

Storage
Forestry

SD

1

H39

86

VOL. IX.

SEPTEMBER, 1912

No. 9

Price, 10c. Per Copy; Per Annum, \$1.00; Foreign, \$1.25.

THE
Hawaiian Forester

AND

Agriculturist

A MONTHLY MAGAZINE

OF

Forestry, Entomology and Agriculture

ISSUED UNDER THE DIRECTION

OF THE

BOARD OF COMMISSIONERS OF AGRICULTURE
AND FORESTRY.

PUBLISHED MONTHLY.

Entered as second-class matter at the Post office, at Honolulu, Hawaii.

ADDRESS ALL COMMUNICATIONS TO

DANIEL LOGAN,
EDITOR "THE FORESTER,"

P. O. BOX 366,
HONOLULU, H. T.

For business relating to advertising or subscriptions, address

HAWAIIAN GAZETTE CO., LTD., Publishers,
VON HOLT BLOCK, 65 S. KING ST., HONOLULU HAWAII.

TABLE OF CONTENTS.

	PAGE.
Editorials.....	261
Forest Reserves (reports).....	263
Division of Forestry	281
Division of Animal Industry.	284
Division of Entomology.....	290
The Fruit Fly Campaign.....	291
Forestry as a Profession.....	294

DIVISION OF FORESTRY.

FOREST AND ORNAMENTAL TREE SEED AND SEEDLINGS FOR SALE AT THE GOVERNMENT NURSERY.

The Division of Forestry keeps constantly on hand at the Government Nursery, seed and seedlings of the important native and introduced trees. These are sold at prices just covering the cost of collection or growing.

The list includes both forest and ornamental trees, such as Silk Oak, Koa, various species of Eucalyptus, Golden and Pink Showers, Pride of India, Poinciana, Albizzia, etc. The price of the seed varies from 10 to 50 cents per ounce. The seedlings may be had for 2½ cents each, except a few kinds which are 5 cents. Seed of the various palms is also for sale; the price per 100 varying from \$1.00 to \$2.50. All seed is tested before being sent out, which insures its being good.

All communications in regard to seed or trees should be addressed to David Haughs, Forest Nurseryman, Box 207, Honolulu, Hawaii.

RALPH S. HOSMER,
Superintendent of Forestry.

DIVISION OF ENTOMOLOGY.

To give information about insects free of charge is one of the duties of this Division and Hawaiian readers are hereby invited to make inquiry in person and by mail. In order to be able to advise intelligently or send the right kind of useful insects for relief we like and sometimes it is indispensable for us to see the insect suspected or caught in the act, also specimens of the injury. In a tin with a hole or two, or a wooden box specimens may be mailed at 3rd class rates. When specimens are not accompanied by letter *always* write your name and address in the upper left-hand corner of the package. Address all communications SUPERINTENDENT DIVISION OF ENTOMOLOGY, P. O. BOX 207 HONOLULU, HAWAII.

EDW. M. EHRHORN,
Superintendent.

THE HAWAIIAN FORESTER AGRICULTURIST

VOL. IX.

SEPTEMBER, 1912.

No. 9.

EDITORIALS.

The Massachusetts Forestry Association issues the following boosting card:

Here is a little state which we think is mighty fair;
It has tried to save its forests as a man would save his hair;
But, alas, 'tis bald in places, nothing left but stumps or embers,
All because this 'sociation doesn't have enough of members.

Are you one?

From the L. L. Poates Publishing Company, 22 North William street, New York, has been received an Atlas of the World, which is got up in very neat and clear style. It is represented to have "193 pages of maps, alphabetical index of states and countries, besides the states with their counties and important cities and towns with their populations, according to the 1910 United States census, and the principal cities of the world." As Honolulu is not found among the "important cities and towns," even, let alone "the principal cities," in this book, it is a fair presumption that the work is composed to some extent at least of stale material dug out of older publications. There can be no excuse for leaving Honolulu out. Hawaii as a whole, it may be added, is presented in this Atlas only by a contemptible little map.

Tropical Life (London) for August says: "One of our Hawaii friends writes us that experimental tappings of Ceara rubber trees out there under official supervision yielded 14 ounces per tree, five to six years old. This was obtained during the course of a year, each tree being tapped sixty times, or an average of once in five working days."

A circular of the Porto Rico Agricultural Station says that bees are very fond of working the blossoms of the cocoanut palm, and are ready to start work directly the blossom sheath begins to open. So many bees work on a blossom that their buzz resembles the noise made in swarming. Although the cocoanut does not furnish as much honey per tree as the royal palm, in the aggregate the amount obtainable must be much more, and

the bees seem very ready to work the cocoanuts. Coffee blossoms are said to yield food for the bees very freely.

Reviewing a handbook on education, by H. Osmond Newland, founder of the British West African Association and the Egyptian Association, Tropical Life bewails the kind of education the parents of Greater London are forced to accept under pains of fines and imprisonment if they do not make the children undergo it. For all but perhaps 50 per cent of the children, the magazine sets forth, the existing system tends to force them "to misery and want." What it says further in the following quotation is worthy of study in Hawaii, where, happily, some people and the legislature have already taken up the central idea presented: "Our present system encourages, if it does not actually force, countrymen and townsmen alike to flock into the cities, whereas what this empire is crying out and starving for is decentralization, is the need of not only driving our surplus population out of the cities, but also out of the country, to go elsewhere to earn their living and increase the trade of this country. The only compulsion we believe in is compulsion to work. It is the only thing the law does not insist upon. It compels you to be educated in a way that, with at least 50 per cent of very poor, leads to nowhere; it punishes you if you do not insure; if you do not call in the doctor when ill; if you prefer to starve than to live on charity; but to train you to be of a real help to your country and to yourself by teaching you agricultural industries, and forcing those who cannot earn the much discussed minimum wage in the large towns and cities, which many are not worthy of, to go back to the land and earn what they can, and all they are worthy of, has not entered into the minds of our educational experts, who teach you what they want you to learn, not what you, the student, require to know."

A report of the proceedings of the West Indian Agricultural Conference, 1912, continued in No. 3, Vol. XII, of the West Indian Bulletin, contains some papers on sugar which should be of much interest to Hawaiian planters.

"Insect Pests of the Lesser Antilles," by H. A. Ballou, M. Sc., an entomologist on the staff of the West Indies department of Agriculture, has been received. It is a pamphlet of 210 pages, and is copiously illustrated. "The Mediterranean fruit fly," the work says, "is perhaps the most widely distributed of the fruit flies."

FOREST RESERVES.

REPORTS OF THE SUPERINTENDENT OF FORESTRY MAKING RECOMMENDATIONS WITH REGARD TO THREE FOREST RESERVES.

On Island of Molokai.

Honolulu, July 25, 1912.

Board of Commissioners of Agriculture and Forestry,
Honolulu, Hawaii.

Gentlemen:—I have the honor to submit as follows a report recommending that a forest reserve be created on the Island of Molokai, County of Maui:

OBJECT.

The object of this proposed forest reserve is to protect and permanently to maintain the forest cover on the upper mountainous parts of the island, so that the sources of water—the springs and streams thereon—may be safeguarded, and as far as possible the regularity of their flow assured.

All along the lee shore of Molokai at the lower elevations, but especially near Kaunakakai, is much land that is potentially of high value for intensive agriculture, could it be brought under irrigation. Attempts to secure water on a large scale from wells have proved unsuccessful. Various plans for the development of the mountain water have been proposed,* but up to the present time only comparatively small quantities of water, sufficient only for watering live stock, have actually been brought out of the hills.

Sooner or later it is almost certain that some practicable plan will be evolved whereby the mountain water can be collected and led out to where it is needed. Looking forward to that time, it is expedient that provision be made now for keeping the watershed in the best possible condition.

This is a matter which interests all the owners of the uplands, private parties as well as the government, for any comprehensive program for the systematic development of the mountain water on Molokai would doubtless cover the entire island. The chief value of these upper lands is as producers of water. The owners should see to it that when the proper time comes to dispose of it, the largest possible quantities of water are ready to be sold. Because it will help to accomplish just this end is the main purpose in setting this section apart as a forest reserve.

* Especially in a report by Waldemar Lindgren, "The Water Resources of Molokai"; U. S. Geological Survey, Water Supply Paper No. 77; Washington, 1903.

LOCATION AND AREA.

The area proposed to be set apart lies mauka of a line varying in elevation from 1500 to 2000 feet that circles the eastern half of the island. The total area included is 44,674 acres, of which 13,268 acres, 30 per cent., is land belonging to the Territorial government. Of the remainder, that in private ownership, a large share is held by a few individuals or corporations. So far as it has been possible to ascertain, almost all of the owners of forest land on Molokai are in sympathy with the objects for which the reserve is created. Most of them have expressed their intention of coöperating more or less actively in making the reserve effective on the ground.

The various lands contained in the proposed Molokai Forest Reserve, with their area and ownership, are shown in the following table. The areas were compiled by the Government Survey Office, as a part of the official description:

Name.	Area acres	Owner.	Lessee.	Lease No.
Ilii	156.0	Meyer Bros.		
Naiwa	70.0	Meyer Bros.		
Kahanui (L. C. A. 7755)	317.0	Meyer Bros.	American Sugar Company	117
Kalamaula	1621.0	Government		
Kahanui (Grant 3437)	1048.0	Meyer Bros.		
Kaunakakai	965.0	American Sugar Company		
Kapaakea	220.0	Government	American Sugar Company	117
Kamiloloa 1	490.0	{ Government	American Sugar Company	516
Kamiloloa 2	550.0			
Makakupaia mauka	490.0			
Makakupaia makai	654.0	American Sugar Company		
Kawela	3850.0	American Sugar Company		
Makolelau	253.0	Mrs. F. Foster	L. H. Dee	
Kamalo	1600.0	Bishop Estate	Meyer Bros..	
Kapualei	{	Austin Estate		
Kamueli				
Wawaia	923.0			
Puaahala	163.0	Government	(Unleased)	
Maamola	33.0	Bishop Estate		
Keawanui	182.0	Bishop Estate		
West Ohia	172.0	Kumu (†)		
East Ohia	220.0	Government		
Manawai	416.0	Th. Meyers (†)	A. Rodrigues	655
Kahananui	182.0	{ Government		
Ualapue	194.0		C. Kaanoi	702 701
Kahuaha	694.0	H. R. Hitchcock		
Mapulehu	1007.0	C. C. Conradt		
Ili o Punaula	152.0	Mrs. E. M. Nakuina		
Pukoo	124.0	Government	(Unleased)	
Kupehe	63.0	Mrs. C. B. Buchanan		
Ahaino 1	96.0			
Ahaino 2	100.0	L. Weinzheimer		
Honomuni	415.0	Mrs. E. M. Nakuina		

