

R E P O R T
OF THE
UNITED STATES COMMISSIONER OF FISH AND FISHERIES
FOR THE
FISCAL YEAR ENDING JUNE 30, 1896.

I have the honor to submit an outline of the operations of the United States Commission of Fish and Fisheries during the year ending June 30, 1896, together with the detailed reports of the work of its different divisions, and appendices embracing the reports of the exhibit at the Atlanta Exposition and of special investigations. After the death of the late Commissioner, Marshall McDonald, which occurred September 1, 1896, the affairs of the Commission were directed by the chief clerk, Herbert A. Gill, as acting Commissioner, until March 30, 1896, when John J. Brice was appointed to fill the vacancy.

When the present Commissioner assumed charge special attention was at once directed to increasing the supply of the commercial fishes of the ocean and inland waters, and the propagation and rearing of certain coarser species was discontinued in order to increase the output of the more important ones. The principal fish-cultural work in hand was the propagation of shad, and the available force was concentrated at the shad-hatching stations at Bryan Point on the Potomac River and Battery Island on the Susquehanna. Work on the New England coast followed, and besides the usual provisions at Woods Hole and Gloucester, Mass., for collecting lobster eggs the force was increased by the detail of men from other stations. In addition to the lobster work the propagation of tautog was undertaken at Woods Hole. The steamer *Fish Hawk* was also engaged in shad hatching on the Delaware, and afterwards in collecting lobster and mackerel eggs on the Maine coast, where she was assisted by the schooner *Grampus*. The results, as compared with the previous year, were very satisfactory, 148,000,000 shad, 105,000,000 lobster, and 31,000,000 tautog eggs being secured. The number of fry successfully hatched from these eggs and planted is shown hereafter.

The scarcity of mackerel made it desirable that the Government should endeavor to increase the supply of this valuable fish, and steps were taken early in April to engage in the propagation of the species at various points on the New England coast. The work was in a manner experimental, and the experience gained warrants the expectation of good results for the future. About 24,000,000 eggs were obtained.

Plans were considered to materially increase the output of shad and salmon by the establishment of auxiliary stations at favorable places on the Atlantic and Pacific coasts, respectively. The fisheries for these important species, representing more than one-tenth of the yield of the fishing industry of the coastal States, are known to depend largely on artificial propagation, and their yearly increase in extent, resulting in a corresponding diminution in natural reproduction, makes it advisable that active artificial measures be taken for their preservation. Comparatively small sums expended in maintaining fish life in important streams before they become depleted will accomplish more than years of expensive effort after the supply is limited or exhausted. With this in view, the Commissioner went to the west coast to personally examine the field, select suitable sites for salmon hatcheries, and make arrangements for the collection of eggs when the season should open.

Details of the fish-cultural work of the year and distributions of fish and eggs are shown in the reports of the various hatcheries and stations which are given hereafter.

While the collections of eggs have been satisfactory, the number of fry hatched and reared has at some stations been less than should be expected, because of an inadequate or impure water supply or of water not of a proper temperature. Steps have been taken to rectify this, and it is expected that a better output will result in the future.

The following stations were operated during the year:

Craig Brook, Me.	Battery Island, Md.	Alpena, Mich.
Green Lake, Me.	Bryan Point, Md.	Duluth, Minn.
St. Johnsbury, Vt.	Central Station, Washington,	Quincy, Ill.
Gloucester, Mass.	D. C.	Neosho, Mo.
Woods Hole, Mass.	Fish Ponds, Washington, D. C.	Leadville, Colo.
Cape Vincent, N. Y.	Wytheville, Va.	Baird, Cal.
Delaware River (steamer	Put-in Bay, Ohio.	Fort Gaston, Cal.
<i>Fish Hawk</i>).	Northville, Mich.	Clackamas, Oreg.

