security. In England, Scotland, and the United States, the distribution of premiums has been the means of great reforms in the modes of cultivation ; of vast improvement in stock, and in the line of new implements and labor-saving machines, it has almost worked miracles. However, premiums must be distributed with judgment or they fail of their object. I feel confident that five hundred or a thousand dollars per annum, judiciously expended in this way by our society would do much to rouse and stimulate both natives and foreigners to increased exertion.

The society has not been idle on the subject of improving our public roads, inter-island navigation, and harbors. The members of the committee having this subject in charge, have exerted themselves in a most laudable manner in procuring appropriations for the improvement of our highways, and in diffusing useful knowledge relating to this matter. The effect of their labors is beginning to be felt ; and as the worthy chairman of this committee has recently received the appointment of Superintendent of the Bureau of Internal Improvements, it may be expected that the public channels, and facilities for transportation will be multiplied, and greatly improved. There is a fair prospect of our soon having steamers plying between the islands, and it is hoped that this event will prove a new spur to agriculture, if not a new era

in our history. No fact is better established, than that the nearer you carry a market to a man's door, by rapid communication, or other means, the more vigorously he will exert himself to increase his products.

I hope, in the brief survey I have given, of some of the proceedings of the society for the current year, there will be found nothing to discourage us in our labors for the year to come. Our beginning has been an auspicious one, and let us strive to make our future support the promise of the past. That the society if well sustained, is calculated to enrich the country, and add to the comforts and blessings of its inhabitants, I think no one will deny. It is worthy then of our best exertions. The paucity of our numbers, is no reason why we should despond. The fewer we are, the more strenuous should be our efforts. To support any association in these islands is well known to be no easy matter. Men give their money, for private or public good with a generosity I have never seen equalled ; but, absorbed in the daily pursuits of their business, they will not freely grant the aid of their thoughts, their counsel and their time. Some are opposed to the very name of association, and will not support one in any form. Others again are indifferent to all societies which do not promise a direct and present gain ; while another class, composed for the most part of strong-minded, sensible, and useful men, say, "away with your theories, your book-knowledge, and your preaching, and give us more experience and practice." With these difficulties to encounter, it is no light task to keep up, and advance with heart and spirit. If we would flourish, we must have the individual exertions of all our members, and the countenance of every class, the farmer, the mechanic, and the merchant. The present time is one of distress among our planters, and the trouble and expense of visiting Honolulu, superadded to their embarrassments, will no doubt prove a temporary obstacle to our progress. We are assured, however, that though some may not be able to attend our meetings, all are with us in heart. If ever we needed to come together and unite our efforts for the promotion of our cause, and to extend our aid, sympathy and support to each other, it is now. That our planters will eventually flourish I consider certain ; and the present misfortunes should, by no means, be charged exclusively to the account of agriculture. Many of our best planters flushed with

the success which formerly attended shipments to California, have neglected their plantations, and launched upon the untried and fickle sea of commerce. The former high prices of our products induced a spirit of wild speculation, which has been attended with sad disappointment. Let us profit by the past—anchor ourselves at home; and leave commerce to our merchants. California, the great market of the Islands, is now paralyzed; and the immense importation of sugar and other products from Manila, China, and elsewhere, has reduced the prices of most articles of our produce below their prime cost. But this state of affairs cannot last long, and let us prepare for the better times which are surely coming. With our genial climate and virgin soil, we can successfully compete with any part of the world in sugar and coffee. I am told by those that speak from experience, that we can produce better sugars than any made in Manila, at a price ranging from two to three cents per pound. If this be so, where is the obstacle to our prosperity? Our agriculture is yet in its infancy. Almost every enterprise, calling for labor and capital, especially when commenced in a country so new and remote, is attended with difficulty, and loss; and often indeed does the hard-working pioneer but toil and plant, that those who come after him may reap. We have gained much light from the experience of those who have gone before us, but still are we not, to some extent, spending our treasure and our strength, delving where we cannot clearly see? Though this is a motive for increased exertion, let it not prove a source of discouragement. Let us as members of this society bend our whole strength to direct our energies aright—to assist the hard toiling tillers of the soil—to insure them the fruit of their labors; and to promote the wealth, prosperity, and happiness of the nation.

On motion of Stephen Reynolds, it was voted:—That the thanks of this meeting be extended to the President for his able report, and it be printed with the transactions of the society.

The Treasurer submitted his report; which was accepted, and is as follows:

OF THE TREASURER OF THE ROYAL HAWAIIAN AGRICULTURAL SOCIETY.

Honolulu, August 11, 1851.

To the Hon. Wm. L. Lee,

President of the R. H. A. S.

SIR,—I have the honor to represent to you that since the formation of this society up to the present time, the receipts and disbursements have been as follows, viz :—

RECEIPTS.

Cash for 117 Certificates of Annual Membership,	\$585 00
“ “ 13 “ “ Life Membership,	650 00
Amount of Bill for printing and binding 750 copies of the first number of the Society's Transactions, assumed by the Hawaiian Government.	209 75
	\$1444 75

DISBURSEMENTS.

Paid Bill for Letter-press and Stationery,	\$ 43 00
“ “ for printing Circulars - - -	4 00
“ to E. P. Bond, Esq., to be sent to Great Britain, the United States, and China, and invested in Publications, Books, and Silver Cups for Premiums.	395 00
Invested in Bond and Mortgage on acc't. of the Society. - - -	500 00
Paid for collecting—and loss on money	1 38
Amount of Polynesian office's Bill for Printing and Binding, as above - -	209 75
Balance Cash on hand - - -	291 62
	\$1444 75

Mr. S. N. Castle, the former treasurer, resigned his office on the 31st of May on account of his intended visit to the United States, and delivered up the books, papers, and cash in his hands, and rendered an account current with the society, which is hereto annexed. I had the honor to be appointed treasurer by the Board of Managers, on the 30th of June last, and received the balance of cash (\$291 62) named above, which is now in my possession. Respectfully submitted by

Your ob't servant,

C. R. BISHOP, Treasurer.

The society then proceeded to the election by ballot, of a committee of five to take charge of the exhibition of productions, stock, &c., and to award the premiums to the successful competitors. Messrs. Marshall, Torbert, Miner, Rice, and Meek were elected said committee.

On motion of J. F. B. Marshall—Resolved, That the thanks of this society be tendered George Frederick Dickson, of London, and George W. Bond, of Boston, for their exertions in behalf of the society ; and that George W. Bond be constituted a corresponding member of the society.

Resolved, That the society meet on Tuesday, at 12. m., to examine specimens of products and stock.

On motion—The society adjourned to meet at half-past 7 o'clock p. m., at the chapel, to hear the Annual Address of Hon. L. Severance.

Meeting at the the Chapel.—A large audience, in addition to the members of the society, met at the Chapel. Hon. L. Severance being introduced by the President, delivered an able and eloquent address.

On motion of Mr. Castle, the thanks of the society were tendered Mr. Severance for his able address, and a copy of the same requested for publication.

On motion, adjourned to meet at 12 m., to-morrow.

At 12 o'clock on Tuesday a large number of ladies and gentlemen assembled at Mauna Kilika, to inspect the articles presented for exhibition ; and although meagre compared with similar exhibitions in more advanced countries, still we are far from being disposed to undervalue the "day of small things." The *quality* of the stock, vegetables and staples exhibited, is a gratifying indication of what a more full development will accomplish. Wheat, oats, sweet and Irish potatoes, corn, sugar cane, coffee, cocoa, onions, carrots, beets, parsley, radishes, kalo, peas, turnips, grapes, figs, an apple, a peach, pomegranates, water melons, granadilla fruit, arrow-root, butter, eggs, sugar, woolen cloth, syrup, leather, boots and shoes were exhibited, and among the stock, horses, cattle, sheep, and monstrous swine came in for a full share of attention. A few beautiful boquets also graced the collection. While we do not attempt to designate every article of interest which we noticed, we cannot refrain from specifying the wheat, corn, Turkey figs, pomegranates, carrots, radishes, peas, turnips, and Irish potatoes, as unusually fine specimens.

REPORT OF THE COMMITTEE TO AWARD PREMIUMS.

Your committee submit their report with much diffidence, and ask for it your kind indulgence. They have labored under embarrassments, which will not, we trust, exist another year, from the want of proper prizes to distribute, and proper instructions as to the manner of their distribution. But a small portion of the amount sent to China to be invested in plate, medals, &c., for prizes, was so invested, and the books which were ordered for premiums have not reached us. We have used our best judgment in the distribution of these prizes which we have, and in regard to the other premiums, we desire instructions from you. We would advise, however, that a money premium be named, which may be given to the parties, to whom they are awarded, or if such parties prefer, that suitable books, or medals, be ordered in their stead.

The display of stock, produce, flowers, &c., though small, was as large as could be expected perhaps, at this period of general depression. We were glad to see the general interest which seemed to be taken in the exhibition, meagre as it was, by all classes, and we confidently believe that at our next annual meeting, a very creditable and full display will be made.

The display of neat cattle was very small, but of choice stock. No working oxen or cows were exhibited, though we have seen some on the islands that will compare favorably with those of any other country. Some fine geldings were entered, and several stallions and mares, which two latter, however, being of foreign importation, were not entitled to premiums.

Some fine sheep and swine were exhibited. But very few fowls, which is somewhat remarkable, as some fine varieties of the Shanghae, Malay and native breeds could have been shown, and this branch of stock is of no small importance in the supplies furnished to vessels trading at these islands. No turkeys or ducks were exhibited.

Good specimens of sugar and coffee were shown.

The show of vegetables and fruits was small and might have been much greater from Honolulu alone. Another year will, we trust, exhibit a great improvement in these branches, as well as in the display of flowers, of which, however, a few choice specimens were sent in by the ladies. Some excellent specimens of boots and shoes made from

native leather, were exhibited, and some sole leather, in which we noticed that much injury was done to the leather by the barbarous practice of branding with huge and clumsy brands, which burn deep into the hide and injure it for tanning.

Some woolen cloth of good texture was exhibited.

The following is a list of premiums awarded by your committee :

STOCK.

1. For the best Bull, a silver cup, to John Meek.
2. For the best Steer, for slaughtering, a silver medal to John Meek.
3. For the best Steer, for slaughtering, second premium, a silver medal to Paul Manini.
4. For the best Gelding, a silver cup to Thos. Cummings.
5. For the best Gelding, second premium, \$5, to John Meek.
6. For the best breeding Mare, a silver medal, to Thomas Cummings.
7. For the best Sheep, a silver cup to James I. Dowsett.
8. For the best Sheep, second premium, \$3 to David Adams.
9. For the best Sow, first premium, book, Colman's Agriculture, to John Meek.
10. For the best Sow, second premium, \$3, to A. Paki.
11. For the best Cock and Hen, to P. J. Gulick, \$5.
12. Best Geese, W. C. Parke, \$3.

SUGAR.

13. For the best cwt. of Sugar, first premium, a silver cup, to A. H. Spencer.
14. For the best cwt. of Sugar, second premium, \$5, to L. L. Torbert.
15. For the most productive acre of Sugar Cane, as per certificates accompanying, a silver cup, to L. L. Torbert.
16. For best Sugar Cane, 15 sticks from one hill, \$3, to G. A. Lathrop.
17. For largest and best varieties of Cane, \$5, to L. L. Torbert.
18. For the best Syrup, a silver medal, to L. L. Torbert.

COFFEE.

19. For best Coffee, in parchment, a silver cup, to Benjamin Pitman.

VEGETABLES AND FRUITS.

20. For the best Irish potatoes, L. L. Torbert, \$5.
 21. For the best Sweet potatoes, Benj. Pitman, \$5.
 22. For the best Kalo, a silver medal to Z. Kaauwai.
 23. For the best assortment of garden vegetables and fruits, first premium, tomatoes, carrots, radishes, beets, and musk melons, a silver medal, to J. Montgomery.
 24. For the best assortment of garden vegetables, second premium, a diploma, turnips, green peas, and cucumbers, to James Makee.
 25. For the best specimens of pine apples, B. W. Parker, \$3.
 26. For the best assortment of mangoes, a diploma, to Paul Manini.
 27. For the best granadillas and water melons, Mrs. John Paty, \$2.
 28. For the best granadillas and water lemons, second premium, diploma, Mrs. A. B. Bates.
 29. For the best pomegranates, diploma, William Miller, Esq.
 30. For the best peach, on a tree 2 years and 4 months old, Diploma, R. C. Janion.
 31. For the best bananas, first premium, L. L. Torbert, \$3.
 32. For the best bananas, second premium, J. Kaauwai, diploma.
 33. Figs, fresh A. Paki, \$3.
 34. Figs, dried, J. S. Emerson, \$3.
 35. Corn, J. S. Emerson, \$5.
 36. Onions, B. Pitman, \$4.
 37. Cocoa, P. Manini, \$4.
 37. Butter, first premium, Miss M. M. Smith, \$5.
 38. Butter, second premium, Thos. Brown, \$3.
 39. Boots, shoes, and leather, a silver medal, J. H. Wood.
 40. 20 yds. woolen cloth, a silver medal. The sheep raised, the wool shorn and woven, by Jos. Gardener, Kauai.
 41. Flowers, first premium, Mrs. J. Makee, \$4.
 42. Flowers, second premium, Mrs. Penhallow, diploma.
 43. Arrow root, B. Pitman, a silver medal.
 44. Wheat, best bushel, J. S. Green, silver medal.
 45. Oats, best bushel, J. S. Green, 4\$.
 46. Eggs, R. C. Janion, first premium, \$4.
 47. Eggs, Mrs. Paty, second premium, diploma.
- Samples of sugar from Koloa, were exhibited, also some made by.

Captain Perry at Maui, in an old try-pot, both of fair quality. Some fine figs of the Turkey variety, from a cutting planted only last February, and had borne this year fifteen figs, was exhibited by B. F. Snow, Esq., also by R. C. Janion, Esq., of the same variety, 9 months old, and but 12 inches high, which had 25 figs upon it. An apple from a tree 4 years old, was exhibited by A. Paki, Esq.

Choice varieties of flowers by Mrs. G. P. Judd, R. C. Janion, Esq. and Miss Emma Smith.

Your committee hope that more attention will be paid next year to the exhibition of Agricultural implements. In this branch our merchants would have a good opportunity to display their stock, and the planter would know where to look for those implements of which he was in need. The only articles in this department were, a patent thermometer churn, and Emery's patent seed planter, which were exhibited by W. Chamberlain.

The number and value of premiums distributed is large compared with the means of the society. Your committee would however recommend, that if our means will allow, a still larger amount be expended in premiums for next year. They believe that by the competition thus awakened, the members will be stimulated to greater exertions, the interest in the prosperity of the society much increased, and great improvements shown in all the branches of agriculture which it is the design of this association to foster.

All which is respectfully submitted.

J. F. B. MARSHALL, Chairman.

L. L. TORBERT.

E. MINER.

JOHN MEEK.

WM. H. RICE.

EVENING SESSION, AUG. 13.—The secretary being absent, Mr. E. O. Hall was chosen secretary, pro. tem.

The committee on agricultural implements made no report, but in lieu thereof, read several letters, in answer to a circular issued by them to planters and others.

The committee on seasons reported, through their chairman, J. S. Emerson.

An interesting communication was read from J. H. Wood, on the subject of domestic tanning, leather, &c.

A communication was read by Mr. L. L. Torbert, on the subject of sugar, cane-planting, &c., also giving some very encouraging statistics on the subject of the expense and proceeds of an acre of sugar-cane, grown and manufactured on his plantation.

The reports of standing committees having been completed, the society proceeded to the election of officers for the ensuing year, when the following were duly elected :

HON. WM. L. LEE :—*President.*

G. S. KENWAY, Hawaii,

BEN. PITMAN, “

L. L. TORBERT, Maui,

S. G. DWIGHT, Molokai,

S. REYNOLDS, Oahu,

J. F. B. MARSHALL, Kauai,

} *Vice Presidents.*

CHAS. R. BISHOP, *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.*

Adjourned to Thursday morning, at half-past 9 o'clock.

Thursday, August 14, 1851.

The society met at half past nine, the President in the chair.

The committee on poultry submitted their report, through their chairman, Mr. E. H. Rogers.

On motion of R. H. Bowlin it was resolved that the standing committees for the ensuing year be appointed by the President ; whereupon the following were appointed as committees for the year to report at the next annual meeting.

ON POULTRY.—R. C. Janion, *Chairman*, E. H. Rogers, J. Montgomery.

TO COLLECT STATISTICS.—R. C. Wyllie, *Chairman*, B. Pitman,

G. S. Kenway, Preston Cumings, L. L. Torbert, J. T. Gower, C. R. Bishop, F. Wundenburg, George Gilmore.

ON HORTICULTURE.—A. B. Bates, *Chairman*, H. M. Whitney, Thomas Brown, E. H. Rogers, John Montgomery.

ON SUGAR AND ITS MANUFACTURE.—L. L. Torbert, *Chairman*, R. W. Wood, G. A. Lathrop, J. F. B. Marshall, J. T. Gower.

ON COFFEE.—G. Rhodes, *Chairman*, T. C. B. Rooke, B. Pitman, P. Cumings, A. Archer.

ON LABOR.—S. Reynolds, *Chairman*, J. F. B. Marshall, R. W. Wood, R. J. Hollingsworth.

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

ON WORMS AND OTHER INJURIOUS VERMIN.—W. Newcomb, *Chairman*, J. T. Gower, J. G. Sawkins, W. H. Pease.

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

ON AGRICULTURAL IMPLEMENTS.—R. C. Janion, *Chairman*, R. Armstrong, C. W. Vincent, W. H. Rice, W. Chamberlain.

ON NEAT CATTLE.—John Meek, *Chairman*, C. G. Hopkins, H. Sea, Robert Moffat.

ON HORSES.—T. Cummings, *Chairman*, S. Thompson, John Meek, John O. Dominis.

ON SHEEP.—G. S. Kenway, *Chairman*, T. Cummings, J. I. Dowsett.

ON SWINE.—P. J. Gulick, *Chairman*, A. Paki, Z. Kaauwai.

ON SEASONS.—J. S. Green, *Chairman*, J. S. Emerson, E. Bond, H. R. Hitchcock, J. W. Smith.

ON FENCES.—R. J. Hollingsworth, *Chairman*, E. Johnson, H. A. Widemann, R. G. Davis.

ON TREES, GRAPES AND CURING HAY.—G. P. Judd, *Chairman*, D. Duncan, E. Bailey, W. H. Pease, H. M. Whitney.

ON GARDEN SEEDS AND FRUITS.—R. H. Bowlin, *Chairman*, J. Montgomery, B. F. Snow.

ON FOOD FOR LABORERS.—J. T. Gower, *Chairman*, A. H. Spencer, S. Burbank.

On motion of Mr. Marshall,—Resolved, That a committee be appointed to institute experiments with a view to obtain plants from the

seed of the sugar cane, and to procure information on this subject.

The committee appointed were, E. P. Bond, *Chairman*, D. Baldwin, G. A. Lathrop, B. Pitman.

Resolved, That a committee be appointed to procure the HONEY BEE from Australia, Central America, or Chile, who are authorized to incur the necessary expense. R. C. Janion, *Chairman*, Baron de Thierry, J. Montgomery, were appointed.

Resolved, That a committee be appointed to procure a variety of INSECTIVEROUS BIRDS, and they are authorized to incur the necessary expense, L. Severance, *Chairman*, W. Newcomb, A. B. Bates, D. McTavish, were appointed.

Resolved, That a committee be appointed to introduce new species of FISH at their discretion, R. C. Janion, *Chairman*, W. A. Howard, D. McTavish, were appointed.

Resolved, That a committee be appointed on the subject of LEATHER, TANNING, &c. J. Hardy, *Chairman*, J. H. Wood, A. H. Spencer, Wm. French, were appointed.

Resolved, That a committee be appointed on MANUFACTURES. Mr. Weston, *Chairman*, J. H. Wood, J. F. B. Marshall, were appointed.

Resolved, That a committee be appointed on Wheat, Corn, Oats, and other grains with instructions to inquire into the adaptedness of our soil for such grains. J. S. Emerson, *chairman*, J. S. Green, J. T. Gower, T. E. Taylor, Wm. H. Rice, were appointed.

On motion of Mr. Wyllie, Resolved, that a committee be appointed to inquire into the subject of CAPITAL, and in regard to the establishment of a bank of discount and deposit, to report next year. R. C. Wyllie, *chairman*, A. B. Bates, James Makee, L. Severance, S. N. Castle, were appointed.

A communication was read by Mr. Hollingsworth, on the subject of labor, and a copy left for publication in the Transactions.

Mr. R. H. Bowlin introduced the following Preamble and Resolution, which was seconded by Mr. Wyllie, and made the order of the day, after the current business of the Society had been transacted.

Whereas, our planters are suffering, and our sugar plantations languishing from the depressed state of the sugar market both here and on the coast of California, and Oregon, and

Whereas, under the present high prices of labor on these islands,

and the imperfect means of manufacturing sugar, our planters find it difficult to compete with the cheap sugars of Manila and China, and

Whereas, a large per centage of the raw material on all the sugar plantations is thrown away and wasted, because the planter is prohibited by law from manufacturing it into the only product it is susceptible of being converted into, for purposes of commerce ; therefore be it

Resolved, That this society recommend to the next Legislature the passage of a law permitting the planter to manufacture his bagasse, skimmings and refuse sugars into spirits, surrounded by such restrictions and safe-guards as shall prevent the consumption of any portion of the same on this group.

Adjourned to 3 o'clock, P. M.

Afternoon session, August 14th.—Met according to adjournment.

On motion of Mr. Andrews—Resolved, That any person who shall introduce into the islands any new plant, shrub, or tree, beneficial to the country, is invited to report such introduction to the secretary, who shall record the name of such individual in the annals, with the date of such introduction.

Resolved that a committee of three be appointed on the subject of BUTTER AND CHEESE. B. W. Parker, Chairman, J. P. Parker, Thomas Brown, were appointed.

Resolved that a committee of three be appointed on the VINE AND FIG, with special reference to their preservation for export. E. Bailey, chairman, T. E. Taylor, G. B. Rowell, were appointed.

Resolved, That it shall be the duty of the several committees to communicate to the chairman of such committee his individual report on the subject for which such committee was appointed, at least one month before the annual meeting of the society.

Resolved, that a committee be appointed on PREMIUMS for the next year, whose duty it shall also be to order and distribute the medals to be given in place of the money premiums awarded this year, and that the committee shall specify the particular premiums for particular articles. J. G. Sawkins, chairman, James Makee, A. B. Bates, G. A. Lathrop, H. M. Whitney, were appointed.

Resolved, That the Board of Managers be empowered to locate and manage the lands granted by act of Legislature to the Royal Hawaiian

Agricultural Society, according to their best judgment and discretion.

Resolved, That when this society adjourn, it adjourn to meet on the first Tuesday in June, 1852.

Adjourned to Friday morning, at 9½ o'clock.

Friday morning, August 15th.

The committee on NEAT CATTLE made their report, which was read and accepted.

Dr. John Rae delivered a lecture on Geology before the society. Thereupon, Resolved, That the thanks of this society be tendered to Dr. Rae, for his lecture before them on the subject of Geology.

The society proceeded, (S. Reynolds, Esq. in the chair), to the consideration of Mr. Bowlin's preamble and resolution, on the subject of allowing the distillation of spirits by the sugar planters of the islands. A lengthened and animated discussion ensued, in which Messrs. Bowlin, Sawkins, and Dr. Newcomb advocated the passage of the resolution, and Messrs. Lee, Clark, Castle, Gulick, and Taylor, opposed it. The subject was still under discussion when the society adjourned to 3 o'clock, P. M.

Afternoon session, August 15th. Met according to adjournment.

The discussion of Mr. Bowlin's resolution was resumed and advocated by Messrs. Sawkins, C. C. Harris, and Bowlin, and opposed by Messrs. Castle, Lee, Severance, Gower and Taylor. The question was taken upon the resolution, and lost by a large majority. This discussion was conducted in the most courteous manner; and although a question of vital importance, and one so regarded by all who took part in its discussion, the calm and deliberate manner in which it was handled, was highly creditable to those who spoke.

A communication was read by Mr. Sawkins, on the subject of trees, fences, salt and labor, and a copy left for publication in the transactions.

Resolved, That a committee be appointed on the subject of SALT and the PEARL OYSTER. J. G. Sawkins, Chairman, C. W. Vincent, W. Newcomb were appointed.

Resolved, That a committee on printing be appointed. E. O. Hall chairman, J. Montgomery, E. H. Rogers, were appointed.

Resolved, That the Treasurer be authorized to pay Dr. John Rae

the sum of \$30 for his lectures on Geology delivered before this society.

On motion, Voted to adjourn to the first Tuesday in June, 1852.

ADDRESS

Delivered by HON. LUTHER SEVERANCE.

Doubtless I ought to apologise for my temerity in consenting to deliver the annual address, for this year, before the Royal Hawaiian Agricultural Society. Almost any one else, of your members, may be presumed to have more knowledge of agriculture, generally, and much more of that which is applicable to these islands. What I may say, therefore, you will consider as evidence of my desire to promote the great object you have in view, rather than as a valuable contribution to that end.