Name.	Area acres	Owner.	Lessee.	Lease No.
Kawaikapu (Grant 3108).....	67.0	Mrs. E. M. Nakuina		
Kainalu (Grants 3730:2 and 1140:1).....	572.0	Vincent, Bowen & Co.		
Puelehe	14.0	Liliuokalani Trust		
Puniuohua 1	1.5	{ Vincent, Bowen & Co.		
Puniuohua 2	2.5			
Waiaha	627.0	Hui		
Moanui	282.0	Tollefsen & Christensen		
Honouliwai	378.0	Government		
Honoulimaoloo	175.0	Kapiolani Estate	(Unleased) (in dispute)	
Lapehu (Grant 1836)	83.0	J. F. Brown half; J. Jones half		
Pohakupili	9.0	Mrs. Paia Naki		
Mokea	218.0	Estate of Mana King		
Keopukaunu	16.0	Hui (J. F. Brown in part)	Mr. J. F. Brown	
Keopukaloo	810.0	Hui		
Halawa	7190.0	Bishop Estate		
Wailau	8540.0	Government		
Pelekunu (including grants and Kuleanas)	4512.0	J. B. Castle	A. C. Dowsett	540
Waikolu	3400.0	Board of Health.	Valley belongs Leper Settlement	
Makanalua	142.0	Board of Health.	Valley belongs Leper Settlement	
Kahanui (Grant 3539 to Meyer).....	215.0	Meyer Bros.		

44674.0

The data in regard to ownership were compiled after consultation with various persons familiar with Molokai.

The Boundary.

In common with the usage in other Hawaiian Forest Reserve projects, the boundary of the proposed Forest Reserve has been drawn across both government and privately owned lands so as to include all the area which in the judgment of the Superintendent of Forestry should be permanently maintained as forest. Starting on the Molokai Ranch boundary, at a point near the pali overlooking the Leper Settlement and following the forest fences across the Molokai Ranch, the line runs along the southeastern slope of the Molokai mountain as far as Halawa gulch, from one to another of the triangulation stations erected at the time the island was surveyed by the government. These points are located on the ridges, practically at the edge of the existing forest. The line runs mauka of the heads of the greater part of the many small lands along the southeast coast.

Beyond Halawa the line is one of natural boundaries. It follows the sea coast but excludes, by description, "all the cultivated or agricultural land in the valleys of Halawa, Wailau, Pelekunu and Waikolu, all land in Waikolu, and Waihanau that may be used or required for public purposes and all flat land along the shore at the foot of the bluffs."

At the Settlement the line runs up the pali, skirts the top of the bluff for a way, and connects with the Molokai Ranch fence by crossing the fee simple lands of the Meyer Brothers.

The Meyers' Lands.

With the exception of the Meyers' lands, practically all the areas included within the reserve is now under forest or in process of being reforested. Most of the forest at the east end of the island is now, of course, subject to cattle grazing, but almost all the larger owners have expressed their intention sooner or later of fencing off the forest. The Meyers' lands, on the contrary, are now used regularly for grazing, and it is the intention of the owners to continue so to use them. The larger part of the Meyers' lands within the forest reserve limits are now open.

In my judgment it would be for the best interests of the island as a whole were these particular lands again got under forest, more especially the portion of Kahanui bordering the great Waikolu Gulch, through which land run the small gulches that unite to form the Waihanau Gulch that comes out above the Leper Settlement on the land of Makanalua.

From a water supply standpoint this is a highly important portion of Molokai, because while the area is small, only about one square mile, it is subject to heavy rainfall, while from its location the Waihanau is a stream that could readily be diverted and put to use. Speaking of this stream, the Waihanau, Lindgren says (l. c. p. 31): "Swamps line the borders and much water comes in

from springs on the sides of the abrupt canyon in which it flows. . . . I conclude that the stream can be relied on for 3,250,000 gallons per 24 hours from November 1 to June 1, for 1,000,000 gallons during June and July and for at least 100,000 gallons from August 1 to November 1." When water is as badly needed and as valuable as it is on Molokai, it is not good policy to use such an important catchment area as this for grazing. On a good portion of upper Kahanui the native forest would probably come back naturally if cattle were excluded. Lower down artificial planting would be necessary. On the lower portion of Kahanui mauka, but still within the line of the proposed reserve, are "Meyer's Lake" and one or two other possible reservoir sites.

Theoretically, the proper thing would be for the Territorial Government to take over this land, at a fair valuation, but practically there is no fund available for making such purchases. Owing to complications resulting from the fact that the Meyers' lands are parts of the undivided estate of the late R. W. Meyer, under the terms of a will which provides that the estate cannot be finally settled during a term that has yet many years to run, it would not be easy to effect a transfer of title. But, possibly, in time, were a Molokai water company formed, it might be possible through a long lease to control the lands for a sufficient time to make it pay to get a new forest started. In the meantime the fact that a forest reserve line has been drawn across it on the map as a guide for future action, does not affect the Meyer Brothers in practice if they see fit to continue to use their lands for grazing.

At present Kahanui is separated from the Molokai Ranch Company's lands by well kept fences. Should some plan of full reservation not previously have been effected, provision for the maintenance of this fence should be made when the present lease of the adjoining Government land of Kalamaula expires, in 1918. Similar provisions of fence up-keep should be included in the leases of all the other Government lands that run into the Molokai Forest Reserve.

Protection of the Forest.

In the matter of protecting and extending the forest on the Molokai mountain considerable interest has already been shown. Chief among those who are alive to the advantages of such action is the American Sugar Company, locally known at the present time as the Molokai Ranch, which for a dozen years now has maintained a forest fence across the upper lands, including both those held in fee simple and those held under lease from the Government. This fence, which is approximately 8 miles in length, was built in 1898 and 1899, voluntarily by the ranch company. Since that time cattle have been kept off the mountain, except for one paddock. And within the last two years that, too, has been given up.

That the lands at the east end of the island may get the full

benefit from the forest reserve requires that the forest line be fenced, except where there are natural barriers all along its course. On the few lands that belong to the Government, provision for fencing can be made when the lower end of the land comes again to be leased. This has already been done in the case of a couple of Government leases. Similar action will probably be taken by the Bishop Estate. Some of the other private owners would be willing to fence off their upper lands, but are unable to do so because of the expense. Under the circumstances about all that can be done just now is to point out where the line ought to be and lend what encouragement is possible to the construction of various stretches of the fence from time to time.

Owing to the configuration of the slope the line to be fenced consists for the most part of comparatively short stretches of fence, across ridges, between the impassable sides of gulches.

It is proper here to recall that at the time of the building of the Molokai Ranch forest fence, from 1898 to 1900, considerable money was spent by the Molokai Ranch Company in killing off the deer* and in getting out wild cattle that were then at large in the woods. In recent years enough deer hunting has been done practically to keep pace with the yearly increase. Deer are also found, and hunted, on the forest lands at the east end of the island.

In this connection, in view of the damage liable to result to the native forest from deer, the Territorial Government is on record as holding that in Hawaii deer are to be considered as being in the same class with goats, animals to be regarded as pests to be got rid of.

There are several large bands of goats on Molokai. The Molokai Ranch Company has lately had several systematic goat drives and is using other means to clear their mountain lands of this enemy of the forest. By these efforts the bands are gradually being reduced in number, but it is work that ought steadily to be continued until the goats are exterminated.

It should also be noted here that for the purpose of bettering the water holding condition of the catchment basin, forest planting is now being done by the Molokai Ranch Company on the mountain, at Maunahu'i, near Kahanui, on the land of Kaunakakai. In many places above the forest fence the native vegetation is coming back naturally. There it was felt to be desirable to expedite matters by artificial planting.

RECOMMENDATIONS.

For the reasons set forth in the foregoing pages I do now recommend that the Board of Agriculture and Forestry request the Governor of the Territory, in accordance with the usual procedure, to create a forest reserve on the Island of Molokai, to be

* Introduced from the Orient and turned loose on Molokai during the reign of King Kamehameha V, in the late sixties.

known as the Molokai Forest Reserve, and to set apart all government lands that lie within its boundaries.

Accompanying this report is the official description of the boundary of the proposed Molokai Forest Reserve, prepared by the Government Survey Office, together with a blue print of the eastern half of the island showing the location of the Reserve.

Very respectfully,

RALPH S. HOSMER,
Superintendent of Forestry.

MOLOKAI FOREST RESERVE.

Island of Molokai.

Beginning at a point in the land of Ilioli on the top of the pali, said point being due north of Government Survey Trig. Station "Puu Olelo";

1. Thence 3300 feet, more or less, due south across the lands of Ilioli and Kahanui (Grant 2709, L. C. A. 7755) to Government Survey Trig. Station "Puu Olelo" in the land of Naiwa;
2. Thence 2000 feet, more or less, in a southwesterly direction across the lands of Naiwa and Kahanui (L. C. A. 7755) to a point on the boundary of Kahanui (L. C. A. 7755) and Kalamaula;
3. Thence 60 feet, more or less, in a southwesterly direction along the boundary between Kahanui (L. C. A. 7755) and Kalamaula;
4. Thence 2440 feet, more or less in a southwesterly direction along the boundary between Kahanui (L. C. A. 7755) and Kalamaula;
5. Thence 3400 feet, more or less, in a southwesterly direction along the boundary between Kahanui (L. C. A. 7755) and Kalamaula to where the forest fence begins;
6. Thence 1000 feet, more or less, in an easterly direction along forest fence across the land of Kalamaula;
7. Thence 2000 feet, more or less, in an easterly direction along forest fence across the land of Kalamaula;
8. Thence 3000 feet, more or less, in a southeasterly direction along forest fence across the land of Kalamaula;
9. Thence 2250 feet, more or less, in a southeasterly direction across the land of Kalamaula along the forest fence;
10. Thence 3300 feet, more or less, in a southeasterly direction across the land of Kalamaula along the forest fence to a point on the boundary of Kalamaula and Kaunakakai;
11. Thence 16300 feet, more or less, in a general southeasterly direction across the lands of Kaunakakai Kapaakea, Kamiloa 1 and 2, Makakupaia mauka and Makakupaia makai and along the forest fence to a point which is 2800 feet directly south of Government Survey Trig. Station "Makakupaia" in the land of Makakupaia makai;
12. Thence 10600 feet, more or less, in a southeasterly direction across the lands of Makakupaia and Kawela along the forest fence;
13. Thence 4000 feet, more or less, across the land of Kawela along the forest fence to a point on the boundary of Kawela and Mokelelau, said point being 4400 feet, more or less, southwest of Government Trig. Station "Puu Kolekole";