There have been distributed in suitable public and private waters, by means of the cars and messengers of the Commission, 498,488,268 eggs, fry, yearlings, and adults of various fishes. The output of some of the more important species, which is markedly in excess of the previous year, is as follows:

Shad	93,481,500
Salmon	10,845,852
Lake trout	8,996,618
Whitefish	189,740,000
Cod	66,212,000
Flatfish	8,472,000
Lobster	97,079,000

Plants were made in all the States and Territories, and eggs of various species were sent to representatives of foreign governments and fish-cultural societies in return for similar courtesies received from them, as follows:

Quinnat salmon	95,000
Steelhead trout	75,000
Rainbow trout	125,000
Lake trout	50,000
Whitefish	50,000
Total	395,000

Another attempt was made to acclimatize quinnat salmon in east-coast waters by the transfer of 10,000 eggs to Craig Brook, Maine, where they were hatched and retained for distribution in the fall. Large consignments of steelheads were also brought east to be introduced into the coastal waters of New England, and besides the usual plants of salmon fry in the Columbia and Sacramento rivers, over 750,000 fingerling salmon were liberated in the Clackamas and McCloud rivers, which should produce valuable results.

Further experiments have been made in using artificial nests for spawning black bass at Wytheville, the fish ponds at Washington, and at Put-in Bay. From the results secured at the former station, it is believed that artificial nests may be successfully used and the problem of raising this species simplified. Efforts were again made to artificially fertilize the eggs of black bass; and though in one or two instances the eggs were fertilized, as yet the experiments have not disclosed a method of conducting the work on a large scale; first, because of the difficulty of securing ripe fish, and second, of expressing the milt and eggs.

In accordance with previous custom, the use of the laboratory at Woods Hole was granted to the representatives of various colleges for biological study, in order that the Commission might be benefited by the results of their researches. This station, equipped as it is with extensive buildings and costly appliances, and situated on a bay which is a natural spawning-ground for the more important marine fishes, is a valuable property to the Government, and it is designed to so extend the work of the station that it shall be a hatchery and biological station second to none.

The canvass of the fishing industries of the interior waters of the United States, begun in the winter of 1895, was resumed and actively pushed during the entire year, and is now complete. The inquiry did not cover the Great Lakes, which were canvassed the previous year, but included all those interior States in which the industry was carried on to any great extent. These fisheries are of considerable economical importance; in 1894 they employed 11,282 persons, represented a total capital invested of \$722,328, and yielded to fishermen a product valued at \$1,791,145. While many varieties of fresh-water fishes are represented in the catch, the most prominent and those of most pecuniary importance are sheepshead, black bass, crappie, whitefish, sturgeon, sunfish, buffalo-fish, catfish, and yellow perch.

From February to April, 1896, a canvass was made of the contiguous waters of Maine and New Brunswick to obtain certain data regarding the commercial aspects of the herring and sardine industries for the use of the International Fisheries Commission, and at the same time much valuable statistical information was collected regarding the herring fisheries and their related branches, which will be embodied in a report to be issued later. There was also obtained for the International Fisheries Commission desired information relative to the mackerel fisheries of New England.

In May, 1896, a general canvass of the shad, alewife, and salmon fisheries of the Atlantic coast was begun, to determine their present commercial value, the number of persons employed, the value and kind of apparatus used, with other important statistical details. At the same time a similar investigation of the general fishery industries of the Pacific coast was begun, particularly as to the development of the California sardine industries and the condition of the shad and striped-bass fisheries, to determine the advisability of establishing hatcheries for these species. An examination of the results of the former plants of eastern lobsters in California waters was also made to obtain data for further experiments. At the close of the fiscal year these inquiries were satisfactorily progressing.

