U.S.

BUREAU OF FISHERIES,

Department of Commerce and Labor.

U. S. FISHERIES SCHOONER "GRAMPUS."

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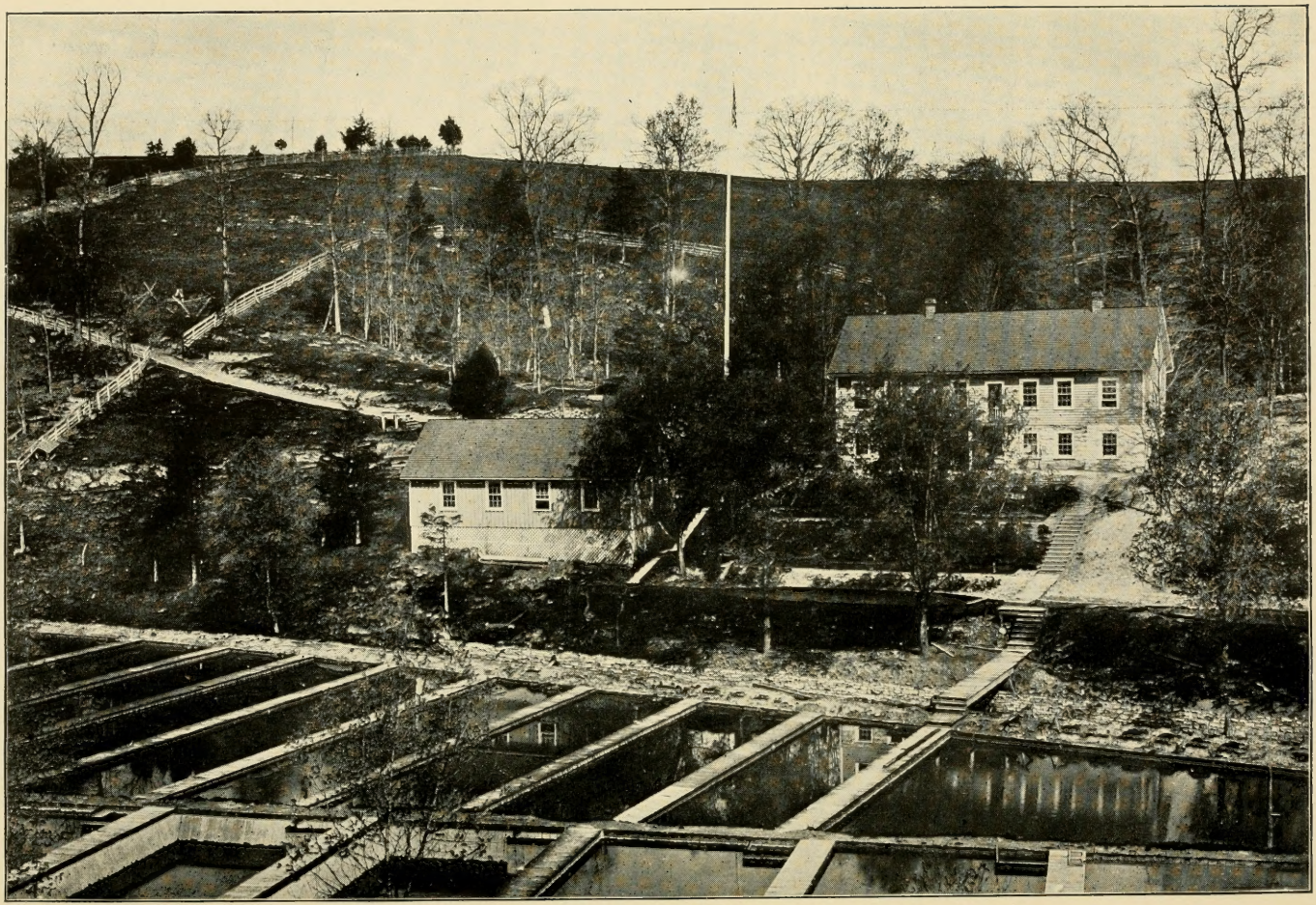
Origin and Functions.

THE Bureau of Fisheries may be said to date from 1871, in which year Congress passed a joint resolution authorizing the President to appoint a Commissioner of Fish and Fisheries, whose duty it should be to conduct investigations relative to the diminution of the supply of food fishes and to make recommendations to Congress regarding this subject. From this beginning the work increased yearly in extent and scope; and under the name of Commission of Fish and Fisheries the Bureau had an independent existence until June 30, 1903, when it became a part of the Department of Commerce and Labor, under the title Bureau of Fisheries.

The Bureau of Fisheries is peculiarly American in its conception, and its prototype exists in few other countries. It labors directly for the preservation and increase of useful water animals, and, in conjunction with many of the states, has placed certain branches of the fisheries on a permanent basis. It has achieved a wide reputation for originality of method and magnitude of operations, and has given the United States first place in all matters relating to the enrichment of the aquatic food supply by artificial means. The Bureau has participated in all the great expositions at home and many of those abroad, and has received numerous awards for the originality and excellence of its work.

