

prepare them usually by drying. Most of this work is done on Hawaii, the district of Kona being especially noted for its dried fish.

The nehu, while one of the smallest of the many species found around the islands, is the one usually dried by the dealers. Large pieces of bagging are spread on the ground, exposed to the full rays of the sun, and the nehu, in round condition, are laid on these. When the drying is completed they are placed in tubs and carried around the islands on carts, and are generally sold to the Chinese and Japanese for about 25 cents per pound.

The piha, a fish about the same size as the nehu, is frequently prepared in the same way on Hawaii.

The general method of preparing the larger species is as follows:

The fish are split open from the back, except in the case of the opelu, which is opened from the belly, and the entrails removed. The fish are not washed before salting, as it softens them and they are apt to spoil. The larger fishes are scored along the side. They are then lightly salted and put in a container, where they are allowed to remain overnight. In the morning they are taken out, the salt shaken off of them, and they are put in a pan of fresh water, where the salt is thoroughly washed off, after which they are placed upon rude racks or boards, covered with cocoanut leaves, and allowed to remain until the sun thoroughly dries them. They are put under cover at night. When thus prepared, they will keep for some time. Opelu, amaama, akule, and aku are the species usually preserved in this manner.

In preparing the ahi (albacore) the fish is cut up in squares of about a pound each, which, except in localities where blow-flies are troublesome, are scored. The pieces are kneaded in salt until almost as round as a baseball and are then put out to dry.

A considerable quantity of amaama was dried in Kauai during 1901, but it was all condemned when it reached the Honolulu market, owing to the alleged careless manner in which it had been prepared. It is very probable that with proper care a considerable trade could be built up by the fishermen who live in localities from whence fresh fish can not be shipped.

*Limu (algæ).*—The natives are great lovers of limu, and the gathering of it for market forms quite a profitable business for numbers of women and children. It is prepared by rolling it into balls 2 or 3 inches in diameter, squeezing the water out, and sprinkling lightly with salt. Many varieties of algæ are found around the islands, but only a few are used for food. Among these are limu lipoa, limu eleele, limu pakaeleawaa, limu mananea, limu lipcepee, limu lipakakai.

#### FISH MARKETS AND THE HANDLING OF FISHERY PRODUCTS.

There are six fish-market houses on the islands, one each at Honolulu (Oahu), Hilo (Hawaii), and Wailuku (Maui), and three at Lahaina (Maui). In addition, peddlers with small carts and on the backs of jackasses retail fish throughout the sections of inhabited country which are not convenient to the markets or to the fisheries. There is great room for development in this phase of the business, however, as the inhabitants of some of the more inaccessible villages rarely have an opportunity to purchase fresh fish.

## HONOLULU.

Previous to 1851 the only market place for fish, vegetables, etc., was an open space in the vicinity of the present location of the Honolulu Iron Works. In 1851 the first regular market house for the sale of fishery products was erected on the wharf, and a law passed May 12 of the same year provided that this building and the adjacent grounds seaward of Pulaholaho, belonging to the Government, should be the public market. By a later act, under date of June 25, 1855, the space between the old flour mill and the water, at the west end of Queen street, was reserved for a market.

In 1890 the present market house was erected on the square bounded by Alakea, Richards, Halekauwila, and Allen streets, at a cost, including the value of the land, of \$155,000. It is built almost entirely of iron, and is open on all sides except one, where there are a number of closed booths for the sale of fruit, vegetables, meat, etc. In design and workmanship this building is one of the best in the United States. The stalls all have wooden sides with marble tops. There is always plenty of fresh water, and the drainage facilities are of the very best. Its location, about 100 yards from the wharf where the Japanese fishermen land, also is convenient. The market is owned by the territorial government, which pays the salaries of the officials in charge of it. The market keeper, who is also the fish inspector, receives a salary of \$30 per month as keeper and \$60 per month as inspector. There are also an assistant market keeper at \$25 per month, an assistant fish inspector at \$40 per month, and one laborer at \$1.25 per day. All fishery products must be sold in the market house, as hawking through the streets of the city is not permitted. All fish must be inspected before they go upon the stalls, and the market is open every week day and up to 9 a. m. on Sunday.

There are 20 stalls for the sale of fresh fishery products, with rents varying from \$15 to \$30 per month, according to the location. Only 15 of these stalls were occupied in 1900. Of this number 11 were run by Chinese, 3 by Japanese, and 1 by natives, the total number of persons employed, exclusive of the market officials, being 40 Chinese, 6 Japanese, and 2 natives. The usual wage of the help is \$12 to \$15 per month, including food and lodging. In addition, 6 stalls were occupied by 6 native women on Saturday, and sometimes Sunday morning, for the sale of limu (algæ). The charge for these tables is 50 cents on Saturday and 25 cents on Sunday. Three stalls also were devoted to the sale of dried fish from the island of Hawaii during most of the week, and were run by three native women. On a few days in the week when fish are scarce certain of the dealers sell also pickled California salmon, for which they pay an additional license fee of \$10 per year.

The fishermen bring their catch to the market at whatever hour is convenient to them, and the dealers sell for them on a basis of 10 per cent commission. Fish brought in prior to noon must be sold before the market closes the same evening, but if brought in after noon and not sold before night they can be kept in a cold-storage house close by, at a cost to the owner of 2 cents per pound, and be placed on the stalls again the next morning; in that event, however, they must be distinguished by a small placard bearing the words "iced fish." The inspector is directed

by law to pass upon all fish before they are placed upon the stalls, and can condemn any tainted fish either then or afterward. It is the custom to make frequent inspections of the fish after they go upon the stalls, as they soon become tainted in that trying climate. Owing to the cost of ice, none is used around the market house.