The inquiries conducted by local agents at Gloucester and Boston, covering a large part of the offshore vessel fishing of New England, serve the purpose of keeping the Commission well informed regarding the condition of the great fishing banks off the coasts of New England, Nova Scotia, and Newfoundland. The statistical tables published hereafter (pages 132-135) show the extent of the fisheries centering at these important fishing centers during the calendar year 1895. At Gloucester there were discharged by American fishing vessels about 76,631,000 pounds of fish and salt fish, valued at \$2,205,600; at Boston the quantity of fish landed aggregated 73,808,000 pounds, having a value of \$1,346,000. The combined receipts were thus 150,439,000 pounds, valued at \$3,551,600. As compared with the previous year there was a net decrease in the quantity of fish landed at Gloucester amounting to about 3,000,000 pounds, the falling off being principally in mackerel, halibut, cusk, and bake, while the receipts of cod exceeded those of 1894 by 5,430,000 pounds, and of 1893 by 8,781,000 pounds. The fish brought into Boston in 1895 weighed 13,657,000 pounds less than in the previous year, nearly all of the important species showing a decrease.

In the spring of 1896 the investigations of the salmon streams of the Pacific coast were planned, with a view to select suitable sites for hatcheries, as well as to continue the natural-history studies carried on in former years. Examinations of Lakes Washington, Pend d'Oreille, Cœur d'Alene, Crater, and Klamath were also to be made by the same field parties, chiefly with a view to determine the outcome of plants of whitefish made in them in previous years and the advisability of introducing other new species. At the close of the fiscal year this work had been begun and was being actively carried on.

In addition to the regular annual investigation of the fur-seal rookeries required of the Fish Commission by act of Congress, arrangements were made for special studies during the summer of 1895 of the natural history of the herds on the Pribilof and Commander islands, for purposes of comparison with their condition in former years, and with reference to the means necessary for their protection, as well as a comparison of conditions on the Asiatic and American coasts. The investigations on the Commander Islands were made possible through the courtesy

of the Russian Government and were conducted by Mr. Leonhard Stejneger, while the work on the Pribilofs was carried on by Mr. F. W. True; both of these gentlemen, who are connected with the National Museum, were temporarily employed by the Fish Commission for this purpose. Other agents of the Commission conducted the usual investigations on the islands, besides which observations were made on board a vessel of the sealing fleet and with the Fish Commission steamer *Albatross* at sea. These inquiries confirm the conclusions reached in former years, that the fur-seal herds are steadily diminishing and that their depletion is caused by pelagic sealing. The investigations are described in detail in the exhaustive report of Mr. Stejneger, published in the Bulletin of this Commission for 1896, and in Senate Document 137, Fifty-fourth Congress, first session.

The fur-seal investigations for 1896 were planned in accordance with a joint resolution of Congress, approved June 8, which provided for a scientific investigation into the present condition of the fur-seal herds on the Pribilof, Commander, and Kuril islands, to be conducted under the direction of the Secretary of the Treasury by persons employed for the purpose or detailed from the Government service. Dr. David S. Jordan, of Leland Stanford Junior University, was selected to take charge of the party, assisted by Mr. Leonhard Stejneger and Mr. F. A. Lucas, of the United States National Museum; Lieut. Commander Jeff. F. Moser, U. S. N., commander of the steamer *Albatross*, and Mr. C. H. Townsend, naturalist; Col. Joseph Murray, special agent of the Treasury Department, and Mr. G. A. Clark, secretary. The *Albatross* was detailed by the President to convey the party to Bering Sea, and sailed from Seattle June 24 with the investigators on board. A similar commission was appointed by the British Government, and though there was no provision for the coöperation of the two parties, transportation was afforded to Prof. D'Arcy W. Thompson, of University College, Dundee, Scotland; Mr. James M. Macoun, of the geological survey of Canada, and Mr. A. Marett, photographer, representing Great Britain.

During the season of 1895 the *Albatross* was not attached to the patrol fleet in Bering Sea, as in previous years, though she was authorized to board and inspect sealing vessels. Having landed on the Seal Islands the naturalists detailed to study seal life during the season, the vessel remained at the Pribilofs during the remainder of July assisting in the work at those islands, and during August was engaged at sea in making investigations of the habits and movements of seals while in search of food. Observations of the water temperatures and densities were made, soundings were taken, and much progress was made in collecting information as to seal life. The *Albatross* left Unalaska August 30 for the waters of the Puget Sound region, going via Sitka and the inland passages, and from September 22 to October 16 was engaged in collecting data concerning the salmon industry, when she proceeded to the navy-yard, Mare Island, Cal., to undergo necessary repairs. On January 28, 1896, the steamer sailed for the waters of southern California, where investigations were carried on in the vicinity of San Diego, and of

Cortez and Tanner banks. She returned to San Francisco April 28, and from May 7 to 17 was used by the Navy Department in connection with the speed trials of the *Oregon*. On completing this duty a series of observations and dredgings was carried on in San Francisco Bay, in connection with an investigation of its waters with reference to the cultivation of oysters. Tables showing results of the work of the vessel for the year are published as an appendix to this report.