14. Thence 2800 feet, more or less, in a southeasterly direction across the land of Makolelau to the head of the land of Kapuakoolau;
15. Thence 8500 feet, more or less, in an easterly direction across the land of Kamalo to a point on the ridge on the eastern boundary of Kamalo, said point being 2000 feet south of Government Survey Trig. Station "Kaapahu";
16. Thence 9100 feet, more or less, in a general southeasterly direction across the lands of Kapualei, Kumueli, Wawaia, Puaahala, Kaamola and Keawanui to a point 1000 feet south of Government Survey Trig. Station "Ohianui" on the last-named land;
17. Thence 9300 feet, more or less, in a general northeasterly direction across the lands of Keawanui, West Ohia, East Ohia, Manawai, Kahananui, Ualapue and Kaluaaha to a point 500 feet, more or less, south of Government Survey Trig. Station "Kaluaaha" on the last-named land;
18. Thence 5600 feet, more or less, in a general northeasterly direction across the lands of Kaluaaha, Mapulehu and the Ili of Punaula to Government Survey Trig. Station "Pukoo" on the west boundary of Pukoo;
19. Thence 3000 feet, more or less, in a general northeasterly direction across the lands of Pukoo, Grant 1135, Apana 3, Kupeke and Ahaino I to Government Survey Trig. Station "Ahaino" on the boundary between Ahaino 1 and 2;
20. Thence 8250 feet, more or less, in a general northeasterly direction across the lands of Ahaino 2, and Honomuni to the head of the land of Kamanoni, thence continuing in the same direction across the lands of Kawai-kapu, Kainalu, Puelelu, Puniuohua 2 and Puniuohua 1 to Government Survey Trig. Station "Wai-alua" on the west boundary of Wai-alua;
21. Thence 8100 feet, more or less, in a northeasterly direction across the lands of Wai-alua, Moanui and Honouliwai to Government Survey Trig. Station "Moanui";
22. Thence 5200 feet, more or less, in a northeasterly direction across the lands of Honouliwai, Honoulimaloo, Lupehu, Pohakupili and Moakea to a point on a small peak a short distance south by east of Government Survey Trig. Station "Halawa";
23. Thence 4050 feet, more or less, continuing on the same northeasterly line across the lands of Moakea, Keopukauku and Keopukaloa to a point on the edge of the pali of Halawa called Koholua;
24. Thence 5400 feet, more or less, in a northwesterly direction across Halawa Valley to the Government Survey Trig. Station "Kawaikapu";
25. Thence 3450 feet, more or less, in a northerly direction to the Government Survey Trig Station "Apuu";
26. Thence 650 feet, more or less, in the same direction to the sea coast;
27. Thence along the sea coast to the boundary between Halawa and Wailau;
28. Thence along the sea coast to the boundary between Wailau and Pelekunu;
29. Thence along the sea coast to the boundary between Pelekunu and Waikolu;
30. Thence along the seacoast to the boundary between Waikolu and Kalawao;

31. Thence along the boundary between Waikolu and Kalawao to top of pali being the intersection of the boundaries of Waikolu, Kahanui (Grant 3437) and Kalawao;
32. Thence along the top of pali between the boundaries of Kahanui (Grant 3437) and Kalawao to the southwest corner of Kalawao;
33. Thence along the top of the pali between the boundaries of Kalawao and Kahanui (Grant 3539 to Meyer) to a point between the boundaries of Kalawao and Makanalua called Alae;
34. Thence along the top of the pali between the boundaries of Kahanui (Grant 3539 to Meyer) and Makanalua to a point due east from the boundaries of Kalamaula and Kahanui on the westerly boundary of Makanalua;
35. Thence due west across the Waihanau Valley to the westerly boundary of Makanalua and the boundary point between Kalamaula and Kahanui;
36. Thence along the top of the pali between the boundaries of Makanalua and Kahanui to a point between the boundary of Makanalua and Kalaupapa called Iiilikā;
37. Thence along the top of the pali along Kalaupapa to the point of beginning.

Containing an area of 44,674 acres.

Excepting and reserving therefrom all the cultivated or agricultural land in the valleys of Halawa, Wailau, Pelekunu and Waikolu, and all land in Waikolu and Makanalua that may be used or required for public purposes, and all flat land along the shore at the foot of the bluff.

Addition to Waianae-kai Reserve.

Honolulu, July 26, 1912.

Committee on Forestry, Board of Commissioners of Agriculture and Forestry, Honolulu, T. H.

Gentlemen:—I have the honor to submit as follows a report recommending that the Waianae-kai Forest Reserve, District of Waianae, Island of Oahu, be increased by the addition of an area of 396 acres, lying in the upper middle part of Waianae Valley.

The Waianae-kai Forest Reserve was created by proclamation of Gov. G. R. Carter on September 7, 1906. It now embraces a total area of 3257 acres, of which 3150 acres, 97 per cent., is Government land. The Reserve is made up of two classes of land, the forested slopes of the main ridge of the Waianae Mountain and the more or less arid section in the upper part of the Waianae Valley and on the sides of the lateral ridges running down toward the sea.

The object of the reserve, as stated in my report on the matter in 1906, is:

“by the re-establishment and maintenance of a forest cover, to assist in securing a more regular flow in the springs and brooks on the land, and to put to economic use areas which from their topography and situation are incapable of being profitably used for any other purpose than producing trees.”

The proposal now is to include in the forest reserve an additional area of land of the semi-arid type (outlined on the accompanying blue print in colored pencil) for the reason that it will serve the Territory better if made a part of this forest reserve than if it is used in any other way.

The solution of the question of the right use of the Government land in Waianae Valley turns essentially on the supply of water. Were a greater quantity available much more of the valley might be devoted to intensive agriculture than is now possible. As it is the lower lands, now mainly cultivated in sugar cane, carry the prescriptive right from ancient times to practically all the water in the regular flow of the stream. From the configuration of the valley it does not appear feasible to construct storm-water reservoirs except at prohibitive expense.

This portion of Waianae is too dry to permit the growing of agricultural crops without at least some irrigation. About the only other use is grazing and to such use of this particular area there are several objections. First, because being somewhat isolated, it is too small to be of much value as an independent paddock. Second, because its use for grazing would render liable the continuation of trespass by cattle on the forest reserve, which in the recent past it has been found difficult to control, and third, because with the outlook that exists at Waianae for getting forest planting started, it appears that in any event on this particular tract a better showing of returns to the Government could be made from trees than from cattle.

As has been said by me in earlier reports on this valley, the Waianae Plantation Company has for some years been carrying on, at its own expense, forest planting on the Waianae-kai Forest Reserve. As a part of an agreement regarding the use of certain waters rising in the forest reserve, the settlement of which is now pending in the Land Office, the Waianae Company is ready to undertake the planting of additional areas and, moreover, to build and maintain a fence on the lower boundary of the proposed addition and in such other places along the borders of included kuleanas as may be necessary efficiently to protect the forest reserve.

The area now proposed to be set apart was cut up into lots when the Waianae Valley was surveyed a few months ago for the so-called Pahoa Homestead subdivision. It was, however, never offered to the public, being withdrawn on the grounds, as above set forth, that it would be of greater advantage to the Valley as a whole if added to the Forest Reserve. The land is now under lease (No. 602, expiring July 1, 1913) to the Waianae Company. This whole question has received the personal attention both of the present and of the last Commissioner of Public Lands. Both favor the project here proposed.

For all these reasons I therefore do now recommend that the Board of Commissioners of Agriculture and Forestry approve this project and request the Governor of the Territory to set

apart, in accordance with the regular usage, the portion of the Government land of Waianae-kai described below, as an addition to the Waianae-kai Forest Reserve. Following is the technical description of boundary prepared by the Government Survey Office:

ADDITION TO WAIANAE-KAI FOREST RESERVE, WAIANAE,
OAHU.

Beginning at Government Survey Trig. Station "Kauaopuu" as shown on Government Survey Registered Map No. 2501 and running by true azimuths:—

1. 92° 37' 2034.0 feet along ridge to a stake;
2. 95° 06' 626.6 feet to a + on rock at spur;
3. 64° 40' 1057.5 feet to a + on rock at the East corner of Pahoa L. C. A. 7713 apana 1 to V. Kamamalu;
4. 124° 08' 688.5 feet along Pahoa L. C. A. 7713 apana 1 to V. Kamamalu to a stake;
5. 116° 26' 733.4 feet along Pahoa L. C. A. 7713 apana 1 to V. Kamamalu and along Lot 49 to a + on rock at the North corner of Lot 49;
6. 60° 00' 244.1 feet along Lot 49 to an iron pin;
7. 123° 45' 868.4 feet across road and along Lot 15 to an arrow on rock on east line of Forest Reserve;
8. 213° 33' 4445.3 feet along Forest Reserve to a + on rock at corner of stonewall;
9. 249° 51' 825.0 feet along stonewall along Forest Reserve to an iron pipe;
10. 245° 14' 955.0 feet along stonewall along Forest Reserve to + on rock known as Trig. Station "Kolealilii."
11. 342° 01' 5425.0 feet along Forest Reserve to the point of beginning. Area 396 Acres.

Excepting and reserving therefrom all grants and L. C. Awards and rights-of-way 8 feet wide for the 4-inch water supply pipe and for a 12-inch electric water power pipe within this lot.

Very respectfully,

RALPH S. HOSMER,
Superintendent of Forestry.

Creation of Kula Reserve.

Honolulu, August 1, 1912.

Committee on Forestry, Board of Agriculture and Forestry, Honolulu, Hawaii.

Gentlemen:—I have the honor to submit as follows a report recommending the creation of a forest reserve in the District of Kula, Island and County of Maui, which I propose be called the Kula Forest Reserve.

The area in question is a tract of 6075 acres lying on the western slope of Mt. Haleakala, between a line drawn along the slope at

an elevation of approximately 5000 feet and the crest of the mountain extending from, and including the land of Waiakoa to the southern extension of the main ridge.

The proposed reserve is made up of both government and privately owned lands. The former, 5069 acres, constitutes 83% of the total area. None of the government land is now under lease.