The larger fish are dressed, but the smaller ones are sold round. There is no loss in dressing, however, as the head, entrails, etc., are sold. All except gold-fish, and sometimes china-fish, are sold dead.

In addition to the fresh fish sold in 1900, about 72,000 pounds of pickled salmon, with a selling value of \$9,000; 9,125 pounds of dried fish, with a selling value of \$1,141, and about 18,000 pounds of limu, worth \$2,340, were marketed.

The leaves of the ki plant (*Taxsia terminalis*), which are 10 to 15 inches long and oblong in shape, and are cut with a part of the stem left on, are used for wrapping fish in the markets. The fish is laid across the narrow part of the leaf, the end of which is turned tightly over it and wound around the stem, and then tucked in, the stem forming a handle by which to carry the package. The wrapping is done so skillfully that it rarely works loose. With the larger packages two or three leaves are used. The ki plant grows on the mountain side near Honolulu, and is cut and brought to town by natives. The dealers pay about 25 cents for a package of 100 of the leaves.

The market at Honolulu is the principal one on the islands and has the largest population tributary to it. Quite complete weekly reports of the fish sold are made to the board of health by the inspector.

The most noticeable feature in this market is the extremely high price charged for fishery products, exceeding any other retail market of the United States, and possibly of the world. But few of the better grade of fishes sell for less than 25 cents per pound, some selling for as much as 35 cents per pound. All fish are sold by number, but they have been reduced to pounds in the general statistical tables presented herewith, and the prices computed accordingly, so as to conform to data collected in other sections of the United States. Ama-ama, the commonest species, sell for an average of 25 cents per pound, or 8½ cents each, and ula (crawfish) for 20 cents each, or 10 cents per pound. In The Polynesian, of Honolulu, under date of September 7, 1844, amaama are quoted at 37 to 50 cents per dozen, other fish 3 to 6 cents per pound, and ula at 6½ cents each, showing quite a difference between the prices then and now.

There are a number of reasons given for this condition of affairs, the principal ones being as follows:

1. Owing to the impossibility of keeping the catch in a fresh condition more than 24 to 48 hours, the fishermen try not to take more than can easily be sold, and, because of this, gluts—the principal causes of low prices—rarely occur.

2. Owing to the insufficient transportation facilities there is but little opportunity to bring to a market where there is a scarcity the overplus of another. The island of Oahu has advantages over the others in this respect, as there is a railroad which skirts the western and northern shores for nearly one-half the circumference of the island. This permits of the rapid and cheap transportation of fish from the various places along the railroad to Honolulu, and has been of great assistance in

developing the fisheries of these places. The fishermen on the eastern and southern sides of the island, however, are still compelled to bring their catch to the market in carts and as a result bring in only the higher-priced species.

3. The fish ponds are principally in the hands of two Chinese firms of Honolulu, and these firms, by working in harmony and having control of the principal source of supply of the amaama and awa for a considerable part of the year, are enabled to keep up the prices for these species.

4. The Japanese now do the greater part of the line fishing for the Honolulu market, and they have organized a company, including most of the fishermen of that nationality, with the object, among other things, of securing as high prices as possible for their catch.

5. The indiscriminate use of fine-meshed seines has undoubtedly caused a falling off in the catch, although to what extent is a rather difficult problem to solve, owing to the lack of statistical data for previous years.

6. Shortly after the fall of the monarchy a boom in the islands, especially in Honolulu, caused the prices of everything to rise. The price of sugar has largely controlled everything on the islands, and as this has been quite high for some years it has accordingly affected the prices of other commodities. This boom is on the wane now, and it is probable that conditions will become more normal in the course of a few years.

#### HILO.

The market house at Hilo, which is owned by private interests, was opened for business on April 1, 1899. During 1900 the number of stalls occupied was 27, the rents of which varied from \$5 to \$15 per month. These stalls were not occupied continuously, however, dealers frequently giving up their business after a week or a month. There are 32 stalls in all. The persons employed around the market numbered 22 Chinese, 18 Japanese, and 14 natives. During the summer of 1901 a syndicate of Chinese and Japanese bought up the stalls and began to take advantage of their position by shutting out the other dealers and compelling the fishermen to sell to them at a low price. There was of course no limit to what they could charge the townspeople, as fish could not be sold on the streets. As a result, a number of fishermen carried their catch by carts to Oloo, about 11 miles away, and established a temporary market there.

The territorial government leased the market in August, 1901, and this broke up the combination. An inspector was appointed also, who will have complete charge of everything about the market. Previously there was no inspection, and large quantities of tainted fish were foisted upon the people.

As at Honolulu, every effort is made to dispose of the catch the same day that it comes in, as no ice is used. Owing to the heavy surf close to the market house the fishing boats can not land there, and are compelled to go to Waiakea, a suburb of Hilo, about a mile away. The fishing boats usually land here during the morning and are immediately boarded by the dealers, who begin to dicker for the catch. When a boat with a large catch comes the confusion is excessive, as Japanese, Chinese, Portuguese, Hawaiian, English, and variations of these languages are hurled back and forth, each man trying to outdo every other in the amount of noise made.