In the spring of 1896 arrangements were made for a survey of the fishery resources of southeastern Alaska, by the *Albatross*, in addition to the regular sealing work, but the detail of the vessel for the use of fur-seal investigators necessitated the postponement of these plans.

May 19, Lieut. Commander F. J. Drake, U. S. N., was detached from the command of the *Albatross*, and Lieut. Commander Jeff. F. Moser, U. S. N., assumed command, in obedience to orders from the Secretary of the Navy.

The usual studies of the mackerel fisheries were made by agents of the Commission, along the Atlantic coast and on board the schooner *Grampus*, which accompanied the mackerel fishermen during the summer of 1895, particular attention being given to the offshore waters of New England and the conditions in the Gulf of St. Lawrence.

A resolution was adopted by the Senate February 15, 1895, calling for information as to the condition of the oyster fisheries on the coast of Florida, and investigations were begun November 12 in Apalachicola Bay by Lieut. Franklin Swift, U. S. N., with the steamer *Fish Hawk*. The survey covered not only areas where oysters are now found, but an examination of the bottom to determine its suitability for oyster-planting, and necessarily included a hydrographic survey and the taking of densities and temperatures. Valuable information was collected, as shown in the report of Lieutenant Swift, published as an appendix to this report (pp. 187-221).

Various areas of the bay were found favorable for the cultivation of oysters of an excellent quality, and if the protective laws of the State could be enforced oyster-culture could be made an important industry.

In accordance with an item in the sundry civil act approved March 2, 1895, calling on the Commissioner of Fisheries to make a special investigation as to the extermination of migratory fishes in the Indian River, Florida, an investigation, designed to embrace both the natural-history and commercial aspects of the subject, was made in January and February, 1896, under the direction of Messrs. B. W. Evermann and W. A. Wilcox. The fishing industry of this arm of the Atlantic is of recent growth, its commencement dating from 1878, though the business of taking green turtles was engaged in before the civil war. Since the building of railroads, affording easy communication, the industry has grown, and in 1895 represented an investment of \$41,512, and yielded products valued at \$37,657. The investigation showed that while the fishing resources of this region are great, many valuable species being found in the river, the present tendency to overfishing

will result in the ultimate destruction of the business unless proper restrictive laws are enforced. The report upon this investigation was printed as Senate Document 46, Fifty-fourth Congress, second session, and will also be found as an appendix to this volume, pp. 223-262.

The sundry civil act of 1895 appropriated \$500 for an investigation and report as to the advisability of establishing a fish-hatchery at some suitable point in the State of New Hampshire, and accordingly arrangements were made for an inspection of the conditions on the Merrimac River for the collection of Atlantic salmon eggs and the operation of a hatchery with a view to restocking the rivers of the State with that important commercial fish. A careful examination was made in July and August, 1895, of the Soucook River, the dams and fishways on the Merrimac at Livermore Falls, Sewall Falls, Gavins Falls, Amoskeag Falls, Lowell, and Lawrence. The results of this examination show that while there may be such a revival in the run of salmon as to insure the successful operation of a salmon hatchery at some point on the Merrimac River or its tributaries, neither the present conditions nor the immediate prospects warrant the expenditure of money and effort in the attempt. Further investigations will be made to decide as to the desirability of establishing a hatchery for the propagation of other species of fish of commercial value.