Included in the proposed reserve is the Polipoli Spring, the only permanent source of water on the southern end of Mt. Haleakala. One of the objects underlying the creation of the reserve is to establish a forest cover on the area adjacent to this spring, for notwithstanding the fact that water is now brought to the district by the Kula Pipe Line, Polipoli must always remain a locally important source of supply. Along with getting trees to grow on land that can better be used for forest than for any other purpose, it is obvious that any measures that will tend to increase the flow of such a spring as Polipoli are seriously to be considered.

History.

Prior to about 25 years ago there was a belt of heavy forest with dense undergrowth in the Kula District between the elevations of 3500 and 5000 feet, that is throughout the section immediately above the corn belt. Gradually this forest was opened up by grazing until now it has practically disappeared save as its former extent can still be traced by dead stubs, small groups of trees in certain steep-sided gulches where they are protected from cattle, and scattered groves of Mamane.

Looking up from below, from the Government road, the remaining dead trees make it appear that there is still a considerable stand. But when one gets into it he finds that the former forest belt is now open country with a heavy ground-cover of grass.

The area formerly covered by the Kula forest is now considered the best grazing land in the district. It has so been used for the past twenty years or more. Up to November 1, 1911, the upper lands of Waiohuli and Keokea, up to the crest of the mountain were under lease to the Cornwell Ranch for grazing. Waiakoa and Alae 3-4, for a time unleased, along with the fee simple lands of Kaonoulu and portions of Alae 1-2 were also so used.

When the time came for re-leasing the Government lands, the administration decided, after careful consideration of the whole matter, that it was best again to lease the strip of grazing land above the corn belt, but that the higher slopes should be reserved. This action was largely based on the facts that the old native forest was so far gone that its replacement through natural reproduction was practically out of the question and that, because of its value as grazing land, this section materially increased the usefulness of the lower portions of the lands.

The proposed Kula Forest Reserve, therefore, consists of the

slopes of the mountain above an elevation of approximately 5000 feet.

The location of the forest reserve boundary was fixed after a full discussion of the relative value of this area for grazing or for forest had been had on the ground with a number of Kula ranch men. The line adopted by the Government as the forest line and mauka boundary of the grazing land was selected as the result of this conference, backed by other information acquired by me from time to time during that and other visits to Kula. The line was run out on the ground by Mr. S. M. Kanakanui of the Government Survey Office, the important points being marked by forest reserve monuments.

The new leases of Waiohuli-Keokea (No. 742) and Waiakoa-Alae 3-4 (No. 743) contain, along with tree planting requirements for the lower, grazing lands, a provision that a fence shall be built and maintained on this forest line. Under the terms of the leases this fence must be built "within one year from November 1, 1911."

Reasons for the Kula Reserve.

The proposed Kula Forest Reserve differs from most of the forest reserves so far created in this Territory, in that it is essentially an area where a forest cover must be established. This naturally must be a matter of time, but if gone about right I am confident that eventually forest can be made to cover a considerable part of this slope of Mt. Haleakala.

Above an elevation of approximately 6000 feet the old native lower-zone forest never did extend, giving place at that level, except for Mamane, to the scrub growth characteristic of the higher elevations of our mountains. Along the lower boundary of the forest reserve some of the trees of the lower forest zone may perhaps in spots be induced to come back—and every reasonable assistance should of course be given them to do so—but for the most part it is now too late.

Higher up, Mamane can be depended on. Indeed, during the past decade there has been a marked increase in Mamane on this slope of Haleakala, all the way from the crest of the mountain down to the proposed forest line, but particularly high up on the slope. Within a short time now the small trees will be large enough so that the groves in which they occur can be seen from a distance. Mamane is a valuable tree. Its spread should be fostered wherever practicable.

Over a considerable part of the proposed Kula Forest Reserve I believe that dependence in afforestation must and should be placed on introduced trees. Experience on Maui, both in Kula and above Makawao, has shown that certain of the Eucalypts are admirably adapted for use up to about 7000 feet, while planting experiments are now in progress which I am sanguine will in the end point the way to other exotic trees of economic value that can be got to grow and in time spread naturally over the mountain.

The establishment of a forest on the upper slopes in Kula must necessarily be a slow matter, but with the land set apart and devoted to this purpose steady gains can be made.

There are two reasons why this slope of Haleakala should be devoted to forestry. First, because although most of this area cannot profitably be used for agriculture, a large part of it can be made to grow economically valuable trees. This in itself is sufficient justification of its reservation, but to it may be added the second reason, the possible influence which a forest cover might exert on the local climate.

At present we have so little exact knowledge about this latter subject that generalizations are most unsafe, but it does appear that if an appreciable influence on precipitation can be effected anywhere by a body of forest, Kula is one of the likely places. If then, incidental to tangible and direct benefits through wood production, this influence can also be brought to bear, it is worth considering. Briefly the facts are as follows:

Kula is unfortunate in the scarcity of its natural supplies of water. Between the battery of small springs at Polipoli and the Waihou Spring on the boundary of the government land of Makawao, on the Haleakala Ranch, 10 miles or more distant, there is, save for the intermittent flow from a tunnel constructed by Mrs. Dora von Tempsky above Erehwon, no living water anywhere in the District. The local water situation as regards domestic supply has, of course, been relieved in the last two years by the construction of the Kula pipe line, but that does not change the lack of local sources of supply. Moreover, from the steepness of the slope it is difficult if not prohibitively expensive to store the storm waters that now run to waste down the larger gulches, not infrequently doing damage along their course. Incidentally, another advantage to be gained by a forest cover on the upper slopes is that thereby the run off after storms would be somewhat held back and the danger of erosion lessened.

As to possible influence of a forest on precipitation, the moisture bearing clouds that bring rain to the Kula District are of two kinds: (1) the trade wind clouds that pour over the Kahikinui Ridge, and (2) and probably more important, the Naulu clouds that, forming out of a clear sky over the island and channel of Kahoolawe, drift in and collect on the Kula side of the Haleakala Ridge from above Ulupalakua over to and beyond a point above Erehwon. Just how heavily laden with moisture these Naulu clouds are is a point on which opinions differ but in general I understand that there is frequently, if not usually, sufficient moisture so that water will condense on a rough woolen coat or on a man's beard. During seasons of continuous drought, however, like 1908 or the present year, the Naulu clouds seem to afford no relief to the lower lands.

The argument put forth in favor of a forest cover in this connection is that were a large enough stand of forest present the

slightly cooler surface thus presented would be sufficient to tip the delicate balance of other natural factors and cause some of the moisture to be precipitated.

Whether or not this would actually happen, experience in Upper Hamakua, Hawaii, has shown that through the drip from condensation on the leaves of trees standing exposed to moisture-bearing fogs very considerable quantities of water can be and in fact are collected in tanks and cisterns. I see no reason why a similar state of things should not obtain in upper Kula. And in view of the need of water I believe this is a phase of the subject that should at least be carefully investigated.

Sufficient returns to justify the initial outlay would in my judgment be got from the wood and timber produced from blocks of forest established in the reserve. Any beneficial influence that the forest might otherwise exert would be an advantage thrown in.

In any planting undertaken in the Kula Forest Reserve, the idea should be kept constantly in mind that in the end natural reproduction is to be depended on for the spread of the trees. The initial planting should be made so that the trees set out would act in the most efficient way as producers and distributors of seed. This, of course, applies to whatever species are used, Eucalypts or trees from the north temperate zone.

The questions of how the initial planting is to be paid for and of just what trees should be used do not need to be considered here. It is enough now if this area is set apart as a forest reserve.

The Polipoli Section.

Any tree planting undertaken on the Kula Forest Reserve should begin at the south end in the section that has for some years been held by the Land Office under the terms of Government Lease No. 542, as the Polipoli Spring Reserve. This area, a portion of the government land of Kamaole, is about a mile square. For the most part it is open land, covered by a heavy growth of grass. There are a few groups of Mamane and some scattering trees of other species.

The Polipoli water sources consist of a battery of six springs, two of which, Polipoli and Wai Kawekane, are within the fenced Polipoli reserve. Under Lease No. 542, the Henry Waterhouse Trust Co., Ltd., as trustees for the Ulupalakua Ranch, hold, rent free, for a term of 20 years, expiring in 1922, five-eighths of the flow from Polipoli Spring. Prior to the construction of the Kula Pipe Line the other three-eighths was conveyed by pipe down the slope to a tank on the government road as a public supply for the people of that locality. Of late this pipe has at times been out of repair. The rest of the water from Polipoli proper, with that from the other springs, goes by pipe to various parts of the Ulupalakua Ranch.

Under the terms of Lease No. 542 the Polipoli Reserve has been

fenced off and more or less efficiently kept free from cattle. Partly as the result of disputes between owners of the neighboring lands there has been a good deal of trespass at Polipoli, which is still going on intermittently. But realizing the value of the water, pretty nearly everybody agrees that the area ought to be reserved and efficiently protected. In this connection it may be said that from now on the fence maintenance clauses in all the leases that have to do with the Kula Forest Reserve boundary ought to be strictly enforced. Provision should be made also for policing the reserve as a whole against trespass.

It goes almost without saying that every effort should be made to safeguard the source and increase the flow of the Polipoli Spring. Getting a forest cover on the slope above the spring will, I believe, help somewhat in this regard.

Fencing the Boundary.

As previously stated the fencing of the makai boundary of the reserve where it adjoins government lands is already provided for. Across the fee simple lands of Kaonoulu and Alae 1-2 the owners of the Cornwell Ranch have agreed to continue the fence on the forest line.

At the north end, the boundary between Waiakoa and Kealahou is for some distance a gulch, impassable except at a few crossings, which runs well up toward the steep rocky upper slopes below the crest of the mountain.

Along the crest there is no fence, so that cattle from the Kahikinui side can and at times do come over, though not as much now as formerly because of paddock fences that have been built on that side of the mountain. The Kahikinui lease has eleven years yet to run. When it expires, if the matter cannot be arranged previously, provision should be made for fencing that will protect all the upper slopes of the mountain.

Around the south end of the ridge fences of the Ulupalakua Ranch connect with the fence about the Polipoli Reserve and keep cattle from drifting along the slope.

Recommendation.

For the reasons above set forth, which may be summarized by saying that the upper slopes of Mt. Haleakala can be made of most benefit to the Territory if gradually got under a forest cover, I do now recommend that the Board of Commissioners of Agriculture and Forestry approve the creation as the Kula Forest Reserve of the area covered by the following technical description of boundary prepared by the Government Survey Office, and that the Governor of the Territory be requested to take the usual steps officially to set apart the tract as a forest reserve in accordance with law.