I have derived much information from the volume published last year, by the society. It is seldom, I think, that any similar institution has, any where, been commenced with more flattering auspices, or produced in the outset so many judicious and able essays. I trust those gentlemen who contributed them, however, will not think their duty has all been performed, but will continue to give the society, annually if not oftener, the result of their observations, experiments, and reflections.

Fortunately the most enlightened nations have at last so far advanced in civilization that they have begun to appreciate the dignity and importance of agriculture, and to perceive that no branch of science affords a wider field for human research, or one in which patient and scientific investigation may be rewarded with greater benefits to mankind.

From time immemorial the best energies of the race have been worse

than wasted in wars. The road to Fame has lain through sacked and ruined cities, and harvests trampled under foot by contending armies. The poets and historians of antiquity tell us of the heroes who figured in the work of human slaughter, and the orators whose eloquence aroused the multitude to arms ; but they tell us little or nothing of the men who made improvements in tillage, or of inventors in the mechanic arts. They tell us of Isthmian and Olympic games, and Amphyctionic councils, but they tell us little of inventors and nothing of agricultural societies. The most famous of the former, (Archimedes), attracted attention chiefly by his machinery used in the defense of the city of Syracuse, besieged by the Romans. If he invented any labor-saving machinery in tillage, the historians of his time have not deigned to mention it.

Agriculture and the mechanic arts were abandoned to slaves and menials, throughout the long career of Greek and Roman greatness, as they were generally in countries more barbarous, or less enlightened. And this state of things continued throughout Europe during the middle ages ; and indeed up to this time, the peasantry of some of the countries of Europe are still in complete vassalage, and in others they are practically so to a great extent. Hence there could be no other than a very imperfect cultivation of the soil. Under the feudal system the peasant, who did not own the land he cultivated, would of course, do little to enrich and embellish it, if he had the requisite taste ; and the owner who was generally a "Baron," or "Military Chieftain," could not spare the money from his coffers to fertilize and adorn fields which might be devastated by his enemy, nor lay up stores of grain which might be carried off by victorious marauders. Hence between the results of bad tillage, and the desolations of war, Famine appeared frequently, and Pestilence followed in her ghastly train, to sweep off those whom the sword had spared. Population increased slowly, and sometimes rapidly decreased in places afflicted with more than usual severity. The very slow aggregate increase in all Europe for a thousand years is in striking contrast with the increase in western Europe, and especially in the United States, within the last half century, though this period has not been free from wars. In the last sixty years, from 1790 to 1850, the U. S. increased from less than four millions to twenty three millions. There is nothing like this in Europe, and never has

been ; indeed a part of this American increase is by emigration from Europe ; and yet the very countries from which there has been the greatest emigration, have increased their population, in the last half century, out of all proportion with previous times. The population of Great Britain and Ireland was in

	1700.	1801.	1851.
England and Wales,	5,000,000	8,870,000	18,000,000
Scotland,	1,000,000	1,560,000	2,870,000
Ireland,	2,000,000	5,000,000	8,130,000
	8,000,000	15,430,000	29,000,000

Thus it will be seen that notwithstanding the great emigration from England, Scotland and Ireland, to America, Australia, and elsewhere during the last half century, (much greater than ever before,) the increase has been as great in the last half century as in a whole century before, and greater no doubt than in any previous century, though we have not the statistics for an exact comparison.

Increase of population is not an exact indication of comfortable living, but it is better than any other for the statistics. Such increase may be retarded by luxurious excess, and licentious indulgence, as well as by scanty and bad fare, and poor lodgings ; but it is in most countries the rich few, who are the sufferers by excess, while it is the impoverished many who suffer by famine. We hear of great sufferings, severe labor, and scanty pay in British collieries, mines and manufactories, and even in agricultural districts, and of miserable poverty and destitution in Ireland ; yet the great increase in the last half century shows that there must be better cultivation and more domestic comfort than in previous times. In Walsh's journey from Constantinople to England, in 1820 by way of the Danube, he says it was not until he reached a town in Transylvania, that he found any potatoes. He found the peasantry of Moldavia, Wallachia and Croatia clothed in sheepskins in summer, and living in miserable hovels, which scarcely sheltered them from the weather. They were supplied with few vegetables of any kind but living upon coarse black bread, and the milk of their flocks and herds. Their predecessors, the Dacian hordes, who over-ran Rome, under Attila, probably lived no better, if not much worse, a thousand years ago, and their agriculture of course

corresponded with their condition. If they had anything like a plough, it was doubtless a very clumsy contrivance, and all their agricultural tools were of similar utility. There has been a striking improvement in agricultural tools in our own times, though less than in spinning and weaving. Could old Cincinnatus rise from his grave and see one of the most approved ploughs, of the present day, he might be tempted to use it all the time, and would perhaps, hardly be satisfied with the limited extent of his farm of four acres. It would be interesting to know what sort of a plough it was, to which the prophet Elisha had hitched his twelve yoke of oxen, when he was called from his laborious vocation, to receive the mantle of Elijah. Either the cattle must have been very small, or the plough a poor one. It could hardly have been more cumbrous, or inefficient than that which is used in the same country at the present day, so little progress has been made in any of the arts, and especially in tillage, in that part of the world.

Among the inventions of modern times is one which has shortened human life, and caused much misery. It is the art of distilling alcohol ; but this has been far more than balanced by a better knowledge of medicine and surgery ; better houses to live in ; better clothing ; a greater variety, and greater abundance of food, animal and vegetable particularly of the latter ; for the last century has brought into use a great number of vegetables, not before supposed to be edible, as well as great improvements in modes of cookery, all conducing to human health and comfort. In London, according to Macaulay, the mortality in 1685, was one in twenty-three ; now it is one in forty. This results from greater cleanliness, better lodgings, better food, and a greater variety of it, otherwise the great increase of the city would only increase the mortality. The multiplication of varieties of vegetable food, not only conduces to health, but it is a security against famine ; for when one kind of crop fails, another may be abundant. A local failure, too, may be supplied from a distance of hundreds or thousands of miles, by means of ships, steam-boats, and rail-road cars.

Scarcely any plant is found growing in perfection in its natural state. The fair large apple of our temperate climates, came from the miserable, sour, little crab-apple. The cereal grains were doubtless very inferior, when they struggled with other grasses and useless weeds for existence, or were overshadowed by tangled forests. There may still

be some, as well as edible roots and fruits, which have not yet been discovered in any part of the world, but which might be improved and made of great value. America gave to the eastern hemisphere, maize, tobacco, the potatoe, the pine-apple, the turkey, and more lately the alpaca, together with innumerable flowering plants as well as other vegetables and animals of less economical importance, and has received in return, wheat, rye, oats, barley, turnips, beets, carrots, cotton, hemp, sugar-cane, coffee, the apple, pear, peach, and a great variety of other fruits, roots and herbs ; the horse, the ox, the goat, the sheep, the ass, the swine, the honey bee, and last but not least, the white race of mankind, whose busy improving hand is seen on many parts of the western continent, and even in these remote islands. It is the laudable object of your society to make the work of that hand more effectual in developing the resources of these islands, by improving not only all the native plants, but all such as can profitably be made to thrive here from other parts of the earth. Of these plants and animals from every part of the globe, we may select those most useful to us, and we ought to discover every useful native plant in these islands, and give it to the world in exchange.

The British and American governments, aware of the importance of many new products to the agricultural interests of their countries, have given standing orders to their consuls throughout the world, to send home all the plants and seeds, that may, in the most distant degree, promise to benefit the landed interests ; and similar orders have I believe been issued by other christian powers. Botanic gardens have been established either by government or by individual associations in nearly every country in Europe and in the United States. My own State, the most northerly in the American Union, has recently established a state agricultural school, and purchased a farm upon which the students are to operate. A part of their work will be to endeavor to acclimate, in the long, cold winters and short summers of Maine, plants and fruits from the lower temperate climates, and even from the tropics. This work of acclimation has already been successful with many plants. Experiments of this kind are constantly going on in botanical gardens and nurseries, throughout England, Scotland and Ireland. So successful have been these labors that plantations now exist in the vicinity of London, as well as Paris, whence are dissemi-

nated an infinite variety of valuable and ornamental trees and plants, collected from every soil and climate of the earth. Similar establishments exist in the United States, mostly however the result of individual enterprise, and generally, I am happy to believe, made profitable to the owners.

The French "Jardin des Plantes," of Paris is justly celebrated ; the botanical garden at Montpellier, is scarcely inferior ; and the horticultural enterprise and energy of the French is further developing itself in the establishment of an extensive botanic garden in Algiers. The Royal gardens of the French, as well as those of Russia, at St. Petersburg, and in the milder climate of the Crimea, are celebrated as seminaries of instruction in most of the branches of natural history, and have also been eminently beneficial to agricultural and mechanical labor. Whenever the means of our society may allow, I would suggest that a suitable piece of land be selected on one of these islands for a similar garden. It could be improved by degrees. Royal or individual munificence would, no doubt, supply all the needful funds and render it highly ornamental as well as useful. It would be a bond of union to the society, and serve to perpetuate its efforts, and its usefulness. Every variety of useful tropical plant should have a place in it, together with many from the temperate climates, north and south. Many of the deciduous trees of those climates, as the apple, the peach, and the pear, might perhaps, by planting the seeds from the verge of the tropics, be made to grow here perennially ; if not near the sea-level, at least upon the mountains. If tropical trees and plants can be acclimated in the temperate climates, why may not the rule be reversed ? With such a garden the society would be in good condition to make annual reports, which would be read with interest on all the continents and islands wherever civilization has reached, be treasured up in the archives, made subjects of discussion in agricultural, horticultural, and scientific societies throughout the world, and be the means of receiving their reports in return, with new seeds and plants from their gardens. Should there be among you some rich man who has more money than he needs, or who, unable to carry his wealth with him to the "narrow house" he must finally occupy, is at a loss to dispose of it to his satisfaction, perhaps he may think well enough of the Royal Botanic Garden of Hawaii, to inscribe his name among its

liberal patrons, and thereby render himself the benefactor of his race. Its verdant foliage, its shady walks, its plants of every variety, and flowers of every hue, blooming in perpetual verdure, irrigated if needful by the mountain stream, would be a monument that any man might covet, and transmit his name to posterity with the blessings of millions of the human family. The Royal Botanic Garden of Brazil, at Rio Janeiro, commands the admiration of a multitude of visitors who have seen it.

In the year 1838 Dr. Perrine made application to the government of the U. S. for a tract of land in Florida, and other assistance to enable him to introduce the culture of various tropical plants in that peninsula, and particularly the *Agave Sisalana*, from which the Sisal hemp is made. Of this hemp a cordage is manufactured similar to the Manila white rope. The agave grows abundantly in sandy, barren soils, in Mexico and Yucatan, and would no doubt grow in the sandy regions of Florida. Dr. Perrine's plan received favorable attention in various quarters, but his death put an end to his scheme, and I have not heard of its renewal. There are in these islands some regions of sandy soil, without trees, (such as the low lands between East and West Maui,) where the agave might grow, and possibly the date palm. The introduction of any kind of trees on such soils would have a favorable effect, and serve to condense the vapors of the atmosphere into rain where little or none now falls. Trees are of great use in modifying the climate of a country. They serve to equalize the temperature, check the violence of winds, prevent the streams from drying up, and they attract showers of rain; besides, they are every where wanted for building, fencing, and fuel. I think public attention should be directed to the matter in these islands, where large districts are without trees, and fuel brings an enormous price. Every man who has no more than a single acre of land, should plant trees and raise his own fuel as well as his own kalo, bananas, pine-apples, grapes, figs, and sweet potatoes. Where the trade-winds blow strong, he might plant on the windward side rows of the hau, the pandanus, the tamarind, the ohia, the mango, the pride of India, the koa, or other wood, and in the shelter of these he might have his coffee, and fig trees, his bananas, and other fruit trees. As his barrier trees should grow larger and crowd each other, he might cut down each alternate one for fuel, or saw off superfluous

limbs to be used in the same way. In the neighborhood of Honolulu no trees are growing except those which have been planted. The lands formerly not being divided among individual owners with allodial titles, wood was taken, probably, wherever it could be found, and no care was given to its reproduction. The plains in the vicinity and the spurs of the mountains, were thus stripped of their trees and left bare. But we know that trees grow well here when planted, and serve greatly to modify the heat of a vertical sun. On the mountain sides their roots hold the earth in place, and prevent it from being washed away by the rains. The earth from the disintegrated rocks is thus retained and mingled with the vegetable mould from decayed roots and limbs, and fallen leaves, for they *do* fall here, though it cannot be said

“Leaves have their time to fall,

“And flowers to wither with the North wind's breath.”

The old leaves are falling all the time, as new ones are forming, and the north wind brings no blighting frosts save to the highest mountain-tops.

The improvidence of stripping a country of its wood and preventing its renewal by annual burnings, as on the prairies in the upper valley the Mississippi and elsewhere, or of destroying it in any other way, has been very common in many countries. Possibly in some regions, trees never did obtain a foothold. Large districts in Scotland and Wales were, less than a century ago, clothed with nothing larger than dwarfish ferns or heather, but are now covered with thrifty trees. The old Duke of Athol planted a forest on his estate in Perthshire of 15,593 acres, which contained upwards of twenty-seven millions of young trees when he died, and his successor set out 6,500 acres of poor mountain land solely with larches, valuable for ship timber. The land was not worth over twenty-two cents rent per acre, and now with the timber on it, is valued at \$32,500,000. This statement is taken from a letter of Gen. H. A. S. Dearborn in the published proceedings of the 19th Annual Fair of the American Institute.

Much building timber will be wanted here. The grass houses of the natives do not last long. Their repair is becoming expensive, since cattle have multiplied, so as to prevent the grass from growing long enough for thatch. If fields are fenced and grass grown for the

purpose of thatch, this will cost something, and considering its inferior durability, be about as expensive as shingles. In many places houses can be built of stone, but even with this material many articles used in building must be imported. Before the white man came here the native imported nothing, of course. But it is not so now. All his clothing is imported, as are all the tools he uses. He eats salmon from the Columbia river, and flour from Chili, Australia, and the United States. He rides on saddles from the coast, or drives a wagon or cart, made in Sydney, and if he can afford it, buys silks from China, and costly furniture from Europe or the States. His wants in all these particulars will be increasing and not diminishing. It is well to consider what he can export to pay for these things, so as to leave him a currency of gold and silver. The supply of vegetables and fruits to whale ships will not keep pace with these increasing wants. You must have something to export. No nation can thrive by importing all its bread, and all its manufactures, unless it has rich mines or some great staple of export. You have neither as yet, but may undoubtedly produce a large amount of sugar, molasses, and coffee, for exportation, and you may send a considerable amount of tropical fruits to California and Oregon. It probably will not be long before they will raise their own potatoes, though some may continue to go to their cities on the coast. The orange tree ought to be planted here more extensively, as well as the fig, the grape, and the olive. You have now all the most valuable domestic animals, but there are some not yet here, which might be useful or convenient, such as the alpaca and the deer, which would thrive upon the mountains; but sheep, which are more useful than either, and as well adapted to mountain ranges, are yet only in very limited numbers, though mutton brings a high price in Honolulu. The increase of a large breed, of coarse-wooled sheep, the best for mutton, such as the Leicester, the Dishley, the Cotswold, or the South Downs, would I think be very desirable. The Providence R. I. Journal states that a ram and an ewe have just been imported for the sheep farm H. B. Ives of Rhode Island. They are a present from H. B. M. Consul in Zanzibar, having been brought from the mountains 300 miles interior from the east coast of Africa. They have coarse wool, no horns, and large dewlaps, like cattle, with tails of enormous size and fatness. The mutton is said to be unrivalled in flavor and tenderness. Whale

ships touching at Zanzibar might bring us some of these sheep. Some sheep from the cape of Good Hope have already been introduced here. Sheep increase the fertility of the land on which they pasture, and increase its value for tillage, if it is susceptible of being ploughed, as it should be occasionally to destroy noxious weeds, which I find are very numerous in this vicinity, particularly the indigo plant, which was introduced about twenty years ago, and has come to be as great a nuisance here, as Canada thistles are in the northern United States. It would seem that a plant which grows so thriftily, and which no animal will eat, ought to be used as intended when it was brought here. Perhaps some enterprising man may yet succeed in manufacturing it with profit. It was formerly cultivated extensively in Venezuela and elsewhere on the Spanish main, but the most of it now comes from Hindostan, where labor is cheaper than almost anywhere else in the world. A large quantity is used in Europe and the United States. There are substitutes for a blue dye, but none equal to indigo. In the progress of invention some process may be discovered which may greatly reduce the labor required in the manufacture, so that the indigo now overrunning your pasture lands may be turned to good account. If it should be fifty years hence I apprehend you will not find the plant exterminated. The process by which it is now manufactured may be seen in Ure's Dictionary of Arts, Manufactures and Mines. As to indigo and other plants upon which animals will not feed, it is believed a skilful and persevering use of the plough, the hoe, and the harrow, will be requisite for their extermination. And the plough will be especially needed to preserve and increase the fertility of the soil, as well as to destroy useless plants. It is certainly bad economy to scrape over the top of the ground with the oo or digger, or its substitute the whale spade, and pile up the weeds and burn them, while nothing is ever put upon the earth in the shape of manure. On the contrary, as much as possible of vegetable growth, and all bones and animal remains, should be turned into the earth with the plough, there to ferment and fill the earth with salts, gasses and vegetable mould, rendering it light, friable and fertile, and more capable of withstanding drought.

Few animals being kept here in stables, the amount of manure from that source must be very limited, and yet without manuring in some

way, the fertility of the land will be exhausted. No excrementary matter or animal remains should ever be wasted, but all be scattered and covered in the earth. All putrid bodies, bones, &c., should be carefully covered to fill the soil with their fertilizing elements instead of remaining upon its surface to poison the atmosphere we breathe.

Dr. Daniel Lee, a collaborator for the agricultural department of the American Patent Office, in a letter in the prefatory part of the report of the Commissioners of Patents for 1849, says: "There has been enough of the elements of bread and meat, wool and cotton, drawn from the surface of the earth and sent to London, and buried in the ground or washed into the Thames, to feed and clothe the entire population of the world for a century, under a wise system of agriculture and horticulture. Down to this day great cities have ever been the worst desolators of the earth." Dr. Lee might have added that there is still more wasted in country villages, and even farm residences, washed into streams not used for irrigation, and swept off to the ocean in rivers. In the same report an estimate is made in the chapter on agricultural statistics, to prove that in the United States there is annually wasted "enough of the elements of bread, without which not the first kernel of corn can be formed, to produce one thousand millions of bushels of this important article." And this too while tillage land is every year becoming less and less productive, from the exhaustion of its elements of fertility.

Where enclosures are too limited to be ploughed, the round pointed shovel, which is better than the spade, should be used in digging up the earth and the light hoe in weeding merely. It may require some perseverance to bring these tools into use, but once understood they will be afterwards appreciated. If the bare foot cannot be well applied to the top of the shovel blade, a thick soled shoe or wooden sandal can be used. When wheel barrows were first introduced into Jamaica, the negroes, after loading them, persisted for some time in carrying the load; wheel barrow and all, upon the top of their heads, for so they had been accustomed to carry all their burdens; yet the wheel barrows won the victory in the end, and so will the hoes and the shovels. There is nothing like persevering against error and obstinate prejudice. Newton's theory of gravitation was not adopted even by the academicians of France, until forty years after the publication of his

Principia, and Galileo was obliged to confess before the assembled authorities of the Romish church, that the earth did not turn round on its axis. Still he did not despair, but as he arose from his humble position and brushed the dust from his knees, he whispered to a friend, "nevertheless the Earth does revolve," and his belief has become universal, though the pontifical decree denouncing it as a heresy remains unrepealed. We ought to avail ourselves of all labor saving improvements extant, and find out others as fast as we can.

As an important auxiliary to the proper tillage of the land it is believed that an importation of birds would be very useful. Indian corn and some other crops, I am assured, are much injured by worms destroying the young plants. Such enemies of the husbandman are not peculiar to these islands. The last Patent Office Report, to which I have already alluded, estimates the annual loss in the United States, from the Hessian and other wheat flies, curculios, weavels, and boll worms, at twenty millions of dollars. Most kinds of small birds feed principally on insects. The favorite food of the robin is the cut worm which destroys young corn, cabbage plants, beans, &c. If the robin could be brought here alive and made to increase, he would be a most welcome visitor about our dwellings, and would be of great service in fields and garden. At present hens, ducks, and turkeys may do something in the fields, though they may be mischievous in gardens. They are profitable stock, however, and can be multiplied indefinitely, with great advantage to the consumer. They will live upon the insects they pick up, and require a large proportion of animal food, but to thrive and fatten or lay many eggs, they should be fed daily with some of the cereal grains. Of these only a few are cultivated in the islands, but more of them might be. Indian corn does well in Cuba, nearly the same latitude, and our friend Gower assures me he has raised good wheat on Maui. The high lands will no doubt produce wheat, corn, barley, oats, &c. Grist Mills are wanted, but these will be forthcoming. Where there is no water power, wind-mills can be constructed, as they have been elsewhere for many centuries. The trade-winds could be made to move powerful machinery.

The modes of cultivation which prevail in higher latitudes may not be strictly applicable here. In the regions of winter frost the earth has a season of rest, when all vegetation is suspended, and the earth

is loosened and upheaved by the freezing and consequent expansion of the water which saturates it. Here within the tropics it undergoes no such process, has no such rest, and has no winter's supply of barn-yard manure to be ploughed in when it is wanted. The plough is however, not the less needful to turn under the green sward, together with corn stalks, cane tops, and every kind of straw which can be strewed lengthwise in the furrow. Fortunately the Polynesian islands have one great advantage. In the higher latitudes there is much swampy, wet land not reclaimed by draining. The rains wash the hills and higher grounds, and carry their best soil into the low marshes where little grows but rushes, flags, and coarse grass. Nothing is lost here in that way. Such low grounds are the very best for the taro, which yielding a vast amount of nutritious food for the subsistence of man, requires all the fertilizing matter which can be drained into the slimy beds of soft mud in which it grows best. More might be added by artificial means with advantage, for taro beds, like all other cultivated lands, become exhausted by continual cultivation, if no vegetable or other manures be applied to them. An acre of taro will undoubtedly subsist a greater number of persons than any other crop known, and of course requires a large supply of the elements of fertility. It grows best in the mud, but it can also be accustomed to the high and dry land, and there becomes a somewhat different plant. I see no reason why it might not grow any where within the tropics, on the continent, and in the West Indies, or in the eastern hemisphere, and possibly might be acclimated in Louisiana, Texas, Georgia, Alabama and Florida. The water in which it grows would keep off light frosts in Florida, the lower Mississippi and Texas, as well as on the Sacramento and other rivers of California. It is not a bad substitute for bread, but an occasional corn cake, made of good sweet fresh Indian meal, would be an agreeable change and promote health. If every native owner of land would cultivate an acre of corn, he would keep his pigs and poultry in better condition, give greater variety to his own food, and perhaps so lessen the bills of mortality as to prevent the decrease of his race ; nay soon bring about an actual increase. More regard to the laws of health is indispensable to this end. The mountainous parts of the islands are admirably adapted to the range of the goat, and the milk and flesh of this animal I am aware are much

used by the native population, but the sheep will thrive in even higher altitudes, and his flesh is much superior. He should be shorn, however, once or twice a year. More fat sheep, and fewer lean, scurvy, worthless dogs, would be a decided gain. The food which is thrown to dogs could be more profitably given to turkeys, hens, pigs, ducks, and geese. Wool might sell rather low perhaps, but would be worth saving; and I do not see why it might not be manufactured into blankets, flannels, and cheap cloths here in the islands. The machinery for such woollen mills as the manufacturer would require would not be expensive, nor the labor great. If every native would wear a woollen shirt, and sleep at night under a woollen blanket, I think there would be less of asthma, and other affections of the lungs, induced as these diseases probably are by exposure to the strong winds while the pores of the skin are opened by profuse perspiration. Flannel prevents the too sudden cooling of the body. No clothing made of vegetable texture can ever be equal to that which the God of nature provides to retain animal heat. The fowls of the air and the beasts of the field are all covered with a permanent coat, but the "featherless biped," MAN, is left to clothe himself by his own ingenuity. He can vary his covering with the changes of the weather, taking from the sheep, the Cashmere goat, and the Alpaca the excessive quantity with which nature has provided those animals and fashioning them into shapes for his own convenience.

The culture of silk, which at one time promised great success, seems to have been abandoned, yet the mulberry continues to grow as well as the indigo, and future attempts to manage the silk worm may be more successful. We may look forward to the time when these islands will have a population ten times greater than at present. It will be a mixture of all races, Hawaiian, Anglo-Saxon and Saxon without the Anglo, the Norman and the Celt, the descendant of Goth and Hun, the Chinese, the Japanese, the African and East Indian. The valleys will be cultivated like gardens, and the terraced mountain sides be covered with vineyards, like those of Madeira, Vesuvius and Etna. One of the most populous places in the world, of its size, is the island of Malta, which history informs us was a barren rock, but where the knights of early chivalry made fertile gardens by pounding up the loose and scattered stones which covered its bleak surface and import-

ing soil from Sicily to mix with their dust. The most populous and fertile portions of the Netherlands have been reclaimed from the sea by dykes. The government of Holland is now engaged in pumping out the Zuyder Zee, with wind-mills and steam engines, to a depth of thirteen feet below the sea level for the purpose of securing Amsterdam, Leyden and a large region of farms and villages from inundation, and converting the bottom of the lake into tillage land.