Everything is on a cash basis, the successful buyer counting down the money at once and removing the fish, which are taken to the market by carriers with baskets slung over their shoulders on poles, and by carts. The principal selling time at the market is in the afternoon, after the dealers have returned from Waiakea.

#### WAILUKU.

The market house at Wailuku is a small building with only 5 stalls, which are run by 2 Chinese and 5 natives, and is owned by a private individual. The market house, with land, is valued at about \$1,500. Most of the fish sold here are brought from Kahului, a few miles away, while some ama-ama come from the island of Molokai. The market has no government supervision, which it needs.

#### LAHAINA.

The principal market house at Lahaina is owned by the government and is valued at about \$6,000, including the land. It contains 6 stalls, which rent at \$3 per month. These were run in 1900 by 1 American, 4 Japanese, and 4 natives. Close by are 2 private stalls, which were operated by 4 Japanese. In addition, in 1900, there were 2 private fish markets in town, with a total valuation of \$650. These contained 6 stalls, which were run by 4 Chinese, 4 Japanese, and 4 natives. The greater portion of one of these was destroyed by fire in the early part of 1901 and has not since been rebuilt.

There is no inspector at Lahaina, although one is very much needed, as the sale of tainted fish, particularly by the Japanese, is quite common. Lahaina is the principal market for the disposal of the fish taken by the fishermen on Molokai and Lanai.

The number of persons employed at these markets has not been shown in the general statistical tables in this report.

#### THE WHOLESALE TRADE.

The wholesale trade in fishery products is carried on in two cities—Honolulu and Hilo—and, owing to the constant demand for such articles from the sugar plantations, is very profitable. A few of the plantations purchase their supplies direct, and these are not included in the following table. None of the firms is engaged exclusively in this business, all being principally wholesale grocery firms.

Honolulu leads in the wholesale trade in every particular. In 1900 she had 9 firms, employing 73 persons, and a total investment, including wages paid, of \$348,380 in 1900, while Hilo had 5 firms, with 30 employees, and a total investment of \$161,745, including wages.

Salmon is the principal product handled, followed by sardines, cod, oysters, lobsters, mullets, and shrimp, in the order named. The total value of all products handled amounted to \$359,965.

Table showing the wholesale trade in fishery products of Hawaiian Islands in 1900.

	Honolulu.		Hilo.		Total.	
	No.	Value.	No.	Value.	No.	Value.
Firms .....	9	.....	5	.....	14	.....
Employees .....	73	.....	30	.....	103	.....
Property .....	.....	\$206,860	.....	\$112,000	.....	\$318,860
Wages .....	.....	30,530	.....	12,445	.....	42,975
Cash capital .....	.....	111,000	.....	37,300	.....	148,300
<b>Total</b> .....	.....	<b>348,380</b>	.....	<b>161,745</b>	.....	<b>510,125</b>
<b>PRODUCTS.</b>						
Albacore, pickled .....	pounds	21,250	863	.....	21,250	863
Anchovies:						
Spiced (in ½-lb. jars) .....	number	360	113	48	15	408
Spiced (in 2½-lb. kegs) .....	do	250	1,760	.....	.....	250
In oils (in ½-lb. jars) .....	do	240	180	.....	.....	240
Barracuda, pickled .....	pounds	17,300	692	300	12	17,600
Bonito, pickled .....	do	24,650	1,199	13,800	828	38,450
Cod, dried and pickled:						
Hallifax .....	do	112,000	8,960	.....	.....	112,000
California .....	do	465,036	20,142	147,860	6,052	612,896
Eels, smoked (1-lb. cans) .....	number	120	78	.....	.....	120
Finman haddie (1-lb. cans) .....	do	2,640	715	1,200	225	3,840
Herring:						
Fresh (1-lb. cans) .....	do	1,800	270	2,000	450	3,800
Bloaters (1-lb. cans) .....	do	12,880	2,308	384	64	13,264
Kippered (1-lb. cans) .....	do	10,448	2,540	264	61	10,712
Pickled (100 lbs.) .....	half barrels	180	1,170	35	228	215
Pickled (15 lbs.) .....	kits	211	369	.....	.....	211
Smoked (4 lbs.) .....	boxes	175	36	.....	.....	175
Smoked (10 lbs.) .....	do	1,540	538	.....	.....	1,540
Mackerel:						
Canned (½-lb.) .....	number	480	80	.....	.....	480
Canned (1-lb.) .....	do	4,800	800	.....	.....	4,800
Canned (2-lb.) .....	do	2,160	630	.....	.....	2,160
Pickled .....	kits	540	864	163	326	703
Pickled .....	half barrels	120	840	.....	.....	120
Soused (1-lb. cans) .....	number	66,480	63	864	113	1,344
Mullet (1-lb. cans) .....	do	66,480	10,041	.....	.....	66,480
Salmon:						
Canned (1-lb.) .....	do	1,213,344	114,151	239,232	22,428	1,452,576
Canned (2-lb.) .....	do	4,800	1,000	.....	.....	4,800
Pickled .....	half barrels	1,455	8,730	835	5,010	2,290
Do .....	barrels	4,793	59,913	173	2,076	4,966
Do .....	butts	20	340	.....	.....	20
Bellies .....	kits	522	559	37	71	559
Do .....	half barrels	21	105	.....	.....	21
Smoked .....	pounds	102	12	.....	.....	102
Steaks (1-lb. cans) .....	number	10,224	1,363	.....	.....	10,224
Sardines (foreign):						
Canned (½ oils) .....	cases	3,078	27,240	114	848	3,192
Canned (1 oils) .....	do	35	613	.....	.....	35
Canned (2 oils) .....	do	100	1,175	.....	.....	100
Canned (½ tomato) .....	do	50	475	.....	.....	50
Sardines (American):						
Canned (½ oils) .....	do	759	3,036	682	3,069	1,441
Shrimp:						
Canned (1-lb.) .....	number	26,064	2,541	2,736	267	28,800
Canned (2-lb.) .....	do	4,848	901	.....	.....	4,848
Dried (400 lbs.) .....	barrels	9	277	99	5,940	108
Dried (100 lbs.) .....	boxes	1	18	.....	.....	1
Skipjack, pickled .....	pounds	15,000	600	.....	.....	15,000
Sprats, canned (1-lb.) .....	number	720	270	.....	.....	720
Caviar:						
Canned (½-lb.) .....	do	660	206	276	86	936
Canned (1-lb.) .....	do	1,224	765	180	113	1,404
Clams:						
Canned (1-lb.) .....	do	35,760	3,427	3,120	325	38,880
Canned (2-lb.) .....	do	672	87	.....	.....	672
Chowder (3-lb. cans) .....	do	2,640	462	.....	.....	2,640
Juice (1-lb. cans) .....	do	384	29	.....	.....	384
Juice (2-lb. cans) .....	do	960	100	.....	.....	960
Lobsters:						
Canned (½-lb.) .....	do	19,680	3,034	.....	.....	19,680
Canned (1-lb.) .....	do	39,936	8,486	4,416	1,012	44,352
Oysters:						
Canned (1-lb.) .....	do	91,440	9,296	35,184	3,482	126,624
Canned (2-lb.) .....	do	2,544	604	.....	.....	2,544
Curried (½-lb. cans) .....	do	1,200	350	.....	.....	1,200
Curried (1-lb. cans) .....	do	902	228	.....	.....	902
Terrapin stew (1-lb. cans) .....	do	480	500	.....	.....	480
Turtle, green (1-lb. cans) .....	do	192	35	.....	.....	192
Tongues and sounds .....	kits	.....	.....	9	18	9
<b>Total</b> .....	.....	<b>306,179</b>	.....	<b>53,119</b>	.....	<b>359,965</b>

