REPORT ON THE PROPAGATION AND DISTRIBUTION OF FOOD-FISHES.

By JOHN W. TITCOMB, *Assistant in Charge.*

PROPAGATION OF FOOD-FISHES.

The work of the division was under the direction of Mr. W. de C. Ravenel until February 15, 1902, when he resigned to accept the position of administrative assistant in the National Museum. The vacancy was filled by the promotion of Mr. John W. Titcomb from the superintendency of the St. Johnsbury, Vt., Station.

In addition to the usual work of the division, which consists of the general direction of fish-cultural work, including the propagation and distribution of fish from the various stations, Mr. Ravenel was representative of the Commission at the Pan-American Exposition and also at the Charleston Exposition, and continued the duties of representative after assuming his new position in the National Museum.

There has been no change in the policy of the Commission in respect to the division of fish-culture, and the work is conducted on the same general lines as in the past, the results exceeding those of any previous year. The total number of fish and eggs distributed was 1,495,543,374, or an increase of 321,709,912 over the output of the preceding year. Of these 1,480,642,960 were for the development of the commercial fisheries of the country, and 14,900,414 may be regarded as strictly game fishes. The number of applications received during the year was 3,814, an increase of 762 over the previous year, or 25 per cent. This is in addition to the large number of fishes distributed and planted by the Commission from the various stations, principally commercial fishes. This increase in the output of the stations is attributable to several causes, largely to the increased appropriation provided for by Congress and also to the fact that the general conditions for collecting eggs at most of the stations were unusually favorable during the spawning seasons. The results reflect great credit upon the esprit de corps of the superintendents and other employees in the field.

The following is a list, in systematic order, of the fishes propagated and distributed by the Commission, with the scientific name and the common name or names. The fishes artificially propagated are designated *; those simply collected and distributed are indicated thus §; the introduced species are shown by §§; and the species propagated as food for other fishes are represented by an exclamation mark.

List of fishes propagated and distributed by the Fish Commission.

Siluridæ, THE CAT-FISHES.

* § *Ictalurus punctatus* (Rafinesque). Spotted Cat; Blue Cat; Channel Cat.

* § *Ameiurus nebulosus* (Le Sueur). Horned Pout; Bullhead; Yellow Cat.

Catostomidæ, THE SUCKERS AND BUFFALO-FISHES.

§ *Ictiobus bubalus* (Rafinesque). Small-mouthed Buffalo-fish.

Cyprinidæ, THE MINNOWS AND CARPS.

! §§ *Cyprinus carpio* Linnæus. Carp. (Cultivated varieties, German Carp, Leather Carp, Mirror Carp, etc.)

Clupeidæ, THE SHADS AND HERRINGS.

* *Alosa sapidissima* (Wilson). Shad.

Salmonidæ, THE SALMONS, TROUTS, WHITE-FISHES, ETC.

* *Coregonus clupeiformis* (Mitchill). White-fish.

* *Argyrosomus artedi* (Le Sueur). Lake Herring; Cisco.

* *Oncorhynchus tschawytscha* (Walbaum). Quinnat Salmon; Chinook Salmon; Tyee Salmon; King Salmon.

* *Oncorhynchus kisutch* (Walbaum). Silver Salmon; Coho.

* *Oncorhynchus nerka* (Walbaum). Blueback Salmon; Red-fish; Sockeye.

* *Salmo gairdneri* Richardson. Steelhead; Hardhead; Salmon Trout.

* *Salmo salar* Linnæus. Atlantic Salmon.

* *Salmo sebago* Girard. Landlocked Salmon.

* *Salmo lewisi* Girard. Yellowstone Lake Trout; Cut-throat Trout; Black-spotted Trout.

* *Salmo pleuriticus* Cope. Colorado River Trout; Black-spotted Trout.

* *Salmo macdonaldi* Jordan & Evermann. Yellow-finned Trout.

* §§ *Salmo trutta* Linnæus. Sea Trout; Salmon Trout.

* §§ *Salmo trutta levenensis* (Walker). Loch Leven Trout.

* §§ *Salmo fario* Linnæus. European Brown Trout; Von Behr Trout.

* *Cristivomer namaycush* (Walbaum). Lake Trout; Mackinaw Trout; Longe; Togue.

* *Salvelinus fontinalis* (Mitchill). Brook Trout; Speckled Trout.

* *Salvelinus agassizii* (Garman). Dublin Pond Trout.

* *Salvelinus aureolus* Bean. Golden Trout; Sunapee Lake Trout.

Thymallidæ, THE GRAYLINGS.

* *Thymallus montanus* Milner. Montana Grayling.

Esocidæ, THE PIKES.

§ *Esox lucius* Linnæus. Common Pike; Pickerel.

§ *Esox vermiculatus* Le Sueur. Little Pickerel; Grass Pike.

Centrarchidæ, THE BASSES, SUN-FISHES, AND CRAPPIES.

* § *Pomoxis annularis* Rafinesque. Crappie.

* § *Pomoxis sparoides* (Lacépède). Strawberry Bass; Calico Bass.

* § *Ambloplites rupestris* (Rafinesque). Rock Bass; Red-eye; Goggle-eye.

* § *Chænobryttus gulosus* (Cuvier & Valenciennes). Warmouth; Goggle-eye.

§ *Micropterus dolomieu* Lacépède. Small-mouthed Black Bass.

* § *Micropterus salmoides* (Lacépède). Large-mouthed Black Bass; Straw Bass.

* § *Lepomis pallidus* (Mitchill). Bluegill.

Percidæ, THE PERCHES.

* § *Stizostedion vitreum* (Mitchill). Pike Perch; Wall-eyed Pike; Yellow Pike; Blue Pike.

* § *Perca flavescens* (Mitchill). Yellow Perch.

Gadidæ, THE CODS.

* *Gadus callarias* Linnæus. Cod.

Pleuronectidæ, THE FLOUNDERS.

* *Pseudopleuronectes americanus* (Walbaum). Winter Flounder.

INSPECTIONS.

During the month of November Mr. Ravenel visited Detroit and Northville to confer with the superintendent of the Northville Station and the State fish and game warden of Michigan, and to arrange for the collection of lake-trout eggs in the Michigan waters of the Great Lakes. He also visited Put-in Bay Station, inspected the improvements recently made, and found the station in very good condition. Various recommendations were made for further improvements—first, for the dredging out of the channel and a place for anchoring the penning crates. The station very much needs a residence for the superintendent. The only available house is over 2 miles from the hatchery.

In order to familiarize himself with the work of the various stations over which he had recently assumed charge, Mr. Titcomb began a series of inspections in March, and before the close of the year had visited the following stations in the order named:

Wytheville, Va., Station.
Erwin, Tenn., Station.
Bullochville, Ga., Station.
Neosho, Mo., Station.
San Marcos, Tex., Station.
Bryan Point, Md., Station.
Edenton, N. C., Station.
Gloucester, Mass., Station.
Swanton, Vt., Substation.
Nashua, N. H., Station.
Battery Station, Havre de Grace, Md.
Steamer *Fish Hawk*, Delaware River.
Cape Vincent, N. Y., Station.
St. Johnsbury, Vt., Station.

All of these stations were found to be in good condition, but each one seemed to have more or less need for improvement in order to keep the work up to its fullest capacity. At the Wytheville Station the buildings and ponds were found to be in very good repair. An ice-house is needed, as it is possible to collect at the station all the ice necessary for fish-cultural work if storage room is provided for it. The superintendent was instructed to introduce a power chopper for preparing fish food. A bad feature about this station is the fact that the spring is gradually failing in the amount of water flowing from it.

The Erwin Station is very attractive in appearance, and everything being new was in good repair with a few exceptions. The superintendent's residence is small and cheaply constructed; it should be enlarged and the chimney rebuilt. Arrangements were made for the construction of five new ponds for the propagation of bass and other pond fishes and for inclosing the station with a hog-proof wire fence.

The station at Bullochville, Ga., was found to be in first-class condition, both as to buildings and ponds. One of the main sources of water supply is not on the station property. It would be a great improvement to the station if an additional purchase of land could be made, to include the source of water supply and straighten the boundary lines.

At Neosho the buildings had been recently repaired under a special appropriation and the ponds were in course of construction and repair. The station is very inadequately supplied with water, and an additional supply can be obtained only at large expense.

The station at San Marcos, Tex., and everything connected with its conduct, was very satisfactory. The demands upon this station are

increasing annually, owing to the opening up of new territory and the remarkable results attained from the fishes already distributed. These conditions make it desirable to acquire additional land for pond culture.

The shad stations at Bryan Point and Havre de Grace, Md., were visited during the period of active operations, and everything was found to be working most satisfactorily. The *Fish Hawk*, engaged in shad work on the Delaware River, was also visited before the close of the egg-collecting season.

The shad station at Edenton has in connection with it three marsh ponds for the propagation of black bass and crappie, but it is questionable whether the station will ever be of value for other work than the propagation of shad. It is a well-built and well-equipped station, in fact, the most complete shad station of the Commission. It would be economy, however, to have in connection with it a boathouse to shelter the launches and other boats and to give additional storage room.

When the station at Gloucester, Mass., was visited everything was in readiness for the lobster work. Arrangements were made for the construction of a breakwater in which to keep the fish-cars for retaining live cod and lobsters. The capacity of the station for fish-cultural work should be increased by an addition to the hatchery.

At Swanton the work of collecting pike-perch eggs on Missisquoi River was placed in charge of Supt. Livingston Stone, of Cape Vincent Station, and arrangements made for its conduct during the season.

At the Nashua Station the chief problem was the shortage of the water supply during the summer season, and methods for increasing the supply were fully discussed with the superintendent. In the hatchery there had been an unusual mortality among the brook-trout fry, undoubtedly due to the lack of sufficient flow of water upon the eggs during the period of incubation.

At the time the Cape Vincent Station was visited no fish-cultural work was going on, the product of the station having been previously distributed. This station is entirely dependent upon the collections of eggs from other stations for its source of supply. The capacious hatchery building is capable of turning out a great many young fish and is well supplied with the necessary apparatus and equipment. Arrangements were made for obtaining water from the city works upon a more economical basis. The heating apparatus at this station is not satisfactory, owing to the inordinate amount of coal consumed by it. A new and more economical heating plant should be installed. Extensive repairs upon the wharf will soon be necessary.

The St. Johnsbury Station is still inadequately supplied with water, the special appropriation for necessary improvements being kept unimpaired until satisfactory arrangements can be made for its economical expenditure.

The traveling expenses incurred were much less than the saving at one station, resulting from the changes made as a result of the inspection.

METHODS OF FISH-CULTURE.

Few improvements in the methods of fish-culture can be recorded for the year. The most notable one may be the method of taking salmon eggs at the Baird, Cal., Station and substations, whereby from 10 to 15 per cent more eggs are obtainable from the same number of fish than heretofore. This is accomplished by cutting the salmon open after the usual stripping and washing the bloody eggs thus obtained in a normal salt solution before fertilizing them, as explained in detail under the summarized report of Baird Station. This improved method will be adopted at the other salmon stations the coming year.

At Put-in Bay, Ohio, Superintendent Downing has devised a new hatching-jar along the same general lines as the Stranahan jar, except that it is of a different shape and of greater capacity. It has been adopted for Put-in Bay Station.

In pond culture, by which is meant the propagation of the basses and other fishes, the eggs of which are handled and hatched in ponds by the natural process, little definite progress has been made. The general feeling among fish-culturists in charge of pond stations is that the ponds for the propagation of bass and other fish should be made much larger than at present—in fact, as large as possible and still have them entirely under control so that the fish can be removed as wanted.

The following stations and auxiliary stations were operated during the year, and the work at each is reviewed in detail in the abstracts of the reports from the various superintendents:

Green Lake, Maine.
Craig Brook, Maine.
Grand Lake Stream, Maine.
St. Johnsbury, Vermont.
Nashua, New Hampshire.
Woods Hole, Massachusetts.
Gloucester, Massachusetts.
Cape Vincent, New York.
Swanton, Vermont.
Steamer *Fish Hawk* (Delaware River).
Battery Station, Maryland.
Bryan Point, Maryland.
Fish Lakes, Washington, D. C.
Central Station, Washington, D. C.
Wytheville, Virginia.
Edenton, North Carolina.
Erwin, Tennessee.
Cold Springs, Georgia.
Put-in Bay, Ohio.
Northville, Michigan.
Detroit, Michigan.
Alpena, Michigan.
Sault Ste. Marie, Michigan.
Duluth, Minnesota.
Quincy, Illinois.
Manchester, Iowa.
Bellevue, Iowa.
San Marcos, Texas.
Neosho, Missouri.
Leadville, Colorado.
Spearfish, South Dakota.
Bozeman, Montana.
Baird, California.
Battle Creek, California.
Mill Creek, California.
Rogue River, Oregon.
Clackamas, Oregon.
Little White Salmon River, Washington.
Baker Lake, Washington.

GREEN LAKE STATION, MAINE (E. E. RACE, SUPERINTENDENT).

The work at the Green Lake Station has been confined entirely to the propagation of the brook trout and landlocked salmon. During the summer months, in addition to the usual fish-cultural work, investigations were made with the view to establishing new field stations for the collection of eggs, and as a result operations were inaugurated at Alligator Lake, in Hancock County, and Sourdnahunk Lake, in Piscata-

quis County. The field stations operated in previous years at Green Lake, Pattens Pond, and Branch Pond were also reopened and operated.

At Alligator Lake a log camp was constructed for the shelter of the fishermen, and a temporary hatchery for eying eggs was erected and equipped with the necessary apparatus for conducting operations. At this point it was thought that brook trout could be captured on the bars and landlocked salmon at the outlet of the lake, but although the water and weather were both favorable, and the station in the hands of experienced fishermen, no salmon and only 52 brook trout were captured. From the trout 21,000 eggs were obtained, 7,000 of them being transported direct to Green Lake Station within 24 hours after being taken from the fish. The remaining 14,000 were laid down in the temporary hatchery to be eyed, but after holding them from 15 to 20 days in a temperature of 38° F., it was found that the expense of developing them at the point of collection would be very large; they were therefore transferred to Green Lake Station before the eye-spots appeared, but all died en route.

Sourdnahunk Lake is 55 miles northwest of Patten, in an unbroken wilderness, and is probably at the highest elevation of any lake of equal size in the State. It is 4 miles long by 1¼ miles wide, and is the breeding-ground for nearly the entire west branch of the Penobscot River. No fish are found in the lake except brook trout and shiners. The adult trout averaged a trifle less than a pound in weight, the largest weighing 2 pounds. Owing to the expense of transporting suitable material from Patten, nets were used for the leads of the traps and sides of the confining pens, but these were destroyed by a moose swimming around in the lake about the time the fishing season began. Temporary pens were built of poles and the fish were captured by means of seines. All the fish that could be safely held in these pens were caught before any of them had commenced working on the spawning-grounds, as many as 800 being taken at one haul of the seine. The total number recorded as captured was 4,275 males and 5,725 females; 4,047 females were stripped and yielded 1,470,000 eggs. As the lake froze over two weeks earlier than was expected, the rest of the females were liberated by cutting holes through the ice and removing the stakes in the pens. The eggs were eyed in troughs set up in a small tent, the troughs being not more than 6 inches above the ground; but notwithstanding the fact that two fires were kept night and day, the water temperature dropped to the freezing-point several times, and 190,000 were lost by freezing to the bottoms of the hatching-troughs. On February 19 the eggs were packed out, but on account of the deep snow between Sourdnahunk Lake and Patten they were on the road three days, and 10,250 died en route. Of the 1,280,000 which reached Patten in good condition, 320,000 were shipped to the Maine Fish Commission and 50,000 to the Parmachenee Club, Camp

Caribou, Maine. The others were transferred to Green Lake to be hatched, and the losses on the eggs and fry were very small.

Operations at Green Lake for collecting landlocked-salmon and brook-trout eggs were inaugurated as in previous years, but owing to the fact that the water in the lake was 14 inches lower than during any fishing season in the past seven years no fish were captured in the trap at Great Brook near the spawning-house, it being impossible for them to get over the bars at the mouth of the brook. This is the first season since the establishment of the hatchery that the fish were unable to ascend Great Brook during the spawning season. A large pound net was operated on what is known as the middle ground, between the hatchery wharf and the outlet of the lake, but owing to unprecedentedly low water no fish were captured in it. A pound net set southeast of the bar at Great Brook in 10 feet of water captured 2 brook trout and 164 salmon, half of each species being females. From these fish 2,000 trout and 194,000 salmon eggs were taken. The female salmon caught late in the season were all small, and averaged a trifle over 2,365 eggs to the fish. Some eggs were from immature salmon, apparently 4 or 5 years old, and, as a result, 25,000 died within a few days after being laid down in the troughs.

At Patten Pond, owing to the low water, only 56 brook trout and 2 male salmon were captured. The trout yielded 35,000 eggs, which were transferred to Green Lake Station in good condition.

In September the collecting station at Branch Pond (Winkempaugh Brook) was repaired and put in shape for the season's work. The water at this point was higher and general conditions more favorable for the capture of fish than at any of the other field stations. However, the lake froze over ten days earlier than the previous year, which prevented the capture of the usual number of salmon. On October 14 the only rain of any importance during the fishing season raised the water in the brook from 8 to 10 inches, and as a result 110 brook trout (25 males and 85 females) and 35 salmon (22 males and 13 females) were captured. The total take of fish at this point for the season was 142 trout and 50 salmon. Owing to the scarcity of male brook trout, 16 were captured at Harriman's Pond and transferred to this station, but after using all the male fish available there were still 25 large females unstripped, and as it was impossible to obtain milt for fertilizing their eggs, they were liberated. The total collections at Branch Pond amounted to 56,000 salmon eggs and 85,000 brook-trout eggs.

The landlocked-salmon eggs secured at all points numbered 250,000, and 45,000 of these were shipped to applicants in Massachusetts, Vermont, New York, Utah, and Colorado. The remainder were hatched for rearing and distribution as yearlings in the fall. The stock set aside for this purpose was materially increased during the spring by the transfer of 100,000 young salmon from the Craig Brook Station, the loss on these in transit between the stations amounting to 1,551.

In addition to the 1,613,000 brook-trout eggs collected at the field stations, 200,000 were purchased from George F. Lane, Silver Lake, Mass. These reached the station in excellent condition, only 1,370 having died en route, and the resulting fry were strong and active, the total losses on eggs and fry not exceeding 4 per cent. All but 15,000 of this stock, which are being held for brood fish, were distributed in May and June with the fry derived from the collecting stations, the total output aggregating 1,081,388. This work was all done by the regular employees of the station, and was completed by June 20.

The following shows the field stations operated in connection with Green Lake Station, and the number of fish and eggs obtained at each:

Stations.	Species.	Males.	Females.	Total.	Number of eggs.
Branch Pond	Brook trout	41	101	142	85,000
Do	Landlocked salmon	28	22	50	56,000
Patten's Pond	Brook trout	29	27	56	35,000
Do	Landlocked salmon	2		2	
Sourdnahunk Lake	Brook trout	4,275	5,725	10,000	1,470,000
Alligator Lake	do	20	32	52	21,000
Green Lake	do	1	1	2	2,000
Do	Landlocked salmon	82	82	164	194,000
Harriman's Pond	Brook trout	16		16	
Total		4,494	5,990	10,484	1,863,000

At the close of the year the stock of fish on hand consisted of 264,088 landlocked salmon fry and 129,514 brook-trout fry.

A special appropriation for general repairs and improvements having been provided, the western wing of the dam at Rocky Pond, 53 feet long, was removed and replaced by a new wing 189 feet long, and surmounted with 4-foot flush boards. Two hundred and fifty feet of the main supply flume was replaced and 5,000 feet of it repaired. For the purpose of housing the steamer *Senator* and other boats during the winter, a boat-house 57 feet long by 22 feet wide, with a roller railway 384 feet long leading to it, was constructed near the station wharf. The hull of the steamer *Senator* was replanked, calked, and otherwise repaired. Sixteen hatching-troughs were constructed for increasing propagation facilities in the hatchery; the bridges between the hatchery and Rocky Pond were repaired, and much work was done in grading around the north and south reservoirs, hatchery buildings, and rearing-ponds. The coal shed at the outlet of Green Lake, together with 7 or 8 tons of soft coal, was burned on October 17, it presumably having been struck by lightning.

Craig Brook Station, Maine (C. G. Atkins, Superintendent).

The work at the Craig Brook Station and its two auxiliaries, Mattagamon and Grand Lake Stream, has been applied to the propagation of the Atlantic salmon, landlocked salmon, quinnat salmon, steelhead trout, brook trout, rainbow trout, Scotch sea trout, and grayling.

The work at the Mattagamon auxiliary was wholly tentative, aiming at the capture of wild Atlantic salmon near their natural spawning-

beds for the collection of spawn, as a substitute for the present system of obtaining spawn from salmon purchased from fishermen about the mouth of the river and impounded during the summer in a stream near Craig Brook. At the beginning of the year a weir of novel form was in operation and an inclosure ready to capture all salmon seeking to ascend the East Branch, but on account of the very low water the salmon failed almost wholly to surmount the dams in its lower course, and scarcely any reached the East Branch. In consequence of their failure the station was abandoned in August.

At the beginning of the year the stock of Atlantic salmon consisted of 238 adults in the Dead Brook inclosure, 300,295 fry, and 411 fish 2 years old. Of the 2-year-old fish 16 were distributed in August, and the remainder were carried through the year with a loss of 19. The fry were reared to fingerlings, and as a result 282,400 were distributed in October and 351 kept to the end of the year. From the 238 adult salmon 832,300 eggs were obtained, of which 315,000 were distributed in the winter and 397,499 hatched in March and April. Of the fry thus obtained 48,715 were liberated in June, and 326,186 remained on hand at the close of the year in course of rearing. Preparations have been made for enlarging the Atlantic salmon operations the coming year by the collection in May and June of 614 adult salmon, of which 589 remained alive at the close of the year.

The stock of landlocked salmon on hand at the opening of the year consisted of 4 broods, of which 24,229 were fry and 1,796 were from 1 to 3 years old. The fry were all fed until November, when 20,758 of them were distributed. Of the balance 2,407 remained on hand at the end of the year. At the Grand Lake Stream auxiliary 72,312 landlocked-salmon fry were on hand at the beginning of the year. These were a part of those reserved for the preservation of the species in the waters where the eggs were collected, and 53,825 were reared and liberated in Grand Lake Stream and vicinity in October. During October and November the run of wild salmon from Grand Lake down into the stream for spawning purposes was unusually heavy, and the weir intercepted 3,210, of which 1,464 were males and 1,746 females. The eggs obtained from the latter amounted to 1,448,274, the largest number collected at this point since 1884. Of these, 225,000 eggs were distributed, and there were hatched from those retained at Grand Lake Stream 505,513 fry and at Craig Brook 282,482. Of the fry at Grand Lake Stream 429,785 were liberated in the lake and stream in June and the remainder, 68,949, were held for feeding. From Craig Brook 100,000 of the fry were transferred to the Green Lake Station in May, 90,000 were distributed in June, and on June 30 there were 67,546 on hand.

Of the 2,137 fingerling brook trout on hand at the beginning of the year 1,243 were distributed as yearlings. From the few adult brook trout on hand 8,500 eggs were collected, and the fry from these eggs, amounting to 5,475, were distributed in local waters.