On the other hand, large districts of country once swarming with population, are now comparatively desolate. Depending upon irrigation for their fertility, their canals, aqueducts and hydraulic machinery, under bad government and the ravages of war, have gone to ruins, and arid deserts have taken the place of fruitful fields. The city of Babylon, watered by the Euphrates, is supposed by D'Anville to have had a population larger than Paris, and covered an area greater than London. Herodotus speaks of Babylonia as the most fruitful of all the countries he had seen. It is now little better than a desert. Nineveh it is supposed was on the Tigris, as is also Bagdad. Damascus, still surviving in diminished proportions, is watered by a stream from the mountains of Anti-Lebanon. Heliopolis or Baalbec, and Palmyra or Tadmor, now deserted, were no doubt the centres of irrigated countries, in the plains of Syria. These were great cities in their time. They might be so now if these canals and aqueducts had been kept in order and a skilful system of agriculture had been practised. It is not alone the moisture of the water which makes irrigation so useful. If economically managed, the waste from the sinks and sewers of cities and villages may be carried into the irrigating canals and be absorbed by cultivated lands, instead of being washed off into the sea. Farm-houses, stables, barns and cattle pens should be so constructed, if possible, that all their drainage may be carried upon gardens, taro patches, or grass land. A striking instance of this may be seen below the city of Edinburg, in Scotland, where a small stream coming through the city is spread over several hundred acres of meadow land, producing a most astonishing degree of fertility.

Many roads are to be made on the islands, and some of them will be expensive, but all together will amount to nothing like the labor which was expended by the Incas of Peru upon one great road from Quito to Cuzco, along the spurs of the Andes, the remains of which were seen by Humboldt and are vividly described by Prescott.

Among the resources of the islands we should suppose the manufacture of salt might be enumerated. Great quantities are made in the Bahamas and other islands of the Atlantic, by solar evaporation of sea water. On the leeward side of the Hawaiian islands the evaporation must be as great, and the rains very little. The Pacific coast will require a large supply ere long. It is true that Mexico and California have numerous salt ponds, much stronger than sea water, but they are far interior. The water of the great salt lake in the great basin of Utah, is as strong as that of the Dead Sea—perhaps stronger than the Caspian—there are numerous other salt lakes in the Great Basin. All such lakes, every where, which have no outlets, are salt, and none are salt which have streams running out of them. Tezcuco is the lowest of several in the great valley of Mexico, and is of course salt ; but all along the coast salt can be obtained easier and cheaper by sea, and can be made as well here as any where. Indeed, Nature by means of her volcanic fires has made one complete basin for solar evaporation of the sea water, near Eva, where the sea-water, slowly admitted by a subterranean channel, is for the most of the year constantly evaporating under a hot sun. This is the place to which Capt. Wilkes went with his boats and deep sea sounding lines to find the bottom reported to be unfathomable, but where he could find but 18 inches of water. There is however a deep place which he did not find.

A species of flax, which grows in New Zealand (*Phormum tenax*) has been recommended by Mr. Poinsett in De Bow's Commercial Review, as a product which may be useful in the Southern States. Probably it would grow well in these islands. As described by M'Culloch he says it excels every other species in strength of fibre and whiteness. It is mentioned in Capt. Cook's voyage in 1775 and in Wilkes' Narrative of the Exploring expedition. According to experiments of La Bellardiere, Mr. Poinsett says the fibre of this plant is much stronger than any vegetable we know of ; that of the *Agave Americana* breaks under a weight of seven ; that of flax at eleven and three fourths ; that of hemp at sixteen and three fourths ; that of the New Zealand flax at twenty-three and seven elevenths ; so that it is only exceeded by silk which reaches to twenty four. The New Zealand flax grows on dry or wet land, but best on the wet land.

The capacity of the islands to produce sugar, coffee and tobacco, has been placed beyond doubt, and it is upon these, and especially sugar, that reliance must be had for extensive exports to pay for the constantly increasing imports. I have said nothing of the modes of culture or the manufacture of these articles, because there are other members of this society who understand the matter far better than I do. Besides I have no love for tobacco.

Cotton grows well here, but perhaps you can do better than to raise cotton to be sent round Cape Horn to be manufactured, and there to enter into competition with that of the United States, Brazil, Egypt and the East Indies. California and Oregon will have cotton and woollen manufactories, but it will be some time hence.

Rice will grow here, no doubt, but at present it comes cheap from China and the Phillipine islands ; and we must add that sugar comes from there also and competes with that which is made here.

The mode of irrigation of rice in China, is thus described in Fortune's China, a work which contains many interesting particulars relating to Chinese agriculture.

“IRRIGATION IN CHINA.—Rice is grown on the lower terrace ground, and a stream of water is always led from some ravine and made to flow across the sides of the hills until it reaches the highest terrace, into which it flows and floods the whole level space. When the water rises three or four inches in height, which is sufficiently high for the rice, it finds vent at an opening made for the purpose in the bank, through which it flows into the terrace below, which it floods in the same manner, and so on to the lowest. In this way the whole of the rice terraces are kept flooded continually until the stalks of the crops assume a yellow ripening hue, when the water being no longer required is turned back into its natural channel, or led to a different part of the hill for the nourishment of other crops. These mountain streams, which abound in all parts of the hilly districts, are of the greatest importance to the farmer, and as they generally spring from a high elevation in the ravines, they can be conducted at pleasure over all the lower parts of the hills.”

So it will be seen the cultivation of rice is not confined as in South Carolina and Georgia to low, flat lands flooded by a river, or as on the Ganges and other rivers of lower India, but the hill

sides are made equally available. Nor is this mode of irrigation, which is here applied only to kalo and bananas, in China applied only to paddy (rice) fields and other aquatic plants, but the soil for other crops is moistened by the same process.

The art of irrigation is an important one in these islands, for though there is generally rain enough on the tops of the mountains and on the sides swept by the trade winds, there is very little on the leeward sides in summer, and in some localities very little at any time. These cannot be made productive without irrigation by the mountain streams. The native population seem to understand the art of conducting water into their kalo patches, but it is desirable also to spread it over fields, and it may be necessary to bring it down from greater distances. In Northern Europe irrigation is not yet practised to any great extent, and still less in the Atlantic States of America. The cultivation in California and New Mexico depends much on the streams from the mountains. But the most successful and extensive system of irrigation in the world perhaps is in Egypt, for thousands of years held to be the granary of the world ; yet cultivated Egypt is but a ribbon of land running some hundreds of miles across the Lybian desert, where very little rain ever falls. There is no cultivation beyond the reach of the waters of the Nile. All the soil is the deposit of the Nile, brought down by the annual floods from the mountainous regions of the interior of Africa. Like the Mississippi, the banks of the Nile are higher than the land on each side, made so by the sedimentary deposit. When the winter floods fill the channel of the river the water is carried back into the country by thousands of little canals by which the ground is thoroughly saturated as far as the waters reach, and an annual deposit of mud enriches the land at the same time. When the water falls in the river far below its highest level, it is pumped up by water-wheels, wind-mills and other artificial processes, and thus carried upon the land to a limited extent. With a surface one third less than the state of Virginia, the kingdom of Egypt, in the time of Sesostris, contained a population of twenty-five millions and was the first and wealthiest kingdom of the earth. Since then many of the water-works have gone to ruin and the drifting sands of the desert have reduced the cultivated lands nearly one half in extent.

The country being level, the nature of the land thus irrigated in

Egypt is so different from these mountainous islands, that we perhaps can learn but little from the Egyptians as to the best means of irrigating the valleys and mountain sides of Hawaii. On the contrary we must look rather to modern inventions and discoveries in the science of hydraulics. When the land becomes divided into small tracts, with multiplied ownerships, many lots will be without water, and the porous volcanic soil, with no strata of saturated clay to hold it, will afford no wells. To such places the mountain stream must be carried in canals or aqueducts, or lifted in small jets by the hydraulic ram, invented by Whitehurst and Montgolfier ; or recourse must be had to cisterns to catch the rain water, with apparatus for filtering it. It may thus be obtained very pure for family uses and for cattle.

Land which is irrigated by streams of water will not be so quickly exhausted as that which is not, because water brings with it a large quantity of fertilizing matter. Green plants contain 75 per cent. or more of water, and this is formed of oxygen and hydrogen, which are also the bases of vegetable matter. Water also may contain sulphur, lime and other salts, the greater part of which are absorbed and decomposed by plants. Water also deposits lime which fertilizes. It carries off a large quantity likewise of other fertilizing particles, unless they are arrested by the hand of culture and turned to use. A great amount of earth is thus carried off by rivers and deposited at their mouths or along their courses. According to Rennel, the Ganges every hour deposits at its mouth 2,509,056,000 cubic feet of earth, the Nile 14,784,000, and the Mississippi 800,000. This is the origin of the rich deltas at the mouth of rivers whose waters are turbid ; but in this way much fertile soil must be buried deep and lost to human use. I may say, however, I do not rely on the accuracy of the calculations of Rennel, as I find them stated, not believing either the Ganges or the Nile deposit so much more than the Mississippi. Perhaps there is some typographical mistake.

All the soil upon the Hawaiian Islands has been made from the abrasion of the hills by the united actions of the rains and the atmosphere, since they were thrown up by volcanic eruption. The rocks are constantly undergoing the process of disintegration, and hence the mountain streams are constantly bringing down fertilizing matter to the

valleys below. If there be any lime in these rocks, the water from them will supply a very important element of vegetation.

Carbonate of lime, as stated by Thaer, easily mixes with pure water, but does not dissolve in it, and if the fluid is left quiet the carbonate soon subsides. But it may also be *dissolved* in water which is saturated with carbonic acid. Water from most springs which issue from calcareous mountains is of this kind. The lime is deposited when it comes in contact with the atmosphere when held in solution ; or if merely floating it subsides in the first still water, like other particles of dust. That the portion of saline matters contained in spring water is diminished by being used for purposes of irrigation has been proved by the experiments of Dr. H. Madden, who found that a gallon of water "clear as crystal," issuing from the base of the Pentland Hills, contained, before passing over a meadow, ten grains of common salt, and four grains of carbonate of lime, (chalk), but after passing over the meadow a gallon of the same water contained only five grains of common salt, and two of carbonate of lime. Hence it will be seen that water from the hills may be more fructifying than rains direct from the clouds, if the former passes over rocks or through soils containing fertilizing elements. The water which has passed through a dozen rice fields or kalo patches lying below each other in successive embanked terraces, must however contain not a little of vegetable and some animal putrefaction, and perhaps be more fertilizing to most plants than pure spring water. It contains the *humus* which is indispensable to all vegetation, while at the same time it is less wholesome to drink. "Humus or vegetable mould," says Thaer in his Principles of Agriculture, "is the product of living matter and the source of it. It affords food to organization ; without it nothing material could have life ; at least the more perfect animals and plants could not exist ; and therefore death and destruction are necessary and accessary to the re-production of animal and vegetable life. The greater the number of living creatures, the more humus is produced and consequently the supply of the elements for the nutrition of life is increased. It is however apparently lost by being carried into the ocean by rivers, and into the atmosphere by the agency of oxygen which unites with and converts it into gaseous matter." "We have," says he, "only to observe the progress of vegetation upon naked rocks

in order to understand the history of humus from the beginning of the world. At first only lichens and mosses are found there, from the decomposition of which more perfect plants derive their nourishment. These in their turn die and augment the mass of mould by their putrefaction, and thus a bed of humus is formed capable of affording nourishment to the largest trees."

The olive tree grows to a great age, and is long in coming to maturity as heretofore cultivated, but I see in a letter from L. W. Tinelli, the U. S. Consul at Oporto, that a new variety has been introduced into the South of France, and in Spain and Portugal, which yields abundantly the second year after planting. It is rather a bush or shrub than a tree, growing only about four feet high. Probably it would grow well here, and may be worth introducing. It would be less affected by the winds than a high tree, and be a fine embellishment in a garden.

I think it very desirable that not only more wheat and corn should be cultivated on the islands, but more beans and other grain. I know not how oats thrive, but I find in the U. S. Patent Office Report of 1848 some remarks on barley which may be worth noticing here. When Lieut. Lynch, of the U. S. Navy, was in Palestine exploring the Dead Sea he procured three kinds of wheat from Syria and two kinds of barley, one of these from Engaddi. The hill country of Judea and the mountains of Lebanon, Sinai, and Hermon, have some resemblance in soil and climate to these islands, but not being fanned by trade-winds and being bounded on the south and east by arid deserts, the heat of summer greatly exceeds the heat here; yet wheat and barley are common there, and were so when the children of Israel, escaping from bondage in Egypt, crossed an arm of the Red Sea and passed round through the deserts of Moab to the more fruitful valley of the Jordan, whose inhabitants they subdued and drove away or exterminated. Barley is often referred to in the Jewish scriptures. It was evidently more common than wheat three thousand years ago, and is so still among the Arabs, and other inhabitants of Northern Africa, Arabia and Syria. A variety of black skinned barley has been received at Washington from England, and distributed from the Patent Office. It has been acclimated in Europe and is reckoned a valuable grain, but is said to have been brought from Abyssinia.

It is described as making an excellent flour and being very productive.

Barley is recommended in a South Carolina paper, as an excellent crop for the South. The writer says it is the only grain in the South which will mature a crop from the winter's moisture of the earth, and being originally cultivated in the hot climates of Arabia, Persia and Egypt, is admirably adapted to the climate of South Carolina. By high cultivation it has been made to produce 72 bushels to the acre. The writer pronounces it a better food for horses, mules, cattle and hogs, as well as furnishing the best of food for poultry: if ground into coarse meal, such as is commonly called "chops," and mixed with cut straw or fodder, it is unrivalled for working cattle and horses. We apprehend the grinding is more necessary for the cattle than the poultry, for the gizzard of a bird is a powerful grinder, having been found by experiments of Spallanzani, to dissolve or grind up iron, lead and glass in a short time. In this connection it may be well to say that if fowls lay many eggs they must have access to lime in some form, for the shell is composed principally of lime.

Speaking on this subject, Professor Gregory of Aberdeen says:—As I suppose you keep poultry, I may tell you that it has been ascertained that if you mix with their food a sufficient quantity of egg-shells or chalk, which they eat greedily, they will lay, other things being equal, twice or thrice as much as before. A well fed fowl is disposed to lay a vast number of eggs, but cannot do so without the materials for the shells, however nourishing in other respects the food may be: indeed a fowl fed on food and water free from carbonate of lime, or not finding any in the soil, or in the shape of mortar, which they often eat off the walls, would lay no eggs at all with the best will in the world.

In Skinner's Monthly Journal of Agriculture, published in New York, in an essay on Poultry, it is said—"The ordinary productiveness of the hen is truly astonishing, as it actually lays in the course of a year 200 eggs, provided it go at liberty, is well fed, and has a plentiful supply of water. Many instances have been known of hens laying 300 in a year." At 50 cents a dozen, the price in Honolulu, the produce of twenty five hens at 200 eggs each, would be over \$220 a year, or nearly \$9 per hen per annum. If they would lay half as many, they would pay well for a little meal or grain. Of course they get

lime enough where there is coral or sea shells. If the hens kept by the native population do not lay so much as in Europe and the United States, I suspect it is because they are not properly fed. If any one present should deem this a subject not grave enough for an agricultural address, let him go without eggs for his breakfast or get very small ones at a great price. It is a wonderful provision of nature that the domesticated fowl should be made to lay a number vastly greater than she can hatch, thus converting all manner of insects and creeping things, centipedes included, and many seeds and vegetable matter which would otherwise be wasted or produce noxious weeds, into the most condensed, nutritious and palatable food for man. Such a living laboratory is not lightly to be regarded.

The number of eggs consumed in all the cities of the United States and in Europe is very great. I have not thought it necessary to gather statistics to prove this, but may mention the fact that in one day, as stated in a Cincinnati (Ohio,) paper, there was shipped from that city 500 barrels containing forty seven thousand dozen of eggs. The census of the United States for 1850 has not been printed, but it is said its statistics estimate the value of poultry at twenty millions of dollars, of which the state of New York has two millions. Besides the great amount of eggs produced in England, a great number are brought to London from France. Bixio's Journal of Practical Agriculture and Gardening, (French), contains a statement of the poultry and eggs of France, in which, alluding to actual statistics, he says, "We have found 190,000 fowls for 85,685 inhabitants, and these give annually a product of 14,400,000 eggs, or 166 eggs to a person a year." The population of France by the last census having been 34,230,178 inhabitants, he reckons the value of the eggs, at four francs per hundred, and one hundred and twenty eggs to a fowl, at over forty six millions of dollars. At the prices we pay they would come to nearly three hundred and forty millions of dollars. They ought to be as plenty and as cheap here as in France. If they were so, or half as cheap, the whale ships and other ships which touch here would take eggs and poultry to a large amount.

The American Patent Office Report for 1847 says:—"In France it is stated that 7,250,000,000 eggs are annually used, of which Paris consumes about 120 millions. The importation of eggs by England

from France in 1838 amounted to one hundred millions. It is stated that a bushel of Indian corn will last twice as long for hens as a bushel of buckwheat, but that the buckwheat is better to make them lay than any other grain. Barley is said to be better for them than oats, but perhaps those differences are mostly imaginary. Rice is believed by many to tend to blindness in fowls and to kill them. Perhaps it may where they are shut up, fed profusely, and have little or no animal food. The unboiled rice too may swell and over-distend their crops. Fowls like bears, swine and men, are omnivorous. They like a variety of food, animal and vegetable, especially where they are expected to lay eggs every day.

I should like to add something on the subject of fences, if I knew what to say for your advantage. Where there are loose boulders of stone scattered over the soil there can be no doubt they can be best disposed of in fences and walls of buildings, bridges, and terraces of hill sides for purposes of irrigation. Where the stones are not abundant the wall need not be very high if the night-flowering cactus be planted beside it. The plant will climb on the wall and render it impassable to all animals, I should suppose, while it will render the fence highly ornamental, especially on moonlight evenings, when the magnificent flower opens its snowy petals to the Queen of Night, to close again for ever with the next morning sun. On the premises I occupy in the valley of Nuuanu I have seen more than sixty of these gigantic and fragrant flowers blooming at once. Each flower blooms for only one night, but the plant itself is any thing but fragile, and I believe lives to a great age. New flowers open almost every night in the summer months. The plant is easily propagated by cuttings, and like all varieties of the cactus will grow in an arid soil. In like manner it would cover a low adobie wall, or a bank of earth with a ditch each side of it. Hedges may be made without stone, bank, or ditch, in some places of the common cactus or other material, but I expect that iron wire will after a while become the cheapest kind of fence. I see that it has already been introduced in California and made close enough to keep out a rabbit. Some kind of wood, like cedar or locust, which will last a long time set in the ground for posts, should be planted and growing if there are none such already on the islands. The wire will not rust if kept painted and it will take but little paint to do this. A

wire fence offers little obstruction to the wind, and is therefore not liable to be blown down. As a fence against cattle and horses, only two or three stout horizontal wires are necessary ; more for smaller animals ; but these may all be lighter wire below the topmost. It seems almost superfluous to add that every dwelling, every cottage, should be embowered among trees, and these might, for the most part, as well be fruit trees as any other. The tamarind grows large and strong ; the alligator pear is a stately tree and yields an excellent fruit ; the chirimoya is growing on some of these islands ; and the mango may be seen in this town ; the fig and banana require some shelter from other trees ; but gentlemen, you know more of the trees of the islands than I do, and I trust each of you, individually, will give the society and the farmers of the islands the benefit of your observations. The object of the society is to collect and diffuse information in every thing that relates to agriculture. For this purpose you have already made the commencement of a library, which I trust may have a regular and not a slow growth. Notwithstanding the stationary condition of things in China, I have no doubt much may be learned of the Chinese in agriculture, and some valuable trees and plants may yet be obtained from them. Our intercourse with them is constantly increasing, as it is with all parts of Polynesia and the East Indies. We ought to have here every kind of tree or plant that is of any value, and may expect to have them in the course of time. But this society may greatly speed the time and accelerate the progress of agriculture, gardening and flower-adornment. Let us hope there may be no abatement in its efforts to that end. Superior cultivation, skill and taste in horticulture, well pruned trees, neat and smooth walks, among verdant shrubbery and brilliant flowers, serve to make one contented and happy in his dwelling, though it be only a grass house or thatched cottage, and they imply a degree of mental refinement, as they also have a refining, an elevating and a felicitous influence on all around them. With a climate unsurpassed for healthfulness, perpetually fanned by the breezes of the vast Pacific, it is here if any where that the "islands of the blessed," sung of by the Arabian poets, may be located ; here, where the far west approaches the verge of the extreme east, it is that we must look for the realization of the fabled gardens of the Hesperides. It is here in the midst of a vast sea, unknown to Greek or Roman, we

may make the language of the Mantuan bard applicable, though written nearly nineteen hundred years ago :—

“The golden corn each laughing valley fills,
“The vintage reddens on a thousand hills;
“Luxuriant olives spread from shore to shore,
“And flocks unnumbered range the pastures o’er.
“Here ceaseless spring, here winter wreathed with flowers,
“And flocks twice teem and fruits twice bend the bowers;
“Yet here no lion breeds, no tiger strays,
“No poisonous aconite the touch betrays,
“No monstrous snake th’ uncoiling volume trails,
“Or gathers orb on orb his iron scales,
“But many a peopled city towers around,
“And many a rocky cliff with castle crowned.”

For the Roman castle let us here substitute the Christian temple, and for the proud and warlike Pagan, a people imbued with a goodly portion of the spirit of the Great Teacher who, more than eighteen centuries ago, proclaimed peace on earth—good will to the whole family of man. Then may it be literally and truly said that every dweller in the land may “repose under his own vine and fig tree, with no one to molest or make him afraid.”

NOTE.—The statement of the population of England, Wales, Scotland and Ireland in 1700, 1801 and 1851, on page 22, was taken from the London Economist. The last column was by estimation on the ratio of increase on each preceding ten years and partial census returns. More full returns received here since the address was prepared, show in Ireland an absolute decrease of more than a million and a half in the last ten years, the results of famine from the repeated loss of the potato crop the great amount of emigration and other causes.

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

Honolulu, August 11, 1851.

To the Hon. Wm. L. Lee,

President of the R. H. A. S.

SIR,—I have the honor to represent to you that since the formation of this society up to the present time, the receipts and disbursements have been as follows, viz :—

RECEIPTS.

Cash for 117 Certificates of Annual Membership,	\$585 00
“ “ 18 “ “ Life Membership,	650 00
Amount of Bill for printing and binding 750 copies of the first number of the Society's Transactions, assumed by the Hawaiian Government.	209 75
	<u>\$1444 75</u>

DISBURSEMENTS.

Paid Bill for Letter-press and Stationery,	\$ 43 00
“ “ for printing Circulars	4 00
“ to E. P. Bond, Esq., to be sent to Great Britain, the United States, and China, and invested in Publications, Books, and Silver Cups for Premiums.	395 00
Invested in Bond and Mortgage on acc't. of the Society.	500 00
Paid for collecting—and loss on money Amount of Polynesian office's Bill for Printing and Binding, as above . . .	1 38
Balance Cash on hand	209 75
	291 62
	<u>\$1444 75</u>

Mr. S. N. Castle, the former treasurer, resigned his office on the 31st May last, on account of his intended visit to the United States and delivered up the books, papers and cash in his hands, and rendered an account current with the society, which is hereto annexed.

I had the honor to be appointed Treasurer, by the Board of Managers, on the 30th June last, and received the balance of cash (\$291,62) named above, which is now in my possession.

Respectfully submitted,

by your obd't servant,

CHAS R. BISHOP,
Treasurer.

Dr. Royal Hawaiian Agricultural Society,

In acc't current with S. N. Castle, Treas. Cr.

1850.		Dr.	Cr.
Aug. 16.	To cash p'd for book of records allowed to R. H. Bowlin	\$ 2 00	
	do. to S. N. Castle acc't book	1 75	
26.	Paid for binding three books for the corresponding secretary, and book of receipts for treasurer.	1 50	
	" Mr. Whitney for blank receipt book	3 00	
29.	" J. F. B. Marshall for bill paid by him for printing circulars calling convention.	4 00	
31.	Paid for press and paper for corresponding secretary.	34 00	
Sept. 4	Paid to E. P. Bond pr receipt to invest in publications in Great Britain and the United States by resolution of board of managers of Aug. 28, 1850.	120 00	
15	Paid for book of record for the sec'y of the board of managers.	75	
25	Invested for the benefit of the society on bond and mortgage by order of managers.	500 00	
Nov. 14	Paid for draft on H. Hill, Esq., favor of G. Wm. Bond, to be invested in books and premiums in the U. S. per order of the board of Managers.	150 00	
16	Allowed to the corresponding secretary in Mexican dollars to be remitted to China by Capt. Hubertson to be invested in premiums by order board of managers	125 00	
22	Paid for collect'g and losses	1 38	
1851.		\$943 38	
May 31.	Balance to new acc't	291 62	
		\$1235 00	
1851.			
May 31.	By cash received for 117 certificates of annual membership at \$5,		\$585 00
	By cash received for 13 certificates of life membership at \$50		650 00
			\$1235 00
May 31.	By balance on hand brought down		\$291 62

The above account is respectfully submitted to the Royal Hawaiian Agricultural Society by

SAM'L N. CASTLE, Treasurer.