The operations of the Bureau are now conducted on three general lines: (1) The propagation and distribution of food fishes; (2) the scientific investigation of the seas, rivers, and lakes and their inhabitants; (3) the study of the economic fisheries and the collection of statistics thereof.



FISH CULTURAL STATION, WYTHEVILLE, VA.

Propagation and Distribution of Food Fishes.

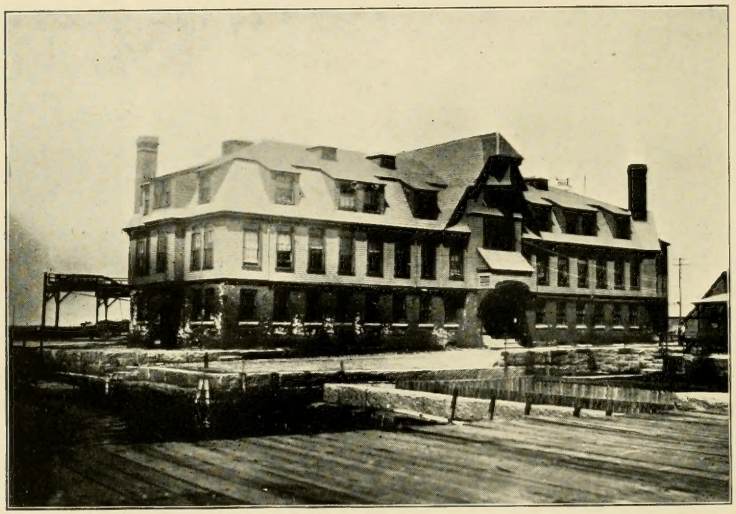
THE work of increasing the supply of food and game fishes by artificial means has become of more importance each year, and there are now maintained by the government 33 specially constructed hatcheries and 16 subhatcheries, located in 26 states and territories. Of the main hatcheries, 3 are on the New England coast, 8 are on the rivers of the Atlantic and Pacific seaboards, 4 are on the Great Lakes, and 18 are on the interior fresh waters.

About 50 species are regularly propagated and distributed by the Bureau, and others are from time to time taken up as circumstances require or permit. Among the most important species handled are the cod, pollock, flounder, and lobster among marine forms; the shad, salmon, striped bass, white perch, yellow perch, Atlantic salmon, chinook salmon, and blue back salmon on the coast rivers; the whitefish, lake herring, lake trout, and pike perch on the Great Lakes; and the brook trout, rainbow trout, black-spotted trout, landlocked salmon, grayling, black bass, rock bass, crappy, and catfish in the interior waters.

One of the most interesting and important lines of work is the introduction of foreign fishes into American waters and the transplanting of native fishes from one section of the country to another. A most noteworthy example of the successful transfer of native fishes to new waters was the acclimatization of the shad and the striped bass on the Pacific coast between 30 and 35 years ago; the aggregate cost of this experiment was less than $5,000, while the catch of these two fishes on the west coast to the end of 1906 exceeded 30,000,000 pounds, valued at more than $1,000,000. Experiments are now in progress having for their object the colonizing of the Atlantic lobster on the Pacific coast and the establishment of the Pacific salmons in the waters of the Middle and New England States.

Plants of fish are made gratis in suitable public or private waters, on the receipt of applications endorsed by a United States Senator or Representative or by a state fish commis-

sioner. The Bureau also transfers to the state hatcheries large numbers of fish eggs in various stages of incubation. In the transportation of fish for long distances, six specially



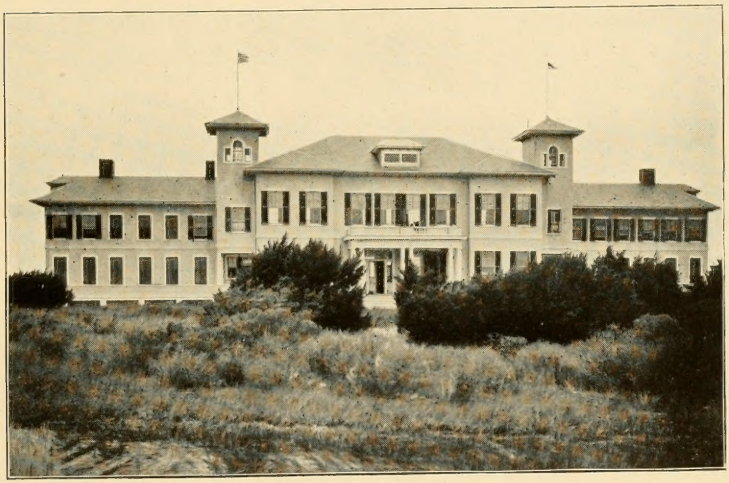
HATCHERY AND LABORATORY, WOOD'S HOLE, MASS.

constructed railway cars are employed. (See model in exhibit.) During the fiscal year 1906 the distribution of fish and eggs by the Bureau was as follows:

Species.	Eggs.	Fry.	Fingerlings, yearlings, and adults.	Total.
Shad	495,000	37,504 300	.....	37,999,300
Whitefish	73,099,000	263,400,800	.....	336,499,800
Chinook salmon	115,628,645	20,789,928	122,980	136,541,553
Blueback salmon	122,500	9,923 680	9 500	10,055,680
Other salmon	445,180	10,352,829	178,034	10,976,043
Brook trout	960,000	5,333,609	3,678,879	9,972,488
Black-spotted trout	810,000	6,988,918	1,100,336	8,899,254
Lake trout	25,090,000	29,084,540	73,200	54,247,740
Other trout	514,400	2,675,084	1,655,315	4,844,799
Pike perch	136,100,000	232,105,000	.....	368,205,000
Yellow perch	.....	161,943,000	3,065	161,946,065
White perch	5,400,000	176,690,000	.....	182,090,000
Basses and sun-fishes	.....	245,450	696,042	941,492
Cod	.....	159,492,000	.....	159,492,000
Flat-fish	.....	285,049,000	.....	285,049,000
Lobster	.....	117,787,000	.....	117,787,000
All other fish	38,892,000	7,316,500	78,895	46,287,395
Total	397,556,725	1,526,681,638	7,596,246	1,931,834,609

Inquiry Respecting Food Fishes and the Fishing Grounds.

TO this division of the service belong the investigations and researches addressed to the physical and chemical characters of the seas and fresh waters in their relation to aquatic life; the life histories, habits, food, abundance, distribution, enemies, and diseases of fishes and other economic animals, as well as the minor forms of life which, while not directly important, are indirectly valuable to man



MARINE BIOLOGICAL LABORATORY, BEAUFORT, N. C.

because they furnish food for the higher animals. This branch also makes inquiries regarding the causes of the decrease of food fishes, points out the remedies therefor, studies particular species and regions in the interest of fish culture, conducts the necessary biological investigations antecedent to the establishment of hatching stations, explores the fishing grounds of the coasts and interior, and in numerous other ways promotes the commercial fisheries and artificial propagation.

The Bureau maintains two well-equipped seaside laboratories—at Woods Hole, Mass., and Beaufort, N. C.—where scientific and economic questions connected with the ocean are studied by large numbers of experienced investigators from the leading institutions of learning.

Among the biological problems having an important practical bearing which have been recently under consideration are the possibility of fattening oysters by increasing artificially the abundance of the minute plants (diatoms) on which the oysters feed; the rearing of the lobster; the natural history of the Pacific salmons; the feasibility of growing sponges from cuttings; the bacterial and other diseases of cultivated and wild fishes; the infection of oysters by contaminated water, and the possibility of raising the diamond-back terrapin and the green turtle from the egg on a commercial scale.

One of the most valuable adjuncts of the scientific work is the steamer *Albatross*, a twin-screw iron vessel of over 1,000 tons displacement, which was especially constructed and equipped for exploration of the seas, and is the best-known and most efficient vessel of her class. She has conducted investigations in all parts of the world; surveyed the fishing grounds of our east and west coasts, Alaska, Hawaii, etc.; made over 10,000 deep-sea soundings, more than 4,000 dredgings, and brought up from the bottom of the sea hundreds of tons of fishes and other creatures never before seen by man. The greatest depth at which the *Albatross* found life was 4,173 fathoms; the deepest sounding made was 4,813 fathoms. The greatest ocean depth known is 5,269 fathoms (6 miles), ascertained by the U. S. S. *Nero* while using apparatus belonging to the *Albatross* in the Pacific Ocean near the island of Guam.

Statistics and Methods of the Fisheries.

SINCE the establishment of the Bureau, the collection of fishery statistics has been a part of its work, as it is only by means of specially collected data that the effects of fish culture, the necessity for restrictive measures, the influence of legislation, and the trend of different branches of the industry can be determined. In this division there is a small corps of trained agents who visit all fishing communities to obtain information regarding the number of persons engaged, the quantity and value of the property used, and the amount and value of the catch. This division also makes a study of the apparatus and methods employed in fishing, the manner of utilizing and preparing the catch, the financial relations of the fishermen, the wholesale fish trade of the larger cities, and various other matters connected with the commercial fisheries; and, by means of correspondence and printed reports, disseminates among the fishing population useful information concerning the utilization of new or waste products, the best ways of preparing the catch, the most approved methods of other countries, the opportunities for extending markets, etc.

The latest canvasses show that the high-sea, coastwise, and interior fisheries of the United States give employment to more than 219,500 persons; involve an investment of over $88,000,000, and yield annually a product weighing more than 2,000,000,000 pounds, valued at nearly $57,000,000. The extent of the industry on each coast and in the interior waters is as follows:

Geographical sections.	Persons employed.	Capital invested.	Products.	
			Pounds.	Value.
Atlantic Coast	163,834	$54,380,564	1,566,075,551	$37,704,089
Pacific Coast	30,524	22,672,927	276,504,418	14,011,090
Great Lakes and interior waters	25,201	11,296,012	185,187,239	5,012,598
Total	219,559	$88,349,503	2,027,767,208	$56,727,777

U. S. FISHERIES STEAMER "ALBATROSS."

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