Forty-one quinnat salmon hatched in 1897 are kept in a deep pond for experimental purposes.

Of steelhead trout several old broods have been kept for experiment, and two of the broods, numbering 1,019, are still retained. One brood afforded 8,500 eggs. From these and from a lot received from Rogue River there were hatched 33,994 fry. These suffered from an obscure disease, and only 12,046 were left for distribution.

In October there were distributed 3,350 rainbow trout hatched in 1901 and 1,056 hatched in 1900, leaving only a lot of 33 fish hatched in 1899.

The Scotch sea trout, like other species, has deteriorated under domestication, the vitality of the eggs and fry growing constantly less. In October 6,937 yearlings were distributed, and in November 68,950 eggs were taken from the brood stock. Of these 10,000 were distributed in the egg stage; the remainder were hatched, and as a result 7,694 fry were distributed in June. The adult stock on hand is 459. The results from the introduction of this species are not encouraging, and their propagation will be discontinued.

From 100,000 grayling eggs shipped from Montana in May, 86,615 fry were hatched, and 36,333 fry were distributed in local waters. An attempt was made to feed the balance, but about June 3 a sudden and heavy mortality attacked them, and by the end of the month only 1,775 remained. This remnant has, as observed at other stations, grown very rapidly.

The fish food consisted of hogs plucks, purchased at an abattoir near Boston. The total consumption was 5,346 plucks, weighing 23,790 pounds and costing $310.04, including transportation.

From the entire stock of fry of all species in the spring of 1901 84.4 per cent were reared to fingerlings and distributed in October and November. The Atlantic salmon did a trifle better than this, and the landlocked salmon best of all, 94.4 per cent having been reared to the fingerling stage. The aggregate production of the station for the year, including auxiliary stations, is as follows: Eggs collected, 2,516,524; eggs distributed, 550,000; fish hatched, 1,321,490; fish distributed, 1,099,929.

The stock on hand at the close of the year was as follows:

Kind.	Calendar year in which fish were hatched.					
	1902.	1901.	1900.	1899.	1898 or earlier.	Wild fish inclosed.
Atlantic salmon	326,186	351	.....	376	.....	589
Landlocked salmon	[a] 67,546	2,407	39	955	707	.....
Do	[b] 68,949	.....	.....	.....	41	.....
Quinnat salmon	.....	.....	.....	.....	.....	.....
Steelhead trout	.....	.....	.....	906	113	.....
Rainbow trout	.....	.....	.....	83	.....	.....
Scotch sea trout	.....	279	.....	47	133	.....
Grayling	1,775	.....	.....	.....	.....	.....
Total	464,456	3,037	39	2,317	994	589

[a] At Craig Brook.

[b] At Grand Lake Stream.

ST. JOHNSBURY STATION, VERMONT.

Mr. John W. Titcomb, the superintendent of this station, having been appointed in charge of the Division of Fish-culture of the U. S. Fish Commission, at Washington, D. C., he was succeeded on February 15 by Mr. E. N. Carter.

During the summer preparations were made for the collection of brook-trout eggs in the waters controlled by the Laurentian Club in Canada, in Lake Mitchell at Sharon, Vt.; Darlings Pond, Groton, Vt., and Noyes Lake, Chittenden, Vt. At Darlings Pond, where the run of fish has heretofore been very large, the opposite conditions prevailed. The collecting season was unusually dry throughout New England and also in the Province of Quebec, where, in the Laurentian Mountains, the lumbermen reported the water in the streams as lower than it had been since 1847. Owing to the excessive drought the trout did not run as early as usual, and in many instances the eggs were inferior in quality. In the Province of Quebec 6,000 trout were handled in one stream, but the ovaries of the females seemed diseased and the few eggs secured were of inferior quality. In the Laurentian Mountains most of the fish spawned around the shores of the lakes late in the season after the ice had formed on the surface, and there were very few places where the fish ascended the streams to spawn.

At Lake Mitchell the first eggs were secured October 9 and the last on November 16. Of the 324,129 collected, 150,300 were shipped on assignments and the remaining 173,829 were transferred to the St. Johnsbury Station to be hatched.

At Darlings Pond the spawning season extended from September 30 to November 11, and resulted in the collection of 156,000 eggs, 15,000 of which were shipped on assignments. The remainder were hatched at St. Johnsbury.

From Noyes Lake 53,930 eyed eggs were secured, and after shipping 25,000 to fill assignments, the remaining 28,930 were transferred to St. Johnsbury and hatched, producing 22,661 fry. The work at this point began late in the season—October 18—and lasted only five days.

In addition to the eggs secured at the different field stations 250,000 domesticated-trout eggs were purchased of commercial fish-culturists; a consignment of 40,000 was received from Carolina, R. I., in exchange for 35,000 wild-trout eggs, and 39,500 were obtained by the same method from East Freetown, Mass. An assignment of 8,000 domesticated-trout eggs was donated by Mr. L. B. Handy, of South Wareham, Mass., to be used for experimental purposes. All of these eggs were hatched at the St. Johnsbury Station, and the fry were distributed with those derived from the field station in May and June, only 5,802 being retained for rearing.

While the results from the domesticated-trout eggs do not compare favorably with those from the eggs of the wild brook trout, very good

results obtain by stipulating that the domesticated eggs must be the product of fish at least 2½ years old.

The rainbow trout on hand began spawning early in April and eggs were obtained from them at intervals to the end of the month. Only 17,845 were secured, and these were very inferior in quality. The fry were retained for rearing. The propagation of the rainbow trout at the St. Johnsbury Station has never been very successful, owing to the extremely cold water. A shipment of 50,000 eggs was also received from the Manchester Station, but they proved to be very poor and only a few fry were hatched from them.

During the winter and spring 200,000 lake-trout eggs were received from Duluth, Minn; 25,000 landlocked-salmon eggs from East Orland, Me.; 50,000 grayling eggs from Bozeman, Mont., and 50,000 steelhead-trout eggs from the station at Rogue River, Oregon. These hatched with good results, and all of the fry were distributed, with the exception of the landlocked salmon and a few of the grayling, which were retained for rearing.

The results of the fish-cultural work at St. Johnsbury for the past five years have proved extremely satisfactory, as demonstrated by the large catches of lake trout from Big Averill Pond, Averill, Vt., which never contained any of that species until they were introduced by the Commission in 1897. From Little Averill Pond, Averill, Vt., in which salmon never existed until introduced from the St. Johnsbury Station, large quantities of salmon have been taken. From Caspian Lake, at Greensboro, Vt., it is estimated that 6 tons of fish were taken with hook and line between May 1 and September 1, 1901, and a proportionate amount for the months of May and June, 1902. Ever since the establishment of the St. Johnsbury Station this lake has been annually stocked with lake trout, landlocked salmon, and brook trout. The species mostly caught are the lake trout and landlocked salmon, speckled trout not having produced very satisfactory results. The introduction of the steelhead trout in Vermont waters has also been very successful.

The introduction of the lake trout in Big Averill Pond afforded an opportunity of ascertaining the actual growth of the fish from the fry stage. The plant of 1897 afforded good fishing for anglers during the season of 1901, the largest fish taken that year weighing 3¾ pounds. The next in size weighed 2¾ pounds, the next 1½ pounds, and the smallest specimens ranged from 9 to 10 inches in length. Many fish of the sizes mentioned were taken, and there was very little variation from the weights given above, indicating that the fry planted in 1897 had attained in 1901 a weight of 3¾ pounds, and that the other sizes were the results of plants in the succeeding years, those from 9 to 10 inches long being a year and a half old from the time the eggs were taken.

During May and June, 1902, the anglers reported an average of about 200 pounds a day from this lake, and the largest fish, which undoubtedly resulted from the plant in 1897, weighed 5½ pounds.

The stock on hand at the close of the year is shown by the following table:

Species.	Calendar year in which fish were hatched.					
	1902.	1901.	1900.	1899.	1898.	1897 or before.
Steelhead trout	20,500					
Rainbow trout	5,734					90
Hybrid of brook and lake trout					4	
Grayling	1,000			14		
Brook trout	5,802					
Landlocked salmon	17,786					
Total	50,822			14	4	90

NASHUA STATION, NEW HAMPSHIRE (W. F. HUBBARD, SUPERINTENDENT).

Besides the brood stock of fish on hand at the beginning of the year, there were 63,810 brook-trout fry which were reared to yearlings before being distributed, the product of the same amounting to 62,500 yearlings. There were also on hand at this time 46,100 landlocked-salmon fry hatched from eggs belonging to the New Hampshire Fish Commission on shares. The product of these fish amounted to 22,400 yearlings, one-half of which were turned over to the New Hampshire Commission and the balance distributed in the usual manner.

During the summer a disease known as pop-eye attacked the 55 adult rainbow trout retained as a brood stock. The eyes protruded from the head, and little bubbles, some of them as large as peas, appeared on the gill-covers, fins, and other parts of the body. When the disease made its appearance the fish were being held in one of the rearing-ponds 100 by 8 feet in dimensions and with plank sides and bottom. In order to cure the affection, the fish were transferred to a larger pond, 150 by 100 feet in area, with natural earth embankments, and as a consequence only two of them died. When removed from this pond, in November, they were found to be in good condition and produced eggs during the following spawning season.

In the course of the summer the superintendent visited various places in the State with the view to finding suitable locations for field stations, and as a result a station for the collection of brook-trout eggs was, in September, established at the Balsams, 12 miles east of Colebrook, the nearest railroad station. Another station was established at Lake Sunapee for the collection of eggs of the brook trout, golden trout, and landlocked salmon.

At the Balsams the fish were caught by means of a trap, in a brook tributary to the pond, and held in pens. The eggs were transferred daily by wagon 12 miles to the State hatchery at Colebrook, where they were eyed, and in December shipped to the Nashua Station.

At Lake Sunapee the brook trout were captured in traps and also, along with the landlocked salmon and golden trout, in fine-meshed gill nets. The eggs at Lake Sunapee were placed in hatching-troughs at the lake, where they were kept for four or five days, or until enough had been collected to warrant making a shipment, when they were placed in 2-quart glass preserve jars, filled three-fourths full of eggs and brimful of water. The jars were then sealed and packed in a box with hay and ice, and in this condition were shipped to Nashua. The eggs were about eight hours in the jars in transit and the jars were not opened during that period, but all eggs shipped in this manner were received at Nashua in good condition and with very small loss.

The brook trout at the station began spawning October 24 and continued until the middle of January, when 1,959 females, nearly all of which were 2½ years old, had been stripped and 1,009,470 eggs secured, or an average of about 512 per fish. The eggs began hatching early in February, the period of incubation being 104 days.

There was an unusual mortality among the brook-trout fry about the time they began to feed, and the cause of this mortality is attributed to the fact that the station was inadequately supplied with water during the early stages of incubation. In order to determine whether the same mortality would occur among fry hatched under favorable conditions, but reared at the Nashua Station, 100,000 brook-trout fry were transferred from the St. Johnsbury Station to Nashua and were successfully reared.

The following table shows the number of eggs and fry received at the station during the year:

Species.	Source of supply.	Eggs.	Fry.
Brook trout	Taken at station	1,009,470	.....
Do	Taken at Lake Sunapee	70,500	.....
Do	Taken at the Balsams	176,720	.....
Golden trout	Taken at Lake Sunapee	123,800	.....
Landlocked salmon	....do	23,000	.....
Do	Craig Brook Station	10,000	.....
Rainbow trout	Taken at station	25,500	.....
Lake trout	Duluth Station	200,000	.....
Brook trout	St. Johnsbury Station	.....	100,000
Total	.....	1,638,990	100,000

The distributions of fish from the station were all made by the regular station force, and the following table shows the number of fish and eggs shipped from the station during the year:

Species.	Eggs.	Fry.	Yearlings.	Two years or over.
Brook trout	100,000	470,000	62,500	294
Golden trout	.....	70,000	15	.....
Rainbow trout	.....	8,000	.....	.....
Lake trout	.....	160,000	.....	.....
Landlocked salmon	.....	.....	11,200	74
Grayling	.....	.....	.....	8
Total	100,000	708,000	73,715	376

The stock of fish on hand at the close of the year is shown by the following table:

Species.	Calendar year in which fish were hatched.				
	1902.	1901.	1900.	1899.	1898.
Brook trout	131,087	.....	4,429	.....	85
Steelhead trout	.....	.....	.....	5	.....
Rainbow trout	5,705	.....	.....	.....	51
Lake trout	23,510	.....	.....	.....	.....
Landlocked salmon	21,636	.....	.....	.....	.....
Grayling	.....	.....	35	.....	.....
Aureolus	7,051	754	.....	.....	.....
Hybrids	1,989	.....	.....	.....	.....
Total	190,978	754	4,464	5	136

WOODS HOLE STATION, MASS. (E. F. LOCKE, SUPERINTENDENT).

The collection of brood cod off Nantucket Shoals was commenced by the schooner *Grampus* on October 2 and closed on November 3, when 3,179 had been captured and conveyed alive to Woods Hole Station. These fish varied in weight from 3 to 10 pounds, the average being between 6 and 7 pounds, and from them 118,745,000 eggs were taken, which were all of good quality, with the exception of a few of the last lots secured. Of the brood fish 2,106 were released alive, the remainder dying from natural causes. Some of the smaller fish were barren and yielded no eggs.

On November 29 the *Phalarope* reached Plymouth, Mass., and the auxiliary station at that point was opened on December 2. The first eggs were taken on December 3, and collections were obtained up to February 28, when 125,559,000 had been secured. Of these 38,621,000 were shipped to the Gloucester Station and the remainder, 86,938,000, to Woods Hole.

The total number of cod eggs received at Woods Hole amounted to 205,683,000, from which 128,810,000 fry were hatched and planted.

During the month of January arrangements were made for the collection of flat-fish eggs, and on February 5 the boats, nets, and other equipment were sent to Waquoit Bay, but owing to the ice in the bay it was impossible to set the nets until February 15, and it was only done then by breaking up quantities of ice. Nets were also set in the harbor near the station, and from these two fields 553 females were secured, of which 105 died and 123 failed to deposit eggs. The product of the egg-bearing fish amounted to 194,059,000 eggs, of which 144,800,000 were secured from the fish taken at Waquoit Bay. The average yield of eggs this season was larger than that of last year, the average from the fish captured at Woods Hole being 808,000 per fish and from those taken at Waquoit Bay 548,000 per fish.

About the middle of April arrangements were made for collecting egg-bearing lobsters at Scituate, Mass., and from the fishermen at Buzzards Bay and Vineyard Sound. At Plymouth only a few men were fishing and this territory was abandoned. Later in the season a

man was employed at Noank, Conn., to collect egg-bearing lobsters from the fishermen there and at Stonington. The work heretofore done at Newport was discontinued because the commissioners of inland fisheries for the State of Rhode Island were engaged in collecting at that point, and arrangements were made to receive such eggs as the State commission did not have use for. The receipts from these sources were less than one-fourth of the number received last year, but the receipts from Buzzards Bay and Vineyard Sound showed a slight increase over the collections of the previous year, and the collections from Connecticut waters showed a gain of over 900 per cent. The total number of eggs received during the season was 20,480,000, a slight increase over the previous year. Of these 5,176,000 were delivered to Mr. G. H. Sherwood, an assistant in the Division of Scientific Inquiry, for experimental purposes, and from the remainder 12,857,000 fry were hatched. Of the fry 6,177,000 were delivered to Mr. Sherwood for rearing purposes, 2,462,000 were shipped to the Rhode Island Fish Commission, at Wickford, R. I., and the remainder were planted in the waters of Connecticut and Massachusetts.

During the year several collections of live fishes were made for the Pan-American Exposition and also for the aquarium at Central Station, Washington, D. C.

The usual repairs necessary at such a station were made during the season, as well as the necessary repairs to the vessels.

GLOUCESTER STATION, MASSACHUSETTS (C. G. CORLISS, SUPERINTENDENT).

During the summer months the station employees were occupied in overhauling and fitting up the cod-hatching apparatus, making repairs to the equipment and buildings, and also assisting in the construction of the new coal-house. The old coal-house, being past repairs, was torn down and a new one, 29 feet by 14 feet, with a capacity of 45 tons, erected in its place. After the cod season closed a woodshed 12 feet by 9 feet was built adjoining the coal-house, and all the station buildings were painted.

Early in November preparations were made for collecting cod eggs at Kittery Point, Me., and on November 15 Capt. E. E. Hahn, of the schooner *Grampus*, and a force of 7 spawn-takers reported there and at once began operations. The first eggs were taken and shipped to the station November 17. Eggs were collected daily until November 24, when bad weather put a stop to egg-collecting until December 6. Throughout December, January, and February the Ipswich Bay fishing was very poor and irregular. Cod were scarce and many of the boats were laid up for a week or two at a time, it often being difficult to find boats for the spawn-takers. The results of the collections were very disappointing, especially as the weather throughout the winter was exceptionally mild and favorable for fishing. The last eggs were taken March 20, and a few days later Captain Hahn and the *Grampus*

force proceeded to Woods Hole to fit up the vessel for collecting egg lobsters on the Maine coast. During the entire season 132,437,000 cod eggs were received at the station, of which 87,468,000 were collected at Kittery Point, Me.; 38,621,000 were received from the collecting station at Plymouth, Mass., and 6,348,000 from the Woods Hole Station. As a result of these collections 83,191,000 fry were hatched and distributed on the natural spawning-grounds from Ipswich Bay to Massachusetts Bay.

In the meantime preparations were being completed for collecting lobster eggs. Early in April collecting stations were established at Kittery Point, Me.; Boston, Mass., and Beverly, Mass., and the customary arrangements were made with fishermen and dealers for saving their egg lobsters. Collections were also made on the Maine coast from Wood Island to Eastport by the schooner *Grampus*, assisted by a steam smack which was chartered for the purpose. Active operations began April 18, when the first shipment of egg lobsters was received from Boston. The collections in April were unusually large, and in May were greatly increased, the collections at all the stations showing a substantial increase over those of the previous season. During June the collections in Massachusetts dropped off considerably, while at Kittery Point and along the Maine coast egg lobsters continued to be found in fair quantities up to the latter part of the month. The collecting stations at Boston and Kittery Point were closed on July 10, but the *Grampus* continued making collections up to July 18. The shipments of egg lobsters from the several collecting fields arrived at the station in excellent condition, with the exception of a few lots late in the season, the eggs on these being so far advanced that some of them were affected by the heat. The collections from all sources aggregated 5,901 lobsters, which yielded 83,418,000 eggs. Of the fry hatched from these 37,100,000 were distributed in Maine waters, 2,200,000 off the coast of New Hampshire, and the balance, except 180,000 sent to Woods Hole for experimental purposes, were planted at various points along the Massachusetts coast from Rockport to Boston.

CAPE VINCENT STATION, NEW YORK (LIVINGSTON STONE, SUPERINTENDENT).

During the year eggs of the white-fish, lake trout, brook trout, and pike perch were handled.

In November 3,771,000 green eggs of the lake trout were received from the Duluth Station which turned out very well, 2,347,600 fry being hatched from them and distributed. Later 4,088,000 green eggs of this species were sent from Charlevoix, Mich., but these turned out very badly, producing only 741,280 healthy fry.

In December 31,212,000 white-fish eggs were received from the Put-in Bay, Ohio, Station, and 10,003,000 from Detroit, Mich. Both lots turned out well, yielding, respectively, 27,346,000 and 6,954,000 strong, healthy fry.

During the months of January and February 816,250 brook trout eggs were received from commercial fish-culturists in Massachusetts, the product of which, as distributed, amounted to 749,350 fry.

In February 50,000 rainbow-trout eggs were received from Manchester, Iowa, resulting in 38,360 fry at the time of distribution.

In March an auxiliary station at Swanton, Vt., was established for the collection of pike-perch eggs. The superintendent assumed general charge of operations at this point, and was in the field in northern Vermont from March 27 to May 24. The run of pike perch up the Missisquoi River began unusually early, and trial hauls of the seine were first made on March 17. The first ripe eggs were taken April 7. The spawning season lasted fifteen days, during which time 113,550,000 eggs were taken, including the eggs contributed free of cost by the commercial fishermen on Lake Champlain. Most of the brood fish from which eggs were secured were captured by operating a seine on the Missisquoi River, and the green eggs collected from the fish thus taken turned out about 65 per cent of eyed eggs. The total number of good eyed eggs, measured just before the hatching began, was 48,000,000, of which 32,000,000 were turned over to the State of Vermont, 11,925,000 were taken to the Cape Vincent Station, and the remainder, a little over 4,000,000, were distributed in the waters of Vermont and New Hampshire.

In the course of this work it was found that the use of muck is not essential for separating pike-perch eggs, the finely pulverized silt forming the upper layer of the river bed answering the purpose fully as well. It was also found that pike-perch eggs conveyed to the hatchery in the milt in which they were fertilized and put into jars immediately after being washed proved to be better than eggs treated in any other way.

Thirteen hundred steelhead-trout fry were liberated in the St. Lawrence River during the summer, the remarkable feature about this event being the fact that the fry were the product of eggs that had been taken from fish that had been hatched at the station four years earlier and had spent their entire life inside the hatchery building. The fry seemed strong and healthy. Several of the parents of these fish were subsequently liberated in the St. Lawrence River, together with some of the quinnat salmon, which had also matured in the hatchery building. Those of both varieties remaining in the hatchery were sent in September to the Pan-American Exposition at Buffalo.

During the year some minor repairs were made.

Steamer Fish Hawk (James A. Smith, in Charge).

The vessel arrived off Gloucester City, N. J., in the Delaware River, on April 29, and the hatching apparatus was immediately erected and spawn-takers from the vessel's crew detailed to attend the fishing shores at Howells Cove, Bennetts, and Cramer Hill.

Having received information that the Pennsylvania Fish Commission would not operate the hatchery at Bristol, three spawn-takers were detailed to attend the fishery at Riverton, N. J., 9 miles above Camden. The first eggs were taken on May 1, but owing probably to the prolonged season of cool weather and the consequent low-water temperatures very little spawn was secured until May 14. Contrary to past experience, the majority of the spawning fish were found in the upper river above Philadelphia, and the fisheries below that point yielded very few eggs. Howells Cove, which has each season yielded the greatest amount of spawn, the take there last year amounting to nearly 50,000,000 eggs, produced this season only 6,500,000.

The collecting season ended on June 9, the total take of eggs aggregating 36,977,000. Of these 621,000 impregnated eggs were shipped to Central Station, Washington, D. C., and 25,997,000 fry were hatched; 4,835,000 of the fry were distributed on the spawning-grounds at Howells Cove and at the mouth of Timber Creek, New Jersey. The balance were planted by the regular car messengers in the waters of Connecticut, Massachusetts, New Jersey, Rhode Island, and Florida.

BATTERY STATION, MARYLAND (GEORGE H. H. MOORE, IN CHARGE.)

The station was opened March 24 by J. J. Glennan, who, with a small force of men, prepared the buildings and apparatus for active operations. The superintendent assumed charge of operations on April 21, and the first shad eggs were received April 22. The total collections of eggs for the season, which ended June 5, amounted to 20,707,000. Of these, 2,134,000 were shipped to the Exposition at Charleston, S. C., which were subsequently hatched and distributed from that point. The balance, with the exception of 267,000 sent to Central Station, were hatched and produced 14,943,000 fry.