To the Hon. Wm. L. Lee,

President of the R. H. A. S.

SIR,—As it is not improbable that I may be called to visit the U. S.

at an early period and in the multiplied cares which devolve upon me may forget my duties as treasurer, I take the liberty to forward to your care all the books papers and money belonging to that department together with the above statement of accounts.

I take this opportunity through you to express the deep interest I feel in the prosperity of the agricultural interests of these islands and my constant wish for the success of this department.

Very respectfully, yours,

SAM'L N. CASTLE.

Dr. Royal Hawaiian Agricultural Society

In acc't with Chas. R. Bishop, Treasurer. Cr.

1851.			
Aug. 8,	To amount of Polynesian Office's Bill for printing and binding 750 copies of the first number of the Society's Transactions.	\$209 75	
" 11,	Balance cash on hand carried down to new account.	291 62	
		\$501 37	
Aug. 8	By cash from S. N. Castle, late treasurer		\$291 62
" 11	" paid by the Hawaiian Gov't to the Polynesian office for printing and binding 750 copies of the Society's Transactions.		
			209 75
			\$501 37
Aug. 11	By balance on hand brought down		\$291 62

Hilo, Hawaii, 1st., August, 1851.

STEPHEN REYNOLDS, Esq.,

Vice President of the R. H. A. S., Honolulu.

SIR.—In conformity with instructions contained in the tenth resolution of the R. H. A. Society I beg to forward you the annexed statistical report relating to the domestic produce of our district in which I have not confined myself to the letter of the instructions.

As chairman of this committee I would remark that I have not heard from any of the corresponding members and draw the inference that as the vote followed the resolution you will receive their reports direct,

and I trust that from some of the more flourishing districts you may obtain fuller and more satisfactory reports, as these which I present are mostly obtained from the proprietors of the several plantations around. I am sir, your very obedient servant.

B. PITMAN.

TOTAL AMOUNT OF HAWAIIAN PRODUCE EXPORTED FROM THE PORT OF HILO, HAWAII, HAWAIIAN ISLANDS TO FOREIGN PORTS DIRECT—FOR THE YEAR ENDING AUG. 1, 1851.

Live stock and vegetables,	\$1120 00
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EXPORTS COASTWISE.

The plantation of Ahsing & Co. at Makahanaloa consisting of 400 Acres.

Total amount of sugar sent to Oahu for the year ending August 1, 1851.	401,000 lbs
Molasses	18,000 gals.

The plantation of Ahkina, at Puueo, consisting of 90 acres.

Total amount of sugar sent coastwise for the year ending August 1, 1851.	50,000 lbs.
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On hand at plantation	100,000 "
Molasses	3,900 gals.

The plantation of Amoi at Ponoohawaii consisting of 55 acres.

On hand at the plantation the manufacture of the past 6 months.	20,000 lbs
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Total amount of coffee sent coastwise, averaging 13cts.	30,000 lbs.
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"	"	goatskins	"	"	18 "	6,000
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"	"	Arrow root	"	"	6 "	35,000 lbs.
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Vegetable supplies to 26 Whaleships, at \$180 each, for the year ending Aug 1, 1851.	\$4,680 00.
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Our district is capable of great improvement in agriculture, but the natives have not hitherto had any incentive to cultivate. The surrounding country is admirably adapted to the growth of fruits of various kinds, among which may be enumerated the chirimoya, mango and pomegranate (introductions within the last few years) ; oranges,

limes and bananas have thriven exceedingly well, and all these fruits with but little attention attain a state of perfection.

GARDEN VEGETABLES also thrive here. The soil in many parts is particularly adapted to the growth of the onion which for quality and flavor it is generally allowed cannot be surpassed. I take the liberty to forward you a sample grown on my farm which is but an average quality of those grown by the natives.

ARROW-ROOT.—Not much attention paid to the culture. It grows wild and from it in this wild state some hundreds of tons per annum might be manufactured at a cost not to exceed 4 cents. Herewith please to receive sample made on my farm.

SWEET POTATOES yield abundantly and approach nigher to the Carolina potato than any other grown on these islands. You will also please receive samples of this production.

COFFEE.—The growth and yield, with attention to the plants, not to be surpassed. Accompanying this please receive a sample bag, the growth of our plantation.

COCOA.—With care this production can be brought to perfection and yields abundantly, as a few trees in my garden fully attest. I accompany a few seeds and when the coming crop shall be ripe it will give me pleasure to supply any who may desire seed.

ORANGES.—It is to be regretted that this fruit is not more extensively cultivated, the few bearing trees yielding abundantly and the fruit being of very superior quality.

LABOR.—With regard to this subject I have but little to communicate. Prior to the last couple of years little or nothing has offered to stimulate the native of this district to labor. Every available inducement which I have conceived I have adopted and tried, in order if possible to inoculate them with a spirit of industry, but their natural indolence appears to be so firm rooted that every attempt to overcome it has proven abortive. It is with much regret that I am compelled to acknowledge my fears that the means are yet undiscovered whereby may be produced the radical change, so necessary in this respect to the happiness, increase of comforts and advancement of the Hawaiian race. Still I am willing to hope that such means (notwithstanding my fears to the contrary,) may be discovered, acted upon, and prove productive of the hoped for result.

Hilo, August 1851.

B. PITMAN.

As I have not heard from any of the corresponding members ; and have corresponded with several without success in my search after information, I cannot be expected to furnish so full a report as might be desirable but ; I take the liberty of enclosing it under cover to you for disposal at your option.



REPORT,

BY G. RHODES, ESQ., VICE PRESIDENT OF THE ROYAL HAWAIIAN AGRICULTURAL SOCIETY, FOR KAUAI.

The undersigned much regrets that it has fallen to his lot to be the recorder of the bad state of agricultural affairs on this island. Since the formation of the association in 1850, no new plantation has been established, although there are thousands of acres of fertile land unoccupied, which would, if put into cultivation, contribute largely to the national prosperity. The effect produced on the mind of the traveller on our beautiful island is anything but pleasurable when he surveys the large tracts of land, that should support thousands and furnish a large export, utterly neglected and the inhabitants congregated in villages by the sea-side, where they pass their time in the most deplorable idleness, merely growing sufficient kalo for their support.

The plantations already established on the island are generally badly off for laborers and in some cases are fast falling into decay on this account. The dearth of labor is attributable to several causes : as the natural indolence of the native race ; the high prices for food, created by the settlement of California ; the emigration of many of the young men to that country, the determination of the natives in many cases not to work for the foreigners settled among them except on their own terms ; and the unnecessary time that has elapsed in fulfilling a contract to introduce China laborers.

It is believed in some parts of the island that a change is about taking place and that labor ere long will be abundant, and it is pretty certain that in some places the natives do not manifest the same decided disinclination to work that they do in others. The estate of R. W. Wood, Esq., at Koloa, also that of Messrs. Peirce, & Co., at Lihue, have, the writer has been informed, received re-inforcements of laborers from Honolulu and Hawaii. This plan of introducing laborers from other islands will undoubtedly be productive of beneficial results. Some idea may be formed of the position in which agriculturists here for a considerable time past have been placed, from the following facts :—Natives have refused to work for less than four dollars per day ; they now demand at Hanalei one dollar per day and eighteen dollars for breaking in a pair of steers.

There is no doubt that matters are much worse than they would have been had the so long and anxiously expected Chinamen arrived in due season.

The sugar crops are generally expected to be pretty good ; the new plantation of Messrs. Peirce & Co. is flourishing and the works are fast progressing towards completion. These enterprising gentlemen appear to be determined to overcome every obstacle by which they are beset, and it is to be hoped that they will ere long be amply remunerated for the care and expense they have bestowed in subduing the wilderness and rendering it subservient to the uses of civilized life.

The coffee plantation of Mr. Titcomb is in excellent order, the trees healthy, and he expects a tolerably large crop from it. The plantation belonging to Mr. Hunt and myself and those of Messrs. Archer and Wundenberg, should, if in good order, yield at least seventy tons of coffee this year, but I am sorry to say that owing to the want of labor they are in a very bad state and the most we can expect from them is one third of that amount ; and even this we shall not be able to collect if the Chinamen do not arrive, as the natives will not work.

The condition of the public roads under the superintendence of foreigners is wonderfully improved, and the amount appropriated by government for their further improvement will render them tolerably good and easy for travelling on horseback. It is hoped that in the course

of a very few years the whole of the distance between Hanalei and Waimea will be traversed by a good carriage road.

G. RHODES,

Vice Pres. of the R. H. A. S.

for the island of Kauai.

Hanalei, Kauai, July 31, 1851.

ESSAY,

ON THE CULTIVATION OF THE COFFEE TREE AND MANUFACTURE OF ITS PRODUCE, WRITTEN FOR THE ROYAL HAWAIIAN AGRICULTURAL SOCIETY, BY G. RHODES, HANALEI, KAUAI, JULY, 1851.

Pater ipsi colendi

Haud facilem esse viam valuit. *Virg. Geo. Lib.*

Within the whole range of agricultural pursuits it would be difficult to discover any branch affording a more pleasing occupation, or a better subject for contemplation and study, than the cultivation of the coffee tree. In the earlier stages of its growth, a weak and unpromising plant, it becomes under favorable circumstances, by care and the application of science, an object of great beauty and a prolific source of wealth.

With respect to tropical agriculture, independently of the pleasure afforded in watching the full development of the beauty and symmetry of this plant, it possesses the weighty advantage of not requiring so great an outlay in the erection of buildings and provision of machinery for its manufacture as the sugar cane. In our islands it is more certain to find a ready market than indigo, cocoa, cotton, &c., and should the market be overstocked and no immediate sale found for it, instead of deteriorating it improves by keeping.

The great object to be obtained in the cultivation of the coffee tree, is a large annual crop with as little distress to the plant as possible, and to its attainment a judicious use of the pruning knife, as well as

constant care to keep the plant clear of weeds, is necessary ; this is a highly important study to the coffee planter, and one on which there is great diversity of opinion.

With my limited experience I approach the subject with much diffidence, and although I give my own method of cultivation the preference over others, I am far from believing that it may not be materially improved.

The coffee tree is known to, and described by botanists as follows : “ *Coffea Arabica*, or *Jasminium Arabicum*, a genus of the *Pentandria* order, belonging to the *Mongynia* class of plants and ranking in the natural method under the order *Rubiacea*. ”

The coffee tree is generally supposed to be a native of Arabia, but according to some authorities there are reasons to believe that it was imported into that country from Ethiopia, where the use of coffee as a beverage had been known from time immemorial. It is said by some that its exhilarating qualities were first discovered by the prior of a convent in Arabia, who observed the effect produced on goats by browsing on the leaves of the plants, and who afterwards prepared the infusion as it is now used and gave it to the monks to keep them awake during their night devotions. There is no doubt that the use of coffee was discovered in the East, and Constantinople was the place where public establishments were first instituted for the use of this then luxury.

It was introduced into England in the thirteenth century, but for a long period was very little used ; the consumption of it however has gradually increased until at the present day it is generally considered one of the necessities of life.

In the 17th century the Dutch obtained the coffee plant from Arabia which they introduced into their possessions in Batavia, and thence to Amsterdam. Louis the 14th obtained a plant from this place, the seed of which he sent to the French West India Islands, whence the plant was introduced into the British West Indies by Sir Nicholas Laws ; it is probably from this neighborhood that it found its way to South America ; it is also highly probable that the coffee now cultivated throughout the East India Archipelago is from the original stock of the Dutch settlements in Batavia.

Lord Byron is, I believe, entitled to the honor of having first intro-

duced it into these islands from Rio de Janeiro ; Mr. Charlton, H. B. M. late Consul, also introduced some plants from Manila, and later still Capt. Little from the same place or Batavia ; those introduced by Mr. Charlton were planted on H. E. Kekuanooa's land in Manoa valley, and they are the parent stock of the Hawaiian plantations.

The tree will thrive in most of our lands which are sheltered from the violence of the trade winds, and in which the soil is sufficiently deep to allow the tap root to descend two and a half or three feet ; it delights, however, in rich ravines and valleys, in which the soil is alluvial, and in favorable situations the tree attains an extraordinary size, sometimes yielding eight, ten, and even as high as twelve pounds of fruits. The whole of that large belt of rich land on the west coast of Hawaii, situated between the lava on the sea-side, and the range of forest trees on the mountains, and the corresponding lands on the island of Maui, would, I have no doubt, furnish excellent coffee grounds.

No lands on which the soil is not two or three feet deep, or in which volcanic remains are very perceptible should be employed.

The coffee tree in its natural state grows to fifteen or twenty feet in height ; in Arabia it is said to attain the height of thirty feet ; the wood is soft and white and is covered with a greyish bark ; it is furnished with a long fibrous red tap root, the branches are cylindrical and jointed, and shoot alternately and at nearly regular intervals quite round the tree ; from each joint issue the leaves in pairs, these are of a beautiful dark green color and glossy on the upper side ; they are nearly oval but pointed at the end about four inches long and two wide, with a short footstalk ; they bear a resemblance to the Portugal laurel ; the flowers spring from the joints in clusters ; they are of a pure white, and delicious fragrance ; they are formed of single petals, and are much like the jasmine but smaller, it is from this resemblance that it derives its botanical name. Upon the flowers falling the berry is discovered of a pale green color, but it soon assumes the dark green hue, which it retains until full-grown when the fruit becomes first whitish, afterwards a bright scarlet, and at length when quite ripe of a deep red color, in this state it bears some resemblance in appearance to cherries. The flowering season lasts, with little variation, from the end of January till the middle of May, and during this time

there are generally three distinct blossoming times when the trees simultaneously break out into flower ; at these times the plantation presents a most beautiful appearance, and the perfume of the flowers pervades the air ; viewed from an eminence it appears as though the trees were covered with flakes of snow ; they remain in this state of surpassing beauty but three or four days when the flowers drop. The berries grow very closely together and in such numbers that as they increase in size the overloaded branches are gradually borne down towards the ground by their weight, and it sometimes happens that they actually break beneath their burden.

In consequence of the different times of blossoming and close growth of the berries, they cannot all ripen together ; this is a wise provision of beneficent nature, by which time is given to secure the crop, for should the whole field ripen at once it would be impossible to save it.

About the time that coffee is full grown and before it ripens, rain is necessary to perfect the berries ; in this state should it be favored with a few soaking showers the coffee will be much improved both in quality and quantity ; on the contrary, should the weather be perfectly dry, a few weeks previous to the ripening of the coffee, the berries will be generally found small and shrivelled.

Crop generally begins about the middle of August, and lasts without intermission till the end of November when the fruit becomes scarce ; at the last picking it will be necessary to gather all that remains whether ripe or not, in order to stop the exhaustion of the tree ; an exercise of judgment will be necessary here, to determine the proper time for the last picking so as to prevent too great a waste by the gathering of a large quantity of unripe fruit.

The coffee tree generally commences bearing about two years after planting, but does not arrive at its full bearing point until it is five years old. As the tree advances in age, its produce is generally less abundant but superior in quality ; it lasts fifteen or twenty years, and in the island of Jamaica there are records of coffee fields which have been in bearing for more than half a century.

In forming coffee plantations at these islands, it will generally be found necessary to commence by making nurseries, and for this purpose it is requisite to choose the best seed ; the largest and most fully

ripe should be selected from a perfectly healthy tree ; the pulp or outside covering should be removed by hand, and the seed should then be carefully dried in the shade for a few days ; it should not be used after a month old, if it is possible to obtain fresh ; no seed that has fallen from the trees, nor any taken from unhealthy trees should be employed, as it cannot be expected that good, healthy, and prolific plants can be produced from unhealthy or shrivelled seed.

The land chosen for the formation of the nurseries should be moderately rich and in an open and tolerably dry situation, but not exposed to any strong wind ; it should, in the first place, be thoroughly dug, all roots of trees and weeds eradicated, and then laid out in beds about four feet wide ; the seed should be planted an inch deep and six inches apart, in drills also six inches from each other.

Should it be contemplated to establish a large plantation, several of these nurseries should be formed in different parts of the land to save time in transplanting the young plants, and to prevent them as much as possible from suffering by a long exposure upon being taken from the ground. After the seeds are sown the beds must be kept clear of weeds by hand.

In about a month after the seeds have been planted they will appear above ground on a slender stalk which grows to the height of two inches, something in the manner of a bean, when the husk falls off and the plant will remain with two roundish seed leaves exposed : it is at this period an object of great attraction to grubs and other vermin which gnaw through the stalk and kill the plant ; these must be sought for every morning about sunrise, and destroyed ; they will generally be found about an inch below the surface of the earth, by the root of a young plant which they have gnawed asunder ; were it not for these destructive vermin, which always abound in new land, a plantation might be formed by lining out the ground and planting the seed on the spot the tree was destined to occupy, as its growth would never be checked, and the roots would take firmer hold of the ground than those of a plant which had been subjected to the operation of transplanting.

The nurseries being formed, the land intended to be used as a coffee field should be separated from all pasture grounds ; for no domestic animals, such as cattle, horses, mules, goats, &c., should be suffered to roam about a plantation ; if they were, they would do an incalcula-

ble deal of mischief by browsing on the leaves, breaking the branches, gnawing the bark of the trees, &c. ; horned cattle are particularly mischievous. A fence made of the hau, so abundant on these islands, will be found to amply suffice for the exclusion from plantations of all these animals except the last named ; it is made by digging a trench of a few inches wide and two feet deep, and inserting therein sticks of hau, three or four inches thick, and seven or eight feet long, two or three inches apart ; the earth is then filled in and well-trodden down, and two rails, one eighteen inches from the ground, and the other two and a half feet higher, are tied by some stout bark of the same plant all along the fence ; by the time the rails decay, the greater part of the sticks will have taken root ; by interlacing the branches, a good and impenetrable live fence will be formed at the expiration of two years.

The due preparation of the land for the reception of the young plants is a subject of great importance. It is of the utmost consequence to remember that although the coffee tree thrives best in a rich alluvial, and moderately damp soil, it will never succeed in a place where the water remains in pools, let the soil be as rich as it may. However some indigenous plants may thrive in a cold, wet, sour soil, the coffee tree will invariably perish in such a locality. I should therefore strenuously advise, that, as soon as the seeds are in the ground, the land intended for the coffee field, especially if it be a low plain, be surveyed, and that drains be opened throughout to carry off the immense quantities of rain water with which these islands, as well as most mountainous countries are sometimes deluged. The land should then be ploughed, and if a level, laid out in beds of eight feet wide, with a furrow between each bed leading to the drain. One or two crops of maize, potatoes or any other annual, may be advantageously taken off before the coffee trees are planted out.

When the tree has attained the height of twelve or fifteen inches it is fit for removal to the field ; at this stage of its growth it is more capable of resisting any injury it may sustain in transplantation than it would have been at any previous period.

The proper time for transplantation is at the coldest season of the year, when the sap is down and the plant not likely to receive any check in its growth ; the time should be chosen when the young wood

is ripened, and before the fresh growth has commenced. No transplanting should be carried on late in the spring nor in the summer months, for, as the young plants are generally in a vigorous state of growth at these seasons, the sudden check they would receive, the (in many cases) unavoidable exposure of their roots to the atmosphere, and the fervid heat of the sun combined, would frequently destroy the plants, or at least put them back one season in their growth.

The proper season for transplantation having arrived, the land, being cleared of weeds and trenched, is to be lined, and the proper spot assigned to, and prepared for the reception of, each tree.

The distance to be preserved between the trees is a matter of great consequence to their aftergrowth ; if they are planted too close to each other the air will not circulate freely between them, and the branches will wither and die for want of air and light ; trees are frequently seen in this state much resembling an open umbrella, with a good shew of foliage on their tops, but the stems entirely denuded. It will here be proper to say that should the primaries, which are the branches directly proceeding from the trunk of the tree, by any means, be destroyed, a fresh supply can never be reproduced from the same tree, so that the injury is irreparable.

I should recommend the plants to be placed eight feet apart, and at right angles to each other ; if the soil is very rich, nine feet apart might, perhaps, not be too much ; it will be found, however, that in most situations a uniform distance of eight feet will afford ample space for their growth, and prevent them from interlacing their branches with their neighbors, it will also allow the laborers room to perform their operations of weeding, gathering the crop, pruning, &c., without injuring the tree ; on hill-sides the trees may generally be advantageously planted somewhat closer. The reasons that they should be planted at right angles, rather than in the quincunx or lozenge form are, that a freer circulation of air can be preserved between them, and that the after cultivation of the plant is rendered much more simple and cheap by this method, as will presently be seen.

The method of lining the land previously to setting out the young plants is, to run a row of long thin stakes at the distance of about a couple of hundred feet from each other, in a straight line quite through the field ; this row of stakes is to be intersected by another row of the

same description, stuck in the ground at right angles to the first row ; the second row is to be intersected by a third, also at right angles to it, and of course parallel to the first, at the distance, say, of one hundred and sixty feet from the point of intersection of the first and second rows ; this will allow space for a series of rows of twenty trees each and equi-distant eight feet. The line is next to be stretched along each row of stakes, and pegs inserted in the ground at every eight feet from each other ; these and all other rows from which the line is straitened, should be measured off with a rod to insure exactness ; for the remainder of the field it will only be necessary to mark the line at every eight feet with a piece of linen or woollen stuff, the line being adjusted to the proper length, one of the marks or flags is made to touch one of the pegs in the first row, the line is then straitened, and the proper flag made to touch its corresponding peg, in the parallel rows, and so on till the whole is finished.

In staking out the land at the commencement, and in making all the subsequent head-rows, or rows upon which the line is to be straitened, a small instrument called a sight will be found of great service ; this is a small block of wood about six inches square and four thick ; it is sawed half through one of its flat sides in each direction and exactly at right angles, the lines crossing each other in the centre block, a hole is then bored in the centre of the side opposite to that on which the slits are made by the saw, and perpendicular to the surface, into which a stick is inserted ; this stick is of a proper length when stuck in the ground to admit of the eye being applied to the slits. A little care bestowed on the exact lining of the land will be abundantly repaid by the subsequent beautiful appearance of the field, and the ease with which it can be kept clear of weeds.

A sufficient quantity of land being lined, a laborer follows with a spade, and digs a hole at each peg about a foot deep and sixteen or eighteen inches in diameter, the plants are then brought from the nearest nursery, care being taken that a quantity of earth is left about the roots of each, and one placed in each hole ; it is then held in a perpendicular position with one hand while the earth is filled in with the other, the transplantation being completed by the earth being firmly trodden in round the plant. A skillful workman can, in this manner, when the nurseries are not very distant, transplant four or five hundred young trees in one day.

Some persons put two or three plants in one hole, and after some time pull up or cut away the weaker ones, and leave that which appears to be strongest and most healthy, but the propriety of this plan I think is very questionable, as the plants must to a greater or less extent interfere with each other and the nourishment supplied by the earth in so small a compass must be divided instead of being appropriated solely to the support of one plant.

Another excellent plan to form a plantation, or to increase the number of trees on a plantation already formed, is from a description of plant, which, for want of a better name, I shall call a sucker ; these suckers are generally found about plantations that have been in operation for some years, and consist of old or neglected nurseries in which the plants have become stalky, and have attained the height of two or three feet, and in some cases where seeds have been carried by rats or birds, or from other causes have taken root and grown to the above height in different parts of the plantation.

When these suckers are used, they are taken up, cut to a uniform length of about eighteen inches, all the side-roots trimmed off, and the tap root cut to a point. They are then inserted, each in its proper place, as indicated by the pegs, about twelve inches in the ground, about six inches of the stem being left exposed above the surface ; stout, healthy suckers should be selected rather than those which are weak and spindly looking. Trees grown in this manner are not, during the earliest stages of their growth, so subject to the attack of insects as those used by the ordinary method of seed, and being buried to a considerable depth the roots of the plants at once take a firm hold of the ground. Where these suckers can be obtained in abundance, the employment of them is in many respects preferable to that of plants raised from seed.

The young trees being now planted out, the only care they require is to keep the roots clear of weeds ; tobacco, pine-apples, maize, bananas, potatoes &c., may be grown between the rows for the next two years with advantage to the coffee tree, as the continual stirring and loosening of the earth, that their cultivation requires, enable its roots to penetrate the soil on every side, and thus to seek that nourishment which it would be unable to do, did the earth remain hard and unbroken ; for my own part I prefer the cultivation of potatoes

between the rows of young coffee trees to that of any other plant, as it is necessary that the earth should be turned up to a greater depth for them than for the other plants I have named, and there is no fear that the trees will be injured by them in any stage of their growth ; if bananas are planted between the rows they are apt during high winds to be blown down and to fall upon and injure the trees. I have tried most of the plants I have named between young coffee trees, and have found that those, from between which, two or three crops of potatoes had been taken off in the course of a year and a half were larger, healthier, and better in every respect than those which were merely kept clear of weeds without any other kind of cultivation going on at the same time, or than trees between which the cultivation of other plants was carried on. No climbing plants of any description should be grown amongst coffee trees, as they would retard their growth, and in all probability do much damage by breaking the branches of the trees, &c.