Fresh fish is also brought to Honolulu from San Francisco in the cold-storage rooms of the regular steamers. Until last year all of this fresh fish came from Victoria in the Canadian vessels, as the San Francisco steamers had no cold-storage rooms.

During 1900 the following products (not shown in the wholesale table) were retailed in a fresh state in Honolulu:

	Pounds.		Pounds.
Cod, herring, smelt, and shad.....	1,323	Salmon trout .....	312
Flounder.....	2,270	Sea bass.....	671
Halibut.....	35,880	Sole.....	606
Salmon.....	27,793	Sturgeon.....	290

#### FISHERY IMPORTS.

As the domestic fisheries have not been sufficiently developed to supply the large home demand, great quantities of foreign goods must be imported to make up the deficiency. These imports consist principally of salted, smoked, dried, and canned goods, and are very diverse, owing to the unusual mixture of population. The Chinese and Japanese are the principal consumers of dried abalone, cuttle-fish, oysters, seaweed, and shrimp; the dried and salted cod is preferred by the Portuguese and Porto Ricans, while the natives are great lovers of salmon.

An attempt should be made to introduce the abalone, as it would probably thrive well on the rocky reefs and sea walls.

The raising of sugar is the principal industry of the islands, and as large numbers of laborers are required on the plantations, which are frequently not accessible to markets where fresh fishery products can be obtained, prepared products must be supplied.

The United States has always led in the matter of imports, San Francisco of late years being the principal port from which goods were shipped to the islands. Previous to the opening of the transcontinental railroads most of the shipments came either by vessel to Colon, thence by rail across the Isthmus of Panama, and by vessel from there to the islands, or by means of vessels which came around the Horn. Many of the whalers which rendezvoused at the islands previous to 1875 also brought out considerable cargoes of general merchandise, including cod, mackerel, and other products of the New England fisheries, which met with a ready sale or barter to the natives and the white inhabitants.

On January 30, 1875, a reciprocity treaty was concluded between the Hawaiian Kingdom and the United States. This treaty went into effect September 1, 1876, and was to continue in force for seven years, and for twelve months after notice of its termination. By its terms, in compensation for the free entry to the United States of certain natural products of the islands, notably sugar, the Government permitted the free entry, among many other articles, of fishery products of American origin. As the same products from other countries were compelled to pay an ad valorem duty of 10 per cent, this gave the United States an immense advantage. By mutual consent this treaty continued in force until the islands were annexed to the United States on June 14, 1900, and proved of great mutual benefit. For some few years previous to 1876 the sugar industry of the islands had been languishing on account of the duty imposed by the United States on shipments from this source. As a result of this depression and the consequent inability of the people to buy imported goods, shipments of dried and salted fishery products dropped off until in

1876 they amounted to only \$17,891.81. Under reciprocity the imports rapidly increased, until in 1899 they amounted to \$120,374.83, the greater part of which came from the United States.