As at the other shad stations, ripe fish were scarce, and it is a notable circumstance, as reported by old and experienced fishermen, that while the proportion of roe or egg-bearing fish was greater than usual, the percentage of ripe fish was smaller than ever before noted by them.

A supply of herring roe was canned and shipped to the stations at Wytheville, Va., and Erwin, Tenn., to be used as food for trout fry.

A few cases of shad roe were canned with a view to testing its edible qualities. From those who have tested it many favorable reports have been received, and it is the consensus of opinion that it would be difficult to distinguish it from the fresh roe. The method pursued in its preparation and preservation is simple. After being washed a set or pair of roe are put in a 2-pound tin can, which is then capped, exhausted, tipped, and subjected to 15 pounds steam pressure for about an hour. To prepare for the table it is removed from the can and cooked the same as the fresh roe. The milt has also been successfully canned, and it is quite as palatable as the fresh product.

The following table shows the details of operations:

Operations at Battery Station in 1902.

Date.	Number of eggs when received.	Number of eggs 12 hours after received.	Number of eggs 24 hours after received.	Number of eggs 36 hours after received or number purchased.	Fry hatched and planted.	Number of eggs shipped.	Mean water temperature
April 22	589,000	577,000	560,000	249,000	149,000	.....	57
23	1,355,000	1,322,000	1,283,000	596,000	235,000	.....	60.50
24	1,681,000	1,640,000	1,495,000	822,000	618,000	.....	60.25
25	185,000	180,000	151,000	83,000	70,000	.....	59.50
27	974,000	914,000	887,000	488,000	363,000	.....	60
28	1,713,000	1,617,000	1,495,000	657,000	489,000	.....	61
29	8,008,000	2,895,000	2,721,000	1,430,000	1,347,000	.....	60.75
30	871,000	830,000	766,000	416,000	319,000	.....	62.25
May 1	1,856,000	1,762,000	1,711,000	941,000	709,000	.....	62
2	361,000	339,000	329,000	181,000	125,000	.....	62.75
3	216,000	197,000	191,000	105,000	84,000	.....	63.25
4	1,402,000	1,343,000	1,207,000	609,000	499,000	.....	63.25
5	1,741,000	1,696,000	1,647,000	906,000	819,000	.....	63.75
6	2,754,000	2,685,000	2,607,000	1,434,000	1,228,000	.....	65.50
7	1,691,000	1,649,000	1,601,000	881,000	840,000	.....	66.75
8	3,231,000	3,173,000	3,081,000	1,695,000	1,417,000	.....	67
9	815,000	793,000	726,000	621,000	280,000	229,000	65.50
10	366,000	350,000	336,000	292,000	56,000	222,000	62.25
11	1,179,000	1,122,000	1,089,000	1,053,000	248,000	671,000	60.75
12	1,022,000	980,000	932,000	751,000	570,000	.....	61.25
13	777,000	725,000	670,000	577,000	411,000	.....	62.25
14	782,000	768,000	724,000	624,000	515,000	.....	61.50
15	1,374,000	1,336,000	1,216,000	1,076,000	841,000	.....	61.75
16	1,020,000	982,000	871,000	748,000	145,000	530,000	62.75
17	492,000	465,000	385,000	247,000	143,000	91,000	64.25
18	689,000	651,000	599,000	520,000	92,000	391,000	66.75
19	1,498,000	1,402,000	881,000	605,000	605,000	.....	68.75
20	837,000	789,000	597,000	460,000	450,000	.....	69.50
21	593,000	549,000	497,000	295,000	286,000	.....	69.50
22	902,000	836,000	634,000	471,000	402,000	.....	70.25
23	126,000	109,000	87,000	78,000	77,000	.....	72
24	128,000	124,000	91,000	79,000	79,000	.....	73.50
25	70,000	70,000	57,000	30,000	28,000	.....	73.25
26	184,000	163,000	98,000	60,000	57,000	.....	73.25
27	189,000	189,000	180,000	128,000	119,000	.....	68.75
29	49,000	49,000	49,000	20,000	20,000	.....	63.25
30	82,000	82,000	36,000	34,000	34,000	.....	65.75
31	14,000	14,000	10,000	.....	.....	.....	66.50
June 2	271,000	226,000	194,000	146,000	15,000	131,000	71
3	280,000	272,000	140,000	140,000	.....	136,000	73.75
4	176,000	102,000	66,000	66,000	66,000	.....	75
5	112,000	100,000	93,000	93,000	93,000	.....	73.50
Total	37,649,000	36,067,000	32,980,000	20,707,000	14,943,000	2,401,000	

BRYAN POINT STATION, MARYLAND (L. G. HARRON, IN CHARGE).

The old pump-house being badly out of repair and disadvantageously located with reference to the new hatchery, a new and substantial pump-house was erected near the east end of the hatchery and the suction pipe extended from the pumps to the river on the bracing under the new wharf to a point where the water is 10 feet deep at low tide. This change in the location effected the saving of 248 feet in the length of the discharge pipe from the pumps to the supply tank, with a resultant saving in fuel whenever the pumps were operated. The boiler and pumps were removed to the new pump-house, and the old pump-house was fitted up as quarters for four of the spawn-takers; 354 feet of 3-inch discharge pipe was removed from underground, and 106 feet of the same relaid; 240 feet of 3-inch suction pipe was also laid, and the necessary steam-pipes connected. A suitable coal-bin was constructed adjoining the pump-house.

The launch *Blue Wing*, which had been ordered from Woods Hole, Mass., arrived at Washington on March 23 and was taken to Bryan Point the following day. Some necessary repairs were made on her stern post and her hull above the water line, and all her house work and decks were thoroughly cleaned and painted, after which she was in good condition for the season's work.

The station was opened March 24. Sixteen tents were set up and the necessary equipment installed therein for quartering spawn-takers. The hatchery and other buildings were painted with a coat of indurine, and by April 15 all necessary repairs were completed preparatory to active operations in collecting shad eggs.

Small lots of eggs were taken on April 15, 16, and 17, which were placed in jars, but they died and no record was kept of them. On April 18th 60,000 good eggs were received, and on April 20th 791,000 eggs were taken and fishing began in earnest, the entire force of spawn-takers being set to work. The collecting of eggs was pushed vigorously with a full force until May 9, when operations were discontinued. The total collection of eggs for the season was 45,971,000, of which 2,421,000 were shipped to Central Station, Washington, D. C., and 2,007,000 were shipped to the Fish Commission exhibit at Charleston, S. C. Of the 41,543,000 eggs remaining, 84 per cent, or 34,994,000, were hatched at Bryan Point. Of the fry resulting 9,018,000 were delivered to the Fish Commission cars at Alexandria, Va., for distribution in southern waters, and 25,976,000 were planted on the principal spawning-grounds in the Potomac River.

The following table shows the daily collection of eggs, the number of fry planted, and maximum and minimum water temperatures:

Date.	Eggs received.	Eggs hatched	Eggs shipped.	Fry shipped.	Fry planted.	Temperature of water.	
						Max.	Min.
1902.						°F.	°F.
April 18	60,000					53	52
19	81,000					53	52
20	791,000					55	52
21	1,599,000					56	54
22	2,748,000					60	53
23	2,529,000					63	57
24	3,706,000					63	60
25	1,788,000		999,000			62	60
26						64	60
27	668,000					63	61
28	3,490,000	686,000				63	60
29	4,929,000	3,139,000	1,005,000		686,000	63	61
30	5,357,000	4,444,000			3,139,000	65	62
May 1	7,271,000	1,648,000			4,444,000	66	62
2	2,663,000				1,648,000	66	63
3	791,000					68	64
4	1,002,000	5,535,000				67	65
5	1,581,000	6,149,000			2,525,000	69	65
6	1,896,000	6,378,000	1,002,000	3,010,000	3,146,000	70	67
7	947,000			3,003,000	6,378,000	70	68
8	1,201,000	3,005,000	1,005,000			71	68
9	873,000	1,328,000				68	67
10		1,733,000		3,005,000	1,328,000	67	66
11						68	65
12		949,000	417,000		1,733,000	68	65
13					949,000	68	63
Total	45,971,000	34,994,000	4,428,000	9,018,000	25,976,000		

FISH LAKES, WASHINGTON, D. C. (C. K. GREEN, SUPERINTENDENT).

The station being located within the parking system of the District, much attention is given to the ornamentation and care of the grounds during the summer. During the summer months the work consists chiefly in keeping down the extensive growth of aquatic grasses in the various ponds and giving them a tidy appearance. The adult bass and crappie are fed regularly, the food consisting of carp bred for the purpose, which are taken from the ponds by means of nets, dressed, and cut in pieces as large as a hickory nut for the adults and from one-fourth to one-half this size for the yearlings. In the fall of the year, when the breeding-ponds are drawn, a supply of young carp is secured and introduced into the stock ponds, and in this way the adult fish are furnished with a food supply throughout the winter.

During the year the cottage was thoroughly renovated and put in a sanitary condition as a residence for the superintendent. The work of collecting young fish for distribution was begun September 16 and continued until October 21, the total number furnished consisting of 4,688 large-mouthed black bass, 17,468 crappie, and 30,000 cat-fish. On October 18 the shad which had been introduced as fry the previous May to the number of 2,000,000 were liberated in the Potomac River by raising the gates leading from the pond to the river. Several specimens examined when liberated showed that the fish had grown to an average length of 3¾ inches.

The usual attention was paid to the cultivation of ornamental fishes, such as gold-fish, golden tench, green tench, and golden ide, which are raised for stocking the aquaria at the Zoological Park and Central Station and for the District parks. Large numbers of carp were also reared for fish food. Many predatory animals, birds, and snakes were killed during the year.

The crappie began spawning April 17, in a water temperature of 61°, and continued until May 15, the height of the season being about May 2, when the temperature of the water ranged from 68° to 75°. The first eggs cast hatched in five days, the water temperature during the time ranging from 53° to 66°, but as the weather became warmer the period of incubation was reduced to three days.

The large-mouthed black bass began spawning April 20, in a water temperature of 64°, and ceased spawning about May 20, although four nests were discovered between June 2 and June 13. The height of the spawning season was about April 23, when the water temperature averaged about 71°. The first fry made their appearance April 24.

CENTRAL STATION, WASHINGTON, D. C. (J. E. BROWN, IN CHARGE).

The work at Central Station has been conducted on the same lines as for the past few years. The station is used as a clearing-house for much of the product of the Fish Lakes Station and for shipments of fish and eggs sent here from other stations. During fall and winter

various species of fish are hatched for the purpose of illustrating the methods of fish-culture. This branch of the work has always formed an attractive and very interesting exhibit.

Following is a record of the fish and eggs received at the station during the year, eggs hatched, and fish distributed:

Species.	Fish received.	Eggs received.	Eggs shipped.	Eggs hatched.	Fry shipped.	Fish shipped.
Black bass	787	.....	.....	.....	.....	787
Rock bass	2,300	.....	.....	.....	.....	2,300
Rainbow trout	1,746	9,823	.....	7,120	4,200	1,741
Lake trout	.....	253,925	160,000	58,512	53,200	.....
Brook trout	.....	9,729	.....	9,117	8,000	.....
White-fish	.....	3,099,000	2,138,000	628,000	600,000	.....
Atlantic salmon	.....	10,000	5,000	4,620	4,050	.....
Landlocked salmon	.....	5,000	.....	4,411	3,870	.....
Pike perch	.....	2,000,000	.....	1,800,000	1,800,000	.....
Shad	.....	2,892,000	400,000	2,050,000	1,850,000	.....
Total	4,833	8,279,477	2,703,000	4,561,780	4,323,320	4,828

CENTRAL STATION AQUARIUM (L. G. HARRON, SUPERINTENDENT).

In addition to his regular duties in charge of the aquarium at Central Station, the superintendent was detailed to the station at Woods Hole, Mass., from July 8 to August 15, for the purpose of superintending the arrangement and stocking of the aquarium there. In February he was detailed to superintend the installation of a live-fish exhibit at the Sportsmen's Show in Boston, and from March 24 until May 14 he was detailed in charge of the shad hatchery at Bryan Point.

During the summer the aquaria were kept well stocked with the various species of fresh-water fishes found in the Potomac River and five species of ornamental fishes, some of which have been kept in the aquarium for years. In the fall, as soon as the water temperature was sufficiently cool to maintain them, various species of *Salmonidæ* were introduced into the aquarium and carried through the winter. An assignment of trout, salmon, and grayling, representing nine species, was received from the aquarium at Buffalo, at the close of the exposition, and held until December, when the stock was drawn upon to stock the Fish Commission exhibit at the Charleston Exposition.

A live-fish exhibit of marine species was maintained in the aquarium from September until May 15, when the salt-water exhibit was given up entirely, and the closed circulating system connected with this exhibit was used for supplying the fresh-water aquaria, which were cleaned out and completely stocked with fresh-water fishes. The adoption of closed circulation for supplying fresh water is an experiment to test the feasibility of using the system of closed circulation for this purpose at the St. Louis Exposition in order to insure having perfectly clear water in the aquaria at all times. At the close of the year this system was in successful operation, and the exhibit showed great improvement over its appearance when the filthy water of the Potomac was supplied to the aquarium from the city water mains.

Very few improvements have been made to the aquarium in the past few years, and in comparison with the elaborate aquarial displays at the World's Fair in Chicago and the Pan-American Exposition at Buffalo the Central Station aquarium is a very small affair. It should be greatly enlarged and the salt-water tank supplemented with an additional one, so that during the year, while the stock of marine species is in the aquarium, the salt water can be entirely renewed every few months. A refrigerating system is also recommended, in order that the various species of the *Salmonidæ* may be carried in the fresh-water aquaria during the summer months.

The following is a list of the marine and fresh-water species exhibited at Central Station during the year:

Salt-water species.—Jumping mullet, croaker, hog-choker, red drum, sea-robin, toad-fish, sea trout, moon-fish, pompano, swell-fish, spot, pin-fish, spade-fish, blue-fish, yellow-tail, king-fish, striped bass, tautog, flounder, white perch, tongue sole, crevalle, sea bass, blenny, pig-fish, file-fish, scup, rudder-fish, cunner, bur-fish, tom-cod, remora, mummichog, star-fish, chætodon, conger eel, blue crab, hermit crab, lobster, sea-anemone.

Fresh-water species.—Rainbow trout, steelhead trout, brook trout, albino brook trout, lake trout, Scotch sea trout, golden trout, Atlantic salmon, landlocked salmon, grayling, black bass, rock bass, white perch, yellow perch, sand-perch, crappie, blue sun-fish, long-eared sun-fish, banded sun-fish, common sun-fish, spotted cat-fish, channel cat-fish, yellow cat-fish, golden ide, golden tench, green tench, gold-fish, gar-pike, dog-fish, paradise fish, German carp, dace, red sucker, chub sucker, common eel, snapping turtle, diamond-back terrapin, common terrapin, salamander, alligator.

The following shows the maximum and minimum temperatures of salt and fresh water in the tanks during the year:

Month.	Fresh water.		Salt water.		Month.	Fresh water.		Salt water.	
	Max.	Min.	Max.	Min.		Max.	Min.	Max.	Min.
	°F.	°F.	°F.	°F.		°F.	°F.	°F.	°F.
July	84	79	.....	.....	January	35	33	58	55
August	82	78	.....	.....	February	36	33	58	54
September	78	68	72	58	March	51	36	65	51
October	68	55	69	54	April	61	47	72	50
November	55	38	61	51	May	72	61	75	58
December	41	34	58	53	June	78	68	.....	.....

WYTHEVILLE STATION, VIRGINIA (GEORGE A. SEAGLE, SUPERINTENDENT).

Fish-cultural operations have been confined chiefly to the propagation and distribution of rainbow trout, brook trout, black bass, and rock bass. The number of fish on hand at the beginning of the year is shown by the following table:

Species.	Calendar year in which fish were hatched.				
	1901.	1900.	1899.	1898.	1897, or before.
Rainbow trout	318,000	5,080	598	339	1,872
Brook trout	19,400	.....	.....	.....	.....
Large-mouthed black bass	.....	112	.....	.....	53
Small-mouthed black bass	.....	.....	.....	.....	11
Rock bass	.....	.....	39	80	180
Carp	.....	.....	.....	.....	20
Gold-fish	.....	.....	.....	.....	15
Total	337,400	5,192	637	419	2,151

The distribution of the stock of young was begun October 5 and continued until December 13, the output amounting to 208,100 yearling and 385 adult rainbow trout, 13,124 brook trout, 3,815 black bass, 8,700 rock bass. In addition to the above the following fish were received from other stations and distributed: 3,450 brook trout, 2,142 black bass, 9,650 rock bass, 7,310 crappie.

The spawning season of the rainbow trout began November 6 and closed February 10. During this period of ninety-seven days 1,099,000 eggs were collected, of which number 802,000, or 73 per cent, were fertilized and brought to the eyed stage, 246,000 were shipped on assignment, and 556,000 were hatched at the station. The fry resulting from them were strong and vigorous, and when four months old 145,000 were distributed to various applicants by the station employees, and at the close of the year there remained on hand 200,000 fingerlings to be reared for the fall distribution.

In January 304,000 eyed brook-trout eggs were received from one of the commercial hatcheries at Plymouth, Mass., in good condition and hatched out well. Owing to an unusual period of muddy water during the hatching stage, there was a loss of 18,000 alevins, caused by smothering, and the mortality among the young fish during the sac stage was considerable, presumably from the same cause. The fry began feeding when about four weeks old and have grown rapidly. At the close of the year there were 105,000 fingerling fish on hand, the largest weighing 134 ounces to the thousand. The brook and rainbow trout fry were fed on canned herring roe for the first six weeks, when the food was gradually changed to a mixed diet of liver and mush.

Early in the spring the brood stock, consisting of 53 large-mouthed and 11 small-mouthed black bass, were transferred to the breeding ponds. Large beds of creek gravel were provided for their nests, and a light paling fence was built around the nesting-ground to keep the brood fish within its limits. The fish commenced nesting early in May, and by the middle of the month several large schools of young were observed. When the fish were from one-half to five-eighths of an inch in length, which is about the time of the breaking up of the schools, a few thousand were netted from the ponds and placed in rearing-troughs for the purpose of making some experiments in artificial feeding. These fish were first given minute insects collected from the warm, shallow parts of the pond. Only enough of this natural food was given to keep them alive, and while their appetites were only partly satisfied in this way, prepared artificial food was offered them. Ground fish, crawfish, beef heart, and herring roe were all tried, but the experiment was not sufficiently successful to warrant continuing it for more than a few days. If crawfish could have been secured in sufficient quantities, it is believed that better results would have followed, as the fish preferred it to the other food. As soon as it became evident that the experiment would not be suc-

cessful the fish were released in rearing-ponds, together with several thousand more which had been captured from time to time.

About two weeks later, when the fish were nearly an inch in length, the experiment was repeated by transferring 1,500 bass from the ponds to a trough. This time the fish were easily trained to take artificial food. They were first given chopped or ground fish, and afterwards prepared beef heart. After the first two or three days they devoured this food ravenously until about the tenth day, at which time they began to die, and although eating well and apparently in the best of health, the death rate steadily increased from day to day, until the loss reached over 100 per day. On the fourteenth day the remaining fish in the trough, about 900, were released in the rearing-ponds. The cause of the mortality is not known, but sufficient success followed the feeding of artificial food to warrant taking up the experiments another season, in the hope that the cause of the mortality would be ascertained.

The brood stock of rock bass were transferred to their summer ponds about the middle of April, and nesting began the latter part of the same month. By the middle of May the ponds were well stocked with young fish, and at the close of the year there is every prospect of a large crop.

The following improvements at the station were made during the fiscal year: The superintendent's residence was painted, a water tank for supplying the transportation cars with water at the railway siding was erected, and pipe connections made with it and with a Rife hydraulic ram for supplying the tank with water. A cooling tank for mush and two tanks for culling fish were also constructed, besides several other minor improvements.

EDENTON STATION, NORTH CAROLINA (S. G. WORTH, SUPERINTENDENT).

This is one of the new stations, all constructions having been made since 1899. It is in first-class condition as a shad-hatching station, the third successive season of operations having this year been concluded.

Within the year two tidal ponds were constructed, which will demonstrate the value of this class of ponds for producing black bass and crappie for stocking interior waters. The bottoms of these ponds are from 3 to 5 feet below the surface of Pembroke Creek, wire screens in the gateways permitting such change of water as the irregular wind tides send in or draw out. The ponds can be emptied when desired at the rate of 1,200 gallons per minute by means of a centrifugal steam pump economically operated.

The shad-hatching season of the present year was marked by its short duration, being practically confined to twenty-two days between April 14 and May 8. Adult shad were less abundant than usual by one-half. It is believed by the station superintendent that this scarcity was caused by the destruction of the young in the prolonged and violent hurricane which beat directly upon the Atlantic coast August 18–21,

1899. The young which should have arrived at maturity and reentered the sounds and rivers in 1902 were then but a few inches long and were outside the inlets and subject to the breakers.

The spring was very late, both air and water being far below the normal temperature.

A feature unobserved before in this region was the deposition of eggs by the shad 20 miles or more down the sound to the eastward of Edenton Bay. The superintendent attributes this new condition to the excessive rainfall of the previous year, which freshened the waters of Albemarle Sound throughout its length, consequently when the shad reached the fisheries where the spawn-takers were located they were largely spawned out or were carrying overripe eggs owing to low temperatures. A large percentage of loss followed in the process of hatching the eggs.

The whole number of eggs brought to the station was 37,987,000, and from these there was a production of 24,662,000 young fish, the liberation of which is shown in the table of distribution.

ERWIN STATION, TENNESSEE (ALEX. JONES, SUPERINTENDENT).

The fingerling fish on hand at the beginning of the year were distributed as yearlings during the fall and winter, 49,670 being supplied to applicants in eastern Tennessee and western North Carolina by the regular employees of the station. The remainder were shipped by the Fish Commission cars to more distant points. The total product of the station for the season amounted to 133,925 yearling rainbow trout, 12,075 yearling brook trout, 1,050 black bass.

The brood rainbow trout began spawning on November 12 and continued to February 7, the total collections of eggs being 329,100. There were also received from Wytheville Station 50,000 rainbow-trout eggs, and from Neosho 171,740 rainbow-trout eggs. This stock of eggs produced 280,000 fry.

The purchase of 200,000 brook-trout eggs was made from a commercial hatchery in Massachusetts and produced 164,180 fry.

The rainbow trout were transferred from the hatchery to outside ponds as soon as they began to feed nicely, and they grew rapidly with little or no mortality until the approach of warm weather in April. At this time they were attacked by a peculiar disease, and until the warm weather was over there was an unusual mortality among them. This disease is not fully understood, and no remedy has yet been found for it. The first symptoms may be described as follows: Contraction of the stomach, general weakness, rising to the surface with spasmodic contortions, and inability to take food, although inclined to do so. Microscopical examinations failed to reveal any signs of affection of the stomach, throat, or gills, although the latter were at times greatly inflamed. The disease attacks the fish whether in the hatchery or outdoors, in deep or shallow ponds, and with or without

shade, but the trouble is most apparent during and immediately following very hot weather. It abates during cool days, even though the variation in temperature may not be more than four to six degrees.