The exhibit of the Commission, under the direction of Mr. W. deC. Ravenel, at the Cotton States and International Exposition, held in Atlanta from September 18 to December 31, 1895, was considered one of the most attractive and popular features of the exposition, particularly the aquarium. The operations of the Commission were shown by models of hatcheries and apparatus used in the collection, hatching, and transportation of fish and fish eggs, and of vessels and appliances employed in scientific investigations and in the fisheries. There were also exhibited photographs of hatcheries, casts of fishes, specimens of marine life, statistical and other charts, and pictures illustrating fishery methods. Especially interesting to visitors was the practical illustration of fish-culture. Two hatching troughs and a hatching table were fitted up, and in December, when the water became sufficiently cool, lake-trout and quinnat-salmon eggs were hatched, and the fry planted in a pond near Atlanta and a lake in the Exposition grounds.

The aquarium, intended to be a model of its kind both architecturally and in its arrangement of tanks and apparatus, was designed and constructed with great care. It contained seventy-six species, mainly showing the commercial fishes of the South, though other food and ornamental fishes and curious specimens of aquatic life were included.

The exhibit received the award of a grand prize, a diploma of recognition, and two gold medals. At the close of the exposition the aquaria, tanks, pumps, piping, etc., were turned over to the Smithsonian Institution for the use of the National Zoological Park. A detailed account of the exhibit will be found as an appendix to this volume, pp. 147-167.

In addition to the work of repairs and improvements at the various fish-cultural stations, under the direction of the architect and engineer of the Commission, the work of constructing the new stations at San Marcos, Tex., Bozeman, Mont., and Manchester, Iowa, was continued.

The artesian well at San Marcos has been completed, and furnishes an ample supply of water, the volume of flow being about 1,000 gallons per minute. Excavations for ponds were continued and preparations made for erecting the hatchery buildings early in the new fiscal year.

At Bozeman the hatchery buildings and the greater portion of work on the water supply and ponds were finished late in the summer of 1895, when the available funds were exhausted. A further appropriation was granted June 8, 1896, and steps were at once taken to complete the station.

Plans and specifications for the proposed Manchester station were prepared, but actual work was not begun, as the examination of the title to the land had not been completed by July 1, 1896.

The work of repairing the damage caused by the storm of January, 1895, to the breakwater at Woods Hole was continued by the Engineer Corps of the Army until August 21, when the available funds were exhausted, leaving the repairs still incomplete.

The naval engineer has supervised such repairs, alterations, and additions to the machinery at the various stations and upon the steam launches of the Commission as were necessary for their economical and efficient operation, and plans were prepared for such changes in the pumping apparatus at certain of the stations as would provide for an increase in the output of fry.

Passed Assistant Engineer C. W. Dyson, U. S. N., was detailed by the Secretary of the Navy as consulting and mechanical engineer for the Commission October 21, 1895, relieving Passed Assistant Engineer I. S. K. Reeves, U. S. N.

The value of the vessels belonging to the Commission, consisting of two sea-going steamers, the *Albatross* and *Fish Hawk*, and the schooner *Grampus*, besides several smaller steamers, and the amount of the expenditures necessary for their maintenance, made it desirable, in the interest of economy, to organize an office of vessels under a competent and experienced head, who should have general charge of their maintenance, repairs, and equipment. At the request of the Commissioner Lieut. C. M. McCormick, U. S. N., was detailed by the Navy Department for this duty, and was placed in charge of this office June 29.

The Commission has continued the practice of turning over to the National Museum collections made by its agents and vessels. October 19, 1895, there were presented to the United States National Museum ten sets of specimens of fishes, one set being intended for the series of the National Museum, and the others for distribution to the following institutions: Stanford University, Museum of Comparative Zoology, Indiana University, Iowa University, Nebraska University, Arkansas University, Duluth (Minn.) High School, Mankato (Minn.) State Normal School, and Oberlin College.

Much public interest has been shown in the work of the Commission, during the year and valuable assistance has been given its agents. Many railroads have furnished free transportation to the cars and messengers engaged in transporting fish, by which the distributions have been greatly facilitated. A list of these follows:

Summary showing total number of miles of free transportation furnished United States Fish Commission cars and messengers during the fiscal year ending June 30, 1896.