The following table shows the value of dried and salted fish imported into the islands from 1865 to June 14, 1900:

Year.	Value of dry and salt fish imported.	Year.	Value of dry and salt fish imported.
1865.....	\$58,224.63	1884.....	\$74,751.85
1866.....	31,609.04	1885.....	70,977.04
1867.....	47,805.61	1886.....	97,148.12
1868.....	23,025.69	1887.....	96,759.83
1869.....	20,903.08	1888.....	88,673.17
1870.....	39,463.15	1889.....	90,555.23
1871.....	32,439.51	1890.....	105,962.91
1872.....	19,420.60	1891.....	102,073.65
1873.....	18,383.52	1892.....	78,839.93
1874.....	23,524.30	1893.....	89,865.02
1875.....	14,781.74	1894.....	89,270.24
1876.....	17,891.81	1895.....	66,780.80
1877.....	26,594.82	1896.....	80,341.34
1878.....	47,206.95	1897.....	109,827.68
1879.....	66,978.33	1898.....	96,670.23
1880.....	35,276.72	1899.....	120,374.83
1881.....	63,576.95	1900 (to June 14).....	59,820.27
1882.....	65,701.27		
1883.....	96,630.12	Total.....	2,268,129.98

#### FISHERY EXPORTS.

Owing to the large home demand, the islands have exported but little. The bêche-de-mer and sharks' fins have usually been shipped to China or to the Chinese residents in California, while the gold-fish were sent to California, where they were probably used for ornamental purposes. The exporting was carried on in a small way during the period from 1853 to 1876, though in some years nothing was shipped.

The following table shows, by years, the exports of each species:

Year.	Bêche-de-mer.		Sharks' fins.				Gold-fish.		Dried fish.
	Pounds.	Cases.	Pounds.	Cases.	Boxes.	Packages.	Number.	Pounds.	Boxes.
1853.....			100						
1854.....			200						
1861.....	6,507								
1862.....	5,809		50						
1863.....	5,500		50	14					
1864.....	7,135								
1865.....			429						
1867.....	4,958			1				400	
1868.....					1		300		
1869.....		1	6	114			650		
1870.....					5		600		
1871.....						4			
1872.....						3	150		1
1873.....						4			
1874.....						4			
1875.....						3			
1876.....	1,125								

#### PRIVATE FISHERY RIGHTS.

Probably the most peculiar feature of the Hawaiian fisheries is the well-developed principle of private ownership of the fishes found in the open sea and bays to within a certain prescribed distance from shore. In order clearly to understand this condition of affairs it will be necessary to revert to the early history of land tenures in the islands.



Although practically nothing is known of the history of the people for some time after they first settled on the islands, it is probable that they lived in a patriarchal manner, followed later on by a tribal or communal system. In the meantime certain men by force of character and natural talents had become recognized as chiefs, and these men gradually usurped the rights of the common people and in time came to own everything. When a king or chief died his successor claimed the right, and exercised it in most cases, of redistributing the land amongst his own friends and adherents. This continued during the reigns of many petty chiefs and kings until at last all the islands fell through conquest under the sway of Kamehameha I. The king at once divided the lands among his principal warrior chiefs, retaining, however, a considerable portion for himself. Each chief divided his lands among his inferior chiefs, who subdivided them again and again down to the lowest class of tenants. When Kamehameha II ascended the throne he wanted to redistribute the lands as of old, but during the long reign of Kamehameha I the landed interests had become so strong that he found it impossible to disturb the existing order of things, except in a few instances. Trading in lands now became common, but it was not until 1839 that the ownership of land became vested in others than the king. In the bill of rights which Kamehameha III issued on June 7 of that year, occurs the following rather vague paragraph relating to land tenures:

Protection is hereby secured to the persons of all the people, together with their lands, their building lots, and all their property, while they conform to the laws of the kingdom, and nothing whatever shall be taken from any individual except by express provision of the laws. Whatever chief shall act perseveringly in violation of this declaration shall not longer remain a chief of the Hawaiian Islands, and the same shall be true of the governors, officers, and all land agents. But if anyone who is deposed should change his course and regulate his conduct by law, it shall then be in the power of the chiefs to reinstate him in the place he occupied previous to his being deposed.

It was not, however, until 1848 that land tenure was put upon a solid legal basis by the division of the lands between the king, the chiefs, and the tenants, and vesting the titles in each.

Each island was divided into "moku," or districts. The subdivisions of a "moku" were "ahupuaa," which is really a unit of land in the islands. An "ahupuaa" was generally a long, narrow strip, running from the mountain to the sea, and included the mountain, the plateau, and the shore, and extended a certain distance out to sea. This distance was to the reef, if there was one; if not, to one geographical mile from shore. The owner of this portion of the sea naturally had the right to control it, so far as the fishing was concerned, the same as he did his land. When he placed a tabu on it branches of the hau tree were planted all along the shore. The people seeing this token of the tabu respected it. With the removal of the hau branches, indicating that the tabu was lifted, the people fished as they desired, subject only to the tabu days of the priest or alii, when no canoes were allowed to go out upon the water.

In accordance with a law which went into effect June 14, 1900, the fishery rights ceased on June 14, 1903. Some of these rights are of considerable value. Close to Honolulu are two, belonging to one person, which bring in a yearly rental of \$1,375. The fisheries on Oahu are the most valuable, owing to the excellent market at Honolulu. On Kauai only a few of the fisheries are of sufficient value to be rented, these being mainly around Waimea and Hanalei. One of them rents for \$200 a year,

while another brings in only \$20 per year. A few owners allow the fishermen the general use of their fisheries, reserving one species for themselves, as they are allowed by law to do.