The young fish at this station are fed on beef liver and canned herring roe, the beef to the brook trout and the roe to the rainbow trout. The brook trout do not seem to be able to masticate the roe, but the rainbows are especially fond of it, and it has proved a very economical and nutritious food for them for a period of about six weeks, after which time it has been found best to change their food to liver.

Predatory birds and animals are exceedingly numerous and destructive in the summer months, and great numbers are annually destroyed.

The following table shows the stock of fish on hand at the close of the year:

Species.	Calendar year in which fish were hatched.				
	1902.	1901.	1900.	1899.	1898.
Rainbow trout	150,000	1,911	.....	.....	1,315
Brook trout	66,000	.....	.....	.....	.....
Rock bass	2,000	.....	.....	.....	.....
Black bass	.....	75	.....	.....	54
Crappie	.....	696	.....	.....	25
Total	218,000	2,682	.....	.....	1,394

By an act of Congress $5,000 became available in March for the completion of the station, new ponds, and other improvements, and work was immediately commenced on the construction of three ponds ranging in size from 1 to 2 acres, and these have been completed. Another pond 1 acre in area, which had already been partially constructed, was completed. Various repairs and improvements were made about the station buildings, roadways were constructed from the hatchery to the main highway, and 50 shade trees were set out. Contracts have been made for a substantial fence around the station property, and at the close of the year it is in course of construction.

COLD SPRINGS STATION, GEORGIA (J. J. STRANAHAN, SUPERINTENDENT).

Within the year the construction work under the special appropriation was of minor importance, but with it the station was practically completed. There was erected near the station residence a woodhouse 16 by 20 feet, a cabin was built for one of the laborers, and three bridges were constructed across Cold Springs Creek. The drives, walks, lawns, and embankments to the ponds were graded, and the lawns and pond embankments seeded down. All rubbish and underbrush were removed, so that the station presents a neat and attractive appearance. The fish-cultural work was confined to the propagation of the large-mouthed black bass, bream, crappie, and speckled cat-fish.

The spawning season of the black bass extended over 110 days, and this year the season began a full month earlier than in former years, notwithstanding the fact that the temperature of the water was cooler

for the month preceding and during the spawning time than in any year since the establishment of the station. With a few exceptions the bass finished spawning two months earlier than usual. But few eggs were deposited by them in any of the ponds as compared with former years, although the output of young fish was much greater, owing to improved facilities, a larger stock of brood fish, and an earlier distribution.

Pond culture at this station is still in the experimental stage, as the conditions here are not the same as those existing at other stations. The chief difficulty presenting itself is that of fish food. Very little aquatic or plant life is found in the waters under natural conditions, and it is difficult to make the introduced plants thrive and thereby increase the amount of natural food by the development of aquatic life which would naturally follow. The output of black bass fingerlings has, however, been much greater than in previous years, and it is expected that the product of the station can be annually increased for several years to come.

The young bass removed to the fry ponds were fed on chopped fish raised at the station, and no mortality resulted from what appeared to be convulsive fits, which caused an alarming mortality last year when the young fish were fed upon salt-water mullet preserved by some apparently injurious chemical. By careful sorting cannibalism was reduced to a minimum throughout the season. The product of the station in fingerling fish is recorded as follows: Black bass, 13,310; bream, 17,350; speckled cat-fish, 5,850. At the close of the year the stock of young fish on hand available for distribution as fingerlings is estimated as 5,000 bream, 40,000 cat-fish, and 10,000 black bass. There are also on hand a few hundred calico bass.

PUT-IN BAY STATION, OHIO (S. W. DOWNING, SUPERINTENDENT).

In addition to various minor repairs at the station the wharf was rebuilt to the water's edge and covered with 2-inch oak plank; the channel and harbor were also improved by dredging the channel to a depth of 9½ feet and widening it 25 feet. This enlargement gives ample room for the crates used for holding the white-fish penned during the spawning season.

In the fall the work of collecting eggs of the white-fish was pushed at all the fields customarily operated from the Put-in Bay Station. On October 20 a crew of men was set to work at Monroe Piers, Michigan, and two additional rafts of 5 crates each were constructed, making a total of 30 crates available. On this shore the prevailing winds were unfavorable throughout the season, and but 6,627 fish were received at the crates, a few more than one-half the number penned at this point the previous year. Part of these were penned in October, and the temperature of the water during the latter part of the month was so high that a large number of the fish were returned to the fishermen before spawning commenced. As a further result of the warm weather

quite a number of the females became plugged, causing the yield of eggs from the number of fish penned to run below the average.

At Put-in Bay the first fish were received at the crates on October 22 and by the 30th of October 1,403 fish had been received. Owing to the warm weather nearly all the fish taken at this time had to be returned to the fishermen, and penning was discontinued until November 5, when it was commenced again and continued until December 1. The total number collected and penned after November 5 was 5,963 fish, nearly one-fourth of which had been returned to the fishermen before the spawning season commenced. The final results of the work at this point, however, were very satisfactory. At the Port Clinton field men were set at work on November 6 and at the Kelley Island and North Bass fields on November 11. Although the weather was rough and unpleasant through the greater part of the season, there were but few days on which the fishermen did not visit their nets, and the number of eggs secured was beyond all expectations, more than 100,000,000 in excess of any previous season's collection being taken.

The number of eggs received from the different fields and from the crates was 335,860,000, as follows:

Locality.	Field.	Crates.
Monroe, Mich	6,265,000	52,547,000
Put-in Bay	29,998,000	55,422,000
North Bass	47,516,000	.....
Kelley Island	42,240,000	.....
Port Clinton	101,872,000	.....
Total	228,291,000	107,569,000

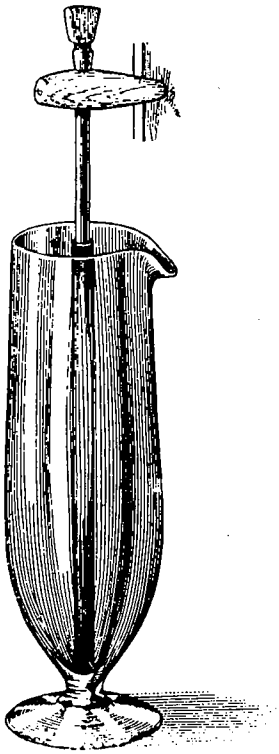
The increased collections were particularly noticeable at the Port Clinton and Kelley Island fields, the first yielding nearly twenty-five times as many eggs as last year, and more than twice the number taken in any season since 1895, when 92,000,000 were secured. At the Kelley Island field the yield was more than four times greater than ever before, and at North Bass it was twice as large as the greatest take of any previous season. At Put-in Bay the yield was four times greater than last year.

The first eggs were received from the fields on November 12 and the last December 2; the first collections from the crates arrived on November 13 and the last December 7. A shipment of 48,160,000 eggs was made to the Pennsylvania fish-hatchery at Erie, Pa., and 31,212,000 were transferred to Cape Vincent; 256,488,000 were retained at the station until eyed, when 8,100,000 were shipped to the New York Fish Commission and 1,000,000 to the Central Station at Washington, the balance being retained for hatching.

During the early stages of development every jar in the hatchery was filled, the surplus of eggs being cared for in floating boxes placed in the fry tanks until arrangements had been made with Col. Horace Park, superintendent of the Sandusky, Ohio, hatchery, for the loan

of 100 jars of the Chase pattern. The borrowed jars were operated by tapping the fry tanks and using wooden faucets, the jars standing upon the floor, and in this way the surplus eggs were cared for until the natural losses and the shipments to other stations made room for all the eggs in the regular batteries.

The eggs commenced hatching on March 25 and were all out by April 15, the period of incubation being 128 days. Eighty-two per cent of the eggs retained were hatched, giving a total of 200,500,000 fry, which were liberated in the waters of Lake Erie.



The Downing jar.

Preparations were made for the collection of lake-herring eggs and a force of men sent to Ashtabula, Ohio, where large catches of herring had been reported, but up to very late in the season very few female fish were taken and none of these were spawning. On December 6 the weather turned so cold as to make large fields of ice, and as there seemed to be no prospects of continuing the work the men were ordered home and the efforts to secure herring eggs were discontinued.

On April 2 men were placed in the Toledo, Ohio, and Monroe, Mich., fields for the collection of pike-perch eggs, and on April 6 pike-perch work was also taken up at Port Clinton, Ohio. Although the weather turned cold, the spawn-takers were very successful in securing eggs, the total collections amounting to 437,200,000, the greatest number with one exception ever secured in one season at Put-in Bay Station. The first eggs were received April 4 and the last April 19, the total yield from the various fields being as follows: Toledo field, 246,850,000; Port Clinton field, 126,800,000; Monroe field, 63,550,000.

Of these eggs 66,000,000 were shipped to State fish commissions and on other assignments, leaving a balance of 371,200,000 on hand to be hatched at the station. Of those retained 48 per cent hatched, and the resulting 143,000,000 fry were disposed of as shown by the tables of distribution. The loss on the eggs was much greater this season than last, being 52 per cent as against a record of 34 per cent the previous year. As the same spawn-takers were employed this year, and the methods were the same as last year, the only possible way to account for the greater loss is the difference in the temperature of air and water, the weather remaining cold and disagreeable through-

out the entire period of incubation, thus causing the eggs to develop very slowly. Hatching began May 3 and closed on May 12.

The superintendent was given authority to make some experiments with the view to making improvements in the form of hatching jar, having in mind convenience in manipulation and general results. Accordingly, a jar was designed somewhat after the pattern of the Chase jar, except that it has a glass instead of a metal spout and is made smaller at the top than at the bilge, thus concentrating the current of water and giving a good motion to the eggs at the top as well as at the bottom. The new jar was received January 18 and a poor lot of eggs placed in it. It was found that these eggs cleaned up faster in the new jar than in any of the older forms, that about a quart more eggs could be worked in it than in either of the other jars, and that it required but two-thirds the volume of water required in the older forms. From an economic standpoint and for convenience in handling it is claimed by the superintendent to be far the best jar used at the station.

NORTHVILLE STATION AND SUBSTATIONS IN MICHIGAN (FRANK N. CLARK, SUPT.).

In the output of eggs and fry the past year's operations at the stations in Michigan have been the most successful of any since the commencement of the work. There are two regular stations in the State, one at Northville and the other at Alpena, and in addition to these the hatcheries at Detroit and Sault Ste. Marie, belonging to the Michigan Fish Commission, have been operated the greater part of the year, Northville Station being the headquarters.

At the beginning of the year there were no fish or eggs in the Northville hatchery, and the number of fish in the ponds was very small. For the first two or three months, therefore, the force were engaged in preparing for the reception of eggs, maintaining the buildings, ponds, and grounds, and in construction work.

Three old wooden ponds were torn out, and in their place two cement ponds 50 feet long, 8 feet wide at the surface, and 6½ feet wide at bottom were constructed, the cement being 5 inches thick on the sides and 4 inches on the bottom. These ponds are supplied with water from a spring under the hatchery, which flows about 135 gallons per minute, the temperature being 48° F. They were constructed for experimental work in connection with the bacterial disease that has caused great mortality amongst the brook trout in past years. Fish not affected by the disease were brought from the Au Sable River and introduced into the ponds.

The experimental work is being conducted under the direction of Mr. M. C. Marsh, and further mention of it is contained in the report of the Division of Scientific Inquiry.

Six old ponds with plank sides were also torn out with the intention of replacing them with one large pond, which will cover more surface than the old ones.

About October 20 preparations for the collection of lake-trout eggs were commenced. After the superintendent had visited various points with the view of establishing field stations it was decided to confine operations to Beaver Island and Manistique, on Lake Michigan, and arrangements were completed for the conduct of work after the close season, which began October 30, on practically the same lines as in previous years, the fishermen agreeing to bear all expenses of catching the fish, and to receive the fish so caught in compensation for their services after the eggs had been taken by representatives of the Commission.

At the Beaver Island group the tugs fished on the shoals within a radius of 33 miles from the harbor of St. James, which is about 36 miles from the mainland, without telegraphic communication, and in rough weather without a regular boat service. The most important of the fishing-grounds were Boulder Reef, Skillagillee, West Shoals, Trout Island Reef, and The Hat, the largest number of eggs being obtained at Boulder Reef. All spawning fish were captured in from 3 to 26 fathoms of water, the early run being principally in water from 9 to 18 fathoms deep, and the last run, which were larger trout, in from 18 to 26 fathoms of water. The first fish were captured November 3, and the last on November 30. The collections were not notably large until November 13, but from that time on to the close of operations the work was highly successful, the best results being secured from November 18 to 26, inclusive. In all, 13,670 trout, weighing 103,716 pounds, or an average of nearly 7¾ pounds each, were captured, and from them 14,804,000 eggs were taken.

At Manistique all eggs were taken between November 5 and 27, the season being a trifle later than usual owing to warm weather. At this point 11,937 trout, weighing 72,796 pounds, were captured, which produced 10,508,000 eggs.

Of the 25,312,000 lake-trout eggs obtained at these two points 14,304,000 were shipped to Northville. The remainder were transferred to the Alpena, Sault Ste. Marie, and Cape Vincent stations. After the eggs sent to Northville were eyed, 5,305,000 were distributed to various points and the hatching period of the balance extended from February 17 to March 25. All of the fry, with the exception of 700,000 distributed in inland waters, were deposited in the Great Lakes and were in excellent condition when planted.

Brook-trout eggs to the number of 1,074,000 were purchased from commercial hatcheries in Massachusetts, and in addition to these 41,807 were taken from the adult fish in the ponds at Northville, making a total of 1,115,807 brook-trout eggs. Of these 1,055,000, or a little over 93 per cent, hatched, the first fry making their appearance on

January 28. The hatching season closed on March 5, and the distribution of fry was made during March and April by the Fish Commission cars and was very successful.

From the brood stock of Loch Leven trout 78,000 eggs were taken, the first on October 28 and the last December 12, the 117 females stripped averaging 667 eggs to the fish. These eggs were of extra fine quality, and from them 75,000 fry were hatched and planted, a trifle over 96 per cent. They were the first eggs in the house to hatch, beginning January 4 and continuing until February 25. The distribution of the fry was made between March 12 and 18.

From the Neosho and Manchester stations 105,012 rainbow eggs were received, from which 86,000 fry, or about 82 per cent, were hatched and planted. This low percentage was due to the fact that some of the eggs were not in good condition when received. The first eggs hatched February 19 and the last March 12, and by April 17 the distribution of the fry had been completed.

From a stock of 3-year-old steelhead trout, which had been hatched and reared at the station, 114,600 eggs of fine quality were obtained, the first on March 19 and the last on April 10, the females averaging 850 eggs each. In addition to the above 50,000 steelhead eggs were received on April 8 in good condition from the Clackamas, Oreg., Station, making a total of 164,600. They commenced hatching on April 23 and closed on May 6, when 140,000 fry, or 85 per cent, were hatched and distributed shortly afterwards in good condition.

One of the finest consignments ever received at the Northville Station arrived from the Bozeman, Mont., Station on May 16, the case containing 209,078 grayling eggs. These were placed in spring water, and in a few days practically all hatched, and shortly afterwards the resultant fry were planted in excellent condition.

At the Alpena Station hatching operations began on November 20, when 35,000,000 green white-fish eggs were received from the Detroit hatchery, and on December 6 a second shipment of 16,000,000 arrived. From the 51,000,000 eggs thus received 42,500,000 fry, or nearly 84 per cent, hatched. The eggs began hatching April 6 and finished April 18. The distribution of the fry was commenced April 11 and was completed April 22, all of the plants being made in Lake Huron, with the exception of 500,000, which were sent to Turtle Lake.

In addition to the white-fish eggs sent to the Alpena Station, 3,581,000 lake-trout eggs were transferred there from Northville and Manistique at various times in the course of the season, and it became necessary to construct additional hatching-troughs to accommodate them. In the month of April 2,530,000 lake-trout fry were distributed, most of them being planted in Lake Huron not far from the Alpena Station. At this point during the past fiscal year a greater number of fry, both

of lake trout and white-fish, have been turned out than ever before, the fry being of the most excellent quality.

At the Detroit Station the work has been confined entirely to white-fish operations, the eggs being collected from the field stations on Belle Isle and Grassy Island, the former located in the Detroit River opposite the upper end of the city of Detroit, and the latter about 8 miles down the river below the city. Fishing was conducted by means of seines, the work being done by the Wolverine Fishing Company, which received the fish in payment for its services after the agents of the Commission had taken the eggs. The fishing season extended from October 16 to December 3, during which time 2,875 hauls of the seine were made and 41,242 fish captured—an average of between 14 and 15 per haul. Of these 2,270 were undersized and were immediately returned to the river. The remaining 38,972 were retained in crates and pounds. The crates used in this work were constructed of slats, to allow free circulation of water, and were 12 feet long, 4 feet wide, and 5 feet deep. The pounds, which were irregular in size and shape, were made by driving boards into the bottom of the river, with a space between each for the free circulation of water. The best day's fishing was on November 18, when 2,568 fish were caught. Of the fish held, 22,245 were males and 16,727 females. Of the latter, 12,529 were stripped, yielding 366,040,000 eggs, or an average of 29,215 per fish. The balance of the females were either spent, plugged, or hard when the season closed.

Following is a summary of the daily take of eggs:

Date.	Belle Isle.		Grassy Island.		Total.
	Females stripped.	Eggs obtained.	Females stripped.	Eggs obtained.	
1901.					
Nov. 10	1	25,000	1	40,000	65,000
11	2	55,000	.....	.....	55,000
12	6	400,000	7	400,000	800,000
14	28	1,520,000	31	1,520,000	3,040,000
15	31	1,440,000	33	1,720,000	3,160,000
16	42	1,560,000	23	1,080,000	2,640,000
17	36	1,520,000	53	2,600,000	4,120,000
18	85	3,040,000	68	2,760,000	5,800,000
19	100	3,320,000	229	8,680,000	12,000,000
20	55	1,920,000	260	9,000,000	10,920,000
21	152	5,120,000	353	11,840,000	16,960,000
22	271	10,000,000	486	15,400,000	25,400,000
23	220	7,280,000	354	12,840,000	20,120,000
24	554	17,680,000	388	11,840,000	29,520,000
25	808	23,560,000	829	22,000,000	45,560,000
26	224	6,320,000	652	18,440,000	24,760,000
27	260	8,280,000	576	14,000,000	22,280,000
28	143	3,760,000	475	12,680,000	16,440,000
29	1,085	30,520,000	906	22,400,000	52,920,000
30	300	9,080,000	644	16,520,000	25,600,000
Dec. 1	111	3,040,000	211	5,600,000	8,640,000
2	52	1,120,000	263	6,240,000	7,360,000
3	156	4,120,000	200	4,800,000	8,920,000
4	140	3,760,000	88	1,800,000	5,560,000
5	.....	.....	71	1,800,000	1,800,000
6	183	5,200,000	.....	.....	5,200,000
7	.....	.....	110	2,480,000	2,480,000
9	115	2,640,000	.....	.....	2,640,000
11	58	1,280,000	.....	.....	1,280,000
Total	5,218	157,560,000	7,311	208,480,000	366,040,000

All of the eggs were forwarded to the Detroit hatchery by means of tug and wagon, it being necessary to hold over night those taken at Grassy Island, but this was done without detriment. The number of eggs shipped was 201,800,000, leaving 164,240,000 in the hatchery. As the total number hatched was 135,000,000, it would appear that the percentage was a little above 82, but in reality it was about 85 per cent when allowance is made for the fact that a part of the eggs shipped were eyed eggs. The season was rather earlier than usual, the hatching period extending from March 23 to April 16, and the distribution was made between March 30 and April 17 by means of a tug and two of the Fish Commission cars. The cars carried 27,000,000 fry in five loads, three of 5,000,000 each to Charlevoix and two of 6,000,000 each to Mackinac City, for planting in Lake Michigan. The balance were deposited in the Detroit River and Lake St. Clair.

Not only did the number of white-fish greatly exceed that of any previous year, but the quality of the fry also greatly surpassed that of any of the earlier efforts. This may have been due in part to the favorable weather conditions, improved facilities, and expert manipulation, but undoubtedly credit should be given to the liberal plants made in the past in the Great Lakes.

To relieve the overcrowded condition of the Northville and Detroit stations, and also to comply with the Milliken act of the State legislature, which provides that the fry from 75 per cent of the eggs collected shall be deposited in State waters, the Sault Ste. Marie hatchery was used, and from the 16th to the 23d of November 5,000,000 lake-trout eggs were sent there from Manistique. Of the 3,700,000 fry which hatched from these eggs, 1,000,000 were turned over to the Michigan Fish Commission and 2,700,000 distributed. The eggs began hatching April 20 and it was not until May 10 that all had hatched, the cold weather greatly retarding development, although it apparently made the fry extremely hardy. The first plant was made on May 19, and the last of the fry were liberated May 31, the work being done by messenger and tug.

A shipment of 30,000,000 white-fish eggs was received at the Sault Ste. Marie Station from Detroit on November 29th, 6,080,000 on December 28, and 10,000,000 on February 25, or a total of 46,080,000. The first shipment was made when the eggs were green and the last two shipments after the eggs were eyed. The product of the eggs resulted in 40,000,000 fry, or about 86 per cent, the first hatching on April 10 and the last on April 29. With the exception of 2,000,000, which were shipped by baggage car to Manistique, the distributions were all made by boat. The first plant was made on April 15, and the work of distribution was completed on May 1. A large proportion of the fry were planted in Lake Superior near Whitefish Point and in Lake Huron off Detour.

The Commission is indebted to A. Booth & Co. for the free transportation of fry to Whitefish Point, Lake Superior.

The following table shows the number of eggs collected, number of eyed eggs shipped, and fry distributed:

Species.	Eggs collected.	Eggs shipped.	Fry distributed.
White-fish	366,040,000	104,720,000	217,500,000
Lake trout	25,312,000	8,128,000	13,255,000
Brook trout	1,134,260	.....	1,055,000
Steelhead trout	164,600	.....	140,000
Rainbow trout	105,012	.....	86,000
Loch Leven trout	78,000	.....	75,000
Grayling	209,078	.....	200,000
Total	393,042,950	112,848,000	232,311,000

DULUTH STATION, MINNESOTA (S. P. WIRES, SUPERINTENDENT).

During the year a concrete sidewalk was constructed along two sides of the station grounds abutting the highway, and extensive improvements were made on the hatchery building, gravity flume, and steam plant. A large number of shade trees were also set out.

Of the 34,290 young steelhead trout on hand at the beginning of the year 30,000 survived and were distributed as fingerlings.

In August and September arrangements were made for the collection of lake-trout eggs at the usual points on Lake Superior, namely, at Grand Portage, Minn.; Port Arthur and Rossport, Ontario; Isle Royale, Manitou Island, Keystone, Ontonagon, and Marquette, Mich. The spawning season opened September 15 and closed October 31, resulting in a total collection of 15,771,000 eggs. Of these 3,771,000 green eggs were transferred to Cape Vincent, and 25,000 to the Pan-American Exposition, at Buffalo. Subsequent shipments of eyed eggs were also made to the number of 2,325,000.