Following is the description:

KULA FOREST RESERVE.

Including portions of the lands of Kamaole (Polipoli Spring), Keokea, Waiohuli, Alae 1 & 2, Alae 3 & 4, and Waiakoa, in the District of Kula, and portion of Papaanui, in the District of Kula, and portion of Papaanui, in the District of Honuaula.

ISLAND OF MAUI.

(C. S. F. 2300)

Beginning at the forest reserve monument at the Northeast corner of Grant 517 to J. Sniffen and on the boundary of Keokea and Kamaole, the coordinates of said monument referred to Government Survey Trig. Station "Puu-o-Kali" being 15,027.5 feet South and 16,947.6 feet East, as shown on Government Survey Registered Map No. 2519, and running by true azimuths:—

1. 228° 58' 35" 13414.0 feet along the Waiohuli-Keokea Grazing land to a forest reserve monument at the head of the land of Koheo and on the boundary of Waiohuli and Kaonoulū;
2. 208° 02' 9948.7 feet across the lands of Kaonoulū, Alae 1 & 2, Alae 3 & 4, and Waiakoa to a forest reserve monument at a point called "Kohe" on the boundary of Waiakoa and Kealahou 3 & 4, the coordinates of said monument referred to Government Survey Trig. Station "Puu-o-Kali" being 2553.0 feet North and 31751.1 feet East;
3. 315° 58' 6647.0 feet along the land of Kealahou 3 & 4 to a stone marked by an arrow cut on rocky ridge between two gulches;
4. 301° 43' 2830.0 feet along the land of Kealahou 3 & 4 to a pile of stones at the edge of a rocky gulch;
5. 307° 41' 6365.0 feet along the land of Kealahou 3 & 4 to a pile of stones on the boundary of Papaanui;
6. 167° 56' 7140.0 feet along the land of Papaanui to a pile of stones on top of mountain;
7. 53° 55' 3395.0 feet along the land of Papaanui to a cross cut on the rock over a sort of cave at a place called Kalepeamoā;
8. 61° 40' 12230.0 feet along the land of Papaanui;
9. 68° 03' 20" 1906.8 feet along the land of Papaanui to "Puu Keokea" Trig. Station marked by a 1½ inch galvanized pipe;
10. 329° 03' 30" 3121.8 feet across the land of Papaanui to a forest reserve monument at a place called "Kieiei" on the boundary of Papaanui and Kahikinui;
11. 83° 44' 3570.0 feet along the land of Auwahi in Kahikinui to a forest reserve monument in a cave;
12. 34° 21' 30" 3350.0 feet along the land of Auwahi to a forest reserve monument, said monument being by true azimuth and distance 214° 21' 30" 6990.0 feet from "Puu Ouli" Trig. Station;
13. 116° 45' 3090.0 feet across the land of Kanaio along Grant 4640 to J. H. Raymond to a forest reserve monument on the boundary of Kamaole and Paeahu;
14. 124° 13' 30" 1007.2 feet along the land of Paeahu to a forest reserve monument;
15. 204° 35' 2640.0 feet to a forest reserve monument;
16. 114° 35' 1320.0 feet to a forest reserve monument;
17. 204° 35' 1336.5 feet to a forest reserve monument;

18. 294° 35' 330.0 feet to a forest reserve monument;
 19. 204° 35' 3976.5 feet to the point of beginning.

Areas.

Papaanui, Government land.....	370	Acres
Kamaole (Polipoli Spring), Government land.....	612	"
Waiohuli-Keokea Tract Government land.....	2450	"
Kaonoulu	804	"
Alae 1 & 2.....	202	"
Alae 3 & 4, Government land.....	70	"
Waiakoa, Government land.....	1567	"
Total	6075	"

Very respectfully,

RALPH S. HOSMER,
 Superintendent of Forestry.

DIVISION OF FORESTRY.

Honolulu, Sept. 7, 1912.

Board of Commissioners of Agriculture and Forestry, Honolulu,
 T. H.

Gentlemen:—I have the honor to submit as follows the routine report of the Division of Forestry for the month of August, 1912.

During the first ten days of August I was in Honolulu engaged in the preparation of reports upon, and with details in connection with certain forest reserve projects that came up for final action later in the month.

From August 10 to 24 I was on Kauai making a general inspection of forest conditions on that island and looking into a variety of forest matters. During my stay on Kauai I followed the forest reserve boundary from Waimea around to Hanalei, seeing in some detail many of the forest lands in the several reserves along the way. The remainder of the month I was on Oahu, occupied with work in the office and with one short trip, to Nanakuli and Honouliuli.

New Forest Reserves.

On August 26, a public hearing was held at the Government Nursery to consider the creation of two new forest reserves, respectively on the Island of Molokai and in the Kula District, Maui, and the addition of a small block of land to the existing Waianae-kai Forest Reserve on Oahu. A number of persons appeared in regard to the Molokai Reserve. After a full discussion, the Governor announced that he would sign proclamations creating that and the other two forest reserves.

The areas are as follows:

Name.	Total area Acres	Gov't. land Acres	Per cent.
Molokai	44,674	13,268	30
Kula	6,075	5,069	83
Waianae	396	396	100
Total	51,145	18,733	100

These new reserves increase the total area of all the forest reserves in the Territory to 685,101 acres, of which 454,390 acres, 67 per cent., is government land.

Yearbooks.

In accordance with the usual custom, the Hon. J. K. Kalani-anaole, Delegate to Congress, has again had his quota of the Yearbook of the U. S. Department of Agriculture forwarded to this office for distribution. The books have been sent out to a carefully selected list of persons throughout the Territory. A few yet remain that may be had free, upon application to the mailing clerk, Board of Agriculture and Forestry, Box 207, Honolulu.

Orders for Seedlings.

Notwithstanding the long continued drought which has hindered a good deal of forest planting work, interest in tree planting in Hawaii seems to be decidedly on the gain. Recently there have been received a number of good sized orders for forest tree seedlings for planting this coming autumn and winter. One in particular deserves special mention, that from Waialua Plantation for 500,000 trees. Planting trees in such numbers as this is forest work that counts. The report of the Forest Nurseryman gives the details of this branch of the work of the Division of Forestry.

Very respectfully,

RALPH S. HOSMER,
Superintendent of Forestry.

NURSERYMAN'S REPORT.

Honolulu, Sept. 1, 1912.

R. S. Hosmer, Esq., Superintendent of Forestry, Honolulu, T. H.

Dear Sir:—I herewith submit a report of the principal work done during the month of August.

NURSERY.

Distribution of Plants.

	In seed boxes	In boxes transplanted	Pot grown	Total
Sold	150	188	338
Gratis	1500	2100	2035	5635
	<hr/> 1500	<hr/> 2250	<hr/> 2223	<hr/> 5973

Collections.

Collections on account of plants sold amounted to \$8.40.

Seed Collecting.

The Koa and a number of the Eucalyptus on Tantalus are now in season and the boys have been collecting there during the greater part of the month. The Koa seed is badly infested with the seed borer but I think we may be able to get a number of pounds of good seed.

Plantation Companies and Other Corporations.

Plants delivered:

1,500 transplants in boxes ready to set out

500 pot grown

10,000 seedlings in seed boxes

12,000

Orders received for plants to be delivered during the next six months:

12,000 Ironwood in transplant boxes ready to set out

500,000 Assorted Eucalyptus seedlings

The above orders came from the plantation companies.

Experiment Garden, Makiki.

Owing to the large number of tin cans which we have been receiving gratis from the cannery at Iwilei and which we are using to good advantage for setting of trees, we have found it necessary to erect a shed at Makiki to hold them and we have, with the aid of the men at the Nursery, put up a rough shed for that purpose. We have also made a machine for cutting the ends of the tins, thereby reducing the cost of labor considerably. With the machine one man can cut five tins in the same time that he could cut one with the ordinary can opener.

We are getting a large number of trees ready for the coming Arbor Day.

U. S. Experiment Planting, Nuuanu Valley.

Owing to the dry weather no planting has been done for several months, but we have a number of trees ready at Makiki and will plant them just as soon as the rain comes. The men have been hoeing and keeping the trees clean.

Very respectfully,

DAVID HAUGHS,
Forest Nurseryman.

DIVISION OF ANIMAL INDUSTRY.

Honolulu, Sept. 12, 1912.

Hon. W. M. Giffard, President and Executive Officer, and Members of the Board of Commissioners of Agriculture and Forestry, Honolulu.

Gentlemen:—I beg to report on the work of the Division of Animal Industry for the month of August, 1912.

The importation of dogs remains about the same number of animals, that is from 16 to 20—as was found to be present at the end of the first four months, or, in other words, about an equal number is coming in as is going out. Unless, therefore, an unexpectedly large importation should come again, such as might accompany a new regiment of soldiers, it may be concluded that the quarantine station as now established will serve all present requirements.

The fifteen dogs which have been kept in quarantine at Schofield Barracks were released a few days ago, all of them being found sound when last inspected on the 5th inst. The temporary kennels which were built for the accommodation of these dogs were, after four months service, considerably the worse for wear and if future importations of dogs belonging to the various arms of the military service are to be granted the same privileges, that is, are to be quarantined at Schofield Barracks, or on military reservations, it would seem well for this Board to insist on the construction of quarantine quarters of a more permanent nature than those hitherto provided.

From official reports received at this office, as well as from newspaper reports, it appears that rabies is spreading constantly, having now invaded the State of Oregon and caused the promulgation of a muzzling act in Portland, which requires all dogs to be either muzzled or kept in leash if brought into the streets of that city.

By the S. S. Zealandia there arrived on the 10th inst. 3 dogs from New Zealand, the same being consigned to the Lanai Ranch. These dogs were accompanied by a certificate signed by the Director of the Division of Live Stock and Heat of the Department of Agriculture, Commerce and Tourists of the Dominion of New Zealand, to the effect that the disease of rabies does not exist in New Zealand and moreover has never been known to exist in that country. While the importer has made no application to this Board for a permit of importation it would seem that all other requirements of the rabies regulation have been complied with, and it is therefore recommended that the three dogs in question, which are detained at the local quarantine station pending the Board's decision, be allowed to proceed to their destination (Lanai) by the first available steamer, that is the "Mikahala" on September 17th.