Practically no effort is made to collect rent for any of the fishery rights of Hawaii. This is largely owing to the sparseness of the population and the consequent lack of markets for the fish, also somewhat to the disinclination of the people to pay rent. Some years ago the Government leased the Waiakea lands (at Hilo), including the fishing rights, to private parties. The lessees tried to collect rent for the use of the fishery, but without much success, and as the lease terminated in October, 1899, the waters became free to everybody, the new lease exempting the fishing rights.

The principal fishery right on Maui is at Kahului. The rest of them are practically free now. Merely nominal rents are exacted for the use of the fisheries around Molokai. Numerous attempts have been made by the owners to collect rent from the fishermen who frequent the waters around Lanai, but without success.

No effort was made to secure complete data on the value of these fishery rights, as the whole matter would necessarily have to be passed upon by the courts in a short time and the owners did not care to go into the subject fully then.

For a more complete exposition of the laws concerning private fishery rights, reference is made to the preliminary report of Doctors Jordan and Evermann, pages 355-380 of U. S. Fish Commission Report for 1901. The same paper contains a discussion of the laws regulating the fisheries and of the measures recommended for the further protection and improvement of the industry.

#### GENERAL STATISTICS.

The three tables below show in a condensed form, by islands, for the year 1900, the persons employed and their nationality, the boats, apparatus, fish ponds, and shore and accessory property used in the fisheries, and the catch by species, together with the value of same.

The island of Oahu leads all the others in almost every phase of the industry, followed by Hawaii, Maui, Kauai, Molokai, Lanai, and Niihau in the order enumerated.

The Hawaiians predominate in the fisheries, followed in the order named by the Japanese, Chinese, South Sea Islanders (people from the Gilbert and Marquesas islands), Americans, and Portuguese. The total number of persons employed in 1900 was 2,345. This does not include the persons engaged in the wholesale trade of Honolulu and Hilo, or the persons engaged in the various fish markets, as these have been shown elsewhere.

Oahu led in total investment, with \$200,544. Hawaii was a poor second, with \$25,172 of total investment. The total investment for all the islands was \$272,591.

So far as quantity of catch is concerned, akule led, but in value amaama was first. Other leading species were malolo, ulua, aku, oio, awa, moano, kawakawa, opelu, opihi, and ula. Oahu leads all the other islands in quantity and value of catch, followed by Hawaii, Maui, Kauai, Molokai, Lanai, and Niihau, in the order named. The total catch for all the islands amounted to 6,222,455 pounds, valued at \$1,083,646.

The malolo catch was confined almost entirely to Oahu, only 3,080 pounds being secured on Hawaii and Molokai. Oau and olepa were taken only in the fisheries of the island of Oahu. Lolohau, nohupinao, okuhekuhe, wolu, frogs, ounauna alealea and pa were taken only on Hawaii, while the carp and puuli catch was confined solely to Kauai. Ii, pakaikawale, puwalu, and Ioli were taken only on Maui.

A remarkable feature of the fisheries was that but five species—aku, oio, uku, ulaula, and ulua—were taken commercially on all of the islands. It is possible that some of the others are also to be found around all of the islands, but are not sought for commercially.

Table showing, by islands and nationality, the number of persons engaged in the fisheries in 1900.

Nationality.	Hawaii.	Kauai.	Lanai.	Maui.	Molokai.	Niihau.	Oahu.	Total.
Americans .....	2	3	.....	1	.....	.....	.....	6
Chinese .....	8	34	.....	3	20	.....	173	238
Hawaiian men .....	318	104	40	151	103	8	471	1,195
Hawaiian women .....	87	16	6	80	.....	4	183	376
Japanese .....	134	50	.....	37	5	.....	259	485
Portuguese .....	.....	.....	.....	.....	.....	.....	2	2
South Sea Islanders .....	.....	.....	.....	25	.....	.....	18	43
Total .....	549	207	46	297	128	12	1,106	2,345

Table showing, by islands, the boats, apparatus, fish ponds, and property used in 1900.

Items.	Hawaii.		Kauai.		Lanai.		Maui.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.
Boats .....	198	\$16,945	51	\$3,215	25	\$2,875	80	\$7,675
Apparatus:								
Seines .....	16	780	1	75	21	435	43	1,550
Gill nets .....	96	2,585	14	103	.....	.....	28	700
Bag nets .....	4	120	5	320	.....	.....	49	2,103
Cast nets .....	100	570	16	160	.....	.....	27	270
Dip nets .....	25	125	28	28	.....	.....	25	63
Scoop nets .....	.....	.....	10	10	.....	.....	6	6
Lines .....	.....	668	.....	94	.....	48	.....	124
Spears .....	67	63	12	12	.....	.....	29	35
Baskets (fish) .....	30	300	.....	.....	.....	.....	39	390
Baskets (opae) .....	52	26	6	3	.....	.....	.....	.....
Snares .....	8	3	.....	.....	.....	.....	.....	.....
Fish traps or pens .....	.....	.....	.....	.....	.....	.....	.....	.....
Fish ponds .....	4	1,200	6	5,100	.....	.....	.....	.....
Shore and accessory property .....	.....	1,887	.....	1,144	.....	120	.....	2,255
Total .....	.....	25,172	.....	10,764	.....	3,478	.....	15,171