The following table shows the number of eggs of various species received from other stations of the Commission and the disposition of same:

Species.	Eggs received from other stations.	Eggs collected.	Eggs shipped.	Fry distributed.	Fingerlings distributed.
White-fish	36,000,000	.....	.....	29,800,000	.....
Lake trout	.....	15,771,000	6,121,000	7,150,000	.....
Grayling	200,000	.....	.....	199,000	.....
Brook trout	100,000	.....	.....	92,230	.....
Steelhead trout	100,000	.....	.....	96,900	30,000
Rainbow trout	50,000	.....	.....	32,000	.....
Total	36,450,000	15,771,000	6,121,000	37,370,130	30,000

All eggs and fry were handled throughout the season with very light losses, and the fry resulting from the eggs received from other stations, and also the lake trout carried through the season, were all distributed in good condition in April, May, and June.

QUINCY STATION, ILLINOIS (S. P. BARTLETT, SUPERINTENDENT).

Throughout the navigable portion of the Illinois River, or about 250 miles, the banks in most places are low and any considerable rise of water overflows them, producing ponds and lakes varying in width from a few feet to 8 or 10 miles, in which the native fishes find desirable spawning-grounds. With the receding waters many of the adult fish and millions of fry become landlocked. Here they grow rapidly until, with the contraction of the water areas and the increasing demands for food, the waters become overstocked and the fish die in countless thousands from starvation or perish by the drying up of the ponds during the season of summer drought, when the temperature of both air and water become abnormally high. The work of the Quincy Station consists in the collection of the fishes from these overflowed ponds and lakes and the return of them to the Illinois River, or their distribution to applicants throughout the country.

At the beginning of the year there were large numbers of fish in the ponds and the best of prospects for a good collection. The weather was hot, causing the moss to grow rapidly, but the evaporation was correspondingly great, so that little difficulty was experienced in cleaning out the moss to facilitate the use of small-meshed seines. The work of collecting continued good until July 22, when the water in the lakes and ponds, which were 10 to 12 inches deep, showed a temperature of 120 degrees, and the fish, large and small, came to the surface dead. Up to this time operations had been confined mostly to one lake, although the moss had been removed from others preparatory to working them. After July 22 operations were necessarily confined to the seining of the deeper ponds, but as the moss could not be removed the results were not so satisfactory as when collecting from the shallower waters. Operations extended over the entire navigable portion of the Illinois River. Great care was exercised in handling the fish on account of the usual high temperature of the water and the distance the fish must be carried from the river to the large towing live-boxes.

It is necessary to observe caution in rounding a haul to land the seine, because if the seine is hauled in rapidly to the shore the floundering of the larger fishes and the rolling of the moss will cause great injury to the fingerlings. Where possible the seine is brought together in deep water and a few feet at a time worked over, the fish being carefully placed in tubs and from them into the smaller live-boxes until ready to haul over to the river, where they are placed in the large live towing-cars. They are then taken to the pumping station, placed in tubs until the temperature is gradually reduced, after which they are put in the retaining-troughs and held until the following day. Those showing signs of injury are removed and those selected for distribution are placed in the retaining-ponds. Early in the season it is difficult to induce the very small fry to take food, but as they grow

older little trouble is experienced in that respect. Fish that have been kept a week or more in the retaining-ponds are in prime condition to bear transportation, but if sent to the distribution cars direct from the field where collected great mortality results.

The season of 1901 was an unusually disastrous one, all kinds of fishes perishing in the shallow overflowed ponds, owing to the high temperature, when in ordinary seasons they live and flounder around until all the water is gone and they are absolutely left on the bare mud. The total distributions of fish thus collected for the year were as follows: Black bass fingerlings, 50,900; adult black bass, 600; adult crappie, 2,170; adult warmouth bass, 100; adult sun-fish, 300; also 158 adult assorted fish.

At the close of the year the water in the river was 13¼ feet higher than the normal level, and too high throughout the month of June for the collecting of fish.

MANCHESTER STATION, IOWA (R. S. JOHNSON, SUPERINTENDENT).

During the year various improvements and repairs were made to the buildings, grounds, and waterways, the most important being the construction of three new ponds. These ponds were 15 feet wide at the top by 10 feet wide at the bottom, and 291 feet, 254 feet, and 140 feet in length, respectively.

Congress having made a special appropriation of $5,000 therefor, a stern-wheel steamboat was constructed by Kahlke Brothers, of Rock Island, Ill., under the supervision of the superintendent. Other particulars in regard to this boat will be found elsewhere. On the morning of May 18 a violent rainstorm and cloud-burst broke over the station, flooding the southeast section of the reservation, destroying the wagon bridge and road from the main-entrance gate, and doing much other damage to the grounds. The upper spring reservoir was completely choked with mud, cutting off the water supply temporarily from the hatchery building and ponds. This resulted in the loss of about 75,000 of the 328,000 fry which were being held in the hatchery troughs. The property damage resulting from the flood was repaired by the station employees, assisted by temporary labor.

The output of fish and eggs during the year has been most gratifying, exceeding the work of all previous years.

The 60,000 brook-trout fry on hand at the opening of the year were reared to the fingerling stage, and in the fall 49,200 were distributed, 2,275 being held for brood stock. The loss incurred in rearing amounted to 8,525. The brood stock of brook trout, consisting of 1,209 two and three year old fish, were kept in one of the stock ponds in an apparently healthy condition until October, when they were transferred to the 80-foot ponds with plank sides, in readiness for the spawning season. Soon after the transfer was made the same peculiar disease which has attacked the brook trout at this station for the past

four years caused a heavy mortality. Efforts were made to check the disease, but without success, until the fish were again transferred to the earth ponds. Experiments conducted at this station prove that it is impossible to hold adult brook trout in the 80-foot wood-lined ponds, while there seems to be no difficulty in holding the same fish in the larger ponds with natural earth embankments.

From 257 ripe female brook trout 214,000 eggs were secured, or an average of 833 per fish. Of this lot of eggs 50,000 were shipped to applicants and 100,000 were hatched, but the fry were a very inferior lot and only 65,000 were distributed. The poor quality of the fry is attributed to the diseased condition of the parent fish. From the Spearfish and Leadville stations 250,000 brook-trout eggs were received, and 285,000 fry were hatched from the eggs received from all sources. Of these, 189,000 were distributed during the spring and 96,000 were held for fall distribution.

The 75,000 rainbow-trout fry on hand July 1 were carried until fall, when 69,000 were distributed and 3,000 held for brood stock. The spawning season of the rainbow trout extended from December 10 to March 21. The brood stock of rainbows consisted of 3,980 three and five year old fish, which were in excellent condition, having been held in the large stock ponds the greater part of the year. Out of this lot 1,296 ripe females yielded 1,247,400 eggs, or an average of 963 per fish. Of the total number of eggs secured 1,007,190, or 80 per cent, were eyed. Of this number 525,000 were shipped on assignment and 482,190 hatched. Of the fry thus obtained, 241,000 were distributed and 128,000 are being held for the fall distribution.

At the beginning of the year there were on hand 10 adult Loch Leven trout. During the month of November 8 ripe females produced 8,000 eggs. From this lot of eggs 6,000 fry were hatched, 3,500 of which are on hand at the close of the year.

There were also received from other stations in good condition 10,000 quinnat-salmon eggs, 10,000 landlocked-salmon eggs, 50,000 lake-trout eggs, 50,000 steelhead-trout eggs, and 100,000 grayling eggs, which produced strong, healthy fry, and these fry were distributed on assignments.

The food used for the brook and rainbow trout fry that were reared to fingerlings consisted of beef livers and mill shorts, boiled in varying proportions, according to the age of the fish. Live food collected from streams in the vicinity of the station was also used to some extent.

During the month of September the rock-bass ponds were drawn, and the young fish, numbering 14,450, were transferred to troughs in the hatchery, where they were held without loss until distributed. The stock of adult rock bass on hand at the beginning of the year numbered 235, but this number was increased by the addition of 45 adults collected from streams near the station. These fish were seen spawning in May, and the first fry were discovered on June 20. The indications are that the crop of young from this brood stock will be large.

The work of fitting up the Bellevue collecting station and overhauling the equipment preparatory to the season's work was begun May 27 and completed June 15. Active fishing operations commenced on July 1, under the direction of Mr. H. Crasser, assisted by the launch *Water Witch* and a temporary crew of six men. Fishing continued until October 12, an extra launch and an additional crew of five men being employed during the month of August. As a result of this work 100,976 black bass, 24,680 crappie, 16,820 cat-fish, 1,700 perch, 4,340 sun-fish, 600 bream, 305 pickerel, 75 pike perch, and 26 carp were collected in the lakes and bayous formed by the overflows of the Mississippi River. These fish were distributed by means of the U. S. Fish Commission cars to various applicants and planted in public waters throughout the United States.

While making the collections of young black bass and crappie large numbers of the more common varieties of fish were seined from the warm shallow lakes and liberated in the Mississippi River between Dubuque, Iowa, and Savanna, Ill. On account of the large number of fish handled and the necessity of transferring them quickly, it was not practicable to count them, but it is estimated that there were transferred in this way 5,000 black bass, 700,000 crappie, 600,000 sun-fish, 500 pickerel, 43,500 cat-fish, 35,000 carp, 500 pike, and 200,000 buffalo, a total of 1,584,500. This is regarded as a conservative estimate, and it is believed to fall short of the actual number transferred.

The fish on hand at the close of the year were as follows:

Species.	Calendar year in which fish were hatched.				
	1901.	1900.	1899.	1898.	1897.
Brook trout	56,000	2,275	.....	.....	110
Rainbow trout	128,000	2,935	.....	.....	2,975
Loch Leven trout	3,500	300	.....	.....	4
Quinnat salmon	5,300	.....	.....	.....	.....
Grayling	25,000	.....	.....	.....	94
Rock bass	.....	.....	.....	.....	220
Landlocked salmon	6,600	.....	.....	.....	.....
Lake trout	4,700	.....	.....	.....	.....
Steelhead trout	49,000	.....	.....	.....	.....
Total	278,100	5,510	.....	.....	3,403

SAN MARCOS STATION, TEXAS (J. L. LEARY, SUPERINTENDENT).

An appropriation of $8,000 for enlarging and improving the station having been secured, two tracts of land (one cutting into the southwest corner of the grounds and the other extending about 300 feet along the river front) were purchased at an expenditure of $3,200. This property rounds out and adds greatly to the appearance of the station and makes it possible to conduct operations on a much larger scale.

Four ponds, covering about 3 acres, were constructed at an expense of $2,252, and a pumping plant of 1,000 gallons capacity was installed. The latter consists of a 10-horsepower gasoline engine of the Springfield type and a No. 6 centrifugal pump, with 6-inch suction and

8-inch discharge. The entire cost of installing it, including the construction of a substantial engine-house and pump-pit, amounted to $1,125. While in operation the pump requires very little attention, and the cost of running it for a period of 8 hours is only $1.40. The plant has already proved invaluable, the station having been entirely dependent upon it at one period during the severe drought which has continued almost without intermission for two years. A building on one of the acquired pieces of land was removed to the southwest end of the reservation and fitted up as a residence for the foreman. Wire fencing was constructed around the orchard and superintendent's dwelling and a large number of shade trees set out.

The four new breeding-ponds for the large-mouthed black bass necessitated the collection of additional brood fish from the San Marcos River, the stock being increased during the winter to 360, not including 90 eighteen-months-old fish which have been reared under domestication. The spawning season of the black bass began over a week later than in past seasons, not a nest being observed until February 18, whereas the first nesting has usually occurred from February 8 to 10. The first fry made their appearance on March 10, but the weather at this time was very cold, the water temperature being 58°, and nearly all of this school died. During the year 103,580 large-mouthed black bass were transferred from the breeding-ponds and 81,260 distributed.

The 70 adult crappie on hand were placed in a breeding-pond prepared for them, together with the necessary number of carp for keeping the water roily. During the year 6,490 were removed from the ponds and 4,455 distributed. This fish is considered as invaluable for the muddy lakes and streams of Texas, being a prolific breeder, rapid in growth, and a fine table fish. Its propagation has hardly advanced beyond the experimental stage, however. The breeding season opens in March, continues well into the summer, and young fish have frequently been observed spawning during the fall months.

Early in the spring 38 bream were placed in one of the breeding-ponds and commenced nesting late in April. The spawning season of this species extends through the summer into early fall. During the year 3,410 young fish were taken from the pond and 2,830 distributed.

The rock bass is the most desirable pond fish cultivated at the station for ponds of an acre or less in area. These fish begin to spawn early in March and the spawning season continues until July. During the year 9,360 were transferred from the ponds and 4,555 distributed. The brood stock on hand at the close of the year consisted of 5 adult fish brought from Neosho in the winter of 1898 and 25 two-year-old fish. These were placed in two ponds previous to the spawning season and from them a good crop of young fish is expected for distribution the coming season.

Of the 10 calico bass received from Neosho in the winter of 1898, 6

remain, and these, with 17 two-year-old fish, were placed in two ponds previous to the spawning season, which began March 10. The product from this brood stock during the year amounted to 1,450 young fish. At the close of the year the ponds had not been drawn, but the young fish seen in them appeared to be about one-third larger than rock bass of the same age.

The question of fish food is an important one in the conduct of a pond station. As most of the streams in the vicinity from which supplies of food have been obtained in previous years had dried up, it was difficult to secure natural food in abundance and cannibalism among the young was much more prevalent as a result. Carp and mud shad have been propagated for a supply of fish food. The carp are placed in the ponds with the bass, where the young make excellent food for the fry. River shrimp have been planted in the ponds in large numbers, but as they have no protection are soon devoured. They make very excellent food for all kinds of fry in the ponds. Crawfish, also a valuable food supply, have been scarcer than for the past four years. Bullfrogs breed in the ponds, but were not so plentiful as in former seasons. Their young make fine food for the adult bass.

Blind cave salamanders and shrimp continued to come up with the waters of the artesian well.

It becomes necessary in the protection of the fish to kill many wild ducks, other water fowl, and snakes, as they are very destructive to the young fish.

With very few exceptions the railroads of the State have given free transportation for messengers with cans of fish and messengers returning with empty cans, thus contributing very largely to the success of the station.

NEOSHO STATION, MISSOURI (H. D. DEAN, SUPERINTENDENT).

The construction work begun last year was continued throughout the year. The hatchery was reconstructed and changed from a low one-story to a two-story building, the office was enlarged, and a hot-water furnace was installed for heating the building. The hatching-room is now 28 by 36 feet, with space for 20 hatching-troughs and a capacity for 1,000,000 trout eggs. A room of the same size on the second floor is used for storage and workshop. Some necessary repairs were made on the residence and a new pond, 12,000 square feet in area, was constructed. Two of the old ponds were enlarged, deepened, and repiled with 1½-inch cypress, and a drainage sewer 800 feet in length was constructed. Over 200 feet of retaining wall and gutter were constructed to protect the embankments on the north side of the station property, a cement concrete walk was built from the hatchery to connect with the walk on the south side of the driveway, and considerable grading was done around the ponds and grounds. This construction interfered somewhat with fish-cultural work, as some of the ponds were undergoing repairs during the spawning season.

Of the 51,500 young rainbow trout on hand at the beginning of the year 44,088 were distributed in the fall and 2,000 were held for rearing. The adult rainbow trout were placed in the rearing-ponds early in December, and from them 487,011 eyed eggs were obtained. Of these, 91,296 eyed eggs were the product of 376 two-year-old female trout, being 63¼ per cent of the total number of green eggs taken from these young fish, and a much better percentage than usual for fish of this age. Of the eggs thus obtained 304,415 were shipped on assignment, 25,000 were distributed as fry when 3 months old, and 77,000 remained on hand at the close of the year.

Shipments of eggs from other stations to be hatched and the product reared for the aquarium at the Louisiana Purchase Exposition were received as follows: Quinnat salmon eggs, 10,000, which were hatched, and the product at the close of the year amounted to 6,900 young fish; landlocked salmon, 5,000, which nearly all died in hatching, only about 200 remaining at the close of the year; steelhead, 10,000, which hatched well and grew nicely, the product on hand at the close of the year being 6,400; grayling, 25,000, large numbers of which died in process of hatching, though 8,000 remained at the close of the year and were in fine condition.

In addition to the propagation of the *Salmonidæ* above referred to, the various fishes propagated in ponds were handled at the station, and while the work during the year was not entirely successful, 32,965 yearlings were distributed, as follows: 18,400 rock bass, 3,251 strawberry bass, 9,514 black bass, and 1,800 sun-fish.

LEADVILLE STATION, COLORADO (E. A. TULIAN, SUPERINTENDENT).

At the beginning of the year there were on hand 260,800 brook-trout fingerlings, of which 30,000 were planted during the month of July, 9,000 in August, 53,000 in September, and 35,500 in October, the losses during this time amounting to about 51 per cent.

The usual arrangements were made for the collection of brook-trout eggs in the fall from lakes belonging to private individuals, and the results of the work are embodied in the following statement:

Source of supply.	Spawning season.	Eggs collected.	Percentage of loss.	Fry hatched.	Eggs shipped.
Station brood fish	Oct. 8 to Dec. 6	235,300	31	.....	162,540
Uneva Lake	Oct. 23 to Nov. 27	261,700	13.5	226,500	.....
Smith's ponds	Oct. 21 to Dec. 5	197,300	12.3	128,300	.....
Wellington Lake	Nov. 1 to Nov. 28	1,303,400	15.9	944,200	153,400
Young's ponds	Oct. 19 to Nov. 23	1,013,700	21.9	680,800	111,700
Musgrove's ponds	Oct. 14 to Nov. 26	569,300	22.8	257,100	183,200
Derry's ponds	Oct. 28 to Dec. 7	225,300	19.2	182,000	.....
Black Lake	Oct. 28 to Nov. 2	443,800	9	378,700	25,000
Total	.....	4,249,800	20.7	2,797,600	635,840

Reference was made in last year's report to the improvement in the percentage of eggs which produced fry owing to the fact that the practice of stripping young fish had been discontinued. This year the

lines were drawn somewhat closer, and when in doubt as to whether a fish was spawning for the first time or not it was put aside without taking the eggs. As a result the loss on each lot of eggs was from 20 to 50 per cent less than on lots taken from the same places last year. Undoubtedly a very much larger percentage of eggs would produce strong, healthy fry were it possible to secure the eggs from wild fish without confining them for a considerable period, during which time it is necessary to handle them over and over again; but the conditions under which the collection of eggs is made in Colorado are such that there is no other practicable way, and most of the wild fish must be caught early in the season and penned until ripe.

After the eggs were eyed 675,000 were shipped on assignments, and in every instance the assignments reached their destination in good condition. One case of 25,000 eggs was sent to Tokyo, Japan, with a loss of 12 per cent en route and a subsequent loss of 2,000 during the period of incubation.

Although the total number of eggs taken was somewhat less than the number taken last year, the percentage of fry hatched was greater than last year, and the number of fish available for distribution proportionally greater. On May 20, when all the brook-trout eggs had been hatched, there were on hand 2,664,440 fry, of which 1,087,115 belonged to the Commission and 1,577,325 to the parties who had furnished the eggs. Between this time and the end of the fiscal year there was a loss of 6½ per cent of the fry belonging to the Commission; 745,000 were planted, and there remained on hand 271,000.

Of the 68 adult Loch Leven trout on hand at the beginning of the year 33 died, and during the months of November and December 30,600 eggs were obtained from the remainder, from which 18,500 fry were hatched; 3,000 of the fry were distributed in June, and the balance on hand at the close of the year amounted to 2,450. The eggs were of inferior quality, as the parent fish were past their prime. The introduction of the Loch Leven trout has not proved very successful, and its propagation will be discontinued.

Of 1,525 two-year-old rainbow trout on hand July 1, 1901, 675 died and 200 were shipped on assignment, leaving 650 on hand at the close of the year. There were also 6,790 fry in the rearing-ponds, of which 5,000 were shipped and 1,790 died. During the months of February and March, 109,800 eggs were collected from Ridgway's ponds, 50,000 were acquired from the station at Manchester, Iowa, and 100,000 were purchased from J. P. Morrill, Verdi, Nev. These eggs produced 227,075 fry, of which 160,000 were distributed during the month of June, 41,550 were returned to the owner of the ponds, the balance being lost.

In February 25,000 lake-trout eggs were received from the Duluth Station, and hatched with a loss of 900. The fry from these eggs did not do well, 16,600 of the young dying before the close of the year.

Out of 76 three-year-old grayling in stock at the beginning of the

year, only 15 remained at the close of the year. The domestication of the grayling has not proved a success, the few fish on hand having been carried for experimental purposes. On the 21st of May 131,200 eyed grayling eggs were received from the Bozeman Station, 120,000 of which hatched, and during the month of June a distribution of 100,000 fry was made in Colorado waters.

On the 23d of May 35,000 steelhead eggs were received from the collecting station at Medford, Ore., from which 34,090 fry were hatched, and 33,900 healthy and rapidly growing fish remained on hand at the end of the year.

On the 26th of February 10,000 landlocked-salmon eggs were received from Craig Brook Station, from which 9,800 fry hatched, and at the close of the year 9,450 remained on hand.

At the beginning of the year there were on the hatching-trays 1,317,800 black-spotted trout eggs, to which may be added the collections during the month of July, amounting to 863,900. Of the 2,181,700 collected, 175,000 eyed eggs were shipped elsewhere and the balance hatched, with a loss of 17.6 per cent. The distribution of these fish was made during the fall, when 847,000 were planted for the Commission and 560,000 for the owner of Grand Mesa Lakes, the point of collection. During the month of June, 3,016,700 eggs were collected at Grand Mesa Lakes, and the loss to June 30 was 106,000, or 3½ per cent, leaving on hand at the close of the year 2,910,700.

For two months during August, September, and October the superintendent was detailed to collect statistics and methods of the fisheries in Utah and Colorado. During this time the station was in charge of W. K. Hancock, fish-culturist.

No material improvements were made at the station during the year in the way of new constructions, although, so far as the funds would permit, the property was kept in good repair. A new tin roof was laid on the kitchen, coal-shed, and storeroom of the messhouse. A small room was built in the workshop, with an inside lining of tin, in which to store seines and nets. The grounds were inclosed by a Page woven-wire fence along the south side and the greater part of the west side, and the balance of the west side was inclosed with a barbed-wire fence.

The stock of fish on hand at the close of the year is shown by the following table:

Species.	Calendar year in which fish were hatched.				
	1902.	1901.	1900.	1899.	1898.
Brook trout	271,000				26
Loch Leven trout	2,450	1,000			35
Rainbow trout			650		
Grayling					15
Lake trout	7,500				
Landlocked salmon	9,450				
Steelhead trout	33,900				
Black-spotted trout					8
Total	324,300	1,000	650		84

SPEARFISH STATION, SOUTH DAKOTA (D. C. BOOTH, SUPERINTENDENT).

During the year the station grounds were materially improved by the construction of a stone bulkhead 82 feet long, 4 feet wide, and 6 feet high across the canyon outlet, and a channel, in places 6 feet deep and 8 feet wide, was cut through the upper grounds to connect with the storm channel constructed last year. Although still incomplete, the channel is sufficiently large to care for sudden accumulations of water from the canyon during ordinary rains, and has during the past year carried off the surface water, thus preventing the pollution of the water supply to the hatchery, and as a consequence the percentage of eggs hatched was higher than heretofore. During the summer much trouble was experienced owing to a decrease in the volume of the spring-water supply, which is the main source of supply for the hatchery and ponds. From time to time, as the regular force could be spared from the fish-cultural work, and with some temporary assistance, the sources of the springs rising on the reservation in the canyon were developed with gratifying results, and it is believed that by continuing this work the present volume of water can be doubled. A driveway was laid to grade through the station grounds, and, together with other completed portions of the grounds, sown to grass. Shrubs of various kinds were planted, and 47 shade trees were set out.