Similarly, three other dogs are expected to arrive from Liverpool, England, within a few days. These dogs are also accompanied by certificates to the effect that rabies has not been known to exist in England for several years and the agents (Messrs. Schaefer & Co.) are anxious that the dogs should be allowed entrance to the Territory upon arrival without quarantine.

This, I believe, can safely be granted if the steamer carrying the dogs has not docked at any infected port since leaving Liverpool, or if such was the case that proper precautions were taken to prevent contact with other dogs while in port.

The swimming tank at the quarantine station has been practically finished, the delay being due to the illness of the contractor, Mr. Oss, whose bid of \$116 was accepted. The tank will undoubtedly add much to the welfare of the confined animals, many of which are feeling the continued hot weather badly, and it is hoped, will be able to find much relief by means of frequent immersions in the tank.

Tuberculin Testing.

As will be seen from the appended report of the Assistant Territorial Veterinarian, the tuberculin testing of dairy cattle on this island may be considered finished for the present time, or at least cannot be resumed until sufficient rain has fallen to allow of the handling of those range animals which have not yet been tested.

It might, therefore, be well to consider now whether this work is to be extended to the other islands, as recommended in previous reports.

From letters received from the Deputy Territorial Veterinarians on both Hawaii and Maui it would seem that there is a certain demand for the extension of this work, if the coöperation of this Board can be secured, or to put it plainly, if the work of testing can be undertaken by this Board. To do this properly would, in my opinion, require that either myself or my assistant

take actual charge of the work. It would, however, be necessary that the various counties where this is to be done should first pass a milk ordinance requiring the tuberculin testing of all dairy cattle from which milk is drawn for human consumption. It should also be ascertained what financial or other support can be expected from the counties enacting such an ordinance, especially as an automobile will be required for the use of the inspector and his assistant while the work is going on. The milk ordinance in effect in this county might, with a few alterations, be used as a basis for similar regulations elsewhere.

Quarantine Stations on Other Islands.

The selection of a site for a quarantine station on Hawaii was accomplished by a trip to Hilo during the beginning of August. The site is located on what is known as the Shipman slaughterhouse pasture, near the entrance to the Waiakea Mill. The plans are all prepared and ready for advertising as soon as the new manager of the Waiakea Sugar Company takes charge and approves of the arrangement.

In regard to the Maui station, there are several locations offered to the Board, but a visit by myself to decide on which one to select will undoubtedly be advisable. The correspondence of Drs. Elliot and Fitzgerald, both in regard to the respective stations as well as to tuberculosis testing, is herewith appended.

I also append a copy of a report on the live stock industry of the Territory prepared at the request of Governor Frear.

Respectfully submitted,

VICTOR A. NORGAARD,
Territorial Veterinarian.

ASSISTANT VETERINARIAN'S REPORT.

Honolulu, September 1, 1912.

Dr. Victor A Norgaard,
Chief of Division of Animal Industry,
Board of Agriculture and Forestry,
Honolulu, T. H.

Sir:—I beg to submit herewith a report of the work for the month of August:

Tuberculosis Control.

The third general test of the dairy herds of the City and County of Honolulu is practically finished. The testing during the past month has been confined to two dairies, and is as follows:—

August 1-3	T.	P.	C.
P. M. Pond	10	10	0
John Souza	2	2	0

A tabulated list of the various dairies visited and number of animals tested is given below, and from the figures it will be seen that a total of 5265 animals were subjected to the test, of which number 5067 passed and 198 condemned, giving a percentage of 3.76 of tuberculosis animals on the Island of Oahu. This is a gratifying improvement over last year's test, which showed a percentage of 5.36 of tuberculosis animals:

	T.	P.	C.
1. Wm. Gomes	10	9	1
2. J. H. Cummings.....	5	5	0
3. D. P. R. Isenberg.....	337	312	25
4. Marshall & Azevedo.....	28	26	2
5. P. M. Pond.....	37	36	1
6. M. Gomes	28	28	0
7. H. B. Brown.....	13	13	0
8. S. J. Grace.....	5	5	0
9. Capt. Hartman	3	3	0
10. J. E. Faria.....	20	20	0
11. R. Compos	12	12	0
12. Frank Gouveira	24	24	0
13. J. Quintal	2	2	0
14. J. M. Whitney.....	10	10	0
15. T. F. Farm.....	45	42	3
16. Omai Tatsuichi	10	10	0
17. E. C. Krauss.....	1	1	0
18. K. Inouye	8	8	0
19. W. P. Alexander.....	5	5	0
20. I. Nagaki	15	15	0
21. J. H. Cummings.....	4	4	0
22. Mrs. C. M. White.....	10	9	1
23. Frank Medeiros	12	12	0
24. P. Miyakawa	13	13	0
25. J. Allencastro	7	7	0
26. K. Yamashita	7	6	1
27. S. Hiarata	14	14	0
28. C. K. Quinn.....	6	6	0
29. Chas. Frazer	1	1	0
30. College of Hawaii.....	15	15	0
31. H. E. Cooper.....	15	15	0
32. Frank Andrade	81	80	1
33. Kawaiahao Seminary	15	15	0
34. Mrs. Mary Quintal.....	8	8	0
35. S. Tsumoto	9	9	0
36. M. Kawamura	6	6	0
37. Mrs. W. W. Hall.....	1	1	0
38. G. L. P. Robinson.....	5	5	0
39. Frank Valph	6	6	0
40. Chas. Bellina	138	112	26
41. S. de Nobriga.....	13	13	0
42. Oahu College	12	12	0
43. Manuel Abreau	3	3	0
44. John Rezants	13	13	0
45. C. J. Day.....	5	5	0
46. Geo. Wond	18	18	0
47. Antone Pires	8	8	0
48. Geo. Holt	37	35	2
49. Kamehameha Schools	44	42	2
50. W. E. Miles.....	17	16	1

	T.	P.	C.
51. Frank Correa	13	12	1
52. Mrs. Mary Riedell.....	10	9	1
53. Victornia Souza	35	33	2
54. Alexander Young Dairy.....	46	46	0
55. Desidero Tello	2	2	0
56. John P. Mendonca.....	10	10	0
57. L. C. Fernandez.....	8	8	0
58. J. G. Silva.....	4	4	0
59. A. Wilder	2	1	1
60. Richard Kapena	2	1	1
61. A. Tavash.....	3	3	0
62. Mrs. E. Johnson.....	2	2	0
63. S. M. Damon.....	148	143	5
64. Galt & Carter.....	13	13	0
65. M. Ota	1	1	0
66. Chas. Bellina	28	28	0
67. Chas. Lucas	90	80	10
68. S. M. Damon.....	182	178	4
69. P. M. Pond.....	327	317	10
70. O. R. & L. Co.....	1403	1390	13
71. Y. Ogawa	4	4	0
72. J. A. Templeton.....	37	35	2
73. Laie Plantation	16	15	1
74. Industrial School	48	48	0
75. F. S. Lyman.....	17	17	0
76. E. K. Ellsworth.....	1	1	0
77. J. Coonradt	3	3	0
78. Waianae Ranch	292	186	6
79. P. Isenberg	129	116	13
80. Tom Quinn	5	5	0
81. S. Boyama	5	5	0
82. Y. Nakamura	5	5	0
83. J. Schwank	5	5	0
84. F. Johnson	9	8	1
85. E. C. Smith.....	9	8	1
86. I. Morioko	22	19	1
87. R. McKeague	4	4	0
88. I. Moniz	2	2	0
89. A. Reis	2	2	0
90. S. Tado	9	9	0
91. K. Shimidsu	2	2	0
92. C. E. Eckland.....	2	2	0
93. T. Fugita	2	2	0
94. N. Kimoto	2	2	0
95. F. de Mello.....	8	7	1
96. S. M. McKeever.....	2	2	0
97. R. T. McGettigan.....	2	2	0
98. H. Focke	8	4	4
99. O. R. & L. Co.....	597	593	4
100. Kaneohe Ranch	102	94	8
101. Waimanalo Plantation	28	28	0
102. Kamehameha Schools	1	1	0
103. Joe Fernandez	4	4	0
104. M. Riedell	1	1	0
105. M. Kawamura	3	3	0
106. S. J. Allencastro.....	1	1	0
107. J. W. McGuire.....	11	11	0
108. J. Gouveira	19	19	0
109. M. Gomes	15	15	0
110. J. P. Mendonca.....	1	1	0

	T.	P.	C.
111. M. Gomes	6	6	0
112. Paul Isenberg	2	2	0
113. Paul Isenberg	182	163	19
114. Paul Isenberg	138	120	18
115. P. M. Pond	10	10	0
116. John Souza	2	2	0
	<hr/> 5265	<hr/> 5067	<hr/> 198

Inspection Service.

During the past month seven trips were taken to Schofield Barracks for the purpose of inspecting the dogs quarantined there. Everything was found to be in as good order as could be expected from the temporary nature of the quarantine pens.

On the first trip, August 2, Captain Apple's dog was released from quarantine, the required one hundred and twenty days having expired on that date. The dog was delivered to the owner in excellent physical condition.

Port Inspection.

The following vessels arrived at the port of Honolulu with live stock:

- August 1—S. S. Korea, San Francisco; 1 cat, 4 cts. poultry.
- August 5—S. S. Ventura, San Francisco, 1 ct. poultry.
- August 6—S. S. Wilhelmina, San Francisco, 5 cts. poultry.
- August 13—S. S. Makura, Sydney, 1 dog, Duke Johnson.
- August 13—S. S. Chiyo Maru, Orient, 1 ct. chix.
- August 14—S. S. Honolulan, San Francisco, 18 Holstein heifers, 1 Holstein calf, 4 brood mares, 6 Shrop. rams, Paul Isenberg; 2 Holstein bulls, Haw. Meat Co.; 1 dog, B. C. Wilson; 9 cts. poultry.
- August 16—S. S. Siberia, San Francisco, 3 cts. Psuff Ply rocks.
- August 19—S. S. Sierra, San Francisco, 10 cts. poultry.
- August 28—S. S. Lurline, San Francisco, 11 cts. poultry; 1 dog (Mr. Fitzgerald of Maui), dog quarantined in Honolulu for the required 120 days.
- August 29—S. S. Mongolia, San Francisco, 3 cts. poultry.

Respectfully submitted.

LEONARD N. CASE,
Assistant Territorial Veterinarian.

DIVISION OF ENTOMOLOGY.

Honolulu, August 31, 1912.

Honorable Board of Commissioners of Agriculture and Forestry,
Honolulu.