In some countries it is customary to plant alternately a row of coffee trees and a row of bananas, each row being six feet apart, and the trees in the rows also six feet distant from each other ; the object of this method is to supply the laborers with food, but I consider the plan of preserving the uniform distance of eight feet between the trees far superior.

The only method I have ever heard of being employed to keep the weeds down in a coffee plantation is with the common hoe, and I practised it myself for some years, but the operation is expensive and slow. I have latterly made use of a single horse plough for this purpose, with perfect success, and I consider it an invaluable implement in the cultivation of the coffee tree. When the plantation is well laid out, and the trees are regularly planted so that they appear to form rows in whatever direction they are viewed from, the plough can be employed to the greatest advantage. It is first run down the rows, commencing as near to the tree as prudence will admit of, turning the earth over towards the tree ; it is then run back in the same avenue, but turning the earth over in the direction of, and close to the next row of trees, this process is repeated until the whole surface is turned over and a small furrow or trench is left in the middle of each space between the rows, and so on until the whole field is lightly ploughed

over, it will be necessary for one or two men to follow the plough to hoe up the weeds that are left close to the stems of the trees. When the weeds recommence growing, the land should be cross-ploughed in the same manner. After a few ploughings should the earth be too thickly heaped about the stems of the trees, or should the furrows between them be too deep, the evil may be remedied at the next ploughing by turning the earth over in the contrary direction, namely from the trees towards the centre of each avenue.

The plough is useful in the cultivation of the coffee tree at all stages of its growth ; while young and during the time that there is a large surface of the land to be kept clean it does its work well and expeditiously, and when the tree has attained its full growth, it not only keeps the land clean of weeds but by occasionally severing the fibrous roots of the plant, it stimulates it to make fresh exertions and to throw out a large number of feeders in every direction which easily penetrate the loosened soil, and cause the tree to thrive wonderfully.

A single horse plough kept constantly going, will, when the weeds are not too high, do as much work as ten men.

Weeds should never be drawn away from the trees and left in the middle of the space between the rows ; should such a plan be adopted and persisted in, the trees would be left in a sort of trench by the repeated withdrawal of earth from their roots, about which in rainy seasons the water would collect in pools, and very soon destroy the plant.

At the expiration of two years from the time of transplantation the trees will generally bear a few berries, and at the end of the third year the quantity of fruit borne will generally repay the expense of collecting it. The tree is now an object of remarkable beauty and symmetry, it is of a conical form with a rather broad base and about six feet high ; its foliage is of a beautiful dark, glossy green, and if the land has been well lined and proper care taken to keep it clear of weeds, I know of no more pleasing object in nature, than a plantation of these trees ; it will besides, for a long series of years, under proper management, return fifty-fold to the planter for the care and expense he has bestowed upon it during the first few years of its commencement. Should there be on the plantation a good sprinkling of willows, orange and breadfruit trees, and about the streams and pools of water

bamboos growing, the pleasing effect will be increased, and the value of the plantation enhanced, and on lands destined for coffee plantations where these plants are not already found growing, I should recommend that one of the first steps on the occupation of the land should be the planting of them in suitable places. They are all ornamental ; bamboo is useful in erecting stages for the curing of the coffee and for many other purposes ; willow in making baskets for its carriage, and breadfruit is a nutritious and pleasant article of food for every person resident on the plantation during several months in the year, and all when once established need very little further attention from the planter.

It is about this time, namely, three years after transplantation, that the operation called topping is performed ; this is nothing more than the cutting off with a sharp knife the few inches of growth that form the crown or top of the tree, and it should not undergo this operation till it is fully six feet high, the point to be cut at is the junction of the ripe or grey wood with the green, this will leave the tree from five to five and a half feet in height, and at this height the tree in future is to be kept. Simple as is the operation of topping, it is productive of a wonderful effect upon the tree which in the course of twelve months quite changes its appearance. The stem thickens, lateral branches shoot from the primaries and suckers spring from each joint of the stem, but more especially from the head ; these latter should be carefully removed every month or two as they are of no service to the plant and rob it of the juices which should go to the support of the bearing wood and fruit.

The utility of pruning is questioned by some planters, but I think all reasoning both from circumstance and by analogy will shew the benefit that ensues from a proper use of the pruning knife. If we consider that the coffee tree naturally eighteen or twenty feet high, is by artificial means ; dwarfed to the height of five and a half feet, and that the roots of the plant are in as active operation and great vitality as though the tree still retained its natural height, we shall at once discover that a greater supply of nourishment is appropriated by the tree than it can consume in its reduced state : it continually makes efforts to increase its height, but they are continually rendered abortive by the crops of suckers being destroyed as fast as they make their appear-

ance. No alternative remains then for the tree but to increase in width, which it does to so extraordinary a degree that under favorable circumstances, unless prevented by cutting, in the course of a very few years, it becomes completely matted and clogged with foliage, and although upon a superficial view it presents a beautiful and apparently healthy appearance, being large and of a rich deep green color, it is entirely useless being quite barren; the branches when examined will be discovered to be weak and spindly and incapable of bearing. Some of the causes of this barrenness are the want of a free circulation of light and air which is prevented by the excessive luxuriance of the foliage, and the harboring of noxious vapors in wet weather from the same cause, also the continual accumulation of wood which having done its work and not being removed robs the tree of the support which should be bestowed on the young bearing wood and fruit. To remedy this diseased state the pruning knife is absolutely necessary.

The bearing qualities of most fruit trees in temperate climates are considered to be improved by a light annual pruning, how much more so must it be the case in tropical climates where vegetation is so much more luxuriant, and where the trees are subjected to a process productive of such wonderful effects on their growth as that of topping.

With difference of circumstances the coffee tree will of course require different methods and amounts of pruning. On poor soils and in places where the trees are small and their foliage thin, it will hardly be necessary to do more than to take out the dead wood and suckers, with here and there a straggling branch that has already borne and seems incapable of being of any further service. In rich soils and places where the growth is exuberant, the tree will require a different treatment. It would be impossible to give directions to enable a person unacquainted with the habits of the tree to become an expert pruner for which a considerable amount of experience is absolutely necessary. I shall therefore content myself with laying down a few short rules to give a general idea as to what wood is to be cut out and what left.

It must be borne in mind that the object of pruning is three-fold, viz: to remove all the superfluous and useless wood, to stimulate the tree by cutting to throw out a new supply of young wood, and to admit the

light and cause a free circulation of air throughout the tree. All wood then should be cut away which grows within six inches of the stem, as well as that which shoots out in a cross direction lying over the other branches and causing an appearance of irregularity ; especially should be removed that wood which has done its work, and hangs about the tree long, straggling and weak, with only two large leaves at the end of the branch.

There is another branch to which the trees become subject after they have arrived at maturity, and which should be cut out at the socket before it becomes too large ; it is called by the French planters "*la branche gourmande*," and from them, English coffee planters have given it the name of "*the gormandizer* ;" it is produced on young plants by improper pruning, or careless cutting, or breaking some of the primary branches, which as I have before observed, when once destroyed, are never re-produced ; the gormandizer also, according to the best authorities naturally makes its appearance on old and worn fields ; it is of the sucker tribe but horizontal instead of vertical and projects far beyond the rest of the tree ; it is not inaptly named, as it robs the tree of most of its aliment and causes it to become weakly and barren.

Great care should be taken that too free use be not made of the pruning knife, and that it is not put into the hands of careless or ignorant persons, should this caution not be attended to the consequences might be most disastrous ; once for all, none of the primaries nor any young nor healthy wood should on any account be removed. The pruning should be commenced as early as possible after the crop has been secured and should be finished before the first blossoming.

When the berries are thoroughly ripe crop commences, and on an extensive plantation a large number of additional hands, principally women, can generally be advantageously employed. The method of collecting the produce is by hand, each picker takes a space between two rows of trees and picks on each side of him as he goes along, he carries a small calabash or bag, kept open at the mouth, which as fast as filled he empties into a larger one at a small distance, when this larger one is filled it is carried to the works and emptied into a hopper above the pulping mill. A diligent picker, when ripe coffee is plentiful will frequently gather four bushels equal to about forty

pounds of cured coffee per day. I have found women to be more expert pickers than men.

When there is a sufficiency of coffee in the hopper the mill is put in operation and the berries are separated from the hulls or skins ; this operation is easily effected by passing the coffee between a heavy cylinder covered with roughened copper, or other metal, on which a stream of water is kept continually running, and a bar of wood, lined with metal, wedges so close to the cylinder as just to admit the berries, which being thus subjected to a heavy pressure are deprived of their hull, the greater part of which is carried by the roughened surface of the roller between itself and another bar of wood set so close to it as not to admit the berries which now appear in their parchment covering, which latter is enveloped in a sort of gummy mucilage. The broken hulls are thus discharged at one end of the mill while the coffee falls on a sieve which is set in motion with the rest of the machinery and thus separated from the few hulls that escape being carried away between the cylinder and second crossbar. No coffee should be kept in the hull longer than one night, for if kept any length of time the hull becomes tough and leathery and exceedingly difficult to be removed.

The coffee is next soaked in water for twenty four hours for the purpose of removing the gummy matter in which it is enveloped ; two water-tight stone tanks, each sufficiently large to contain a day's grinding or pulping will be found sufficient for this purpose. I should recommend them to be built about eight feet square, three feet deep and with a shelving bottom. After the soaking it is to be repeatedly washed to render it perfectly clean, it is then thinly spread on the terraces to dry, these should be built gradually sloping from the centres to the sides, to allow the moisture to drain off, they should also be furnished with water-tight receptacles in their centres in which the partially dry coffee is thrown in the event of a shower and at night. The surface of the terraces is made even either by being flagged with stone slabs, or covered with cement ; care should be taken at the commencement of the crop that they are in good order, for if not the coffee will be broken and of bad quality. The roofs of the drying and store-houses should also be carefully looked after and all leaks stopped. The coffee in its partially dry state should never be heaped up, or

it would heat and spoil, but when sufficiently dry to be housed, it should be spread out a few inches thick on flat forms, and even here it should be continually stirred over until its turn arrives to be subjected to the parching or peeling operation. It will generally be fit to be housed after the third day's drying, provided the weather is uninterruptedly fine; the grain has by this time considerably shrunk within its parchment covering, and instead of completely filling it as it did at the time of peeling, it is upon being shaken heard to rattle inside. It sometimes happens during crop that a succession of rainy weather sets in, during this time the operations in the mill-house must, to a certain extent be interrupted; no drying can of course go on, and the accumulation of coffee on the terraces will be very great; in wet seasons it must sometimes lie exposed for a period of five or six weeks; during the whole of this time it should be thoroughly turned over and stirred two or three times each day to prevent it from growing. The clothing of the pickers should be attended to at these seasons, and as on merely showery days the picking can not be stopped, in places where labor is cheap I think the coffee grower would find it to his interest to distribute coarse woollen shirts among them gratis.

After the fifth or sixth day's exposure to the sun and wind, the parchment will be found quite dry and friable, and the coffee will be fit for the mill, if upon a few berries being rubbed between the hands the parchment is easily broken; it cannot be too dry; in this state it is passed under a heavy grooved wooden roller which is made to revolve in a trough also grooved; by this means the parchment is broken, and a thin pellicle or membrane within the parchment, called the silver skin, is removed. There is another method which is very effectual, but which requires rather more time to remove these two coverings by a machine called a peeling mill; this is a sort of drum the circumference and ends of which are made of roughened sheet-iron: it is made to revolve rather slowly on its axis; on the same axis are four fanners or heaters also made of roughened sheet-iron, and which revolve inside the drum with great celerity: a quantity of coffee is put inside, the machine is set in motion and in a few minutes the coffee is turned out beautifully cleaned—it is then winnowed, packed, and sent to market.

In divesting coffee of the parchment and silver skin I make use of

both these machines, the roller first and the drum afterwards with very good effect ; in this manner the coffee does not require to be kept so long in the drum as it would do were it not first passed under the roller. Two men with two horses or mules may in this manner easily prepare twelve hundred pounds of merchantable coffee per day.

In some parts of Arabia the coffee is not subjected to any process of preparation for market for a considerable period, but when brought in from the field is dried on mats, it is then spread out in thin layers in buildings open to the atmosphere, where it remains, being continually stirred and turned over for a twelvemonth before the coverings are removed. There is no doubt that coffee prepared in this manner retains a much greater aroma and richer flavor than that prepared in the manner I have above described, but it would be quite inexpedient, if not impossible for us to adopt the same plan.

In some parts of the East also an infusion is made and sold in the markets, of the hulls of the berry as they come from the mill, but the refined palate of the European or American would not approve of this insipid beverage ; the only use made of the hulls with us is for the purpose of manure, and there is no doubt that all the refuse of the mill-house returned to the field is of essential service ; a small portion both of the hulls and parchment chaff should be appropriated to, and buried at the roots of each tree.

It is a matter of some consequence to determine what is the best and cheapest method of packing the produce. I have hitherto employed bags made of the rushes that are found in abundance about the low lands for that purpose, but it seems that the increasing scarcity of labor will, ere long, compel us to have recourse to imported materials for our packages.

Coffee should not be stored near tobacco, spice, or any commodity of pungency or strong scent, for however good the packages may be, it will always in such a situation, to a certain extent become tinctured with another article's to the injury of its own flavor.

The method of preparing the infusion for the table is too well known to need a description of the process from me, the only directions that I consider necessary to give for the obtaining of this delicious beverage in perfection are, first :—To roast the coffee till it becomes of a uniform chocolate color without its being at all charred, as it is in this

state that its aromatic and refreshing qualities seem to be most fully developed ; and second :—That a sufficiency of the ground coffee be used in infusing ; the proportion of two ounces of coffee to a pint of water will afford a beverage at once delicious in flavor and exhilarating in its effects, and against which the objections that are made to the use of fermented or alcoholic drinks cannot reasonably be urged.



REPORT ON SHEEP.

BY GEORGE S. KENWAY.

In considering the subject of raising sheep on these islands the first question that naturally presents itself is,—to what extent is this country adapted for the purpose ? Experiments hitherto have been on so small a scale and pursued by parties, who, generally speaking were unacquainted with the shepherd's art, that we are scarcely yet in a position to answer the question.

That many portions of the islands are well calculated for sheep lands is however beyond doubt, and we need only trace from their origin the history of some of the few small flocks already scattered about the hills and plains of Hawaii to be satisfied of this. Left pretty nearly to their own guidance, scarcely even watched by their inexperienced tenders, suffered to roam at large day and night, or at night huddled together in a close, dirty, unsheltered fold, sheared, after a fashion, once in three or four years and sometimes not at all ; lambs and rams and ewes, hairy sheep, and woolly sheep and perchance goats and animals that might be taken for either, all running together, chased by dogs, torn by bushes, smothered in mud and lambing from January to December, they have still thriven and increased, supplied Honolulu with a trifle of excellent mutton, filled many bags with very miscellaneous wool, started some new ideas among lately arrived "colonies" folks, and they still look brisk and hearty and open to any reasonable amount of civilization.

First, then, where are the lands best adapted for experiments on a larger scale? the best sheep lands? They are just those lands scarcely fit for any other purpose, the dry hill sides and plains on the lee, where grass is short and scant but sweet, and water scarce, where the dry soil preserves a healthy foot and the poverty of the pasture requires the animals to travel. The outer plain of Waimea, extending to the base of Mauna Ken and sloping towards the sea, a hitherto unused and useless tract, comprising at the least an area of 30 square miles, is a fine example, and on this land alone, (which of the kind is probably the largest on the islands,) a profitable and interesting population might be brought to exist, break the present dismal silence and redeem the idle wilderness.

But sheep to be profitable must be well cared for, and very artificially treated. They require more constant attention than any other domesticated animals, and such attention cannot be expected from the natives until they are first shown its good effects and profitable consequence. In this country, so far as experience has yet proved, sheep are peculiarly fortunate, being subject to none of those distressing and often fatal diseases so familiar to shepherds from the older countries. And if this natural health can be preserved, (though whether it is a characteristic of the climate or merely owing to the small size of our present flocks remains to be proved,) a most important and disagreeable item of labor, will be saved. Still very much is required, and above every thing *system*. The following suggestions may be worth attention:—

1st. The pens or folds now used here are stationary, and must be unclean, injuring the feet and greatly damaging the wool. *Movable folds* are preferable, constructed of light close hurdles which may easily be shifted. Thus the flock will always have a clean sweet and generally dry resting-place at night.

2nd. The rams here are allowed to run with the flocks, and there is no lambing season. The Ewes are dropping lambs all the year round and as fresh dropped lambs cannot follow the flock, they are left behind, either alone or with their mothers, and frequently lost. The rams should be kept apart and only visit the ewes at a certain season. The shepherd would know when to expect the lambs and make suitable preparations, keeping the young lambs with their mothers in a separ-

ate enclosure and giving that attention to *the whole* for a short period, which otherwise is required from him all the year round. This plan also preserves a greater uniformity in the flock, so that both sheep and wool may be distinctly classified.

3d. *Cutting* the male lambs. This should be done within a month or six weeks from birth, and by having a lambing season this also would be the work of a particular season only, and the shepherd could be certain that his work was effectual.

In catching sheep, which is frequently necessary whilst the flock is grazing, a native would use a lasso or run his victim down, either way harassing the sheep and making at least but a bungling job of it. This seems a trifling matter, but as the shepherd should be on the best possible terms with his flock he should do all things quietly, and a shepherd's crook is better than either lasso or long legs, and a shepherd should never be without one.

4th. *Shearing*.—Let it be done yearly of course. And we cannot do better than receive instructions from some of the Australian shepherds, who have lately wandered hither, as to the manner of conducting the operation, and the washing which should precede it.

5th. *Protection from Dogs*.—Vigilance is the best security. Wild dogs are doubtless troublesome, and now and then destructive, but could the truth be known, a more insignificant pack of native pets, whose beauty and utility are about on a par, would prove oftentimes to be the real delinquents.

And now as to the best breed of sheep, there will of course be divers opinions. But every body will allow that what we most require are sheep that will yield fine wool and good mutton, and can easily be taken to market. The Merino sheep combine these qualities, their wool is amongst the finest in the world, and sustains its character in a hot climate. Their mutton is sweet and good, they fatten readily and their carcasses are not unwieldy. We have half and quarter breed merinos here already, the produce of some pure merino rams imported by Mr. French some years ago, but the breed is fast degenerating. Pure merino rams and ewes can be imported from Sydney or Port Philip, where the rams can be bought for \$15 to \$25 each and the ewes for much less.

In importing sheep, especial care must be taken that they be strict-

ly scrutinized by some competent person on their arrival, that no disease be imported with them, and it would be the safest plan even should such sheep appear in perfect health, to keep them alone for a time, that any lurking fault might be detected ere harm is done.

That the foregoing suggestions may be better received I should explain that they are written down after many conversations on the subject with a thoroughly practical man, a Scotchman from the highlands, one who has tramped over the heather, with his bleating flocks since he was a boy—who has known the joy of health and summer sunshine on the mountain tops, smarted for years in the drifting snow storms and can talk most patriotically of Scotch mists—whose collie dog was his faithful companion and bosom friend, and whose last experience was the charge of forty thousand sheep in South Australia, *forbye* large herds of kyne. And it is to be hoped that he is one of the number whose past experience shall fall like good seed on these islands of ours and produce a thousand fold.

And if our limited capabilities are insufficient to promise an extensive export, we can at least manufacture our own wool. Useful cloths and blankets and a hundred articles of domestic need may be produced from our own material, by our own people, to their benefit every way, and our Hawaiian homespun may yet bear to be named with Irish frieze, Welsh flannel and Scotch tweed. The spinning wheel may replace the *kapa hamali*, and knitting needles in the hands of Hawaiian matrons may become more pleasing companions than sucking puppy dogs and dry nursed little black pigs.

Before closing this, I fear, very lame report, I would suggest whether the *Alpaca* might not be introduced here with good effect. Let those who know something of this animal give their opinion.

Waimea, Hawaii, 24th July, 1851.

REPORT ON NEAT CATTLE.

The committee of the agricultural society, appointed to report on the state of cattle and cattle-farming generally in the Hawaiian Islands, beg to lay the following report before the society.

It is necessary, however, to premise that these observations have been made in the island of Oahu alone, nevertheless much of what is stated here will be found applicable in a great measure to the other Hawaiian Islands. In the first place it appears that great care must be taken by the cattle and owners to prevent the lands from becoming exhausted by allowing the increase of their stock, to exceed the decrease, more especially as from the increasing facilities of communication between the islands and the certainty of steamers running here very shortly, cattle from the other islands of the group will be brought into competition with the cattle of Oahu.

Of the breed of cattle in these islands but little can be said in the way of commendation. The origin of the greater proportion may be traced to cattle imported from the coast of America. As but few were imported in the beginning it follows that breeding in and in has been carried to a very deteriorating extent, especially when the size of the islands is taken into consideration. On a vast continent like America the descendants of any one pair of animals would become so different from the parent stock and from each other in a few years by the modifications of difference of soil, climate, food, &c., by so many and various causes, in fact, that greater varieties would be found in three or four generations there, than there would be in ten or twenty where the same causes do not exist.

Since the first introduction of cattle here a few have been imported at various times, but up to the present time very few have taken pains to make the most of the advantages which might have been derived from such infusion of fresh blood by making a selection of the best cows, putting them to the best bulls and again doing the same by their produce so as to counteract as much as possible the ill effects arising from a small original stock and a limited locality.

In most of the herds here traces may be discovered of the breeds imported from some of the other islands of the Pacific, from Sydney, and from Columbia River.

Within the last twelve months a very valuable accession has been made to the stock already here by the arrival from V. Dieman's Land of a pure breed Angus bull, originally imported from Scotland to Van Dieman's Land, a young Hereford bull, and two well bred cows in calf at the time of their arrival to the Angus Bull. The cows have already since their arrival here produced three calves, one male and two females to the Angus bull and the great and obvious superiority of these over any of the native cattle although running on the same land and treated in the same manner is a sufficient proof that so far as soil and climate go these islands are capable of producing beef equal to any in the world.

To produce good beef however, it will not do to allow growing heifers of eighteen months old to rear calves at an age when they have as much as they can do to rear themselves, their wretched and stunted offspring being again in their turn allowed to rear their wretched abortions, thus making each generation worse than the preceding one; nor to allow old cows to go on rearing calves until they die of old age, each calf becoming worse than the last, losing all tendency to fatten, and the females becoming more and more unfitted for dairy purposes every generation.

The committee cannot conclude their report without calling the attention of cattle owners to the great advantages to be derived from making the cattle as tame as possible, and every cattle owner will acknowledge that the calves of the dairy cows are more disposed to fatten than any of the other cattle on the same lands.

However as from the present competition and from the excess of the increase over the decrease on the already heavily stocked lands, keeping bad cattle must be a losing business, the committee trusts that an improved system of management will gradually take the place of the present one, and that next year it will be enabled to report more favorably concerning Hawaiian cattle.

"GOD SAVE THE KING."

JOHN MEEK.

H. SEA.

REPORT ON HORSES.

Gentlemen of the Royal Hawaiian Agricultural Society :

Your committee (appointed at the first meeting of this society, one year ago,) to furnish such information as might be deemed of value, relative to the breeding of Horses on the islands of this group, have now to report as follows, viz :—

That very laudable efforts have been made within the last three years to improve the present breed by the importation of four stallions, brought here by private individuals. Two of these came from Chile, one from the United States and one from Sydney.

By introducing these stallions a beneficial change has been commenced and some few fine, large-sized, young horses are now beginning to be seen foaled by our best native mares.

Some few forcing mares have also been imported and although perhaps of no better blood than the native stock, they are of larger size and will tend to improve the present stock in this respect, which is a great desideratum.

There are among the different islands some fine breeding mares, foaling good colts, when not any attention whatever is paid to putting them with proper stallion. But there are some evils existing among us that if not eradicated or greatly mollified will eventually ruin the stock of island horses.

Foremost among these is the enormous number of inferior stallions. Indeed it is a notorious fact that they will not be either at the trouble or expense of having a deformed colt altered ; almost invariably allowing such to end their days entire.

Donkeys in crowds running at large, are if possible, a still greater nuisance.

Under such circumstances and entertaining these views, your committee have taken the liberty to offer the following suggestions :—

Could not our rulers be prevailed upon to pass a law in effect somewhat as follows : Limiting the number of stallions in each district to a reasonable number. Said stallions to be approved by proper committees, (appointed as may be deemed best,) who shall recommend such prices as will not exclude any natives who own mares from de-

iving the same benefit from their rise, as their more fortunate white neighbors.

A word in relation to the raising of good and large-sized mules and we have done.

It seems to your committee that in this respect it would be a great benefit could the present tax on mules be rescinded for at least a few years.

The natives universally object to their mares foaling mule colts, on this ground principally.