The fish on hand at the beginning of the year in course of rearing were distributed as fingerlings and yearlings during the summer and fall, with the exception of a lot of rainbows which were retained to rear for a brood stock. The output amounted to 73,500 brook trout, 5,000 Loch Leven trout, and 10,000 rainbow trout.

On the 1st of July there were on hand 1,200,000 black-spotted trout eggs at the collecting station in the Yellowstone Park. As soon as the eggs were properly eyed they were packed in refrigerator cases in lots of about 250,000 each and transported 74 miles by wagon to Cinnabar, Mont., thence by rail to Spearfish, where they were hatched, and during the fall and winter 382,000 fry were distributed to applicants or planted in the waters of the Black Hills. The substation in the Yellowstone National Park was again opened in the early part of June, 5 men being detailed for the collection of eggs at that point. At the close of the year there were in the troughs 1,934,000 eggs.

During the fall the brood stock of brook trout at the station was largely increased by seining the creeks in the vicinity of the station, and resulted in a larger collection of eggs from this source than in previous years. During the early fall arrangements were made with persons in the vicinity of the station who had a supply of stock fish to collect and hatch the eggs at the station on shares. The first eggs were taken October 26 and the spawning season continued until January 14, when the last eggs were taken from the brood fish at the station. The total number of brook-trout eggs collected from all sources amounted to 1,065,000, of which 112,000 green eggs were given to the

owners of stock fish, 113,477 were lost during incubation, 355,000 eyed eggs were shipped to other stations, and the balance produced 496,523 fry. Of the fry, 50,023 were lost in the hatchery, 77,500 were given to the owners of stock fish, 269,000 were distributed as fry during May and June, and at the close of the year 100,000 fry remained on hand in course of rearing for distribution as fingerlings and yearlings.

The Loch Leven trout at the station began spawning October 23 and finished November 29, when 16,375 eggs had been collected. The product of these eggs amounted to 14,000 fry, which were distributed during May and June.

On February 10th 50,000 rainbow-trout eggs were received from the Manchester Station in good condition. The 41,500 fry from these eggs were distributed to various applicants and planted in streams on the Rosebud Reservation and in Spearfish Creek.

Between March 20th and May 31st 3,670 adult rainbow trout were seined in the Laramie River and Sodergreen Lake, about 20 miles south of Laramie City, Wyo. Only 183, or 5 per cent, of these fish produced any eggs, the total collection amounting to 170,000, which, after being eyed at the hatchery of the Wyoming Fish Commission, were divided equally between the Laramie State hatchery and the Spearfish Station, the latter receiving 75,000, the product of which at the close of the year amounted to 60,000 fry.

At the close of the year the stock of fish on hand was as follows:

Species.	Eggs.	Calendar year in which fish were hatched.				
		1902.	1901.	1900.	1899.	1898.
Brook trout	.....	100,000	.....	690	.....	1,000
Loch Leven trout	.....	.....	.....	2,239	.....	104
Rainbow trout	.....	60,000	5,000	.....	.....	.....
Black-spotted trout	1,934,000	.....	.....	.....	390	54
Total	1,934,000	160,000	5,000	2,929	390	1,158

BOZEMAN STATION, MONTANA (JAMES A. HENSHALL, SUPERINTENDENT).

The work at this station was confined to the propagation of brook trout, black-spotted trout, steelhead trout, rainbow trout, Montana grayling, and the collection of eggs at auxiliary stations.

The work at the auxiliary station for the collection of black-spotted trout eggs at Henry Lake, Idaho, was in charge of Mr. W. F. Jarvis, who took the first eggs April 4 and the last May 24. From 700 females there were obtained 871,500 eggs, an average of 1,200 per fish. Ripe males were very scarce during the season, and the loss of nearly a half million eggs is to be attributed to this cause. Besides the eggs transferred to the Bozeman Station, 235,000 were shipped to other stations and applicants, one assignment going to Belgium. The temperature of the water in the hatchery during the season varied from 40° to 54° F., the water in the spring pool being much influenced by the air temperature.

The auxiliary station at Red Rock Lake, Montana, for the collection of grayling eggs, was in charge of Mr. G. H. Tolbert. The first eggs were taken on April 21 and the last on May 31. Ripe fish of both sexes were very plentiful, and the number of eggs collected could have been greatly augmented had the station been equipped with more hatching-jars, in which the eggs are eyed. The collection amounted to 4,463,000 eggs, which were eyed in 21 jars. In addition to the eggs shipped to Bozeman Station there were shipped to other stations and applicants 1,455,000. More than 2,000,000 were hatched and the fry planted in streams contiguous to the substation. The temperature of the water in the hatchery varied from 49° to 53° during the season.

Mr. Tolbert reports that the streams are swarming with yearling grayling from the plant of last season, which indicates that grayling fry thrive well when planted early.

The number of eggs collected at Bozeman Station and received from the auxiliary stations during the year numbered 1,429,000, as follows: Black-spotted trout, 615,000; steelhead trout, 83,000; rainbow trout, 2,000; brook trout, 129,000; grayling, 600,000.

The number of eggs received from other stations during the year was 282,700, as follows: Brook trout, 197,000; rainbow trout, 47,000; lake trout, 38,700.

During the year 2,946,000 fry and fingerlings were distributed in Montana, Idaho, Oregon, and Washington, as follows: Black-spotted trout, 262,000; brook trout, 24,000; steelhead trout, 10,000; grayling, 2,650,000.

The water in the hatchery at the Bozeman Station is uniformly 45° during the winter and 44° during the summer months, when the snow is melting in the mountains. During the past fall the wall of the warm spring was raised and extended, giving a fall of 18 inches to the creek-water ditch. As the water of this spring is 77° during the entire year, it keeps the water in the ditch from freezing in the winter, thus insuring a constant supply of creek water the year round. After the fry are hatched in the spring water it is shut off and the creek water is utilized for the fry. As it never rises above 65° in summer, contains a great deal of natural food, is more highly aerated, and is clear and pure after the spring rise, or from the middle of June, it is preferable to the spring water for the fry.

The different species of trout sent out from the station have done exceedingly well wherever planted. The steelhead trout and brook trout have shown a growth quite remarkable, in some instances weighing 3 pounds at little more than 2 years of age where the supply of natural food was abundant. There was sent to the station a black-spotted trout 2¼ years old that weighed 3 pounds dressed. It had been placed, with others of the same hatching, in a carp pond near Toston, Mont., which may go to show the value of young carp as trout food.

During the past year there has been no evidence of disease among the fry at this station. A few of the black-spotted male trout were injured by fighting and some by jumping against the supply pipes during the spawning season, resulting eventually in their loss. The same causes also account for a slight loss of steelhead trout; otherwise all stock fish have done very well. They are fed on mush made of 1 part beef or sheep liver and 3 parts of mill shorts from which the bran has been taken. This food is well assimilated and taken with avidity.

At the close of the fiscal year the following fish were on hand:

Species.	Calendar year in which fish were hatched.			
	1902.	1899.	1898.	1897.
Brook trout	249,000	.....	278	268
Black-spotted trout	225,000	.....	2,326	.....
Steelhead trout	21,000	.....	1,580	.....
Rainbow trout	37,000	1,574	.....	.....
Lake trout	18,000	40	.....	.....
Grayling	25,000	.....	.....	.....
Total	575,000	1,614	4,184	268

BAIRD STATION, CALIFORNIA (G. H. LAMBSON, SUPERINTENDENT).

The work at this station is confined to the propagation of the quinnat salmon. At the beginning of the year the various racks were in place and some salmon had collected in the fishing pool; the current wheel used to supply the hatchery with water was in running order, and all hatching equipment had been cleaned and painted. During the month of July the spawning-house, fish-pens, whim, and seine reel were made ready for active operations. Twice during the season the current wheel broke down. The first time it was repaired by the station employees, but the second time it was necessary to replace the countershaft. On each occurrence the steam pump was operated during the time the current wheel was out of service and thus kept the hatchery supplied with water.

Fishing began on August 16, when 4 ripe females were obtained. The following day 37,200 eggs were taken from 7 females. Fishing and spawning operations continued until September 25, when the season's operations with the summer run of salmon closed. The fall run of fish began October 25, with a catch of 8 ripe females, and the following day 66,400 eggs were obtained from 10 females. Fishing and spawning operations continued until November 25.

From the summer run 7,375,520 eggs were taken from 1,203 females, or an average of 6,130 per fish. The fall run yielded 1,557,770 eggs from 233 females, or an average of 6,690 per fish. Of the total collections, amounting to 8,933,290 eggs, 5,706,410 were shipped to the California Fish Commission at its Sisson and Eel River stations, 30,000 were shipped to the Pan-American Exposition at Buffalo, N. Y., and 10,000 to each of the stations of the Commission at Neosho, Mo.,

and Manchester, Iowa. From the balance of the eggs collected 2,115,560 healthy fry were planted in the McCloud River. The fry from the summer run, 811,900 in number, were planted just as the umbilical sac was absorbed, all the trough room being required for the eggs from the fall run. The fry from the fall-run fish were held in the troughs until April and when planted averaged about 2½ inches in length. A lot of 100,000 fry from the fall run were reared in an earthen pond, and at the end of the season, when the plants were made, averaged slightly larger than those retained in the hatching-troughs.

The method of stripping and fertilizing the eggs was the same process used during the past five years, with the exception that after the regular spawning all females were killed and opened to secure the balance of the eggs in them which could not be extruded in the regular way. These eggs were washed in a normal salt solution and then fertilized. As a result about 12 per cent more eggs were secured than if the usual methods had been pursued.

The food for rearing the fry consisted of liver, liver and mush mixed, and canned salmon. Heretofore much difficulty has been experienced from feeding the canned salmon, as it dissolved in the water so quickly that the fish could not find particles large enough to eat and the water became so milky as to obscure the fish from view. It also fouled the troughs, covering the sides and bottom with a greasy scum, and collected on the gills of the young fish. During the past season these difficulties were obviated by submitting the canned salmon to pressure in a press made for the purpose, somewhat similar to a hand cider-press. The moisture was pressed from the salmon until it could be squeezed in the hand like damp earth, and in this condition it held together well in the water and did not foul the troughs much more than liver or liver and mush. For experimental purposes eight troughs of fry of about the same age were set aside, four troughs being fed on nothing but canned salmon and the other four on liver at first and then a mush of liver and shorts. When the fry were planted there was no apparent difference in the size or condition of the two lots, the fry fed on the canned salmon appearing as strong and healthy as any in the hatchery. The first cost of the canned salmon is about the same as that of the liver and mush, but it is always available when once canned and the labor necessary to secure and prepare the liver and mush is avoided.

On October 5 the foreman's cottage was reported on fire, and although all the employees were at hand ready to do what was possible to extinguish the flames the building was entirely consumed within half an hour, the foreman losing nearly all of his personal effects.

During the summer there were many fires on the hills and around the reservation. In September the fires entered the southern part of the reservation, endangering the woods back of the superintendent's residence. The spread of the flames was prevented by back-firing.

On January 16 Colchoolooloo, one of the oldest and most influential Indians on the reservation, died in his hut. He was a consistent friend of the white people, and in former years saved the superintendent from being killed by the Indians. His influence was always exerted toward keeping his people sober and industrious. He was buried on the reservation upon a hill, where he had selected a site for his grave.

From October 18 to December 18 the superintendent was absent from the station, detailed to act as messenger in the transportation of a shipment of salmon eggs from San Francisco to New Zealand.

On April 24 a quinnat salmon was noticed spawning in the river opposite the hatchery. It had about finished spawning, only 10 or 15 eggs being secured. It is not known whether this fish was a straggler from the fall and winter run or an early comer in the spring run.

BATTLE CREEK SUBSTATION, CALIFORNIA (OPERATED FROM BAIRD STATION).

In order to determine the extent of the spring and summer run of salmon the racks had been put in place during the month of April. A large run of fish came into the seining-pool during the late spring and early summer, but owing to the extreme heat they died without ripening. The experiment proved that there is a large summer run of fish in the creek, but it also proves that it is impossible to secure eggs from this run at the Battle Creek Station. A new stone-ballasted crib pier was constructed at the mouth of the ditch and the water turned in by the aid of a wing dam. All hatching-troughs and equipment were cleaned and asphalted and the general repairs about the station completed.

The first fishing occurred October 22, when 13 ripe females were caught, and the following day from 41 ripe fish 238,700 eggs were taken. Fishing and spawning operations continued until December 1, when portions of the racks were washed out and the balance of the salmon on hand escaped. The total number of eggs collected amounted to 10,059,000, of which 705,000 were lost during incubation, and 9,354,000 were shipped to the Sisson Station of the California Fish Commission. The fry resulting from the eggs shipped to the Sisson Station were all planted in the Sacramento River and tributaries.

The ordinary method of stripping the fish and fertilizing the eggs was pursued the same as at Baird, and after each stripping all the female fish were cut open to secure the balance of the eggs in them. The eggs were washed in a normal salt solution and then fertilized. By this method 1,512,630 eggs were obtained, or 15 per cent of the total take. The entire loss of eggs from all causes was 0.07 per cent. The method of handling the eggs was different from that followed at the Baird and Mill Creek stations in that after the second day they were left undisturbed until they emerged from the tender period or when the blastopore was fully closed, while at Baird and Mill Creek the eggs were picked daily. The results from this experiment were not

definite or satisfactory, as the eggs proved to be better than those at Baird Station and not as good as those at the Mill Creek Station.

On November 28 a very heavy rainstorm occurred and by night the creek was raised over 7 feet. A large amount of drift came downstream and lodged against the racks and the entire force were engaged in removing it in order to save the racks. This work proved unavailing, and just as the men were ordered to desist C. H. Storrs, a temporary laborer, was caught by a log and killed. The coroner's jury returned a verdict of accidental death and exonerated the Commission from all blame. The work of clearing the racks in times of freshet is hazardous, but this is the first fatal accident that has occurred at any of the California stations, although there have been several narrow escapes.

Toward the close of the year racks were put across the mouth of the creek to turn the salmon into the river and force them up the McCloud, where they can be retained until ripe. The results of this experiment can not be foretold at the close of the year.

MILL CREEK SUBSTATION, CALIFORNIA (OPERATED FROM BAIRD STATION).

This is a new station situated on Mill Creek, a stream which has its source in the foothills of the Sierra Mountains in the northeastern part of Tehama County, and emptying into the Sacramento River from the east about a mile above the town of Tehama.

Investigations made toward the close of the previous year demonstrated that there was a large run of salmon in this creek, and in order to take and eye the eggs a hatching-shed 80 feet long by 40 feet wide, with 10-foot studding and open on all four sides, was erected. A water supply of 1,000 gallons per minute was obtained by tapping a mill-race and thence conducting the water to a settling tank in the hatchery through 78 rods of ditch and 57 rods of flume. The water thus used is returned to the mill-race, and is furnished free of charge. In the hatching-shed 80 troughs, 15½ feet long, 11½ inches wide inside measure, and 6¾ inches deep, were erected. When fully equipped the hatchery will have a capacity of 10,000,000 eggs. A small tool-house and storehouse were also constructed.

The site having been selected before the close of the last year, the racks were all in place at the beginning of the year. The upper rack, 75 feet long, is composed of three stone-ballasted piers, upon which rest three double stringers. The racks are 14 in number, made in sections 5⅓ feet wide and 9 feet deep, with a space of 2¼ inches between the slats. These racks rest upon stringers at the top and on the mud sill, which is placed across the stream at the bottom. The lower rack is constructed in the same way except that it is 85 feet long and has three V-shaped openings or traps, the angle of the V being upstream.

The salmon of the summer run which were intercepted by the racks all died before becoming ripe enough to spawn, death being due to the

extremely warm weather. The fall run was not large because the creek was very low, while at the same time the Sacramento was several feet above the low-water mark. The run began during the last week in October, and fishing commenced October 30 and continued at intervals until the close of the season on December 2, when 2,561,000 eggs had been secured from 451 female salmon. The loss during incubation was 141,000 eggs, or 0.055 per cent. All of the eggs were shipped to the California Fish Commission—1,000,000 to the Price Creek hatchery and the remainder to Sisson. The method of fertilization was the same as at Baird and Battle Creek.

As it has been found impossible to secure eggs from the summer run of fish at the Mill Creek Station, during the spring temporary racks were constructed across the mouth of the creek in order to turn the salmon back into the Sacramento River with the hopes that a large proportion of them would continue up the river and on to Baird Station, where the water is colder and the eggs can be taken. A large run of salmon passed up the river during May and June, and the fish were continually fighting the racks, but all were compelled to return to the river.

Clackamas Station, Oregon (J. N. Wisner, in Charge).

Mr. E. N. Carter, who was in charge of the station for the first six months of the year, having been relieved, Mr. J. N. Wisner, field superintendent, was placed in charge for the balance of the year, and on February 15 Mr. Carter was transferred to St. Johnsbury, Vt.

The initial work of the year consisted in the care of the few fish on hand at the end of June, cleaning up of the station buildings, and the construction of a fence around the premises. On July 24 the construction of the rack across the Clackamas River a short distance below the station was undertaken and the work completed early in August. Owing to the fact that about 2,000 cords of wood were being floated down the river, it was necessary to construct a boom above the rack on either side of the river to a point in the rack where a gate was made to allow of its passage. This gate was constructed of 1-inch boards, 4 inches wide, placed with their edges to the current and hinged to an iron rod below the surface. After the rack had been completed the employees were set to work on the bed of the river, which was cleared of bowlders and snags and put in condition for fishing. Live pens were made for retaining the salmon, and other work preparatory to the fishing season was done.

Fishing with gill nets began on the evening of September 22, and on the following morning 43,000 eggs were taken from eight ripe females. The run of fish gradually increased until October 15, when 194 were taken, 94 being females, and from these 412,000 eggs were secured, making the largest single day's work of the season. By November 8th 10,018,000 eggs had been collected, and as the capacity

of the station was taxed to its utmost it was necessary to discontinue collections. The rack was at once opened, that the remaining salmon might have free passage to the upper waters for spawning. A large portion of the rack was saved and stored for future use. The total loss of eggs was 1,347,850, or about 13 per cent of the entire collection.

The females were spawned in the same manner as that practiced throughout the Columbia River territory, except that after the greater portion of the eggs had been removed an incision was made in the belly of the fish, the eggs shaken free from the enfolding sac, and then pressed from the vent. In this manner the egg take was added to materially, but the eggs thus taken were not of the best quality. On November 10, after a period of incubation of fifty days, the eggs began hatching, and owing to lack of space it became necessary to plant the greater portion of the fry as soon as they hatched.

With the view to affording them as much protection as possible, a series of dams was thrown across the small branch leading from the hatchery to the Clackamas, it having first been cleaned, and into the small ponds thus made throughout its length the fry were liberated. By January 1 over 6,000,000 fry had been planted, and the balance, 2,412,000, were held in troughs and outside tanks to be reared for a time upon artificial food. In each tank 36,000 fry were placed and in each trough 18,000, but on January 9 it was necessary to thin them out by distribution, leaving 15,000 in each tank and 5,000 in each trough. The fry loss for the year amounted to 128,866, or 1.48 per cent of those hatched.

During September and October 220,000 eyed quinnat-salmon eggs were received from the Oregon Fish Commission. Of these, 10,000 were loaned to the Portland Carnival in connection with its exhibit and 175,472 fry hatched from the remainder were planted in the Clackamas River.

In February 900,000 white-fish eggs were received from the Northville, Mich., Station, and after being successfully hatched the resulting fry, numbering 750,000, were planted in Lake Sequalitchew, Washington.

In July and August the rainbow and brook-trout fry carried over from the previous year were planted under the direction of the Oregon Fish and Game Association.

In one of the rearing-tanks 20 quinnat salmon had been held until 18 months old, and on June 26, 1902, copper tags were placed upon them and they were liberated in the Clackamas River.

At the request of the committee in charge a model salmon hatching-house was installed as an exhibit at a carnival held in Portland, Oreg. All the equipment used was made one-third the regular size and was furnished by the committee. The Commission loaned cans, packing, and such other articles as could be spared. The installation of this exhibit was under the direction of the superintendent until completed,

and it proved to be very interesting and instructive to the visitors at the carnival.

On the 25th of February 100,000 brook-trout eggs were received from the Leadville, Colo., Station, and early in March another shipment of the same number came from the same place. These eggs were received in fine condition, hatched well, and the resulting fry, after being fed for a short time, were planted in waters of Oregon and Washington.

On March 16 a shipment of lake-trout eggs was received from the Duluth, Minn., Station in good condition, and began hatching March 23. The loss of fry was heavy, but was due to the fact that one of the screens clogged up, forming a current, which destroyed a large number. The fry were planted in Lake Sequalitchew, Pierce County, Wash., and in waters in Oregon.

During May 10,000 cut-throat trout eggs were received from Verdi, Nev., and the fry hatched from them were planted in waters in Clackamas County, Oreg.

On May 23 the first shipment of steelhead eggs, numbering 40,000, was received from the Rogue River Station, and on June 3 a second lot of 30,000 arrived in good condition. The eggs hatched well, and at the close of the year the fry were doing nicely.

The food used consisted at first of pure liver and later of liver mixed with Germea. This was prepared by stirring the Germea into very hot water, to which a little salt had been added, and then grinding the mixture with the liver to thoroughly combine the ingredients.

Rogue River Station, Oregon.

This station was operated as a substation of Clackamas. The construction of the rack across the river to stop the ascent of the quinnat salmon was commenced on July 5 and completed within five days, the expense of building it being much less than usual, as most of the material in the last year's rack was again utilized. For the remainder of the month and during the early part of August the time of the men was taken up in general repairs to the equipment preparatory to the opening of the salmon work, and in making various improvements, the most important being the construction of a large water-wheel capable of lifting 100 gallons of water per minute, and the erection of 28 hatching-troughs. A strong boom was also anchored in the river above the wheel to protect it from driftwood, and a large supply tank was built. The money for making these improvements was furnished by Hon. R. D. Hume.

The fishing season opened August 20, when 2 ripe females were stripped, and from that time to the end of October eggs were obtained daily, the total collections aggregating 5,601,000. The entire number of ripe females stripped was 1,515, and the largest take of eggs was on October 21, when 385,000 were secured. The last eggs were taken on November 5, and on the 26th of that month one-third of the sea-

son's take was shipped to Hon. R. D. Hume, Wedderburn, Oreg., to be hatched and liberated by him in the Rogue River at that point. The balance of the eggs hatched at the station with a loss of 11.10 per cent, and on December 14 the first plant of fry was made. Early in the winter an effort was made to feed a lot of 100,000 in the rearing-tanks, but by January 26 the weather became so cold that it was impossible to keep the water running and the fry were liberated. Plants of fry were made from time to time during the winter, though as many as could be accommodated were retained for rearing to the fingerling stage, the last of them being released on May 22. The food given these fish consisted entirely of canned salmon, and they seemed to thrive on it until they were about 2 months old, after which time they began dying in large numbers and were immediately distributed.