Name of railroad.	Cars.	Messengers.	Name of railroad.	Cars.	Messengers.
Ann Harbor R. R.	230		Gulf, Colorado and Santa Fe Rwy.	538	
Atchison, Topeka and Santa Fe Rwy.	4,707	911	International and Great Northern R. R.	142	291
Atlantic and Pacific R. R.		292	Jacksonville, Tampa and Key West Rwy.	500	
Burlington and Missouri River R. R. in Nebraska.	840		Kansas City, Fort Scott and Memphis R. R.	432	
Burlington, Cedar Rapids and Northern Rwy.	1,374	588	Kansas City, Pittsburg and Gulf R. R.	326	660
Boston and Maine R. R.	1,507	1,732	Louisville and Nashville R. R.	1,764	
Central Vermont R. R.		870	Maine Central R. R.	2,730	26
Chesapeake and Ohio Rwy.	2,234		Minneapolis, St. Paul and Sault Ste. Marie Rwy.	252	
Chicago, Burlington and Quincy R. R.	2,550	1,803	Michigan Central R. R.	4,639	
Chicago and Northwestern.	1,982		Montana Union Rwy.	44	
Central of Georgia Rwy.	420		New York, New Haven and Hartford R. R.	402	
Cincinnati, Portsmouth and Virginia R. R.		142	Nashville, Chattanooga and St. Louis Rwy.	14	
Chicago and West Michigan Rwy.	420		Northern Pacific R. R.	5,425	991
Cleveland, Cincinnati, Chicago and St. Louis Rwy.	4,284		Oregon Railway and Navigation Co.	404	
Cooperstown and Charlotte Valley R. R.		16	Pennsylvania R. R.	450	
Colorado Midland R. R.		142	Pecos Valley Rwy.		178
Delaware and Hudson R. R.	402		Philadelphia, Reading and New England R. R.		110
Denver, Leadville and Gunnison Rwy.		514	Plant System.	287	
Denver and Rio Grande R. R.	1,062	2,432	Rio Grande Western Rwy.		106
Detroit, Lansing and Northern R. R.	128		Sioux City and Northern R. R.	97	
Detroit and Mackinac Rwy.	1,794		Southern Rwy.	2,857	
Duluth and Iron Range R. R.	228		St. Johnsbury and Lake Champlain R. R.		23
Duluth, South Shore and Atlantic Rwy.	452		Texas and Pacific Rwy.	1,122	1,080
Fitchburg R. R.		114	Union Pacific Rwy.	6,330	
Florida and East Coast Rwy.		326	Toledo, St. Louis and Kansas City R. R.		902
Florida Central and Peninsula R. R.	1,124		Union Pacific, Denver and Gulf.	660	170
Flint and Pere Marquette R. R.	1,359		Wabash R. R.	442	1,980
Fronton, Elkhorn and Missouri Valley R. R.	1,087		Western Rwy. of Alabama and Atlanta and West Point R. R.	700	
Fort Worth and Denver City Rwy.		806	Wisconsin Central Lines.	1,334	64
Grand Rapids and Indiana R. R.	221				
Great Northern Rwy.	659	877	Total	61,654	18,918

The following extracts from the Bulletins and Reports have been issued in pamphlet form during the year, besides the bound Bulletin of the Commission for the year 1895:

- Report proper of the Commissioner for the year ending June 30, 1893, Marshall McDonald, Commissioner, pp. 1-138.
- The fisheries of the Pacific Coast, by W. A. Wilcox. (Report for 1893, pp. 139-304.)
- The American lobster, by Francis H. Herrick. (Bulletin 1895, pp. 1-252.)
- Salmon investigations in Idaho in 1894, by B. W. Evermann. (Bulletin 1895, pp. 253-284.)
- Investigation of the menhaden fishery in 1894, by Hugh M. Smith. (Bulletin 1895, pp. 285-302.)
- Fishes of the Neuse River basin, by B. W. Evermann. (Bulletin 1895, pp. 303-310.)
- Notes on fish-culture in Germany. (4 articles.) (Bulletin 1895, pp. 311-324.)
- Report of a reconnaissance of the oyster beds of Mobile Bay and Mississippi Sound, Ala., by H. P. Ritter. (Bulletin 1895, pp. 325-339.)