Now it is almost universally conceded, that for many uses on plantations and farms, at these islands, mules are more desirable and consequently actually of greater value than ordinary horses.

But for such uses it is desirable that they be large and strong, and therefore it is necessary that some greater care be bestowed upon their breeding.

To accomplish this in some degree your committee beg leave respectfully to suggest that liberal premiums be offered by this association for the best exhibitions of these animals.

THOMAS CUMMINS.

JOHN MEEK.

REPORT ON POULTRY.

To the Royal Hawaiian Agricultural Society :

Much may be said in favor of an increased attention to "the breeding and rearing domestic poultry," says Main : "as one of the branches of rural economy it includes two special though different objects. The first is that of rearing poultry for amusement and for the table of the owner ; and the second is doing the same thing with a view to profit." To accomplish either of these objects it is important that we have the best kinds of domestic fowls, as some are more prolific and hardy than others. We have on these islands but few varieties. We have a very small breed which I call the native breed, short

legs, small bodies, and gives us small eggs. Then comes the Frizzled Fowl, which is supposed to be a native of Japan. Then we have a mixture of the Malay, though I cannot be certain of their having been a cock and hen introduced; the cock is a great fighter. Then we have the Cochinchina fowl, and a noble fowl it is, and were it not so naked and tender during its young state, it would probably take the preference. As it is, by crossing with the Malay, we find it improves; but the chick is exposed to numerous accidents the first few months of its existence, being nearly naked, its body is exposed to the sharp bills of its more advanced friends, and it also feels every change of weather. It is also liable to some diseases peculiar to itself. Will not this society take special pains to introduce to these islands the Dorking fowl, from England or the United States, the golden top-knots, silver top-knots, and the black Poland top-knots; of the last of these fowls Mowbray says "that his five Poland hens in eleven months, laid five hundred and three eggs, on an average one ounce and five drachms, exclusive of the shells, making a total weight of 50½ pounds." I believe that by crossing these varieties we can obtain one to suit us.

Of Ducks I know of but two varieties, the Muscovy, and the common American, the latter a good layer, and a favorite with the natives, it seems to thrive well, and is increasing. There are several varieties which I hope the society will endeavor to introduce. The crested, or top-knot duck, the "red crested" from New Zealand, and above all let us have the canvass-back duck, if it has been domesticated.

Of Turkeys all I can say is that they are few, and very poor at Honolulu.

Will the society offer a premium for the best essay on poultry, in native and English; showing some of the advantages of an increased attention to this department of industry. Also a premium to some one for establishing a poultry yard on a large scale; eggs ought not to be six cents a piece, and poor ones at that.

I have already written more than I intended. The subject is an important one, and I hope will receive your earliest attention. I might enter into detail, and give statistics to show the importance of having good varieties, and plenty of them, but I will only refer the Society to the excellent address of Hon. Mr. Severance.

Respectfully submitted.

E. H. ROGERS

REPORT ON TREES AND GRASSES.

To the Chairman of the committee on Trees and Grasses :

SIR.—Though it is not in my power to do as much as I could wish for furthering the objects of this society yet I feel a deep interest in its success. And I may say I have a special interest in that part of the subject to which I have been appointed.

I regret that I am not able to attend the meeting of the society, but as I cannot do that I take the only method left me of contributing to its advancement.

Trees are always striking objects in a landscape, coming next to mountains and rivers in interest to the eye of the admirers of nature. We who are dwellers on these sunny shores, regret nothing more of all the inanimate objects we left behind than the stately forest the shady avenue, the luxuriant ornamental, or the delicious fruit tree. They are among our earliest associations and still their memory haunts us as a pleasing dream of things passed away. We cannot forget them, nor cease to feel the sad want of them in this land of our adoption.

But few such pleasant groves yet exist here, as no doubt may and will be found hereafter, but these few add to our regrets that they are not more abundant.

It is a well established fact that rains are more frequent and copious where trees abound, than where they are wanting. In America what were in some cases large streams while the country was covered with forests, have now become small streams flowing only in the winter. Some of them it is said might even merit the appellation of rivers formerly that are now nearly extinct. The evaporating surface of all the leaves of one tree is immense, consequently they must exert a great influence on the surrounding atmosphere.

Of the usefulness of trees as timber for a vast variety of purposes, and for fuel I need not speak. Every one must be convinced for himself. Bearing this in mind and also the very great scarcity of wood at these islands, it becomes a question of much importance ; what has been done to supply this deficiency, and what can be done ? The first question others can answer better than myself ; on the last I will make a few suggestions.

No doubt many efforts at cultivating trees have been unsuccessful

owing to lack of knowledge and experience in tropical cultivation. Those which have been successful have been in a measure lost to the community for want of a common centre of communication such as now exists in this society. Instead of recording the results of experiments, each one has contented himself with communicating to his immediate circle of friends, or an occasional visiter, such results to be improved by a few or forgotten altogether. Our present course will be to compare together the experience of all, and thence derive principles which may be of use to all.

Being absent I can only communicate the results of my own experiments, and observations on a few such objects as come within the range of my department. In so doing I wish to be understood in most cases as suggesting what may be fact, than as stating positive fact, the experience of one being insufficient in my opinion to decide upon such facts. I will proceed, without much order, to enumerate and remark.

THE FIG TREE.—There are at the islands four varieties of this tree, viz :—the Bush fig, the Tree fig, the Turkey fig, and the China fig. So far as I know, they all bear well. In some places they do not shed their leaves with sufficient uniformity to produce a full crop at once. They may therefore in those places be made to bear at different times by stripping off their leaves at different times. It is only however during their proper season of bearing that they will produce good fruit, but they may no doubt be made to bear through the season by proper management. But where the leaves all fall at once it would be difficult to vary the season of bearing.

They require a rich soil and should be watered frequently in dry places. Their roots are very branching and will soon exhaust a soil in their vicinity, consequently very little else can be raised near them. The roots will often be found diseased or injured by insects, and it is a desideratum to find a remedy. I would remark, however, that this is not the case where they are frequently flooded with water. The same remark applies to the peach tree. The bush fig bears small insipid fruit and is only valuable for being in season after the season of the tree fig is over. Of the merits of the China fig, or its fruit, I know nothing. I should consider the Turkey fig as the most valuable of all kinds, as the fig is large and abundant, while the stock itself is pro-

portionally very small,—a mere shrub—whereas the tree fig is smaller and grows on a large tree which makes heavy drafts on the soil.

Of the flavor of the Turkey fig I am not sufficiently acquainted to judge.

The fig is easily propagated by cuttings in the months of January and February.

THE GUAVA.—This tree is valuable not only for the abundance and usefulness of its fruit, but it affords excellent fuel. It is easily raised from the seed, and will grow in almost any soil with proper care; but the richer the soil the greater the quantity of fruit it will produce.

There are many varieties of guavas, the principal of which are, the sour guava, the sweet white guava, and the red-fleshed guava. The last is most common, and the best, if but one can be had. It grows on a mere shrub, while the white guava grows on a tree in some situations 40 or 50 feet high. The fruit of the latter has a mawkish taste, but the hybrid produced between this and the sour guava is delicious, being about the right temper.

The production of these hybrids should command more attention than it has received, as it is easily managed, and we have all desirable extremes to commence with, as the sweet is very sweet, and the sour is very sour. Their rich foliage render them a not undesirable inmate of the garden or pleasure grounds, and with proper culture the value of the fruit would be greatly increased.

THE MANDRAKE.—This is often called a guava, and perhaps not improperly so, as tree, flower, leaf and fruit partake of the general character of the guava. But in beauty this tree far exceeds the guava, which is low and weak, with branching limbs, whereas the mandrake towers aloft with upright branches, and its dense foliage is a bright glossy green. It is not easily propagated, as the seeds will not often germinate unless they are kept at a uniform moisture in a very loose soil, near the surface.

But I am persuaded that when this tree is better known very many of the trees now cultivated for ornament will be dispensed with, for in addition to its fine shade and appearance, the mandrake bears an abundance of most delicious fruit, than which none produce a finer jelly. This tree might no doubt be made to produce a valuable hybrid with the guava. It appears to do best in a moist situation.

THE ORANGE, LEMON, CITRON, LIME, &c.—Having little experience in the culture of these trees I can only say of them that, at the islands they all require shade, else they are soon covered with lichen, and either perish or cease to thrive. With much pains taking this may be washed off with soap and water, and they will thrive. But either a cloudy situation, or the vicinity of a mountain or high rock, or the shade of a tree seems necessary to their prosperity.

It is said they are a native of the forests of Persia rather growing in the shade of other trees than forming one of their own.

THE COCOANUT.—What I would say of this tree must have suggested itself to every one, viz :—why is it not more abundant at these islands, as it grows freely where little else valuable will grow, and is so very useful ? What a vast amount of fencing stuff it would furnish. Every part of the tree seems to be useful. And I need not add how greatly it would improve the sandy plains along the sea shore if they were covered over with this tree.

THE MANGO.—Of this tree I know little, but have been told that it requires a moist situation well sheltered from the wind, and an abundance of vegetable matter in the soil.

CUSTARD APPLE OR CHIRIMOYA.—This most delicious fruit can be raised successfully, by a plentiful application of ashes and coal dust, with a portion of other manures. Ashes seem essential to its growth and the production of its fruit. It grows freely from the seed.

THE TAMARIND.—This will grow in almost any situation and is always a beautiful tree. It does not always bear fruit, but in certain locations it bears abundantly. What those peculiar locations are I am not certain, but I have seen it loaded with fruit in a sandy plain near the sea, and in a dry warm situation inland. It was irrigated in the latter situation. The wood is tough, and would probably be valuable as timber, certainly it would for fuel.

ORIENTAL LILAC OR PRIDE OF INDIA.—There are two varieties of this beautiful tree at the islands. One grows to a very majestic tree, and is long lived, the other is but a small tree or shrub, and is very short-lived. They bear abundance of seeds from which it may easily be propagated, and in addition to their beautiful foliage, will furnish abundance of fuel, and perhaps the large tree may be valuable as timber.

They are of very rapid growth, but are ill-shaped where they are exposed to the wind. They yield a gum which may be substituted for gum Arabic, though it is somewhat bitter.

THE PEACH.—Contrary to some of our pre-conceived ideas, it appears that this tree will flourish along with the orange, pomegranate, fig, and even in those hotter regions where only spices grow in perfection. The tree seems to grow with great vigor here in various situations. Unfortunately it is very difficult to raise it from the seed, and that is no doubt the reason why it is not more plenty. It is, perhaps, not generally known that it grows freely from the slip. An experiment which I made with budding succeeded admirably. The kind now grown here is a very meagre one, and it is very desirable that the finer kinds be introduced, and that the lovers of this delicious fruit be no longer debarred the enjoyment of what I am persuaded may be raised here in the highest perfection.

As above stated, the tree can be entirely protected from the ravages of the borer by growing it where it can be frequently flooded.

The various species of *Acacia* and *Mimosa* grow freely, and in addition to their ornamental qualities produce good fuel.

Two species of *Agati* grow freely from seed and produce abundance of large showy flowers but are short lived.

APPLE TREES will grow, but it requires further experiment on some of our mountains, to decide whether they will produce fruit. The same is true of the **QUINCE**.

Whether **PLUM** AND **CHERRY** trees have yet been grown I am not able to say, but hope the day is not distant when a fair experiment will be made.

Of native forest trees I am not able to say much. Some of them may be raised in proper situations with great ease, and are beautiful trees. Large tracts now lying waste may be speedily covered with forests by being protected from fires and cattle.

But I must close. I had intended to say much more, but want of time renders it impossible.

What I have written has been done in great haste, but I hope the will may be taken for the deed.

Very truly yours,

E. BAILEY.

REPORT ON DOMESTIC PRODUCTS.

BY CHARLES R. BISHOP.

Honolulu, August 9th, 1851.

STEPHEN REYNOLDS, Esq.,

Chairman of the committee on Domestic Produce.

DEAR SIR.—As the time for the annual meeting of the "Royal Hawaiian Agricultural Society" has nearly arrived, and as it is my duty, as one of the committee above named, to place in your hands what facts I have relating to the domestic produce of the islands, I beg leave to send herewith, a table of domestic exports as cargo, for one year, commencing July 1st, 1850, made up from the outward manifests and the reports of the collectors of customs at the various ports (except Kawaihae). Probably the table is not entirely correct, but it is as nearly so as I am able to make it, from the data in my possession? and it will serve as a basis of comparison for the future. I enclose also a copy of the "Polynesian,"* which contains a table of exports for the year 1850.

I am unable to state what amount or value of produce has been furnished to ships, as supplies, though it must be about the same as last year, as the number of vessels which have visited the two principal ports, (Honolulu and Lahaina) during the first half of this year, is about the same as during the same period last year.

You are aware of course, that of the principal products of the islands, there is more consumed than is raised upon the island of Oahu.

The accompanying tables, &c, are most respectfully submitted, with the hope, that the other members of the committee will furnish you with much more valuable and interesting facts.

Very Respectfully,

Your obd't servant,

CHAS. R. BISHOP.

* See Polynesian, February 1, 1851.

EXPORTS OF DOMESTIC PRODUCE FROM THE VARIOUS PORTS
OF THE HAWAIIAN ISLANDS (EXCEPT KAWAIIHAE ON HA-
WAI,) FROM JULY 1, 1850, TO JUNE 30, 1851, INCLUSIVE.

FROM HONOLULU, OAHU.

Sugar	228,865 lbs.	Bananas	154 bchs.
Molasses	28,477 gal.	Limes	10 M.
Syrup	18,517 do.	Oranges	18 "
Coffee	114,252 lbs.	Melons	950
Salt	5,182½ bls.	Squashes	2344
Beef	10 do.	Cocoa Mats	119
Hides	1,319	Rope	332
Tallow	8,291 lbs.	Wardrobe	1
Goat skins	26,519	Furniture	2 tables.
Irish potatoes	3,169 bls.	Mules	1
Sweet potatoes	1,217½ "	Swine	23
Onions	481 "	Goats	10
Arrow-Root	13,104 lbs.	Turkeys	34
Hay	10½ tons	Fowls	160
Wood	4 cords.	Brooms	399 2-12 doz.
Mustard seed	786 lbs.		Value \$89,255 36

LAHAINA (FOR THE ISLAND OF MAUI.)

Sugar	64,154 lbs.	Squashes	47,204
Molasses	6,409 gal.	Beans	64 bls.
Syrup	75,511 "	Corn	5 "
Coffee	14,108 lbs.	Pickles	64 "
Salt	100 bls.	Preserves	212 gals.
Irish potatoes	68,777 "	Vinegar	268 do.
Sweet potatoes	5,079 "	Cabbages	1600
Onions	2,564½ "	Swine	331
Arrow-Root	3,676 lbs.	Sheep	15
Bananas	50 bchs.	Goats	5
Oranges	116 M.	Fowls	120 2-12 doz.
Melons	6806.	Lime juice	304 gals.
Pine-Apples	14 3-10 M.	Butter	157 lbs.
Cocoa Nuts	4,350		Value \$266,718 14

FROM WAIMEA, ISLAND OF KAUAI, AND THE ISLAND OF NIIHAU,

PART MANIFESTED AT WAIMEA AND PART AT HONOLULU.

Sweet potatoes	3009 bls.	Oranges	4 M.
Yams	9 "	Squashes	100
Onions	568½ "	Cattle	4
Sugar	5000 lbs.	Sheep	108
Salt	50 bls.	Swine	110
Pine Apples	2 M.	Turkeys	110
Bananas	20 bchs.	Fowls	1202
Cocoa Nuts	1400	Ducks	12
Dried Pork	1200 lbs.		Value \$9,030 62.

FROM HANAIEI, KAUAI, MANIFESTED AT HONOLULU.

Coffee	21,298 lbs.	"Penelope" and "Alice Tarleton."
Irish potatoes	39 bls.	do.
Cattle	20	"Lightning."
	Value \$2744 08	

FROM KOLOA, KAUAI, MANIFESTED AT HONOLULU.

Sugar	26,023 lbs.	Cattle	50
Molasses	2,851 gals.	Swine	130
Syrup	353 do.	Goats	1
Sweet Potatoes	360 bls.	Turkeys	542
Yams	40 do.	Fowls	1017
Onions	75 do.		
Squashes	1000	Value \$6,631 94	

FROM KEALAKEAKUA, HAWAII.

Sweet Potatoes	1122 bls.	Squashes.	1050
Yams	40 "	Swine	27
Coffee	300 lbs.	Goats	20
Oranges	5 6-10 M.	Fowls	300
Cocoa Nuts	600		
Bananas	21 bchs.	Value \$2,059 97	

FROM HILO, HAWAII.

Sweet potatoes	50 bls.	Swine	75
Onions	70 bls.	Fowls	500
Pine Apples	5 M.	Turkeys	75
Squashes	75	Value \$950	

TOTAL EXPORTS, AND VALUE.

Sugar	324,042 lbs.	Furniture	2 tables
Molasses	32,737 gals.	Mules	1
Syrup	94,381 "	Swine	696
Coffee	150,583 lbs.	Goats	36
Salt	5332½ bls.	Turkeys	761
Beef	10 do.	Fowls	375 doz.
Hides	1319	Ducks	1 doz.
Tallow	8291 lbs.	Pine Apples	21 3-10 M.
Goat skins	26,519	Cocoa Nuts	6350
Irish potatoes	71,985 bls.	Brooms	399 2-12 doz.
Sweet Potatoes	10,837½ do.	Beans	64 bls.
Onions	3,759 do.	Corn	5 do
Arrow-Root	16,780 lbs.	Dried Pork	1200 lbs.
Hay	10½ tons.	Pickles	64 bls.
Wood	4 cords.	Vinegar	268 gal.
Mustard seed	786 lbs.	Butter	157 lbs.
Bananas	245 bchs.	Cabtagas	1600 do.
Limes	10 M.	Lime juice	304 gals.
Oranges	143 6-10 do.	Preserves	212 do
Melons	7756	Yams	89 bls.
Squashes	51,769	Cattle	74
Cocoa Mats	119	Sheep	123
Rope	332 lbs.		
Wardrobe	1	Value \$377,390 11.	

REPORT ON ROADS.

Puukapu, Hawaii, August 3d, 1851.

T. METCALF, Esq.

As a member of the committee of the R. H. Agricultural Society, on roads, harbors, and inter-island navigation, of which you are chairman, I beg, through you, to urge upon the society the propriety and urgent necessity of doing all in their power to promote the introduction of one or more steam vessels, as coasters among these Hawaiian Islands.

The delay and inconvenience to persons engaged in business, whose time is valuable, arising from the want of a speedier and more regular mode of inter-island communication, than that afforded by the heterogeneous fleet of sailing coasters, is well known and has been frequently experienced by many of the members of the Agricultural society. Do not some of them, yourself among the rest, look back with feelings the reverse of agreeable, on a three days calm to the south west of Lanai, or off Waianae, or to crossing the Hawaii or Molokai Channels in a dirty, thirty-ton schooner in rough weather, when they could not show their noses over the weather rail, and when it seemed doubtful at times whether they should ever reach Honolulu; or have none of them ever received letters two months old, which with proper means of communication they ought to have received in two days from the time they were written?

The importance of this subject was recognized by the society at its last annual meeting, as I perceive by the fourth resolution, passed August 14th, and it is to be hoped that additional light will be afforded this year, as to the probable expense of running a good and sufficient steamer round the islands. Nothing short of a large and substantial sea-going vessel, will answer the purpose. A small boat, or a river boat will never be safe to cross our rugged channels in. It will require a boat with plenty of deck room, for the purpose of transporting horses, cattle, sheep, hogs, &c., without inconveniencing passengers, in order to make the business profitable. And profitable, I will venture to say, it will be, after it is fairly tried. Passengers would cheerfully pay double fare in a steamer, on account of her superior speed and accommodations, and the foreign part of the population, who pay

most for their passages, would travel at least twice as much as they now do, between the islands.

A steamboat would get nearly all the light freight to carry, and there are many things that would be raised on the other islands, for the Oahu market, if a proper mode of conveyance were once established.

A steamer might leave Honolulu every Monday morning, and arrive at Lahaina, touching at Molokai, the same evening; leave Lahaina on Tuesday morning and arrive at Hilo the same evening, touching at Honuaula and Kohala; leave Hilo on Wednesday and arrive at Kealakeakua the same evening, touching at some place in Kau, say Kailikii, leave Kealakeakua on Thursday morning, and reach Lahaina the same night, touching at Kailua, Kawaihae and Honuaula or Kalepolepo; leave Lahaina on Friday evening and arrive in Honolulu early on Saturday morning. This of course excludes the island of Kauai, but if the depot for the steamer were situated either at Hilo, or at some port on Kauai, the whole circuit of the islands could be made between Monday morning and Saturday night. This could certainly be effected by running in the night time.

There is one thing which ought to be remembered in calculating the probable expense of maintaining a steamer round the islands, and that is, the great saving of fuel which can be effected in the down passage, in four out of five voyages by sailing before the trade-winds.

In reference to roads and harbors I have little to say. These subjects in your hands, will not be forgotten. The roads generally received the earnest attention of the last Legislature, and will doubtless be gradually improved throughout the kingdom. There are some districts, the coasts of which I think ought to be minutely surveyed, for new harbors or landing places. Hamakua, Hawaii, is one of those districts. It is a beautiful tract of land, and would make a fine agricultural country, but it possesses no harbor. There are said to be several places along its shores where landing places might be made. And here is an instance of the benefit to be derived from steam coasters. A steamer could call at such places, and land or take off freight and passengers, when a sailing vessel could do nothing. The government owns a great deal of unoccupied land in Hamakua, which can never be extensively cultivated until some place of shipment is provided for planters in the district. When this is done we may expect to

see the beautiful slope of that portion of Hawaii covered with flourishing sugar plantations.

Yours respectfully,

G. M. ROBERTSON.

REPORT OF THE COMMITTEE ON LABOR.

The subject of labor is that, above all others, of the most vital importance to the Agriculturists of this nation. It is, in fact, the great question, upon the satisfactory solution of which, their success, their progress, their very existence depends. Its importance is increased by the fact that from our isolated position, and our want of the necessary capital, we are unable in a great measure to avail ourselves of the various labor saving inventions that are constantly being brought into use by our countrymen at home.

STEAM.—That great auxiliary to, and substitute for, the labor of human hands, which is now lending its giant aid, not only to the mechanic and the manufacturer, but also to the planter and the farmer, is as yet unknown among us. Not a steam engine is to be found upon these islands, and even the occasional visits of the "moku ahi," or fire-vessel, are yet hailed with wonder and admiration by the natives, and as "remarkable events" by the foreign class of our population. Doubtless this mighty agent will ere long be introduced and put in successful operation, but the present obstacles, the lack of capital, the want of machine shops, difficulty of obtaining engineers, and the scarcity of fuel, appear so formidable that no one as yet has the courage to face them.

This great obstacle, the scarcity of labor, was the great question which stared us in the face, at the outset of our organization as a society. Many of us who met together last year to devise means by our association to encourage and aid each other in our labors, came up to the meeting from coffee and canefields which were overgrown with weeds and run to waste before our eyes, only from the utter impossi-

bility of obtaining labor at any price within the bounds of reason, to save our plantations from ruin. This question engaged our minds and time, and various means for obtaining the desired end were discussed by the society. The importation of coolies from China appeared the most feasible of these means, from our proximity to that country and the readiness with which laborers could be obtained from its redundant population. Your committee were chosen by the society to carry their views into effect, and they lost no time in endeavoring to do so. That the result of their efforts has been so unfortunate a failure, cannot be too deeply deplored, but your committee feel that the failure of the attempt is not in any way attributable to mismanagement on their part. The measures taken by your committee were so taken with the concurrence of the members of the society who were interested in the matter. And this is the history of the matter.

A contract was entered into in the month of Sept. 1850, with G. F. Hubertson, Esq., a merchant recently established here, (who had resided in China, and was supposed to be by far the best person with whom to make the contract, from his experience in the matter, and his facilities,) for the importation of two hundred Chinese coolies. The charge for passage for each coolie was fifty dollars, which with the advances to be made to each, on shipping them, and a years' supply of rice for consumption here, made the sum about \$71 that each coolie would cost delivered here, of which two month's advance wages formed a part. The men were to be engaged for five years. To secure dispatch in this matter between nine and ten thousand dollars, or nearly two thirds of the whole amount was advanced to Mr. Hubertson to meet the ship's disbursements in China and the necessary expenses of shipping the coolies. The ship Amazon, belonging to Mr. Hubertson, sailed on the ———, and your committee believed that a successful commencement had been made of the great work of supplying the islands with laborers, whose brawny arms should lay open to them the wealth now buried in its soil. But we were sadly disappointed. The Amazon arrived in China, and the coolies, we learn were engaged, but after waiting in vain for her return with the much needed freight, a rumor has reached us that the vessel has been sold and the voyage abandoned. The reasons for this disastrous result have not been made known to us, and in the absence of Mr. Hubertson we must probably for the present remain in ignorance of them.

Arrangements have since been made by members of this society to procure coolies, with Capt. John Cass of Ship Thetis, which vessel sailed yesterday for Amoy, for that purpose. This new enterprise your committee believe will be successful, and that we shall soon be able to try an experiment, the success of which will remove the grand obstacle to our agricultural progress and success.