The Elk Creek Substation was again operated for the collection of eggs of the steelhead and silver salmon. A dam 125 feet long and 10 to 15 feet wide was constructed in the creek about a mile from the hatchery, the old location 10 miles above the station having been abandoned, as it was found that a large number of the fish spawned before reaching that point. The dam was very solidly built of logs and rocks, with false and solid aprons alternating. The false aprons were filled with rock to give the necessary weight, and around one end of the dam a 4-foot channel was blasted and a trap placed in it. Toward the center of the dam were bowlders, around which the fish jumped, and it was found that by putting a slide upon some of these the fish would fall into it and be carried into the trap on the opposite end of the dam. Only one trap was in operation at the opening of the season, but later the number was increased to three. A series of substantial live-pens was constructed above the dam.

Between the 18th of November and 6th of December 500,000 silver salmon eggs were taken from 268 females. These hatched with a loss of 63,000 eggs, and in April 424,530 fry were deposited in the Rogue River at Trail, Oreg.

The steelhead work opened February 18, but the conditions early in the season were all unfavorable. There was a scarcity of males, and in many instances it was necessary to impregnate the eggs of several females with the milt of a not fully matured male. The weather was also cold and rainy and the water higher than normal. At the close of the season—May 11—the total collections amounted to 617,000. The number of ripe females used was 290. As soon as the eggs had developed sufficiently 481,000 were shipped on assignment, one case of 25,000 being forwarded to an applicant in Germany. The loss on the 126,000 eggs retained for hatching was very heavy, only 20,250 fry resulting from them. These were released in the Rogue River on May 29. The method of taking and fertilizing the eggs was the same as in previous years, and the heavy mortality during incubation is attributed to the unfavorable conditions existing during the collecting season.

LITTLE WHITE SALMON STATION, WASHINGTON.

Although a substation of Clackamas, this station is more important than the head station in all branches of the work. From it are operated the substations on the Big White Salmon River, and also on Eagle and Tanner creeks.

The station was opened July 9, when the usual preparations for active work were commenced. The hatchery and troughs were put in good condition, a combined wood-shed and storeroom was erected, and four skiffs for use at the station and substations were built. All of the buildings were whitewashed and the outside of the window frames given a coat of paint. The dam in the supply creek was partly torn out and widened, with the view to giving an easier outlet during winter freshets. The mess-house, which had been almost against the hatching-house, was moved to a distance of 30 yards from the latter to lessen the danger of fire. A new flume was built from the source of the water supply to the filter, and thence to the upper hatching-house; it was then laid along this building to the lower house, and from there to the outside troughs. A scow was made for use in bringing in supplies and for the distribution of fish and eggs.

On August 5 the upper rack was completed, and the work of putting in the other racks was at once pushed to completion. The racks were constructed in the usual temporary manner of tripods with one long and two short legs, weighted, and tied with stringers, upon which the pickets of 2 by 2 material were nailed in a vertical (angular) position.

The fish were captured by means of the regular downstream traps, and after being caught they were held in retention pens until the following day, when they were spawned.

The spawning was done by the use of a spawning-box to hold the fish, which were stunned before being put into the box. The eggs were pressed from the fish by one man into a pan held by another, and the milt was immediately applied. The mixture of milt and eggs was stirred with the fingers, and then the spawn-taker added water until the eggs were barely immersed. After this the pan was set aside for 1½ minutes before being taken up and washed. The eggs were then carried to the station in buckets, 15,000 to the bucket, and there they were measured and placed in hatching baskets. After the eggs had been cleaned and picked for a period of 4 or 5 days, they were covered and allowed to remain in perfect quiet until 30 days old, when they were thoroughly washed and picked over. After this picking they were kept perfectly clean until hatched. Feeding was begun before the yolk-sac was absorbed. At first, with the view to accustoming the fry to food, only pure and very finely ground liver was given, but later on, as soon as they began taking food well, they were fed a mixture of liver and mill-feed.

It was necessary to plant many of the fry as soon as they were hatched, on account of lack of water and space, but as many as possi-

ble were held and fed until late in the spring, the final distribution taking place during April. The total collections during the season amounted to 14,166,132 eggs, on which there was a loss of 2,537,200.

In addition to the eggs taken at this station, 573,000 were received from the Big White Salmon substation and 598,868 from the Eagle Creek substation, making the total of eggs handled 15,338,000, from which were hatched 12,800,800 fry. The fry loss amounted to 719,995, and the total number available for distribution amounted to 12,080,805, which were scattered along in waters tributary to and in the Columbia River from a point 30 miles up the Des Chutes River to the Sandy River.

Big White Salmon Station.

When this station was visited it was found that the White Salmon Boom and Improvement Company had thrown a wing dam across the mouth of the river and had cut a channel across the bar in order to get logs out on a lower stage of water than had been the former practice. This change necessitated new plans for capturing the fish in the river, as it gave the fish a new lead from the Columbia and threw the current from the eastern to the western side of the river.

On September 5 the run of logs was finished and Mr. G. H. Tolbert was placed in charge of the substation with a crew of 2 men. As there are no buildings at this point, the necessary camp equipment was transferred from the Little White Salmon Station, also a complete equipment of tools. Camp was pitched within 300 yards of the mouth of the river, and the fishing-ground was located 500 yards from its mouth. Fishing was conducted by racking the stream and by downstream traps. Old troughs were freighted from the Little White Salmon Station and set up on Olsen Creek, a small stream 1 mile below the mouth of the Big White Salmon River. Here a fine water supply was available, which was not only clear at all times but never varied in temperature.

Later in the season it developed that there was not sufficient room for the fry being collected, and 100 new troughs were made for this station and set up out of doors. They were supplied with water from a 500-foot flume temporarily but substantially built, as it was necessary to carry the flume in one place 20 feet from the ground, exposed to high winds.

The first females were taken September 14, when 29,500 eggs were secured. The fish were captured during the greater part of the season in the downstream trap, but owing to high water it was necessary at times to seine them. The same manner of handling the fish was in vogue as at the Little White Salmon. During the season 872 females were taken, from which were secured 3,415,000 eggs, showing the average production per fish to have been 3,916. From the eggs taken at this station, and from the 741,932 taken at Tanner Creek and shipped

to this point, there were hatched 3,075,000 fry, which were distributed with a loss of 330,500. Considering the fact that there were no buildings at the station and that it was but the second year of operation, and also that it was impossible to start the work until late in the season, the results are considered very good.

At Eagle Creek the eggs collected were eyed in troughs set up temporarily and supplied with water by a flume from the creek. Owing to the rough bottom of the creek it was impossible to follow any definite method of fishing, but so far as possible the fish were caught in downstream traps. The traps could hardly deserve the name, being nothing more than slats and slabs placed wherever practicable between the bowlders. Besides these traps, seines and dip nets were used.

The total number of eggs collected amounted to 715,000, which were secured from 146 females, an average of 4,897 per fish. Of these, 90,132 were lost during the period of incubation, 598,868 eyed eggs were shipped to the Little White Salmon Station, and 26,000 eggs were left at the point of collection and planted in Tanner Creek.

The station was cared for throughout the season by two men, and, considering the fact that it was operated for the first time, the work is thought to have been very successful.

At Tanner Creek troughs, lumber, tools, tent, and a complete outfit were set up which had been sent over by boat from the Little White Salmon Station.

The fish were caught by means of racks and downstream traps, and troughs were set up beside the creek in a most temporary manner, with a flume 700 feet in length leading to it from the creek as a water supply.

The first eggs were taken September 12, when 6,000 were obtained from 2 females, and from this date the collecting season continued with an average daily take of 33,516 for twenty-four days. The total take for the season amounted to 804,400, which were secured from 234 females. The loss of eggs during the eying period was 43,468. Of the 786,932 eggs eyed 45,000 hatched before it was possible to get them away from the station, and 741,932 were shipped to Big White Salmon Station to be hatched in the new troughs set up at that place.

The work at this point, as at the Big White Salmon and Eagle Creek, was all done out of doors. The crew of two men lived in a tent, cooked for themselves, and did all the work. The hatching troughs were set up in the open air with no shelter except boards laid across the top of them as covers.

BAKER LAKE STATION, WASHINGTON (H. H. BUCK, SUPERINTENDENT).

The opening of the fiscal year found the racks in place on the river above the lake, as work on them had been diligently prosecuted throughout the preceding month. Seven racks were built, but there were still some sloughs and low places which it was impracticable to

close entirely at high stages of the water. Notwithstanding the fact that the racks stood and were carefully attended, it was found, as the season advanced, that the fish ascended the river. This makes six years that the problem of blocking the salmon from the upper river has been tried without success. Some other method of capturing the fish must be devised.

During the summer 100 new egg baskets were made of wire with 5½ meshes to the inch, and these proved more satisfactory for hatching blueback-salmon eggs than the former size of 5 meshes to the inch.

The spawning season of the blueback salmon opened September 5 and lasted until October 26. Low water, which had prevailed throughout the summer, continued, and the run of fish in the lake was the smallest that has been noted. In all, 3,694,000 blueback eggs and 50,000 quinnat-salmon eggs were secured, which hatched with a normal loss of 8.7 per cent. These were all planted as fry in the waters of Baker Lake between February 22 and June 4.

Silver salmon, as usual, spawned in large numbers in the sloughs at the head of the lake, but no attempt was made to collect eggs from this species because it is not thought best to allow them to dispute the limited area of Baker Lake with the more valuable bluebacks, and there are no facilities for transporting the eggs from the hatchery to other points for distribution.

Early in December the auxiliary station at Birdsview was opened under the direction of Mr. Henry O'Malley, and preparations were made to collect eggs of the steelhead trout from Phinney and Grandy creeks. The heavy winter rains made the maintenance of the racks difficult on Phinney Creek and they were twice washed out. The temporary hatchery erected at this point last year was used as a base of operations, but the greater number of eggs were secured on Grandy Creek, and considerable inconvenience and a heavy loss of eggs resulted in transporting them over the 5 miles of rough country which separates the creeks. It is recommended that the temporary hatchery be removed to Grandy Creek. In all, 408,000 eggs were collected and hatched, with a loss of 18 per cent. Of the resulting fry, 110,000 were planted in the tributaries of the Skagit River during the last days of June and 223,815 were on hand at the close of the year.

Details of distribution.

Species and disposition.	Eggs.	Fry and fingerlings.	Adults and yearlings.
Shad:			
Cahaba River, Centerville, Ala		450,000	
Connecticut Fish Commission, Stratford, Conn		3,000,000	
Hadlyme, Conn		3,000,000	
Brandywine Creek, Wilmington, Del		2,257,000	
Nanticoke River, Seaford, Del		2,755,000	
Leipsic Creek, Clayton, Del		83,200	
Leipsic Creek, Cheswold, Del		124,800	
St. Johns Creek, Dover, Del		332,800	
Murdock Creek, Felton, Del		416,000	
Mispillion Creek, Milford, Del		416,000	
Murderkill Creek, Ellendale, Del		124,800	
Indian River, Millsboro, Del		582,400	
Potomac River, opposite Fish Lakes, D. C.			2,000,000
above Georgetown, D. C.		450,000	
Bathing Beach, D. C		350,000	
Suwannee River, Suwannee, Fla		240,000	
Bramford, Fla		240,000	
Ichetucknee River, Ichetucknee, Fla		240,000	
Santa Fe River, High Springs, Fla		270,000	
Withlacoochee River, Istachatta, Fla		300,000	
Anclote River, Tarpon Springs, Fla		520,000	
Aucilla River, Aucilla, Fla		525,000	
Ocklocknee River, Ocklocknee, Fla		525,000	
Little River, Quincy, Fla		525,000	
Apalachicola River, River Junction, Fla		525,000	
St. Johns River, East Palatka, Fla		450,000	
Tomoke River, Ormond, Fla		225,000	
Spruce Creek, Spruce Creek, Fla		225,000	
Peace Creek, Wauchula, Fla		600,000	
Lake Tohope Kaliga, Kissimmee, Fla		600,000	
Ogeechee River, Midville, Ga		450,000	
Savannah River, Augusta, Ga		1,650,000	
Ocmulgee River, Macon, Ga		450,000	
Potomac River off Pamunkey Creek, Md		2,049,000	
Piscataway Creek, Md		8,245,000	
Bryan Point, Md		5,423,000	
Point of Rocks, Md		600,000	
Swan Creek, Swan Creek, Md		2,140,000	
Bush River, Bush River, Md		688,000	
Elk River, Elkton, Md		319,000	
Susquehanna River, Port Deposit, Md		600,000	
Havre de Grace, Md		214,000	
Gunpowder River, Gunpowder, Md		939,000	
North East River, Charlestown, Md		230,000	
Patuxent River, Laurel, Md		450,000	
Wankinko River, Wareham, Mass		400,000	
Assawomsett Pond, Middleboro, Mass		3,000,000	
Furnace Pond, South Hanson, Mass		3,000,000	
Delaware River, Howells Cove, N. J		4,435,000	
off mouth of Timber Creek, N. J		400,000	
Lambertville, N. J		450,000	
Scudders Falls, N. J		450,000	
Washingtons Crossing, N. J		450,000	
Trenton, N. J		512,000	
Navesink River, Redbank, N. J		450,000	
Salem Creek, Salem, N. J		450,000	
Hudson River, Catskill, N. Y		2,123,000	
Cape Fear River, Wilmington, N. C		956,500	
Neuse River, Newberne, N. C		750,000	
Kinston, N. C		750,000	
Trent River, Pollocksville, N. C		270,000	
Six Runs River, Clinton, N. C		1,000,000	
New River, Jacksonville, N. C		300,000	
Chowan River, Hornblower Point, N. C		2,103,000	
Eden House, N. C		2,802,000	
Reedy Point, N. C		1,245,000	
Pasquotank River, Elizabeth City, N. C		1,448,000	
Tar River, Washington, N. C		728,000	
Salmon Creek, Avoca, N. C		3,409,000	
Perquimans River, Hertford, N. C		1,012,000	
Roanoke River, Plymouth, N. C		2,623,000	
Neuse River, Goldsboro, N. C		380,000	
Edenton Bay, Edenton, N. C		1,269,000	
Lake Waccamaw, Lake Waccamaw, N. C		400,000	
Chowan River, Holleys Haul, N. C		1,464,000	
Susquehanna River, Fites Eddy, Pa		235,000	
Columbia, Pa		363,000	
Runnins River, Providence, R. I		1,200,000	
Shad Factory Creek, Providence, R. I		1,800,000	
Cooper River, Monks Corners, S. C		300,000	
Ashepoo River, Ashepoo, S. C		900,000	

Details of distribution—Continued.

Species and disposition.	Eggs.	Fry and fingerlings.	Adults and yearlings.
Shad—Continued.			
Big Pedee, Pedee, S. C		1,625,000	
Sampit River, Georgetown, S. C		413,000	
Black River, Harpers, S. C		410,000	
Edisto River, Jacksonboro, S. C		1,000,000	
Salkehatchie River, Yemassee, S. C		500,000	
Nottaway River, Courtland, Va		750,000	
Blackwater River, Franklin, Va		446,000	
Nansemond River, Suffolk, Va		956,500	
Potomac River, Occoquan Bay, Va		686,000	
off Occoquan Creek, Va		2,000,000	
Little Hunting Creek, Va		1,090,000	
Pohick Creek, Va		4,835,000	
Doves Creek, Va		1,648,000	
Total		104,986,000	2,000,000
Quinnat salmon:			
McCloud River, Baird, Cal		2,115,560	
California Fish Commission, Sisson, Cal	14,472,380		
Eel River, Cal	2,008,030		
Price Creek Hatchery, Cal	1,000,000		
Lake Okoboji, Spirit Lake, Iowa		4,000	
Spring Branch, Clackamas, Oreg		4,462,342	
Clackamas River, Clackamas, Oreg		4,043,356	
Columbia River, Viento, Oreg		1,757,000	
Cascade Locks, Oreg		192,000	
Hood River, Oreg		108,000	
Hood River, Hood River, Oreg		153,558	
Columbia River, mouth of Lindsey Creek, Oreg		80,000	
Osterguarde Creek, Oreg		80,000	
Shell Rock, Oreg		60,000	
The Dalles, Oreg		12,000	
Memaloose Island, Oreg		55,100	
Eagle Rock, Oreg		36,000	
Wasco County, Oreg		36,000	
Seufert's cannery, Oreg		12,500	
Rogue River, Rogue River, Oreg		920,000	
Trail, Oreg		2,161,363	
Tanner Creek, Bonneville, Oreg		45,000	
Five Mile Creek, Wasco County, Oreg		23,400	
Lindsey Creek, Wasco County, Oreg		30,000	
Five Mile Creek, Seufert's Cannery, Oreg		25,000	
Des Chutes River, Free Bridge, Oreg		11,000	
Sandy River, Multonomah County, Oreg		15,000	
Mill Creek, The Dalles, Oreg		7,000	
Currens Creek, Currens Creek, Oreg		21,000	
Eagle Creek, Wasco County, Oreg		15,000	
Tanner Creek, Wasco County, Oreg		20,000	
Herman Creek, Wasco County, Oreg		20,000	
Willamette River, Portland, Oreg		10,000	
R. B. Hume, Wedderburn, Oreg	1,866,000		
Little White Salmon River, Skamania County, Wash		7,650,305	
Big White Salmon River, Skamania County, Wash		234,000	
Columbia River, mouth of Dog Creek, Wash		432,000	
Cooks Landing, Wash		244,000	
Underwoods, Wash		72,000	
Skamania County, Wash		2,024,390	
Thirteen Mile Point, Wash		450,000	
Eagle Rock, Wash		160,000	
Klickitat County, Wash		62,558	
Huntsucker Point, Wash		61,600	
Dog Creek, Skamania County, Wash		37,000	
Rock Creek, Skamania County, Wash		89,000	
Olsen Creek, Skamania County, Wash		1,159,276	
Wind River, Skamania County, Wash		36,000	
Hamilton Creek, Skamania County, Wash		15,000	
Klickitat River, Klickitat County, Wash		39,000	
Baker Lake, Baker Lake, Wash		50,000	
Total	19,346,410	29,337,308	
Atlantic salmon:			
Connecticut Fish Commission, Windsor Locks, Conn	200,000		
East Branch of Mattawamkeag River, Oakfield, Me		48,715	70,650
East Branch of Penobscot River, Grindstone, Me			87,768
Pleasant River, Brownville, Me			118,582
Phillips Lake, Bangor, Me			5,000
New Hampshire Fish Commission, Concord, N. H	100,000		
Salmon River, Altmar, N. Y		4,050	
Saxton Millpond, Spartanburg, S. C		4,000	
Total	300,000	56,765	282,000

Details of distribution—Continued.

Species and disposition.	Eggs.	Fry and fingerlings.	Adults and yearlings.
Landlocked salmon:			
Gus. Cushman, Telluride, Colo	5,000		
Connecticut Fish Commission, Windsor Locks, Conn	25,000		
Sysladobsis Lake, Grand Lake Stream, Me			8,000
Grand Lake Stream, Grand Lake Stream, Me		282,057	30,880
Grand Lake, Grand Lake Stream, Me		147,728	14,945
Phillips Lake, Dedham, Me			4,999
Toddy Pond, Orland, Me			10,723
Williams Pond, Bucksport, Me			4,999
Moosehead Pond, Moosehead, Me			45
Second Debsconeag Lake, Norcross, Me		35,000	
Herd Pond, Norcross, Me		35,000	
Nickerson Lake, Houlton, Me		20,000	
Parmachenee Club, Camp Caribou, Me	20,000		
City Reservoir, Worcester, Mass			500
Massachusetts Fish Commission, Wilkinsonville, Mass	10,000		
G. H. Richards, Wenaumet, Mass	5,000		
E. C. Wood, Plymouth, Mass	5,000		
Massachusetts Fish Commission, Paris, Mass	20,000		
Lake Winnepesaukee, Laconia, N. H			1,000
Crystal Lake, Grafton, N. H			1,000
Penacook Lake, Concord, N. H			1,000
Granite Lake, Keene, N. H			1,000
Lake Winnepecket, Warner, N. H			1,600
Tewksbury Pond, Canaan, N. H			800
Lake Tarleton, Pike Station, N. H			1,800
Dan Hole Pond, Moultonville, N. H			500
Sunapee Lake, Lake Station, N. H			59
A. M. Bigelow, Branchville, N. J	10,000		
New York Fish Commission, Caledonia, N. Y	20,000		
James Annin, jr., Caledonia, N. Y	10,000		
Wilmurt Club, Northville, N. Y	5,000		
W. M. Keil, Tuxedo Park, N. Y	10,000		
Otsego Lake, Cooperstown, N. Y		3,870	
Harris Pond and Mill River, Woonsocket, R. I			1,000
Utah Fish Commission, Murray, Utah	10,000		
Clyde River, Derby, Vt			1,000
Caspian Lake, Greensboro, Vt			4,688
Little Averill Pond, Averill, Vt			3,797
Long Pond, Westmore, Vt			2,240
Willoughby Lake, Westmore, Vt			400
Lake Dunmore, Salisbury, Vt			1,699
Vermont Fish Commission, Roxbury, Vt	35,000		
J. B. Fielding, North Wales, England	10,000		
Total	200,000	523,655	98,565
Silver salmon:			
Rogue River, Trail, Oreg		90,000	
Rogue River, Rogue River, Oreg		334,530	
Total		424,530	
Blueback salmon:			
Baker Lake, Baker Lake, Wash		3,371,000	
Steelhead trout:			
Alex. Von Boxel, Cimarron, Colo	10,000		
Lake Cobbosseecontee, Monmouth, Me		12,046	84
Big Sturgeon River, Indian River, Mich		20,000	
Thunder Bay River, Turtle Lake, Mich		40,000	
Baldwin and Sanborn creeks, Baldwin, Mich		30,000	
Spring Fork and Sweetwater creeks, Wingleton, Mich		10,000	
Greens and Floodwood creeks, Leota, Mich		20,000	
North Branch Pere Marquette River, Branch, Mich		10,000	
Little Au Sable River, Fountain, Mich		10,000	
Tobins Harbor, Tobins Harbor, Mich		20,000	
Lester River, Duluth, Minn			5,000
Fischer Creek, Duluth, Minn			5,000
Lake and Stream, St. Paul, Minn			5,000
Pickwick Creek, Pickwick, Minn			10,000
Lake Reno, Deerwood, Minn		20,000	
Island Lake, Cromwell, Minn		20,000	
Lester, French and Sucker rivers, Duluth, Minn		20,000	
West Branch of Lester River, Duluth, Minn		6,900	
Bridge Creek, Gallatin Co., Mont			10,000
St. Lawrence River, Cape Vincent, N. Y			1,319
Rogue River, Trail, Oreg		20,250	
Willoughby Lake, Westmore, Vt			28,358
Bean Pond, Wheelock and Snyder, Vt			145
Crystal Lake, Barton, Vt		10,000	6,930
Fairlie Lake, Fairlie, Vt			850

Details of distribution—Continued.