- A list of fishes and mollusks collected in Arkansas and Indian Territory in 1894, by S. E. Meek. (Bulletin 1895, pp. 341-349.)
 The sources of marine food, by James I. Peck. (Bulletin 1895, pp. 351-368.)
 Contributions toward the improvement of the culture of salmonoids and crawfish in small water-courses, by Karl Wozelka-Iglan. (Bulletin 1895, pp. 369-378.)
 A review of the history and results of the attempts to acclimatize fish and other water animals in the Pacific States, by Hugh M. Smith. (Bulletin 1895, pp. 379-472.)
 Report upon the work of the U. S. Fish Commission steamer *Albatross* for the year ending June 30, 1893, by Z. L. Tanner. (Report 1893, pp. 305-341.)
 Report upon ichthyological investigations in western Minnesota and eastern North Dakota, by Albert J. Woolman. (Report 1893, pp. 343-373.)
 The food of the oyster, clam, and ribbed mussel, by John P. Lotsy. (Report for 1893, pp. 375-386.)
 Establishment of stations for the propagation of salmon on the Pacific Coast, by John J. Brice. (Report for 1893, pp. 387-392.)

The Museum of Comparative Zoology, of Cambridge, Mass., has continued the publication of papers relating to investigations made under the direction of Professor Agassiz during the cruise of the Fish Commission steamer *Albatross*, referred to in the report for 1891, and has issued the following papers since the last report:

- Birds from Cocos and Malpelo islands, with notes on Petrels obtained at sea; by C. H. Townsend. Bulletin of the Museum of Comparative Zoology, vol. xxvii, No. 3-xvii.
 Die Comatuliden; by C. Hartlaub. Bulletin, vol. xxvii, No. 4-xviii.
 Die Ostracoden; by G. W. Muller. Bulletin, vol. xxvii, No. 5-xix.
 The Foraminifera; by Axel Goës. Bulletin, vol. xxix, No. 1-xx.

The United States National Museum published the following report, the thirty-fourth in the series of papers relating to the scientific results of the explorations of the *Albatross*:

- Report on Mollusca and Brachiopoda dredged in deep water, chiefly near the Hawaiian Islands, with illustrations of hitherto unfigured species from north-west America; by William Healey Dall. Proceedings U. S. National Museum, vol. xvii, pages 675-733, No. xxxiv.

There have been distributed 6,904 pamphlet and 2,958 bound copies of publications, the greater portion to educational institutions, societies, and persons interested in fish-cultural subjects.

During the fiscal year ending June 30, 1896, the appropriations made by Congress for the operations of the Commission were as follows:

Salaries.....	\$180, 440
Miscellaneous expenses:	
Administration.....	9, 000
Propagation of food-fishes.....	105, 000
Maintenance of vessels.....	30, 500
Inquiry respecting food-fishes.....	10, 800
Statistical inquiry.....	5, 000
For construction and repairs of fish-cultural stations located at—	
Put-in-Bay, Ohio; Duluth, Minn.; Green Lake, Me.; Craig Brook, Me.; and Neosho, Mo.....	8, 450
Northville, Mich.....	13, 000
For purchase and development of fish-cultural station at Wytheville, Va....	10, 000
For completion of fish-cultural stations now in course of construction at—	
Cape Vincent, N. Y.....	2, 500
Manchester, Iowa.....	8, 000
Bozeman, Mont.....	12, 000
San Marcos, Tex.....	18, 000
St. Johnsbury, Vt.....	7, 000
For the establishment of a fish-cultural station in South Dakota.....	10, 000

A report showing the details of expenditures from these appropriations was submitted to Congress December 7, 1896.

JOHN J. BRICE, *Commissioner.*