Gentlemen:—I respectfully submit my report of the work of the Division of Entomology for the month of August as follows:

During the month there arrived 36 vessels, of which 20 carried vegetable matter and one vessel sand. The usual careful inspection was made with the following results:

<i>Disposal with principal causes.</i>	<i>Lots.</i>	<i>Parcels.</i>
Passed as free from pests.....	1,040	17,200
Fumigated or otherwise treated.....	6	36
Burned	22	55
Total inspected	1,068	17,291

Rice Shipments.

Twenty-two thousand eight hundred and nine bags arrived from Japan during the month and all was accompanied with certificates of fumigation. After thorough inspection the shipments were passed as free from pests. In this connection I beg to report that during last season we found some bean shipments infested with the rice moth and thought at that time that the infestation was caused by the shipment being in contact with the infested rice shipments. However, this season we again found a small shipment of beans infested, and as all rice shipments had been fumigated and found free from pests, we now have requested the fumigation of all bean shipments under government supervision before taken for shipment at Kobe or other Japanese ports. The Japanese Merchants' Association has taken the matter up with their government, and I don't anticipate any further trouble.

Pests Intercepted.

Thirty packages of fruit and 25 packages of vegetables were confiscated from passengers and immigrants during the month. One package of seeds from Sydney was found infested with weevils (*Calandria linearis*). One package of seeds (*Balanocarpus maximus*) were so badly infested with *Scolytid* beetles that hardly a single seed was free from the pest; the package was fumigated for 24 hours and then all was destroyed by burning. One Hydrangea from the mainland was badly infested with *Bryobia sp.*, a common red spider, and was thoroughly fumigated before delivery. The common house ant (*Monomorium pharaonis*) was found in the baggage of an immigrant from Yokohama.

Beneficial Insects.

We distributed 18 lots of Japanese beetle fungus to various applicants. This pest is not as bad as last season, although some sections seem to favor the increase of the beetle more than others.

Hilo Inspection.

Brother Matthias Newell reports the arrival of six vessels at Hilo, of which three brought vegetable matter, consisting of 74 lots and 1,116 packages, which were passed as free from pests.

Inter-Island Inspection.

During the month of August, 60 steamers were attended to, and the following shipments were passed:

56 cases plants.
473 bags taro.
11 bags cocoanuts.
7 packages fruit.
2 cases sugar cane.

Total 549 packages inspected and passed.

The following packages were refused shipment:

42 packages of fruit.
3 packages of vegetables.
8 packages of plants infested and carrying soil.

Total 53 packages inspected and refused shipment.

Respectfully submitted,

E. M. EHRRHORN,
Superintendent of Entomology.

THE FRUIT FLY CAMPAIGN.

Report of Committee on Entomology.

Honolulu, September 12, 1912.

To the Commissioners of the Board of Agriculture and Forestry,
Honolulu, T. H.

Gentlemen:—The Executive Officer of the Board has called the attention of your Committee on Entomology to the following facts, viz.:

1st. The "Agricultural Bill" as passed by the last Congress provides the sum of \$35,000 for the "Investigation of the Mediterranean fruit fly in the United States, its territories and possessions, said sum being immediately available for the purpose named."

2nd. As a result of said appropriation, the Secretary of Agriculture has authorized an investigation of the Mediterranean fruit fly in this Territory, together with such expenditures as may be necessary in connection therewith, the said investigation to be conducted under the supervision of the Bureau of Entomology, Washington, D. C.

3rd. Dr. E. A. Back, of the U. S. Department of Agriculture, arrived in Honolulu on the 29th ultimo bearing a commission from the Secretary of Agriculture and under instructions from the Chief of the Bureau of Entomology, his object being to direct the expenditure of the federal appropriation referred to on such lines as may be not only of benefit to Honolulu and adjacent territory, but also as a means of protection to the mainland.

4th. Doctor Back has instructions from the chief of his department to avail himself of the coöperation of the Territorial Board of Agriculture in his proposed line of investigation and control, and both he and Mr. Marlatt, the assistant chief of the Bureau of Entomology, have asked for such coöperation and assistance as your Board may be able to offer.

5th. As a result of the federal appropriation, the California State Horticultural Commissioner has notified your executive officer that financial assistance will no longer be required by the Territory from the State of California, and proposed to withdraw such assistance as of September 1, 1912.

In view of the facts above mentioned, your committee makes the following recommendations, to wit:

(1) That the direction of the fruit fly control by artificial means, as already organized and operated by the Territorial Board of Agriculture and Forestry, be assigned to Dr. E. A. Back, as its special agent, and that the president and executive officer be authorized to commission Dr. Back as said special agent for the purpose named, the said assignment and commission to be dated as of September 15, 1912.

(2) That the president and executive officer be authorized to allow the balance of the Territorial appropriation for combating the fruit fly by artificial means to be expended under and by direction of Dr. E. A. Back, as special agent in coöperation with the Territorial Board of Agriculture and Forestry, or its executive officer.

(3) That the use of a portion of the premises, now partly occupied by the offices and laboratories of the Board, be tendered to Dr. Back for such purpose as he may deem necessary in connection with the work to which he has been assigned by the U. S. Bureau of Entomology.

(4) That your executive officer be authorized to officially acquiesce in the proposal of the California State Horticultural Com-

missioner that financial assistance be withdrawn as of September 1, 1912.

Respectfully submitted,

W. M. GIFFARD, Chairman;
ALBERT WATERHOUSE,
J. M. DOWSETT,
Committee on Entomology,
Board of Agriculture and Forestry, T. H.

Letter from President.

Honolulu, September 9, 1912.

To the Commissioners of the Board of Agriculture and Forestry,
Honolulu.

Gentlemen:—I have to report that the recent United States Congress enacted a Federal law to regulate the importation into any State or Territory of any nursery stock and other plant products, to permit and regulate the movement of fruits, plants and vegetables therefrom and to establish and maintain quarantine districts for plant diseases and insect pests.

I am informed that this new Federal quarantine law will permit the continuance of the present exportation of bananas and pines to mainland ports, providing that these fruits undergo the customary inspection before shipment and are found to be free from attack of insect pests. As regards other fruits and vegetables which at present are not allowed export to coast ports, it has been intimated by the representatives of the U. S. Department of Agriculture that if after careful investigation certain varieties of these are demonstrated to be free from attack or infestation, the quarantine on such will be lifted.

I am personally informed by Mr. C. L. Marlatt, the assistant chief of the Bureau of Entomology and chairman of the Federal Horticultural Board, that he has recommended to the Secretary of Agriculture that the inspection of bananas and pines intended for export to Pacific Coast ports be placed in charge of Dr. E. A. Back as soon as the quarantine has been officially promulgated. The promulgation will be in effect on or before September 15, and in the meantime will be continued as at present by representatives of the California State Horticultural Board and of the Marketing Division of the Territorial Bureau of Immigration, Labor and Statistics. After the above date the aforesaid Territorial and California State officials will no longer, as such, attend to, or assist in, the inspection of exportations of fruits and vegetables to the mainland.

I am further informed by Mr. Marlatt, as chairman of the Federal Horticultural Board, that he will recommend to the Sec-

retary of Agriculture the appointment of the Territorial Superintendent of Entomology and his assistants as deputy quarantine plant inspectors under the new law in order that the duties of Territorial and Federal inspection of imported nursery stock, fruits, etc., may be combined, thereby preventing duplication and overlapping of government work.

Respectfully submitted,

W. M. GIFFARD,
President and Executive Officer,
Board of Agriculture and Forestry, T. H.

FORESTRY AS A PROFESSION.

The increasing demand for the practice of Forestry throughout the United States on both public and private lands is the result of the rapid depletion of our forests. Changes in methods of lumbering, better forest fire protection, and the reforestation of denuded areas are urgently needed, if there is to be a timber supply in the future, and if the sources of the waters now used for domestic purposes, power and irrigation are to be protected.

No profession offers greater opportunities for individual success through public service than Forestry. Yet success in this work can be won only by conscientious and unstinted devotion. The discomforts due to weather or isolation in the field test unflinchingly the forester's capacity for success.

Forestry should not be selected as a profession except by those with enthusiasm for the work and with sound health. No man can expect to prepare himself for Forestry unless he is ready for the hard study which masters detail and for the rough life of the woods. A thoroughly trained forester must have complete detailed knowledge of his subject and abundant drill in its methods. —Colorado College Publication.

Proves Its Worth at Harvest Time

Crops must have Nitrogen, and the most available is that in

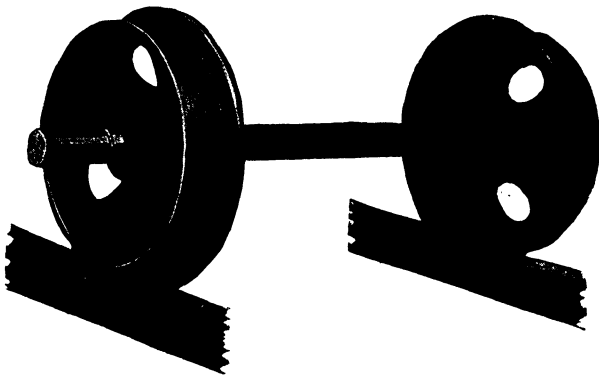
Nitrate of Soda

Moreover, because of this 100% availability, it is the cheapest form of Nitrogen. Nitrate of Soda is odorless, clean to handle and easy to apply.

We Want to Send YOU a Book—FREE

that we have prepared on the use of Nitrate of Soda. Send for it, follow it and get bigger crops. Address a Post Card to

Dr. WILLIAM S. MYERS, *Director Chilean Nitrate Propaganda*
No Branch Offices **17 Madison Avenue, New York**



Car Irons—Steel Cars—Portable Track **ORENSTEIN-ARTHUR KOPPEL CO.**

Pittsburg, New York, San Francisco, Berlin, London
Plant at Koppel, Pa. 5 Plants in Europe. 60 Branches

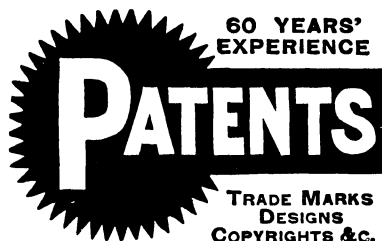
H. HACKFELD & CO., LTD.