Items.	Molokai.		Niihau.		Oahu.		Total.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.
Boats .....	39	\$2,950	4	\$300	348	\$30,980	745	\$64,940
Apparatus:								
Seines .....	9	250	.....	.....	19	1,195	109	4,285
Gill nets .....	14	134	.....	.....	441	8,871	593	12,393
Bag nets .....	9	1,250	.....	.....	29	1,955	96	6,248
Cast nets .....	43	430	.....	.....	83	1,235	269	2,675
Dip nets .....	.....	.....	.....	.....	68	304	146	520
Scoop nets .....	.....	.....	.....	.....	69	45	85	61
Lines .....	.....	78	.....	12	.....	225	.....	1,149
Spears .....	5	3	.....	.....	51	53	164	166
Baskets (fish) .....	.....	.....	.....	.....	54	540	123	1,230
Baskets (opae) .....	.....	.....	.....	.....	47	21	105	50
Snares .....	.....	.....	.....	.....	.....	.....	8	3
Fish traps or pens .....	.....	.....	.....	.....	3	1,500	3	1,500
Fish ponds .....	15	11,425	.....	.....	75	149,050	100	166,775
Shore and accessory property .....	.....	620	.....	10	.....	4,560	.....	10,596
Total .....	.....	17,140	.....	322	.....	200,544	.....	272,591



Table showing, by islands and species, the yield of the fisheries in 1900—Continued.

Species.	Hawaii.		Kauai.		Lanai.		Maui.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Piha	945	\$95			3,500	\$56	5,585	\$88
Pillkoo	10	1						
Poon	300	30			200	20	444	111
Poupou	60	6			200	20	260	26
Pua-ii (young mullet)					8,750	143	12,500	200
Pualu	5,595	428			2,182	546	2,065	516
Puhi	19,710	1,386			5,200	1,300	35,519	10,109
Puwalu							4,700	470
Puuili			5,100	\$153				
Uhu	809	81					875	88
Uku	13,372	928	45,722	25,408	1,800	90	11,715	702
Ulae	714	47			216	43	2,015	403
Ulaula	615	61	26,552	14,341	590	148	800	200
Ulua, fresh	88,675	8,564	88,162	10,016	12,100	3,025	90,725	14,334
Ulua, dried	8,214	246						
Umaumalei	200	20					1,100	110
Uouoa	40	3						
Upapalu	1,524	68			114	11	1,543	154
Uu	34,061	2,136			1,111	167	4,735	908
Uwau	210	17						
Walu					700	70	1,200	300
Weke	1,000	100	11,950	2,820			2,400	360
Welea	600	60			2,854	286	18,412	1,841
Wolu	400	40						
Conchs							700	175
Frogs	380	1.0						
Haukooke	10	1						
Hee (octopus)	17,416	3,031	3,000	750	2,200	550	4,198	1,050
Honu (turtle)	800	64					975	49
Ina (sea eggs)	620	62			300	75	2,870	718
Leho (cowrie)	200	10					1,736	435
Limu (algæ)	2,150	188	397	81	720	180	2,680	268
Loli (bêche-de-mer)							1,158	116
Miscellaneous shellfish							150	23
Muhee (squid)					200	20	3,675	368
Naia (porpoise)	300	30						
Olepa (clam)								
Ounauna alealea	720	72						
Opae (shrimp)	1,118	280	400	200			2,500	625
Opifi (limpet)	16,150	484					1,327	289
Pa	300	30						
Papai (crabs)	800	200	4,567	550	150	38	1,500	375
Pupu (sea snail)							515	52
Ula (crawfish)	15,295	1,758	622	156	6,100	1,525	22,631	5,657
Wana (sea egg)	1,514	151	800	160	600	150	8,880	2,220
Total	1,304,311	137,734	403,521	89,993	212,628	29,853	1,159,117	190,929

Species.	Molokai.		Niihau.		Oahu.		Total.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Aalalhi	2,875	\$575			3,876	\$969	27,451	\$3,858
Aawa	1,205	181			5,921	1,481	9,722	2,280
Aha					2,544	283	4,351	464
Ahi	603	60			1,909	241	31,731	2,014
Aholehole	1,834	275			12,612	3,155	19,368	4,691
Aku, fresh	33,300	3,996	380	\$95	56,589	6,277	401,053	41,383
Aku, dried							21,000	840
Akule, fresh	33,912	3,391			266,643	19,828	839,328	81,672
Akule, dried							10,340	620
Alofloi	323	65					323	65
Ama-ama (mullet)	112,514	28,154			503,794	125,920	721,661	177,562
Auau					24	4	39	5
Awa	2,219	555			233,877	58,139	243,085	59,783
Awa-awa, fresh					2,083	522	5,698	1,968
Awa-awa, dried			3,100	465			3,100	465
Awelea					26	6	1,866	144
Aweoeco	1,275	446			1,375	590	15,465	4,300
Carp							1,500	150
China-fish					3,988	1,396	3,988	1,396
Ea, fresh					193	48	193	48
Ea, dried			800	120			800	120
Gold-fish					4,854	607	4,854	607
Hapu'upu'u	502	50			1,290	237	5,669	598
Haultuli, fresh							35,920	3,651
Haultuli, dried							8,200	666
Hihimau					1,790	179	4,065	317
Hilu					995	124	8,336	1,005
Hinalea	1,696	170			3,143	472	18,746	3,304
Humuhumu	7,191	575			14,876	893	44,077	3,043

Table showing, by islands and species, the yield of the fisheries in 1900—Continued.