All which is respectfully submitted.

J. F. B. MARSHALL, *Chairman.*

Honolulu, Aug. 13th, 1851.

To STEPHEN REYNOLDS, Esq.

REPORT ON SEASONS--HAWAIIAN SEASONS.

The seasons for agricultural purposes, so far as kalo and sweet potatoes and melons are concerned, are probably as well understood by intelligent natives at the present time as they ever will be. But the cultivation of almost every recently imported plant is as yet a matter of experiment, and must require experiments not a few to bring out satisfactory results that shall decide the proper time for planting the same. So that your committee in their present report only expect to throw out suggestions and make statements such as are the result of the few observations and enquiries which they have been able to make.

Messrs. Green of Makawao, Bond of Kohala, and Smith of Koloa have each furnished me with observations and remarks which will be used freely in this report.

As to the importance of our subject ; we would remark that many disappointments have already been experienced by those who have attempted to cultivate the soil at these islands, from the fact that they put their seed into the ground at the wrong time. The resident on the hills of New England watches the opening spring, the dissolving snow, the swelling bud, the opening leaf and flower, to indicate the season when to plant and sow his seed. But such indications of seed time are here unknown. The mildews and frosts and snows so fearful

to the northern planter are never experienced between the tropics, and the New Englander naturally concludes that on the windward sides of our islands, and on the high table lands, where there is plenty of rain the year round, all the agriculturist has to do is to plant and sow and gather in his crops irrespective of times or seasons. The idea also is common among new comers into these islands, that where irrigation can be practised no regard need be paid to the season.

But such, your committee think, will be found, to a great extent, the result of mistaken notions ; as it has repeatedly been the occasion of sad disappointments.

Solomon the most scientific herbarian of ancient times says: "To every thing there is a season, and a time for every purpose under the sun." With whatever latitude or restriction this passage of Sacred Writ may be interpreted in morals, every practical cultivator of the soil at these islands, will we think, agree that it has an unmistakeable meaning in Agriculture. Every plant, to be brought to its highest perfection, must be indulged in a greater or less degree of conformity to its season.

Our next enquiry is :—What constitutes a Hawaiian season ?

The general division into wet and dry months furnishes one important clue to Hawaiian seasons. The rainy months in the islands generally are from October to April, seven in number. Although frequently little or no rain falls either in October, November, or April. The wet season varies somewhat in different years and in different islands, but not generally very much.

But the time for planting the same articles in different soils, and different localities varies somewhat widely. And in respect to these planting seasons is the main field for enquiry before us.

Not only is the rainy season to be consulted, but the natural moisture of the soil, its elevation, its position on a northern or southern slope of a hill, especially the side of a pali. Many crops may be delayed a month or two in places where irrigation can be practiced. On the windward coasts, especially near the sea, the seasons of high surf, when the salt spray sweeps over the coast with the power of a destructive frost, must be consulted and avoided. During that season corn, beans, potatoes, &c., if planted in exposed situations are sure of

destruction. In many places the season for the caterpillar and the grub-worm must be consulted. Natives on Oahu rarely think of planting potatoes, corn, beans, &c., until the season for those vermin has passed.

But to make ourselves better understood we will give our views of the time most suitable for the planting of different kinds of articles in different kinds of soil.

1st. INDIAN CORN.—In a dry soil, that cannot be irrigated, let this article be planted as soon after the commencement of the rains as may be, yet not earlier than November. It will then be out of the way of the caterpillar and grub, and will be likely to ripen well in the early part of the dry season. If planted before November or December, it may suffer from ripening in the rainy months. In a wet soil or on the northern slope of a mountain or pali, or in situations where the crop can be irrigated if need be, just before it is ripe, it may be well to delay planting corn till after the season for the caterpillar has gone past. December and January are the months in which these vermin are generally most destructive to plants.

The above remarks will apply to melons and squashes as well as to corn.

Corn or melons planted in a damp soil or in cloudy situations in the month of October or November will not do well. A field thus planted by Mr. Gulick, in Kamananui, Waialua, the past year, both of corn and melons grew beautifully till about the time for fruit to appear; when the corn shot forth very meagre ears, and did not fill out very well; a very ordinary crop was realized. The melons were of poor flavor, and less profitable than if planted later.

On East Maui, Makawao and Hamakua, corn does well, if planted as late as March or April; owing doubtless to the damp and cloudy situation of those places, while at Kaupo, on the opposite side of the mountain, planting time should be at least two months earlier, or the crops will dry up before they ripen.

Wheat generally does best if planted at the same time that suits the corn crop. It will not stand drouth as well as corn, and as its period for coming to perfection is about three months, i. e., one month less than corn, it escapes that evil if planted at the same time, which suits the corn crop.

IRISH POTATOES.—For these, it is said there are two seasons on East Maui, the fall and spring. But doubtless the time for planting is regulated more by the desire of the planter to suit his crop to the shipping season than by the nature of the plant itself.

On Oahu and Kauai the results of several experiments go to show that the Irish potato yields the best crop, if planted soon after the setting in of the rainy season or the early fall rains.

This crop may be raised on all the islands if the right soil and season are sought for the purpose, and suitable pains taken in the cultivation.

The sweet potato has been rarely cultivated advantageously at the islands, by foreigners. It has its seasons, and requires a suitable soil and appropriate cultivation. Many a field has been planted, without any returns to the planter. The field was planted too late, or too early ; it was irrigated too much or too little ; the earth was left hard and baked around the roots of the plant ; or the field was suffered to run to vines only.

All of these points must be understood by the man interested in the crop, or a failure may be expected. But to be more particular. We know of no place where it is suitable to plant the sweet potato in June, July or August. Indeed we know of nothing that can profitably be planted in those three months except sugar cane.

On light plain land the sweet potato may ordinarily be planted soon after the commencement of the fall rains, but where irrigation can be practiced, a delay of one, two or three months may be well.

On the north side of a deep ravine the potato is planted early ; on the south side it is planted by the natives two or three months later, say in February or March.

The sweet potato does best on a light porous soil. On a clayey soil which bakes and cracks, the potato on Oahu becomes what the natives call pakika, a disease which, so far as I know, has no name in English ; but the disease, if existing in the cooked potato, is easily detected when on the table, both from its offensive smell and taste. This disease which it would be well for some scientific man to investigate, is said to have had no existence on the island of Hawaii fifteen or sixteen years since. The natives attribute it to the influence of a fly upon the potato.

Garden vegetables, such as beets carrots, turnips and parsnips, are rarely raised in the islands. So far as attempts have been made to raise them, the failure has been so general in consequence of the grub worm, that I know of but few who have succeeded to any extent. Mr. Greene of Makawao says: "As for garden vegetables I can not raise them, for the Pelua or grub-worm destroys them. Onions will do nothing. I am almost discouraged with attempts at these articles."

The onion however does remarkably well in many places, and with less cultivation than is requisite in the United States of America yields a crop. The onion is not generally raised from the seed, and for economy's sake it may be best to plant it twice during the season, first about October again, in January. The native onion planted in October naturally divides itself up into six or eight independent plants so that what covered one rod of land in October, may be replanted in January on six or eight rods.

The grub worm is said often to destroy this plant on elevated situations such as Makawao and Kohala. But I am not aware of such an evil on low lands near the sea.

PEA NUTS do well in the islands, require a rich, dry, mellow soil. Should be planted in October or November, if the fall rains have commenced. If the soil in which they are planted is moist the year round, they will grow on and continue to put forth fresh nuts, till matted together, and the whole is taken by the rats. Hence the importance of a dry soil that they may ripen together.

SUGAR CANE.—This article which insects can harm but little, will grow, if planted at any season of the year, and on almost any part of all the islands, where it can obtain a sufficient amount of moisture. The most profitable season however for planting it in all the low lands is said to be from May to August. The earlier, probably the better, as the tops for planting can then be obtained at the least amount of loss to the crop on the land from which they are taken. A favorable circumstance this, that when almost nothing else can be planted the sugar cane may be.

FRUIT SEASONS.—Early in the fall is the best time for planting the fig. It then has a long moist season before it in which the slip will take root, and in favorable circumstances grow with great rapidity. The sap of the tree is at this season generally down, and the woody

fibre is solid, and in good condition to grow. The fig will yield a large and profitable crop, if well cultivated and planted in a good soil ; and from some experience in cultivating it I am led to believe that to lighten up and enrich the soil around the roots of the tree is more important than any protection that shade trees can give it. Indeed two of the most productive trees I have seen in the islands stood unprotected and alone, on the windward side of this island, having no other roots intermingling with theirs. To be fruitful it should not be allowed too many branches, and no young shoots from the root.

But of fruit trees, generally, your committee are not prepared to speak.

In considering the subject of seasons we shall not have discharged our duty unless we speak of the caterpillar and grub-worm season. The caterpillar generally makes its appearance in December or January and continues for a month or more. They are legions—so numerous as to cover the ground for hundreds of acres together, thicker than the farmer sows his wheat, and so voracious as to leave no green thing behind that suits their taste.

The natives rarely think of planting anything but kalo in lands infested by the caterpillar till his season has passed.

His appearance may be confidently expected in from 6 to 10 days after the second soaking rain in the fall or winter.

The grub worm commences his work about the same time with the caterpillar, but is more concealed in his work and will hardly notify you of his operations till you find your field partially mowed over by an unseen enemy. The grub works mostly in the night, and lives underground during the day ; while the caterpillar remains exposed upon the tops of the grass or plants he is devouring. Of the two the grub worm is more to be feared than the caterpillar ; he continues his work much the longest.

Every judicious agriculturist, will make enquiries in relation to these vermin, their time of appearance, &c., on the soil he intends to cultivate.

If no means can be found to prevent their ravages, they will always be a great impediment to many kinds of agriculture. Soaking the seed to be planted in tobacco juice is stated in some New England

paper to be an infallible preventative of the incursions of the grub-worms. I hope this is true, if so, we shall have found at least one good use for tobacco, and one strong motive for raising it in this country, which is probably as well adapted to its growth as any land on earth.

The grub-worm has in some places been at least greatly diminished by plowing and re-plowing the land to be planted and allowing domestic fowls to live upon it when newly turned by the plow. As to losses sustained by the grub-worm. I am informed by Mr. Bond of Kohala that one native, Naihe, entirely lost a crop of onions, by the grub, which if brought to maturity would have been worth ten thousand dollars.

A field of from one to three or four acres of corn has the past season been planted, and replanted a second or third time, and destroyed by the grub. Any means of destroying this insect that would prove effectual would be of great service.

One other topic claims our attention at this time, viz :—

The season of KAICO or HIGH SURF. On the windward side of the islands there are certain periods in the fall or winter when there is a high surf connected with a north or north-west wind. At such times a salt spray spreads over the adjacent shore, and in the distance, often resembles a New England fog.

This salt spray is ruinous to many, perhaps most vegetables that may be exposed to it. Corn, wheat, beans, peas, potatoes of all kinds, beets, carrots, parsnips, &c., wither before it as if cut down by New England frost. Even the leaves of the tamarind fall as if smitten by a November blast in New England.

Natives are cautious of planting in places exposed to the Kaiko until the season for its violence has passed.

The kalo root and banana are supposed to have no season but may be planted with equal advantage at any time, in case the soil be sufficiently moist. But of this opinion I stand in doubt.

Natives say that in the months of May, June and July, at which times the kalo is in blossom, it can not be planted with equal profit as in other months as the yield will be much less. The young kalo, that shoot from the parent stock will be less numerous and the crop altogether inferior. This I am inclined to think correct, although I am alone in the committee on the point.

I am not aware of any season when the banana may not be planted with profit. Although a field planted so as to ripen in March or April will be more likely to be lost in the winds and rains of the two preceding months, than if planted at a later or earlier period.

In behalf of the Committee on Seasons,

J. S. EMERSON.

To the Royal Hawaiian Agricultural Society :

GENTLEMEN.—Having yesterday become a life member of your society, and am happy to say much pleased with its proceedings, I take the liberty of addressing you, which liberty I did not consider myself justified in taking, situated as I have been heretofore, unless I would have prepared documents, treating on some of the most leading principles of the agriculture and manufacture of sugar, which from my constant application to this business, and experience on these islands, I think would have proved satisfactory to all ; however as this has not been done, I live in hopes to be able at the next annual meeting to produce some still more valuable statistics relating to facts that have come under my immediate notice, on these islands, and compare them with other places, as our great end is to know what really can be done here, and not preach up what is done in other parts of the world, without giving some satisfactory comparison to our present adopted place of residence.

As little or nothing has been said yet on the subject of employing and economizing manual labor, I cannot let this opportunity pass, without making a few remarks on the subject, as I consider it one of the most vital importance to the agriculturist, and the future welfare of these islands in general and also that we cannot be too prompt in adopting some method for the revisal of the present system of employing native and all other laborers, which is in my opinion an erroneous one. In the first place the boy, the cripple, and the aged man are hired by the year as efficient laborers, in every respect, whereas

their services are not worth much more than two-thirds of that of an able bodied man ; another thing, the natives' policy, or any other laboring class of men that we can get here, is to do as little as possible, for they get the same rate of wages for doing little as if they did much, and we have no legal method conveniently within our reach at present to exact a just day's work ; there are a few natives that have a little more energy than others, and are wishful of doing what is right, but the majority are just the reverse, consequently they rule. My system is to pay a man according to his intrinsic value, and to accomplish this his Majesty's government, and the Royal Hawaiian Agricultural Society must take it in hand, and adopt, if they think fit, the following humble suggestions. In the first place, a tariff of the different kinds of work must be established, the accomplishment of which can be effected in the following manner.

Say take six or more able-bodied men, that have been accustomed to work, and give them in charge of some competent planter, and let him work them for a certain time, at every different kind of work that is required on a sugar plantation, by these means we are able to see what a laborer here really can do. Then we can take the medium of the work performed in the given time of each work separate and establish it as a standard task, for a certain sum, and proclaim it a law. In this tariff the quality as well as the quantity of work to be performed must be specified, also the condition that the work was in at the time the labor was performed, whether much or little grass, wet or dry ; whether the earth was hard or soft, so that in event the laborer does not, and will not, perform his work according to law, his wages for that work is withheld until he performs it faithfully, and if he is not satisfied with this treatment let him then apply to a justice of the peace for redress. By these means a laborer is justly paid according to his intrinsic value, he is also fully protected by this tariff as his employer cannot insist on him doing more work than the tariff proclaims, but at the same time the laborer is at liberty to do more work and receive extra pay for it if he is ambitious and willing to work. This plan of self interest encourages industry and enlivens a desire in the laborer to accomplish his task faithfully and as soon as possible, and if he is ambitious will endeavor to do more than one task, so as to enhance his daily wages. The present system encourages idleness and

fraud, for the laborer has no other object in view but to dwindle away time as easily as possible and evade if he can the vigilance of his overseer or driver, for his only aim is to get along as easily as possible.

Concerning the laborers employed about the manufacturing department I purpose paying them according to the stations they fill, for there are certain works about the manufactory that are more tedious and require more skill than others, consequently the men that fill these posts require a little more wages than the rest so as to make it an object for them to take an interest in their business and excite competition. The system of task work is not so well adapted to the mills that are worked by cattle, but I see no just reason for it not being applied to those mills that go by water or steam, and I feel confident that should this system be universally adopted that the agricultural community of these islands would be benefited at least from 30 to 40 per cent, which I can show from my experience here, for I have had charge of from 15 to 20 natives on East Maui plantations, for over five months, which natives I worked on both plans. In the first place I worked them at trashing canes by the day for over three weeks, from sunrise until sunset, with intervals for breakfast and dinner, I found that by doing my best, with the assistance of a native driver, I could not get more than 50 rods on a single row out of them. I then gave them a task of 75 rods, this task I told them that when they finished properly their work for that day was finished, and that they could go home ; they went to work cheerfully and by three o'clock the able men had finished the task in a proper manner and I have not the slightest doubt that had I given them one hundred rods it would have been done in a similar way and about the same time for they wasted a great deal of time smoking &c. After I had finished the trashing we went to work digging a ditch fence, 4 feet wide at top, 3 feet deep and one foot wide at the bottom, with all the earth thrown on the off side so as to make a perpendicular dam. I worked the natives over a week on this job, by the day as before, and during that time did not accomplish more than 10 feet to a man per day. I then gave them a task of 16 feet which they finished at about 2 o'clock, a few days after I gave them another task of 22 feet, with a promise that I would not increase it a single foot more. They, after some little deliberation, went to work and

finished it by 4 o'clock each man, and then went to bathe in a beautiful pond which is situated in the large ravine adjoining the plantation, and so continued until they were taken away. This amusement of bathing and jumping from high cliffs into the water which the natives are passionately fond of, was the grand object in view to get the work finished in time so as to participate in this sport, for they got no more wages for doing double the quantity of work than if they had merely done the 10 feet ; therefore this shows that unless self interest, in some shape is brought to bear on these people, and in fact, on all other classes of laborers, a fair day's work cannot be got out of them, although there is in my opinion very nearly as much work in a native as there ever was in a negro, but we have no legal and efficient means at present adapted for getting it out of them. Another thing I must mention concerning these proceedings, that during the time I worked them by the day I had a great deal of difficulty in turning them out in the morning and after breakfast and dinner, for they did all in their power to waste time and avoid work, consequently my presence was indispensable, but when I adopted the plan of tasking I never had the necessity to go to the native house in the morning and after breakfast or dinner but they were at work long before I got to the spot where the work was going on, and my presence was not requisite until the latter end of the work to see that it was properly done, &c. Another thing, a native driver can take charge of a gang managed on this plan, for all that he has to do is to see and keep them straight during the day concerning the quality of the work, &c., and then let a foreigner visit him at the latter end of the day to see that the work is really and efficiently performed. The plan of foreigners being with natives constantly, as a general thing, will not answer, for they cannot stand, in nine cases out of ten, the native's obstinacy, &c., without using violent means, and this does not answer in any case ; therefore, I propose having native drivers to be with the people constantly and make him responsible for the quality of the work, for without a driver in any case they cannot get along, then have one or two foreigners, if requisite to visit the gangs about the latter end of the work, to see that the driver had done his duty faithfully, and if not, to check his (and the ones' in fault) wages, quietly, until it is finished as it ought to be, but never by any chance resort to harsh means. Now I do not see any just reason

for this system of task work not answering here as well as it has answered in Demerara and Berbice, for it is by these means we employ all agricultural laborers in those colonies. We were, after the emancipation of the slaves, precisely and in some respects worse off for labor than we are here, and we found from sheer experience that employing laborers by the day and working them as we had done in the time of slavery, with a driver behind a certain number of men for a given time, did not answer, consequently we were obliged to have recourse to the above mentioned system which we found to answer a first rate purpose and is now universally adopted throughout the country. The laws concerning the binding of laborers for a given time answer an excellent purpose with one exception and that is if an employer ill uses a laborer he can, by applying to a justice of the peace, free himself from all further obligation, this in my opinion is an inducement for laborers to be refractory and more especially if they are dissatisfied with their employer or their bargain. The system that I would propose in this respect would be a heavy fine on the accused according to the nature of the case and not a total dismissal of the laborer.

A tariff regulating the field work in some respect on a sugar plantation, would not answer on a coffee estate or a grain farm, consequently it would be requisite to have a tariff established for each separate branch of business. Let the parties concerned in it interest themselves in it and model their tariff to suit circumstances. I have in my possession Sir James Carmichael Smith's Tariff of Work in British Guiana and would be most happy to give a copy to the planter that may have the regulating of a tariff here should my suggestions meet the approval of the Royal Hawaiian Agricultural Society.

I remain, gentlemen,

Yours most respectfully,

ROBERT J. HOLLINGSWORTH.

Honolulu, Oahu, August 14, 1851.

ON IMPLEMENTS.

To the Committee of The Royal Hawaiian Agricultural Society :

GENTLEMEN.—In answer to your inquiries on the subject of implements, I send you a few remarks. My experience in regard to ploughs is but limited, as I have used but two kinds: the Eagle plough and the self-sharpener; both of the largest size, are the best for breaking up new land on East Maui; in my opinion they are the best plough that has been imported.

Each plantation requires two or more large ploughs, and two horse ploughs of different sizes.

Harrows can be made here cheaper than they can be imported. Cultivators must be imported; it would be well to import a quantity of extra teeth, as the cultivator teeth are frequently lost.

Hoes here require a lighter and stronger article than any I have seen. The Carolina hoes are not strong enough for the land here in the hands of the natives, it wants a short strong hoe.

Carts had better be imported, as there is no good wood to make carts in this place. There is one objection to the imported carts, they are too narrow and the wheels too high easily to be upset by the native drivers.

Yokes and chains must be imported, also mills for grinding sugar cane, and kettles &c., for manufacturing sugar.

Butter could be made on some of these islands to pay a good profit by persons that understand the business.

Farming implements cannot be manufactured at this place, as a general thing they must be imported. To get them at the lowest price we can, I think it would be best to box them in the smallest possible compass they can be put up in; it will save freight, as any man that knows any thing about farming can put a plough together or handle his hoe.

The natives in general like the hoe better than the old Oo, excepting in the cultivation of the sweet potato, the hoe does not suit on account of cutting the roots.

There is one thing that has not come in practice among the sugar plantations, that is the subsoil plough. I think it would be a great improvement to the East Maui sugar cane lands.

When ploughs are imported it would be well to have a quantity of spare points for the different sized ploughs ; the points are always breaking and good ploughs are thrown away for want of them.

Very respectfully, yours,

E. MINER.

Lilikoi, July 22, 1851.

COMMUNICATED BY BARON DE THIERRY.

The Hon. Mr. Severance, in his admirable lecture of yesterday evening, commented on the advantages which might result from the introduction into these islands of the *Phornium Tenax*, or native flax of New Zealand. The knowledge that such an attempt must be followed by disappointment, induces me to take the liberty of offering a few remarks, which, I am convinced, his anxiety for the good of these interesting regions will induce him to forgive. These remarks are founded on the experience of many years, attended by much labor and expense, which terminated in my being awakened from a dream in which I, in common with many others, had long indulged, as to the magnitude of the importance of that too celebrated plant. In attempts to work the *Phornium Tenax* many thousands of pounds sterling have been sunk, through expectations sanguine as my own, and with nearly the same result.

The *Phornium Tenax* requires three years growth from the young shoot to bring the leaf to maturity, and about seven years from seed. It thrives best in moist, rich land, and must be guarded from cattle, as notwithstanding the rank bitterness of the leaf, cattle render it unfit for use. It never can be grown to advantage where labor is dear, as those employed in scraping it can barely earn ten to twelve cents a day. The fibre, so celebrated for its strength, is not, strictly speaking, a fibre, but an immense number of very minute particles cemented together by the gum of which the leaf is chiefly composed. The New Zealanders scrape the flax with a shell, throwing away

about two-thirds of its bulk. After much hackling by white labor it is fitted for rope making. The loss in this process is from 12 to 20 per cent. reduced of late, by one manufacturer, by converting a part of the waste flax into wool-lashings for the Sydney market. When boiled with common salt, washing soda, or any other alkali, wood ashes from the fire, or common soap, the leaf, if properly attended to may be washed, and though far less sightly than that dressed by the natives, is still useful for rope. But this process, simple as it appears, is much too expensive, and requires from 8 to 9 tons of leaf to produce one ton of flax, requiring farther loss by hackling and dressing. By farther boiling to remove the gum, which adheres so long as the appearance of a fibre remains, the true nature of the *Phornium Tenax* is discovered; it becomes a valueless pulp, and is totally unfit for use. Pounded, when in a green state, by heavy hammers worked by mill power, so arranged as not to cut the thread, a very fine looking flax may be prepared, but the machinery would be very costly, and would barely leave a profit of ten to fifteen dollars per ton, even supposing labor could be procured at 25 cents per day, and a constant supply of leaves secured, which would require years of preparation, large capital, and great extent of land. The working of flax is dangerous on account of the small particles which fill the air to the great distress of the workmen.

A far more profitable speculation would be the introduction into these islands of the European Flax, which would thrive well under the same temperature as wheat and potatoes. It yields oil, oil-cake, and flax, and requires but simple machinery and small outlay. Cotton would thrive almost everywhere, and the single seeded cotton of the *Fegées*, is of such beautiful quality, and superior long and fine staple as to promise a rich reward to those who would attend to its cultivation. Corn brooms, if properly made; cocoa-nut husk for bedding, and cocoa-nut mats would add to the smaller exports. The quince tree grows very rapidly, makes excellent fences, (seldom molested by cattle,) and in the higher lands would produce abundant fruit.

With regard to poultry, it is not generally known that the seed of the sun flower, causes fowls to lay nearly double their ordinary quantity of eggs. The seed is also very useful for its abundance of excellent oil.

I beg leave to add that a public record of the names and countries of persons who have introduced, up to the present time, and who may hereafter introduce any new tree, plant, vegetable, animal, or bird, beneficial to these islands, would induce many persons to become contributors, and benefactors to the country.

THIERRY.

August 12, 1851.

MANUFACTURE OF LEATHER.

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

Among the many subjects claiming your attention as connected with the produce of Hawaiian soil, and the consequent individual and national prosperity of the kingdom is, as I conceive, that of the manufacture of leather.