Agents, Honolulu

FRED F. LACKS,

Resident Sales Manager

WE FURNISH CAR IRONS TO FIT EXISTING EQUIPMENT



Anyone sending a sketch and description may quickly ascertain our opinion free whether an invention is probably patentable. Communications strictly confidential. HANDBOOK on Patents sent free. Oldest agency for securing patents. Patents taken through Munn & Co. receive special notice, without charge, in the

Scientific American.

A handsomely illustrated weekly. Largest circulation of any scientific journal. Terms, \$3 a year; four months, \$1. Sold by all newsdealers.
MUNN & Co, 361 Broadway, New York
Branch Office, 625 F St., Washington, D. C.

Garden and Farm Tools and Implements

To do good farming you must have up to date tools to work with. We carry a most complete line of everything needed by the small or large farmer, from the smallest hand trowel to the largest cane plow. We also have a good assortment of Hand, Bucket or Barrel Sprayers. Our assortment of Hoes, Shovels, Spades, Mattocks, Rakes, Garden Shears, Lawn Mowers, Garden Hose, and other things that are needed daily about the farm or garden, is most complete and our stock large.

E. O. HALL & SON, LTD.

OFFICERS AND STAFF OF THE BOARD OF COMMISSIONERS OF AGRICULTURE AND FORESTRY.

COMMISSIONERS.

W. M. Giffard, *President and Executive Officer.*
J. M. Dowsett, P. R. Isenberg
H. M. von Holt, Albert Waterhouse

DIVISION OF FORESTRY.

Ralph S. Hosmer, *Superintendent of Forestry and Chief Fire Warden*
David Haughs, *Forest Nurseryman.*
Joseph F. Rock, *Consulting Botanist.*
Bro. Matthias Newell, *in charge of Sub-Nursery at Hilo, Hawaii.*
Walter D. McBryde, *in charge of Sub-Nursery at Homestead, Kauai.*
David Kapihe, *Forest Ranger for Tantalus.*

DIVISION OF ENTOMOLOGY.

Edward M. Ehrhorn, *Superintendent of Entomology and Chief Inspector.*
Albert Koebele, *Consulting Entomologist.*
D. B. Kuhns, *Inspector.*
Miss Louise Gulick, *Laboratory Assistant.*
Fred Muir, *Beneficial-Insect Collector.*
Bro. M. Newell, *Fruit and Plant Inspector, Hilo, Hawaii.*
Robert R. Elgin, } *Mahukona, Hawaii.*
W. O. Aiken, } *Honorary Plant Inspector at Kahului, Maui.*
W. D. McBryde, } *Koloa, Kauai.*
Dr. W. B. Deas, } *Hana, Maui.*
Capt. C. F. Turne } *Kaanapali, Maui.*
G. C. Munro, *Keomuku, Lanai.*
W. M. Giffard, *Director, Fruit Fly Control.*

DIVISION OF ANIMAL INDUSTRY.

Victor A. Nørgaard, *Superintendent of Animal Industry and Territorial Veterinarian.*
L. N. Case, *Assistant Territorial Veterinarian.*
H. B. Elliot, *Deputy Territorial Veterinarian for Hilo, Hawaii.*
J. C. Fitzgerald, *Deputy Territorial Veterinarian for Maui.*
A. R. Glaisyer, *Deputy Territorial Veterinarian for Kauai.*

CLERICAL STAFF

Geo. R. Clark, *Secretary to the Board.*
Mrs. C. L. Seybolt, *Clerk.*
Miss Anna K. Harrison, *Librarian.*
Daniel Logan, *Editor of the "Forester."*

PUBLICATIONS FOR DISTRIBUTION.

Any one or all of the publications listed below (except those marked *) will be sent to residents of this Territory, free, upon application to Mailing Clerk, P. O. Box 207, Honolulu.

BOARD.

Report of the Commissioner of Agriculture and Forestry for 1900; 66 pp.
Report of the Commissioner of Agriculture and Forestry for 1902; 88 pp.
* First Report of the Board of Commissioners of Agriculture and Forestry, from July 1, 1903, to December 31, 1904; 170 pp.
Second Report of the Board of Commissioners of Agriculture and Forestry, for the year ending December 31, 1905; 240 pp.; 8 plates; 10 text figures.
Third Report of the Board of Commissioners of Agriculture and Forestry, for the year ending December 31, 1906; 212 pp.; 3 plates; 4 maps; 7 text figures.
Fourth Report of the Board of Commissioners of Agriculture and Forestry, for the calendar year ending December 31, 1907; 202 pp.; 7 plates.
Fifth Report of the Board of Commissioners of Agriculture and Forestry, for the calendar year ending December 31, 1908; 218 pp.; 34 plates.
Report of the Board of Commissioners of Agriculture and Forestry, for the biennial period ending December 31, 1910; 240 pp.; 45 plates.
"Notice to Importers," by H. E. Cooper; 4 pp.; 1903.
"Digest of the Statutes Relating to Importation, Soils, Plants, Fruits, Vegetables etc., into the Territory of Hawaii." General Circular No. 1; 6 pp.

PUBLICATIONS FOR DISTRIBUTION—Continued.

- "Important Notice to Ship Owners, Fruit Importers and Others. Rules and Regulations Prohibiting the Introduction of Certain Pests and Animals into the Territory of Hawaii." General Circular No. 2; 3 pp.; 1904.
- "Law and Regulations, Importation and Inspection of Honey Bees and Honey." General Circular No. 3; 7 pp.; 1908.

"The Hawaiian Forester and Agriculturist," a monthly magazine. Vols. I to VII; 1904-1910. To be obtained from the Hawaiian Gazette Co., Honolulu. Price \$1 a year.

DIVISION OF FORESTRY.

- * "Forest and Ornamental Tree Seed for Sale at Government Nursery." Press Bulletin No. 1; 3 pp.; 1905.
- * "Suggestions in Regard to the Arbor Day Tree Planting Contest." Press Bulletin No. 2; 7 pp.; 1905.
- "An Offer of Practical Assistance to Tree Planters." Circular No. 1; 6 pp.; 1905.
- * "Revised List of Forest and Ornamental Tree Seed for Sale at the Government Nursery." Press Bulletin No. 3; 4 pp.; 1906.
- * "Instructions for Propagating and Planting Forest Trees." Press Bulletin No. 4; 4 pp.; 1906.
- "Instructions for Planting Forest, Shade and Ornamental Trees." Press Bulletin No. 5; 7 pp.; 1909.
- "Na Hoakaka no ke Kanu Ana i na Laau Malumalu ame na Laau Hoohiwahiwa." Press Bulletin No. 6; 8 pp.; 1909.
- "Eucalyptus Culture in Hawaii," by Louis Margolin. Bulletin No. 1; 88 pp.; 12 plates; 1911.
- Report of the Division of Forestry, for the year ending December 31, 1905. Reprint from Second Report of the Board; 77 pp.; 5 plates.
- * Report of the Division of Forestry, for the year ending December 31, 1906. Reprint from Third Report of the Board; 123 pp.; 4 maps.
- Report of the Division of Forestry, for the year ending December 31, 1907. Reprint from Fourth Report of the Board; 70 pp.
- Report of the Division of Forestry, for the year ending December 31, 1908. Reprint from Fifth Report of the Board; 85 pp.
- Report of the Division of Forestry, for the biennial period ending December 31, 1910. Reprint from Report of the Board; 86 pp.; 22 plates.

DIVISION ON ENTOMOLOGY.

- "The Leaf-Hopper of the Sugar Cane," by R. C. L. Perkins. Bulletin No. 1; 38 pp.; 1903.
- ** "A Catalogue of the Hemipterous Family Aleyrodidae," by G. W. Kirkaldy, and "Aleyrodidae of Hawaii and Fiji with Descriptions of New Species," by Jacob Kotinsky. Bulletin No. 2; 102 pp.; 1 plate; 1907.
- * "On Some Diseases of Cane Specially Considered in Relation to the Leaf-Hopper Pest and to the Stripping of Cane," by R. C. L. Perkins. Press Bulletin No. 1; 4 pp.; 1904.
- "A Circular of Information," by Jacob Kotinsky. Circular No. 1; 8 pp.; 1905.
- "The Japanese Beetle Fungus," by Jacob Kotinsky and Bro. M. Newell. Circular No. 2; 4 pp.; cut; 1905.
- Rule VII: "Concerning the Prevention of Distribution of the Mediterranean Fruit Fly"; unnumbered leaflet; 1910.
- Rule VIII: "Concerning the Importation of all Banana Fruit, Banana Shoots or Plants"; unnumbered leaflet; 1911.
- Report of the Division of Entomology, for the year ending December 31, 1905. Reprint from Second Report of the Board; 68 pp.; 3 plates; 10 text figures.
- Report of the Division of Entomology, for the year ending December 31, 1906. Reprint from Third Report of the Board; 25 pp.; 7 text figures.
- Report of the Division of Entomology, for the year ending December 31, 1907. Reprint from Fourth Report of the Board; 18 pp.; 1 plate.
- Report of the Division of Entomology, for the year ending December 31, 1908. Reprint from Fifth Report of the Board; 26 pp.; 2 plates.
- Report of the Division of Entomology, for the biennial period ending December 31, 1910. Reprint from Report of the Board; 70 pp.; 10 plates.

DIVISION OF ANIMAL INDUSTRY.

- * "Inspection of Imported Live Stock." Rule 1; 1 p.; 1905.
- * "Inspection and Testing of Imported Live Stock for Glanders and Tuberculosis." Rule 2; 1 p.; 1905.
- * "Concerning Glandered Horse Stock in the Territory." Rule 3; 1 p.; 1905.
- * "To Amend Rule 1, Inspection of Imported Live Stock." Rule 4; 1 p.; 1907.
- * "Quarantine of Horse Stock from California." Rule 8; 1 p.; 1908.
- "Rules and Regulations, Inspection and Testing of Live Stock." Rules and Laws, 11 pp.; unnumbered pamphlet; Revised 1910.
- Report of the Division of Animal Industry, for the year ending December 31, 1905. Reprint from Second Report of the Board; 62 pp.
- Report of the Division of Animal Industry, for the year ending December 31, 1906. Reprint from Third Report of the Board; 41 pp.; 3 plates.
- Report of the Division of Animal Industry, for the year ending December 31, 1907. Reprint from the Fourth Report of the Board; 104 pp.; 6 plates.
- Report of the Division of Animal Industry, for the year ending December 31, 1908. Reprint from Fifth Report of the Board; 44 pp.
- Report of the Division of Animal Industry, for the biennial period ending December 31, 1910. Reprint from Report of the Board; 59 pp.; 13 plates.