Species.	Molokai.		Niihau.		Oahu.		Total.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Iheihe	3,240	\$810			2,017	\$404	29,300	\$6,718
Ii							2,546	256
Iiao							22,825	492
Kahala	2,148	215			3,915	781	61,825	9,086
Kaku					1,067	215	5,742	785
Kala	7,421	594			13,766	688	38,695	2,246
Kalekale							1,945	195
Kawelea							2,900	258
Kawakawa	13,674	1,367			78,135	15,627	191,432	24,361
Koae	643	96					643	96
Kole					6	1	49,918	10,062
Kuapaa							5,019	472
Kumu	11,631	1,744			20,925	5,207	56,970	13,171
Kupoupou	851	213			219	55	3,343	1,133
Kupipi					139	16	139	16
Laenihi					1,680	421	6,617	1,473
Lai	1,684	163			368	37	17,790	1,995
Laiपाला							3,425	855
Lauhau	2,065	810			110	11	7,514	881
Lolo-oau							50	5
Mahimahi	1,895	114			3,344	502	18,634	1,580
Maiii					131	20	5,578	699
Maiikoiko	429	43			122	13	6,597	561
Makaa					195	49	341	64
Malamalama					3	1	32	4
Malolo (flying-fish)	800	200			571,002	142,773	573,082	143,085
Mamamo					309	78	2,488	614
Manini	4,067	767			10,005	2,484	25,528	5,111
Mano (shark)	596	30			11,490	219	18,833	686
Maumau							862	86
Mikiawa	391	39			842	211	2,001	322
Moano, fresh	5,497	825			18,042	4,510	212,999	42,023
Moano, dried							6,100	305
Moi-iii					12,642	1,265	33,519	4,368
Mu					32	9	501	123
Nanihu							230	10
Nehu	300	6					92,500	1,696
Nenu					2,260	339	75,060	18,479
Nihipali					42	11	154	12
Nohu	1,006	151			195	47	1,828	325
Nohupinao							300	30
Nunu	2,051	206			1,021	102	5,132	485
Oau					319	80	819	80
Olo	36,000	9,000	7,200	\$1,800	40,322	10,060	321,623	74,076
Okuhekuhe							180	18
Olale	1,612	161			11	3	4,760	541
Omakaha					3,627	906	5,727	1,116
Omitu					12,276	1,841	12,476	1,861
Ono	1,171	176			560	56	4,179	462
Oopu					3,843	577	4,133	630
Oopuhue					130	20	839	89
Oopukai	694	139			1,948	486	4,973	1,196
Opakapaka					6,056	606	6,468	647
Opelu, fresh	13,842	2,768			9,361	2,340	115,695	17,033
Opelu, dried							23,100	805
Opule	1,739	174			969	243	8,083	1,214
Paka	1,303	139					3,765	368
Pakaikawale							1,800	180
Pakalakala					10	1	1,278	127
Pakiki							2,227	223
Pakii	4,129	413			4,372	1,530	31,848	4,375
Pala	9,700	1,455					9,700	1,455
Palani	2,540	381			2,604	551	20,136	2,822
Papao	745	75					1,695	170
Piha							10,030	239
Pilikoa					212	32	222	33
Pouu					206	31	1,150	192
Poupou					26	2	546	54
Pua-ii (young mullet)							21,250	340
Puau					1,876	402	11,718	1,892
Puhi	8,064	968			6,582	658	75,075	14,421
Puwalu							4,700	470
Puuii							5,100	158
Uhu	5,674	567			10,505	2,101	17,863	2,837
Uku	2,617	131	4,400	1,100	14,605	1,459	94,231	29,818
Ulae	616	123			97	10	3,658	626
Ulaula	775	116	1,200	480	11,236	2,809	41,768	18,155
Ulua, fresh	16,692	3,338	4,900	490	324,272	67,630	625,526	107,397
Ulua, dried			5,100	510			13,314	756
Umoamaiei					40	4	1,340	184
Umoa					8	2	48	5
Upapalu	314	31			1,983	297	5,478	561
Uu	1,090	131			33,154	8,288	74,151	11,630

Table showing, by islands and species, the yield of the fisheries in 1900—Continued.

Species.	Molokai.		Niibau.		Cahu.		Total.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Uwau .....					185	\$46	395	\$63
Walu .....							1,900	370
Weke .....	2,878	\$345	600	\$120	70,713	17,675	89,541	21,420
Welea .....	2,422	242			316	64	24,604	2,493
Wolu .....							400	40
Conchs .....							700	175
Frogs .....							380	190
Haukenke .....					50	13	60	14
Hee (octopus) .....	1,700	340			26,085	6,521	54,499	12,242
Honu (turtle) .....	150	9			2,745	357	4,670	479
Ina (sea eggs) .....							3,790	855
Leho (cowrie) .....							1,936	445
Limu (algæ) .....			145	15	36,672	4,584	42,764	5,316
Loli (bêche-de-mer) .....							1,158	116
Miscellaneous shellfish .....							150	23
Muhee (squid) .....					24	4	3,899	392
Nala (porpoise) .....					60	2	360	32
Olepa (clam) .....					327	49	327	49
Ounauna alealea .....							720	72
Opæ (shrimp) .....					3,694	797	7,712	1,902
Opihi (limpet) .....			250	65	129,500	19,425	147,227	20,263
Pa .....							300	30
Papai (crabs) .....					8,670	2,168	15,687	3,381
Pupu (sea snail) .....							515	52
Ula (crawfish) .....			1,200	300	85,334	8,551	131,182	17,947
Wana (sea eggs) .....			250	63	4,587	1,147	16,631	3,891
Total .....	376,255	67,599	29,525	5,623	2,737,198	561,915	6,222,455	1,083,646