It is however a subject with which I am not particularly acquainted, and to which I allude at this time only with a view to bring it before the society, and into the hands of those better acquainted with, and more able to do the subject justice.

Possessing, as we do, in great abundance, and of superior quality, hides and skins suitable for the manufacture of leather of every description; and bark, as I believe, superior to either oak or hemlock; an important and consequently increasing demand for leather, I see no good reason why so great a sacrifice should be made in sending our material to the States to be manufactured, first into leather, then into shoes, saddles, harnesses, &c., or returned to be made up here, some two or three years after the money is invested in the raw material.

Our hides and skins being principally shipped in the fall, accumulating throughout the year, we may reckon the money as invested six months before they are shipped from here; six more from here through the hands of the dealer to the tanner; a third six through his hands to the leather dealers; and a fourth six to find their way back from whence they started, costing us for the transportation and manufacture

six or eight times the amount for which we sold them, and really not worth to the consumer but about half as much.

According to the report of the collector of customs there were exported from Honolulu during the year 1850, twenty-six thousand five hundred and nineteen goat skins, for which, at fifteen cents each, the average price, the producer received \$3,977. These after being dressed in the States are worth on an average \$1 each, so that when we want them back to make into shoes, or for other purposes, we have to pay for tanning and transportation \$22,542, for an article sold by us for less than \$4000.

The same is true in regard to hides and sole leather. According to the same report there were exported during the same period 1319 hides or 20,241 lbs. at 6 cents per pound, the producer received \$1,214, and for which is paid on their return in the form of sole leather at $37\frac{1}{2}$ cents per lb., \$7,590.

At present our hides are scarcely saleable here at six cents; in the States they are worth about eight cents, and when tanned they are worth from 11 to 14, while hides taken directly from the slaughter to the tannery, without salting, drying, or voyaging, are worth in the states when tanned 25 cents per lb. and here $37\frac{1}{2}$ to 40 cents per lb.

And I would here remark that I think one principal reason that our hides command a less price in Boston or New York, than those of Montevideo, Buenos Ayres, and other places is owing to the practice of branding for the purpose of marking the cattle, in such a way and to such an extent as to reduce the value of the hide nearly one third; a practice which appears to me not only cruel in the extreme, but entirely needless, believing, as I do, that a brand on the horn near the head would answer every purpose, without the slightest injury to either bullock or hide.

With reference to hides it must be obvious to every one that there is either some mistake in regard to the number exported, or there are a large number wasted and destroyed of which we have no account; the latter is undoubtedly true.

It is a fact not generally known that with perhaps one exception the goat skins exported from these islands are the best known to shoe manufacturers in the United States, and command the highest price; my own opinion is could the same skins go direct to the tannery from

the slaughter, without salting, drying, or making the voyage, they would be worth nearly double their present value as it is well known that drying and salting, particularly the latter, renders the skin hard, brittle and liable to crack.

Another fact, a knowledge of which is limited, is that we do not have the credit of exporting these skins, they are known almost universally in the States as California skins. Ask a tanner, morocco dresser, leather-dealer, or shoe-manufacturer for Hawaiian or Sandwich Island goat skins, kid or morocco, he will tell you he is not aware there is such an article ; enquire for California skins you will at once be shown the skins exported from the islands. This fact, of little importance in itself perhaps, I suppose may be accounted for by reason of hides and tallow having been imported into the States from California, Central, and South America, with some fine goat skins from the latter places, for the last half century.

From careful experiments in French, English, German, Russian, American, Colonial and Hawaiian upper leathers, I am fully convinced that when well tanned and curried, the latter, from some cause, is not only more durable, but much more comfortable to the feet, retaining its elasticity longer than any other which I have ever used, and consequently less liable to break.

This I think is attributable partly to the superior quality of the bark used in tanning, and in part to the skins having been tanned without losing so much of their original strength by exposure to salt, sun, voyage, &c.

Shoe leather is quite an item of consumption and expense in this kingdom, and any thing tending to lessen that expense and at the same time enrich the people as the consumption increases, will, I apprehend be regarded for the public good.

The grand difficulty, as I have before intimated, with shoe leather in Honolulu, is the universal tendency of the upper to break away from the soles ; indeed it is almost impossible to find any upper leather which will wear out even an ordinary pair of soles. There are several reasons for this, one of which is the extreme heat to which the leather is exposed, both from the sun, and the sand in our streets which in the middle of the day is not unlike a bed of hot ashes to walk in ; this heat keeps the feet in a constant perspiration, which, if allowed to

penetrate the leather (as it is sure to do unless kept out by frequent applications of oil) destroys the elasticity and life of the leather, and prepares it to break rather than bend.

Another reason is said to be the saltpetre contained in our soil which also tends very much to destroy the life and strength of the leather. But the principle reason as I apprehend is that to which I have before alluded, viz: the fact that all leather made from hides or skins dried and salted, is hard, brittle, uncomfortable to the feet, and much less serviceable than what is usually termed slaughter leather. The latter commands double the price of the former, while the cost of tanning is about the same, and the hides originally just the same.

Tanning has been attempted at various times and by various persons on nearly or quite all of the habited Islands of this group, but owing to the want of the requisite skill, capital, or proper encouragement, it has in almost every instance been abandoned, and in some of them without benefiting either the operator or the public. Yet all have I believe acknowledged the superiority of our bark. There has been quite an amount of saddle and sole leather, as well as some goat and calf skins, tanned and finished very creditably; but I am not aware that any morocco dresser has ever attempted his avocation among us. The vats and other apparatus used have been of the simplest and rudest kind got up perhaps for the purpose of trying an experiment and often illy adapted to the purpose for which they were intended.

A gentlemen now residing upon one of our islands, acquainted with the business and fully competent for the purpose, made an estimate about a year since, of the cost of a tanning establishment after the model of the most approved ones in the United States, capable of turning out 2500 hides per year; and the profits on the same. The estimate, believed to be a very careful and correct one and founded upon the most reliable information, was shown to two or three of our residents and capitalists who examined and concurred in it.

By this estimate reckoning the leather at $37\frac{1}{2}$ c. per lb., which has been about the average price for the last five years, the net profits, after paying all cost of material and manufacturing, was about \$1000 for the year. He was obliged however to abandon the project for want of the necessary capital to commence with.

There can be no doubt it would be a profitable investment for any

one with the requisite skill and capital, besides leaving a large amount of money in the country, now paid out for foreign labor and capital, and conferring a benefit indirectly to the pockets and corns of all Hawaiians who wear shoe-leather.

You will permit me to say that I had not given the subject a thought until since listening to the report of our worthy president when it occurred to me that as no mention was made of the subject last year, it might also be forgotten or overlooked this year, and deeming it worthy the attention of our society, as well as one which is recognized and cared for by similar institutions in other countries, I have very hastily thrown together these remarks, hoping that such steps may be taken as will ensure next year, an amount of Hawaiian leather in our market sufficient at least for the manufacture of a pair of new boots for the exhibition.

J H. WOOD.

AN INQUIRY

Into the importance and necessity of an increased attention to Horticulture.

The subject referred to your committee, viz. Horticulture, is one so familiar to all who have been in any degree interested in the products of the soil, that its very familiarity renders it somewhat difficult to present it in such a light that any *new* motives may be derived to incite the members of this body to an increased attention to it.

Without further preamble, we will ask: "What are some of the motives which should urge the members of our society to pay more especial attention to Horticulture, as embracing the culture of every description of fruit trees and garden esculents?" Among these we would present the following:—

- 1st. The enjoyment it affords.
- 2d. The remuneration it would afford.
- 3d. Individual as well as national reputation.

These points may not embrace all the motives which should prompt the members of this society to greater exertion in this department, but

they cover a ground so broad that, if duly weighed, little doubt ought to rest with any that it is not only their duty as citizens, but one of the highest sources of pleasure allotted to men, to engage ardently in Horticulture.

It matters little what may be his particular occupation—the cultivation of his garden affords to the artizan as great a pleasure as to the man of wealth. As he returns from his daily labors, and enters the gate to his own homestead, he spies some new bud or flower, or fruit on the plant or tree which he has watched with care to see if the species could possibly be grown in this climate, and as he daily sees the progress of the new and untried plant, it affords him constant pleasure to point out to his visitors the success of his labor and recount the particulars of his manner of dealing with the exotic. Yet there are many that meet with disappointments, in the cultivation of new and rare plants, and it is on this point that we would urge those who have had success to point out the errors to be avoided. We appeal to all those who have been engaged in Horticulture whether they have not found in it their highest source of pleasure.

But another and more important motive is the *remuneration* which a successful cultivation of trees affords. There are several of the staple fruits of these islands, the cultivation of which promises as great a profit and wealth as any business which can be engaged in. To say nothing of the comfort of having an abundance of fruit in every family, or of the improved health which is guaranteed by its use, it should be our endeavor as members of this society to promote the culture of fruit as a source of profit. The day is not distant when the demand for our oranges and lemons, will far exceed our ability to supply it. Yet there are thousands of acres lying waste throughout this group, capable of producing as fine oranges as were ever grown in the Azores or in Italy. Especially is this true of vast tracts on the southwestern side of Hawaii, which nature seems to have fitted for a vast garden, soon to be cultivated to supply the wants of the rapidly increasing population on the northwest coast. The soil of these islands is of the same nature as that of the Azores and of Italy, which produce the finest of oranges. The island of San Miguel, one of the Azores, supplies London with from 15,000,000 to 20,000,000 of oranges annually. And so abundant is the produce that some of the trees yield from twenty to twenty-five

thousand oranges annually. The same may be done here, and the day is not distant when it will be done. These remarks will also apply to pine-apples, figs, raisins, and a few other fruits, the demand for all which will increase faster than our ability to supply them. It will not be long before the communication to the north-west coast is made so rapid that there will be no more risk in shipping oranges and pine-apples to that market than there now is in shipping the same products from Koloa to Honolulu.

Closely allied to this and forming another motive to perseverance, is our national reputation. We are beginning our career, and our reputation remains to be established. How much advantage our sister island, Tahiti, has over us in this respect. Already do her rich fruits draw a fleet of vessels for that trade which advantage in locality will award to this group, if we only awaken to our true interests. It is said that so great is the trade in oranges between the Azores and London, that seventy-five small vessels may be seen at once, during the harvest season, in the harbor of San Miguel. The day may not be far distant when a similar scene may be noticed in the bay of Keala-keakua on Hawaii.

The subject of Horticulture is one of such importance to us as individuals and as a people, that your committee feel that it has not received in this hasty report that attention and inquiry which it demands. They would therefore request that a committee be appointed to act during the coming year, and collect information and statistics showing the state and progress of Horticulture throughout the group. Such a document would be valuable in showing the annual progress at future periods.

All which is respectfully submitted.

HENRY M. WHITNEY, *Chairman.*

COMMUNICATION OF R. C. WYLLIE, ESQ.

To all who are interested in the prosperity of this kingdom, it is of importance to consider what the islands are capable of. They contain, as you all know, an area of 6,050 miles with a population, perhaps, not exceeding, at this moment, 80,000 souls. It is believed that taking the whole of Europe, the population averages 70 to the square mile. At this rate the Hawaiian islands should support a population of 423,500 souls.

But, if we take the island of Barbados, which comprises a surface of only about 106,470 square acres of land, abounding in mountains and precipitous ridges, divided by deep ravines or gulkies, and yet by the last census of 3d June, 1844, had a population in its twelve parishes, of 122,198 souls, the Hawaiian islands with their 3,897,600 square acres, ought to be able to support a population of 4,473,362 souls.

Let us see to what extent sugar plantations have been carried in that small triangle of land, (Barbados,) measuring only 21 miles by 15, while Oahu, alone, measures 46 by 25, and has a surface of about 330,200 square acres. The following table of Barbados will surprise most of you :

Parishes.	Sugar Mills.	Four wheel carriages.	Two wheel carriages.	Horses.
Christ Church,	60	37	43	517
St. Michael,	40	158	145	1009
St. George,	54	31	51	611
St. Philip,	52	34	47	543
St. John,	38	19	38	480
St. Joseph,	41	4	18	311
St. Andrew,	28	0	2	138
St. Thomas,	55	16	25	461
St. James,	32	11	11	194
St. Peter,	46	19	37	338
St. Lucy,	35	11	21	211
Total,	479	340	438	4813

Owing to the density of the population, Barbados is the only island of the West Indies which has not suffered by the emancipation of the slaves. In 1844, the export of sugar alone was about 460,000 cwt. At the same rate of sugar production, the 3,897,600 acres, in the Ha-

Hawaiian islands, ought to export 16,839,447 cwt., which at only 2 cents per pound would amount to \$37,720,361 annually.

But it may be said that this comparison is unfair, as it assumes that the whole of the Hawaiian soil is fit for cane cultivation. It assumes no such thing, but merely that relatively to the whole, there is not more of the Hawaiian soil unfit for cane cultivation, than there is of the soil of Barbados. The table before given, shows that that island devotes part of its soil to the pasturage for 4813 horses, mules, &c. ; it affords pasture, besides, for numerous cattle, and exports rum, molasses, arrow-root, aloes, cotton, ginger, cocoa-nuts, log-wood, hides, tamarinds, cocoa and coffee.

Where so small an island exports so much, it is not surprising that it should have to import largely of the necessities of life for the sustenance of its inhabitants. These islands would probably be under the same necessity, if the population should increase to 4,473,362, which I hold to be just as possible, as that the population of Barbados from the part of a ship's crew landed in 1605, should have increased to 122,198 souls on the 3d June, 1814. Great Britain is the richest country on earth, although it has to import largely of the necessities of life ; Barbados is, comparatively, the richest of the West Indian islands, although it is in the same condition ; and the Hawaiian islands might be teeming with wealth, although, in exchange for their sugar, coffee, tobacco, &c., they should draw much of their supplies of grain, &c., from Oregon and California. According to my ideas of political economy, it is just as certainly the shortest and easiest way for a nation to become rich, to confine itself to what it can make of the best quality, and at the cheapest price, as it is for an individual to follow the same maxim, buying what he does not make, from his neighbor, who can make it better and cheaper than himself. Upon this principle every nation will support not alone the population for which it can raise food, but that and the farther population for which it can buy food.

From this brief statistical statement, the conclusions which I draw, are the following :

1. That the hopes of the wealth, power and glory of this kingdom depend exclusively upon its agriculture.
2. That the Hawaiian islands afford a wide field for capital and labor in the cultivation of the soil.

3. That that field is a virgin field hitherto neglected and unproductive.

4. That those who have formed, or rather are forming, plantations on these islands, are public benefactors, and that in granting them every possible encouragement, the government will only do its duty, and consult the best interests of the Hawaiian people.

5. That the Royal Hawaiian Agricultural Society, is an institution eminently calculated to give a wholesome direction to the industry of the inhabitants, and to promote all the substantial interests of the Kingdom.

6. That all the friends of PROGRESS, must wish well to the Royal Hawaiian Agricultural Society.

I cannot imagine how any man of common sense, or common loyalty to the King, can be otherwise than a friend of *progress*, where the sin of the past has been a *vis inertix*, and where all the hopes of the future depend upon a *strong pull*, and a *pull altogether*, in the direction FORWARDS.

The first star that has arisen to shed a ray of hope on the destinies of these lovely, and naturally rich islands, is this same Agricultural Society, and however little I can aid it, individually, I can bid it, as I do bid it, very cordially, God speed.

R. C. WYLLIE.



ON AGRICULTURAL IMPLEMENTS.

To the Committee on Implements, for the Royal Hawaiian Agricultural Society :

GENTLEMEN :—In answer to the first question, I consider the most prominent defect to be *bad material* used in the manufacture of the implements. Almost all of the carts are made of lumber which is unfit for the purpose. I have now six new ox and horse carts, from Boston, direct, with white ash spokes and pine fellows, good for nothing but to burn. Everything should be made of the best of *white oak*.

Iron hubs are not fit for this country. *Cast iron shafts* in sugar mills are very bad. None but *wrought* iron shafts should be brought here. If we had a foundry and machine shop here, perhaps cast iron might be best, but as the case stands, *cast iron shafts for mills should not be imported.*

Nourse and Ruggles' centre draught, and side-hill ploughs. My place being almost all on the slant, the side hill plough is to be preferred. It will do one fourth more work, in the same time and do it much better.

I find Nourse and Ruggles' No. 1 to be an excellent plough for heavy work. I would have two No. 1, four No. 3, two No. 7, all side-hill.

I think that everything we want to use in this country can be made in the States and brought here much cheaper than we can make them.

I make my own carts and yokes because I cannot buy any that will stand. There are several kinds of wood here which answer very well for carts, but the price of labor and iron induce me to get my carts made in the States, providing they were made by honest men.

A good cart, such as I use for hard work, costs me to make it about \$240. My father used to make such, in Pennsylvania, for \$94. Two tons is the regular load.

Let us have some agents in the states to procure for us implements of the very best material and let them have instructions how to have them made ; say at Philadelphia for carts and oak ; Boston for yokes and ploughs.

Let the wheels be finished complete, and the axles, (wooden by all means, with steel skeins,) fitted, together with the tongue. Send the lumber for the bodies and make them here. Why don't you offer a premium for the best model of a cart, and the best manner of ironing a yoke ?

My natives take great pride in using foreign implements, and use them very readily.

Gentlemen I only speak of such implements as I use. We are a carting people on Maui, and in the last six years I have had some experience in carts and yokes. Yours,

L. L. TORBERT.

Honuaula, July 21, 1851.

ON AGRICULTURAL IMPLEMENTS.

Honolulu, August 13, 1851.

GENTLEMEN :—We beg to apologise to you for having neglected, until this late hour, to reply to the queries contained in your circular letter of the 8th inst. We are as yet but mere novices in experience of the cultivation of the soil, and our views are consequently of but little value compared with those of older planters. To reply, however, as well as we are able to your queries, we would say first :

As to the most prominent defects in the implements now in use on the islands. That in our opinion the ploughs in use, or to be had in this market, are of the best description. The heavy English iron plough we consider the best for breaking up the ground, though we know that many planters, of more experience than ourselves, prefer the American Eagle plough. If any defects exist, the principal is that the plows are not large enough, or do not plough deep enough for cane planting. For planting cane in drills the Double Mould Board plough. Mr. Burbank of the Koloa plantation, Kauai, has made a plough of this description which is said to answer the purpose, though it requires 8 yoke of oxen to draw it. Mr. Burbank will doubtless make valuable improvements on this plough.

Every variety of harrow is in use here. Hoes in use here are generally too small and easily broken. Large steel hoes of the best quality, with large eyes, are, in our opinion, the cheapest for the use of the native laborers. The same remark may be applied to spades, shovels and oos.

Carts are generally imported of too slight materials, and under the management of natives, with their half broken cattle, are soon destroyed. They should be made exceedingly strong, and of well seasoned wood to do much service.

The prominent defects in mills for grinding cane are, that many of them are made of wood, and most even of the iron mills are on too small a scale to render the business of manufacturing successful. The mill recently imported by Messrs. Wood and Spencer, for their plantation at Maui, and that now in process of erection at Lihue, Kauai, are we believe the two largest on the island, though smaller than many of the mills now being brought into use in the West Indies. The rolls

of our mill are $4\frac{1}{2}$ feet in length, and 26 inches in diameter, and weigh about 3 tons each.

The machinery for manufacturing sugar is also in an exceedingly rude state, and many improvements could be pointed out, and are in deed daily being introduced, which would require more particular description than can be given in this connection. We cannot, however, omit the mention of an invention for purging sugar, recently brought into use in the West Indies, and now about being introduced here. If successful in its operation it will add much to the value of our sugar plantations, saving much time and labor. The present process is to take the warm sugar from the granulating tables, and place it in vats or boxes, where it remains until the molasses has drained through these boxes. This process occupies from two to six weeks, according to the state of the atmosphere, and is of course very uncertain and tedious, and often occasions loss to the planter by a fall in the market before the sugar is fit for shipment. The planter is also tempted to pack his sugar before it is thoroughly drained, in order to take advantage of a rise in the market, and thus the reputation of the island sugars is much injured.

The machine in question obviates all these evils, and turns out the sugar fit for packing and shipment in a few minutes from the time it is taken out of the granulating tables. It is called the "centrifugal separator," and consists of a perforated cask into which the sugar is thrown and by very rapid revolutions the molasses is forced out through the sides of the cask very rapidly leaving the sugar clean and dry. The power may be given from the motive power of the mill, or independently, as is most convenient. A more particular description of this machine was kindly furnished us by his Excellency R. C. Wyllie, who will perhaps communicate it to the society. Several of these machines have been ordered of Mr. D. M. Weston, a practical machinist, now in Honolulu, who came out from the U. S. for the purpose of setting up our sugar mill, to whom we would recommend planters to apply for information on this subject.

As we have occupied so much time in replying to your two first queries, and as you will doubtless receive valuable information from others on the other points in your letter, we will not now attempt any reply to them.

Very respectfully, your ob't servant,

H. A. PEIRCE, & CO.

COMMUNICATION FROM J. G. SAWKINS, ESQ.

Mr. President and Members of this Society :

I wish I could speak practically on the points that casual observation and the absence of many practical hints from some of the committees induced me this morning to pen previous to meeting you here,—I beg you to receive them as the hasty observations of a traveller. When I have gone forth from my peaceful and ever entertaining studio, it has been with the object of observing nature, scrutinizing her various Geological, Botanical, and Chemical formations ; rarely neglecting to note as far as my humble capacities permit, how their products may conduce to the happiness of our fellow-beings. The results of these observations, are, that volcanic formations are of so recent a date at these Islands, is the first great cause of their sterility, in comparison with the older volcanic islands of Cuba, Jamaica and others of the West Indies. Basalt, lava or escoria in the absence of lime, siliceous and nitre is too arid and unkind to create or mature vegetation ; consequently we do not find the stately cyba, mahogany, cedar, cypress, and innumerable other trees of 150 to 200 feet high ; but we find every species of the locust, shoots up with avidity. I beg leave to direct the attention of all the members of this society to that brought from Kauai, 3 years ago and planted by the Rev. Mr. Bishop at Waianea—there are now 4 or 5 of these 25 to 30 feet in height. I entertain no doubt a good fence may be easily constructed, by planting the seed or scion around the land intended to be enclosed, 9 feet apart—in 4 or 5 years cut off 7 or 8 feet from the ground they will form good solid posts, four or five, 3 inch auger holes being bored into these posts at suitable distances, to receive the rails, for which abundance of wood will be found in the tops and branches—such is the prolificacy of this tree and fostering nature of the soil, that wherever seed has fallen from its branches, they have taken root, forming at present a miniature forest. This and other instances observed in recent volcanic formations induces me to believe, that, whenever desirable this island could be covered by its shadows in the short space of 10 years. The chestnut is another tree I would suggest as highly applicable to volcanic soils.

A small specimen of boron from one of the islands in a pulverized state, was submitted to me for analysis, as far as my tests admitted,

satisfactory results were obtained. This may become an important item of export, as that now used is either brought from the lakes of Tuscany, Thibet, or the Lipari Islands.

Nitre is not found pure, so far as I can learn on this group at least none has come under my notice.

Sulphate of soda is the most abundant. The muriate of soda, rarely pure, on account of the sulphurous gases of the neighboring active volcanoes. I have made experiments in this article, with satisfactory results which, if carried into successful operation would result greatly to the benefit of the inhabitants, in curing of meats, fish, &c., which up to this moment I believe has been a failure.

Another resource, under the destructive disposition of the native is verging on extinction. I mean the pearl oyster, it is nearly devoured.

The want of native labor, a subject vital to us all, has occupied much of my attention. The result has developed two great causes—1st The impossibility to extricate themselves from the distinctions human distributions of power has placed them. 2nd Their philosophical contentment under so benign a climate whose almost spontaneous products are sufficient to supply their wants. I will endeavor to demonstrate my meaning by the observations of a negro in Jamaica when asked why he did not work and make himself rich ! He replied : what for me work, massa ? these banana give me plenty of fruit, this river give me plenty of fish, that sow give me a litter of pigs every year, which I sell to buy clothes ; what for me work, massa ? Me always black man, white man no care for nigger ; no honors ! no office for nigger ; what for me work massa ? Hence then the belief that much more depends on ourselves than we are disposed to saddle. *We* must seek an incentive to move them from this philosophical contentment, we must endeavor to elevate them above their condition by leveling the feudal distinctions by which they have been coerced, make them feel that virtue and wealth will elevate them above these human distributions of power ; plant the seeds of virtuous ambition, in every shape and form our superior intellectual reason can devise ; let them feel and know that by superiority in any labor accompanied by virtue, they can obtain a position in society above the level of their forefathers, and most of all avoid every means calculated to make them feel the degraded position, circumstances, or the orders of creation have placed them.

Thus removing the desponding and depressing influence the above causes have, and as long as they last will produce, viz., inebriety, indolence, apathy. We must divest ourselves also of prejudice, and let our distinctions among men be for their virtues and not their color. And last of all I would suggest as an important influence to this end, limits to our ambition, in the acquirement of land; no man wants more than 500 acres of arable land for his own cultivation ; it is a problem long since solved that large land proprietors are a clog on a nation's prosperity.

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