Species and disposition.	Eggs.	Fry and fingerlings.	Adults and yearlings.
Steelhead trout—Continued.			
Skagit River, Phinney Creek, Wash		85,000	
Quartz Creek, Wash		25,000	
Fischer Creek, Orienta, Wis			5,000
Christie Lake, Spooner, Wis		10,000	
S. E. Land, Centennial, Wyo	33,000		
S. Jaffe, Osnabruck, Germany	25,000		
Total	68,000	389,196	77,686
Loch Leven trout:			
Trout Lake, Idaho Springs, Colo		3,000	
Orchard Hill Brook, Plymouth, Mich		10,000	
Van Etten Creek, Au Sable, Mich		35,000	
Intermediate Lake, Bellaire, Mich		15,000	
Lake Hamlin, Ludington, Mich		15,000	
Spearfish Creek, Elmore, S. Dak			5,000
Box Elder Creek, Benchmark, S. Dak		4,760	
Spearfish Creek, Spearfish, S. Dak		4,000	
Trout Ponds, Roubaix, S. Dak		5,000	
Total		91,760	5,000
Rainbow trout:			
Black Water Creek, Jasper, Ala			950
Big Cove Creek Mill Pond, Gadsden, Ala			450
Big Spring, Huntsville, Ala			1,000
Applicants in Alabama			1,000
Oak Creek, Jerome, Ariz			450
Oak Creek, Flagstaff, Ariz			500
Clear Creek, Jerome, Ariz			450
Big Creek, Rich Mountain, Ark			2,000
Fish Lake, Pine Bluff, Ark			500
Spring Brook, Rogers, Ark			200
Eagle River and Lake, Berrys Station, Colo			5,000
Artificial Lake, Salida, Colo		10,000	
Fryingpan River, Thomasville, Colo		45,000	
Platte River, between Grant and Cliff, Colo		45,000	
Eagle River, Berrys Station, Colo		50,000	
Trout Lake, Grover, Colo		10,000	
Applicant at Sterling, Colo			200
Copeland Pond, Seymour, Conn			1,000
Connecticut Fish Commission, Windsor Locks, Conn			1,700
Applicants at Windsor Locks, Conn			500
Beaver Pond, Pine Orchard, Conn		2,000	
Pembleton Creek, Ellendale, Del			800
E. G. Shortlidge (State waters), Wilmington, Del			1,000
Spring Lake, Cedartown, Ga			1,000
Cherry Log and Rock creeks, Ellijay, Ga			1,000
Tallulah River, Tallulah Falls, Ga			3,000
Wolf Creek, Turnerville, Ga			1,000
Anderson Creek, Turnerville, Ga			1,000
Deep Creek, Turnerville, Ga			1,000
Big Spring, Calhoun, Ga			200
Fish Ponds, Calhoun, Ga			2,500
Ivy Creek, Clarksville, Ga			1,000
Santee Creek, Clarkesville, Ga			1,000
Amys Creek, Clarkesville, Ga			1,000
Crystal Lake, Dalton, Ga			300
Pacolet Lake, New Holland, Ga			500
Lookout Creek, Rising Fawn, Ga			1,000
Fish Lake, Toccoa, Ga			1,000
Applicant at Dalton, Ga			200
Bee Creek, Olney, Ill			500
Spring Brook, Bristol, Ind		2,500	
Trout Pond, Rolling Prairie, Ind		2,000	
Early Lake, Durant, Ind. T			1,000
Crystal Lake, Dewitt, Iowa			6,000
Snymagill Creek, McGregor, Iowa			10,000
Spring Creek, McGregor, Iowa			2,000
Maquoketa River, Forestville, Iowa		50,000	5,000
Mill Creek, Bellevue, Iowa			4,975
Lime Creek, Mason City, Iowa			5,300
Upper Iowa River, Decorah, Iowa		25,000	5,300
Big Cedar River, Osage, Iowa			5,300
Turkey River, Cresco, Iowa			5,300
Wapsipinicon River, McIntire, Iowa			5,300
Ionia, Iowa		25,000	
Upper Iowa River, Chester, Iowa		25,000	
Turkey River, Fort Atkinson, Iowa		25,000	
Red Cedar River, Charles City, Iowa		25,000	
Des Moines River, Estherville, Iowa		30,000	

Details of distribution—Continued.

Species and disposition.	Eggs.	Fry and fingerlings.	Adults and yearlings.
Rainbow trout—Continued.			
Maquoketa River, Manchester, Iowa		5,000	
Spring Branch, Manchester, Iowa		5,000	
Cannan Lake, Camden, Me			500
Lake Penneeswasswee, Norway, Me			406
Phillips Lake, Bangor, Me			500
Twinings Branch, Belair, Md			1,000
Texas Branch, Texas, Md			500
Turkey and Painter branches, Parkton, Md			500
Spring Branch, Garrett County, Md			2,000
Muddy Creek, Garrett County, Md			400
Fishing Creek, Frederick, Md			1,000
Bennetts Creek, Frederick, Md			1,000
Mine Branch, Minefield, Md			950
Branch of Youghiogheny River, Mountain Lake Park, Md			1,000
North Blade Pond, Swanton, Md			1,000
Brownings Dam, Oakland, Md			1,300
White Oak Run, Oakland Md			1,500
Marsh Run, Oakland, Md			500
Trout Lake, Oakland, Md			1,000
Lake Jorosa, Glyndon, Md			1,000
North Branch and Paint creeks, Hyattsville, Md			1,000
Maryland Fish Commission, Druid Hill Park, Baltimore, Md	50,000		
Lake Quinsigamond, Worcester, Mass			1,000
Pine Grove Pond, Williamsburg, Mass			500
Massachusetts Fish Commission, Hadley, Mass	25,000		
Wilkinsonville, Mass	25,000		
Hicks Brook, Millbury, Mass			500
West Creek, Hastings, Mich		5,000	
St. Marys Rapids, Sault Ste. Marie, Mich		17,500	
West Branch of Cedar River, Harrison, Mich		6,000	
Perch Creek, Sidnaw, Mich		5,000	
Tributaries of Paint Creek, Oxford, Mich		5,000	
Black River, Onaway, Mich		5,000	
Titibawassee River, West Branch, Mich		10,000	
Huron River, Milford, Mich		10,000	
Pigeon River, Rondo, Mich		5,000	
Lester River, Duluth, Minn		20,000	
Branch of Lester River, Duluth, Minn		12,000	
Fish Pond, Gloster, Miss			500
Brazil Creek, Bourbon, Mo			6,200
Flat Creek, McDowell, Mo			1,000
Lake of the Woods, Fulton, Mo			1,000
Spring Lake, Republic, Mo			1,000
Ash Cave Lake, Dixon, Mo			500
Distillers Pond, Southwest City, Mo			2,300
Galloway Cave Pond, Galloway, Mo			4,000
Bryant Creek, Mansfield, Mo			1,900
Spring River, Verona, Mo			1,900
Bennetts Mill Creek, Lebanon, Mo			4,400
Baker Lake, Dixon, Mo			2,500
Hahatonka Lake, Hahatonka, Mo			1,800
Fish Pond, Carthage, Mo			1,000
Kansas City, Mo			500
Exeter, Mo			500
Hickory Creek, McMahons, Mo			178
Bennetts Mill Spring, Bennetts Mill, Mo		12,675	
Schlichts Springs, Crocker, Mo		5,700	
Blue Lodge Spring, Bourbon, Mo		5,900	
R. D. Kellogg, Lebanon, Mo	9,450		
John A. Williams, Verona, Mo	11,640		
Nebraska Fish Commission, South Bend, Nebr	50,000		
Penacook Lake, Concord, N. H			400
Isinglass River, Dover, N. H			500
Webster Lake, Colebrook, N. H		3,000	
Cocheco River, Dover, N. H		4,000	
Chas. B. Clarke, Concord, N. H	25,000		
Spring Brook, Ramsey, N. J			450
Fish Pond, Gallia, N. J			500
Riegelsville, N. J			500
Pecos River, Glorieta, N. Mex			1,500
Gonzaloy Aroyd Creek, Springer, N. Mex			1,000
Alamositos Creek, Springer, N. Mex			1,000
Fish Pond, Springer, N. Mex			500
Engle, N. Mex			500
Las Vegas, N. Mex			500
Dorsey, N. Mex			500
Portales, N. Mex			500
Indian Creek, San Marcial, N. Mex			500
Wynantskill Creek, Troy, N. Y			500
Fish Pond, Hudson, N. Y			500
Batten Kill Creek, Cambridge, N. Y		10,000	

Details of distribution—Continued.

Species and disposition.	Eggs.	Fry and fingerlings.	Adults and yearlings.
Rainbow trout—Continued.			
Jacobs Creek, Watertown, N. Y		10,360	
J. Stens Creek, Watertown, N. Y		9,000	
Jummey Creek, Watertown, N. Y		9,000	
Silver Mine Branch, Hot Springs, N. C			1,000
Spring Creek, Hot Springs, N. C			1,500
Nokomis Mill Pond, Lexington, N. C			1,000
Fish Lake, Oak Ridge, N. C			1,000
Elk River, Elk Park, N. C			1,000
Fish Pond, Spray, N. C			700
Morrisville, N. C			1,000
Cranberry and Blevins creeks, Cranberry, N. C			500
Trout Lake, Rowland, N. C			1,000
Millpond, Rowland, N. C			1,000
French Broad River, Hot Springs, N. C			500
Swannanoa River, Black Mountain, N. C			1,000
Savannah and Green creeks, Dilsboro, N. C			875
Steele Creek, Morganton, N. C			500
Craig Creek, Morganton, N. C			500
Camp Creek, Morganton, N. C			500
Rose Creek, Morganton, N. C			500
Johns Creek, Morganton, N. C			500
Upper Creek, Morganton, N. C			600
Diamond Lake, Vade Mecum, N. C			1,000
Clear Creek, Hendersonville, N. C			1,000
Devils Creek, Huntsdale, N. C			1,000
Hollow Poplar Creek, Hollow Poplar, N. C			1,000
Bolden Creek, Bolden Creek, N. C			1,000
Trout Pond, Durham, N. C			500
Mine Fork Creek, Mine Fork, N. C			1,000
Jacks Creek, Jacks Creek, N. C			1,000
Boyds Creek, Boyds Creek, N. C			1,000
Applicant at Roxboro, N. C			200
C. A. Schenck, Biltmore, N. C	25,000		
Forest River, Inester, N. Dak			3,000
Beaver and Cedar creeks, Springfield, Ohio		10,000	
Applicant at Amanda, Ohio		3,000	
Indian Creek, Woodward, Okla			1,000
North Canadian River, Oklahoma, Okla			1,500
Applicant at Mulhall, Okla			500
Necanicum River, Seaside, Oreg			18,745
Spring Lake, Chester Valley, Pa			200
Tributary of Susquehanna River, Cush Creek, Pa			500
Musqueto Creek, Williamsport, Pa			1,000
Mountain Brook, Landstreet, Pa			1,200
Windsor Furnace Creek, Hamburg, Pa			700
Dolphin Run, Johnstown, Pa			2,200
North Kill Creek, Robesonia, Pa			500
Sand Spring Run, Lehigh, Pa			500
Ash Gap Run, Lehigh, Pa			500
Pond Creek Run, Lehigh, Pa			500
Trout Creek, Lehigh, Pa			500
Stony Run, Mahanoy City, Pa			500
Messer, Nigger, Hollow, and Rattling runs, Mahanoy City, Pa			500
Stone Creek, Huntingdon, Pa			1,500
Spruce Creek, Spruce Creek, Pa			1,000
Shermans Run, Riddlesburg, Pa			700
Clear Run, Dubois, Pa			800
Allegheny River, Coudersport, Pa			800
Hill Creek, Mansfield, Pa			600
Bailey Creek, Mansfield, Pa			600
Mill Creek, Mansfield, Pa			600
Fish Pond, Bellevernon, Pa			600
Johnson Run, Johnsonburg, Pa			800
Rabbit Run, Tamaqua, Pa			500
Cushen Creek, Grant, Pa			500
Falling Spring Creek, Chambersburg, Pa			800
Queen Run, Lock Haven, Pa			6,000
Sugar Creek, Columbia Cross Roads, Pa			1,200
Trout Stream, McElhatten, Pa			800
Rattling Run, Gordon, Pa			1,000
Locust Creek, Mahanoy City, Pa			500
Trout Stream, Mahanoy City, Pa			500
North Fork Creek, Johnstown, Pa			1,600
Trout Streams, Hutchins, Pa			800
Starrucca Creek, Starrucca, Pa			500
Reform School Pond, Morganza, Pa			400
Tributaries of Clarion River, Foxburg, Pa			1,600
Clover Creek, Altoona, Pa			1,400
Bobs Creek, Altoona, Pa			400
Tom Creek, Stroudsburg, Pa			500
Goose Pond Run, Cresco, Pa			500

Details of distribution—Continued.

Species and disposition.	Eggs.	Fry and fingerlings.	Adults and yearlings.
Rainbow trout—Continued.			
Stony Run, Cresco, Pa			500
Buck Hill Run, Cresco, Pa			500
Mill Creek, Cresco, Pa			500
Spruce Cabin Run, Cresco, Pa			500
Fish Pond, Norristown, Pa			500
Marsh Creek, Howard, Pa			1,600
Goldmine Creek, Tremont, Pa			500
Good Spring Creek, Tremont, Pa			500
Middle Creek, Tremont, Pa			500
Swatara Creek, Tremont, Pa			500
Rattling Run, Tremont, Pa			500
Black Creek, Tremont, Pa			500
Trout Pond, Radnor, Pa			500
Mitchell Run, Snow Shoe, Pa			800
Jonathan Run, Snow Shoe, Pa			600
Beech Creek, Snow Shoe, Pa			1,400
Lucas Run, Snow Shoe, Pa			600
Oley Creek, Upper Lehigh, Pa			1,000
McGinty Dam, Ashland, Pa			600
Spruce Creek, Pottsville, Pa			500
Spring Meadow Pond, Bedford, Pa			200
Stony Run, Tower City, Pa			500
Hunters Valley Creek, Newport, Pa			1,000
Bear Run, Bear Run, Pa			1,600
Swamp Run, Bear Run, Pa			1,600
Spring House Creek, Penllyn, Pa			500
Trout Run, York, Pa			500
Millers Run, York, Pa			1,000
Piney Creek, Martinsburg, Pa			500
Clover Creek, Martinsburg, Pa			500
Trout Pond, Martinsburg, Pa			500
Green Spring, Newville, Pa			1,200
Letort Spring, Carlisle, Pa			500
Rock Run, Ralston, Pa			600
Applicants in Pennsylvania			400
Warwick Lake, Providence, R. I			500
Trout Pond, Providence, R. I		2,000	.....
Drayton Swamp, Sheldon, S. C			1,000
Saxon Mill Pond, Spartanburg, S. C			500
South Pacolett River, Campobello, S. C			500
Edwards Lake, Campobello, S. C			500
Reservoir, Blunt, S. Dak			1,000
Upper Spearfish Creek, Elmore, S. Dak			5,000
Beaver Creek, Buffalo Gap, S. Dak			5,000
Spearfish Creek, Spearfish, S. Dak		26,500	.....
Rock Creek, Rosebud Agency, S. Dak		15,000	.....
Spring Lake, Paris, Tenn			300
Trout Pond, Bolivar, Tenn			1,000
Spring Lake, Chattanooga, Tenn			1,200
Fish Pond, Chattanooga, Tenn			1,200
Richmond Reservoir, Chattanooga, Tenn			1,200
Willow Lake, Murfreesboro, Tenn			300
Waterworks Reservoir, Murfreesboro, Tenn			300
Fish Pond, Santa Fe, Tenn			300
Roaring River and Tributaries, Algood, Tenn			1,400
Bear Creek, Algood, Tenn			600
Spring Creek, Algood, Tenn			700
Turtletown Creek, Ducktown, Tenn			1,000
Fish Pond, Mason, Tenn			300
Rock Creek, Rock Creek, Tenn			3,000
Fish Pond, Trenton, Tenn			300
Beaver Dam Lake, Crandull, Tenn			1,667
Trout Pond, Jonesboro, Tenn			1,000
Fish Pond, Guthrie, Tenn			300
Doak, Middle and Paint creeks, Greeneville, Tenn			1,000
Watauga River, Neva, Tenn			1,000
Sinking Creek, Newport, Tenn			500
Fish Pond, Willard, Tenn			300
Flint Springs Lake, Cleveland, Tenn			500
Silver Lake, Cleveland, Tenn			500
Spring Creek, Cookeville, Tenn			1,000
Little River, Rockford, Tenn			1,025
Trout Pond, Columbia, Tenn			300
Big Richland Creek, Waverly, Tenn			300
Blue Creek, Waverly Tenn			300
Trace Creek, Waverly, Tenn			300
Fish Pond, Lewisburg, Tenn			200
Martins Creek, Martins Creek, Tenn			1,000
Sams Creek, Flagpond, Tenn			6,000
Rice Creek, Flagpond, Tenn			2,000
Coffey Ridge Creek, Flagpond, Tenn			4,000

Details of distribution—Continued.

Species and disposition.	Eggs.	Fry and fingerlings.	Adults and yearlings.
Rainbow trout—Continued.			
Dicks Creek, Dicks Creek, Tenn			1,000
Dry Creek, Dry Creek, Tenn			1,000
Dickens Creek, Dickens, Tenn			1,000
Beaver Dam Creek, Crandull, Tenn			1,667
Rockyfork Creek, Rockyfork, Tenn			1,000
Spivy Creek, Indian Creek, Tenn			1,000
Unaka Springs, Tenn			500
Nolachucky River, Unaka Springs, Tenn			10,000
Fish Lake, Mason, Tenn			300
Carrs Lake, Tazewell, Tenn			1,125
Higgins Creek, Ernestville, Tenn			2,000
Bumpus Cove Creek, Bumpus Cove, Tenn			1,000
Higgins Creek, Higgins Creek, Tenn			1,000
South Indian Creek, Chestoa, Tenn			2,700
Underwood Branch, Bluff City, Tenn			1,000
Barren Fork Creek, McMinnville, Tenn			300
Watauga River, Butler, Tenn			500
Spring Branch, Erwin, Tenn			1,000
South Indian Creek, Erwin, Tenn			2,700
North Indian Creek, Erwin, Tenn			1,000
Broad Shoal Creek, Erwin, Tenn			2,700
Buffalo Creek, Buffalo, Tenn			2,700
North Indian Creek, Unicoi, Tenn			2,700
Tanks, Ennis, Tex			1,500
Waterworks Reservoirs, Ennis, Tex			1,000
Pond, Ennis, Tex			500
John Sharp, State fish commissioner, Murray, Utah	26,700		
Beaver Pond, Proctor, Vt			911
Clyde River, Newport, Vt		2,000	
Bean Pond, Wheelock & Snyder, Vt			120
Willoughby Lake, Westmore, Vt			310
Reservoir, Lynchburg, Va			500
Trout Pond, Cedar Springs, Va			800
Martin Creek, Boons Path, Va			1,000
Ice Pond, Cumberland, Va			500
Trout Pond, Burkes Garden, Va			1,000
North Fork of Catawba River, Fincastle, Va			1,200
Trout Pond, Briggs, Va			2,000
Cedar Creek, Winchester, Va			1,000
Vance Spring, Winchester, Va			500
Bobbs Run, Winchester, Va			1,000
Fish Pond, Milford, Va			500
Goose Creek, Plains, Va			600
Fish Pond, Spencer, Va			500
Wolf Creek, Vienna, Va			2,000
Fish Pond, Cumberland, Va			500
Scottsville, Va			500
Wash Creek, Lynch, Va			1,000
Mill and Cliff Creeks, Lynch, Va			1,000
Fish Pond, Ontario, Va			500
Millpond, Draper, Va			1,000
Trout Lake, Rural Retreat, Va			2,000
Northfork Creek, Northfork, Va			1,000
Fish Pond, Powhatan, Va			500
Graham Creek, Burfords, Va			1,000
North Fork of Holston River, Ceres, Va			1,000
Fish Pond, Marion, Va			600
Back Creek, Stewarts Draft, Va			2,000
Glade Creek, Blue Ridge, Va			1,000
Dry River, Harrisonburg, Va			1,000
Appomattox River, Petersburg, Va			1,000
Stony Creek, Petersburg, Va			1,000
Bailey Creek, Petersburg, Va			1,000
Lake Spring, Gap Store, Va			1,000
Paper Companies' Reservoir, Bristol, Va			500
Goose Creek, Bristol, Va			1,000
Brumbley Creek and tributaries, Abingdon, Va			3,500
Light Top and Laurel Rivers, Damascus, Va			6,666
Mill Creek, Christiansburg, Va			5,000
Trout Brook, Strasburg, Va			1,400
Berry Creek Pond, Amherst, Va			500
Reed Creek, near Wytheville, Va			6,500
South Fork of Reed Creek, Wytheville, Va			3,500
Tates Run, Wytheville, Va			1,160
Little Stony Creek, Pembroke, Va			3,000
Dry Branch, Narrows, Va			3,000
North Fork of Clinch River, Tazewell, Va			8,000
South Fork of Clinch River, Tazewell, Va			8,000
Laurel Creek, Elliston, Va			4,500
Stony Creek, Elliston, Va			1,500
Jennings Creek, Arcadia, Va			3,000

Details of distribution—Continued.

Species and disposition.	Eggs.	Fry and fingerlings.	Adults and yearlings.
Rainbow trout—Continued.			
Spie Creek, Catopaxi, Va			3,000
Cove Creek, Max Meadows, Va			2,500
Trout Lake, Roanoke, Va			1,600
Tinker Creek, Roanoke, Va			8,400
Fish Pond, Crockett, Va			400
South Fork of Holston River, Marion, Va			1,400
Staley Creek, Marion, Va			8,000
Berry Creek, Abingdon, Va			1,000
North Fork of Holston River, Groseclose, Va			2,000
Middle Fork of Holston River, Sevenmile Ford, Va			4,000
Trout Lake, Etter, Va			1,200
Gladstone Pond, Gladstone, Va			500
Spring Pond, Bluemont, Va			54
Harrisonburg, Va			12
Spring Stream, near Alexandria, Va			200
Swan Creek, Warminster, Va		20,000	
Buffalo Creek and Lick Run, Forest, Va		19,500	
Mill Pond, Rural Retreat, Va		20,000	
Roanoke River, Elliston, Va		25,000	
Tributaries of Difficult Run, Vienna, Va		4,200	
Trout Pond, Rural Retreat, Va		10,000	
Stoubles Creek, Blacksburg, Va		6,750	
Meadow Run, Petunia, Va		10,000	
North Fork of Roanoke River, Blacksburg, Va		3,000	
Lick Branch, Blacksburg, Va		5,250	
Stone Bridge Run, Milldale, Va		15,000	
Little Reed Island Creek, Betty Baker, Va		10,000	
Buffalo Creek, Bayard, W. Va			2,000
Fish Pond, Eglon, W. Va			500
Buffalo and Cross creeks, Wellsburg, W. Va			1,000
Trout Pond, Tunnelton, W. Va			1,500
Cheat River, Morgantown, W. Va			1,000
Evitts Run, Charlestown, W. Va			500
Trout Brook, Rowlesburg, W. Va			600
Brown Creek, Augusta, Wis			4,000
Augusta Pond, Augusta, Wis		8,000	
Coon Fork Creek, Augusta, Wis		8,000	
Pigeon Creek, Alma Center, Wis		10,000	
Wyoming Fish Commission, Wolf, Wyo	50,000		
H. S. Beattie, Mexico	25,000		
Walter Bailey, Malvern Wells, England	25,000		
Moreton Frewen, Innishannon, Ireland	25,000		
F. Bruggeman, Lemgo, Germany	25,000		
Total	397,790	748,835	492,496
Black-spotted trout:			
Chicago Lake, Idaho Springs, Colo			50,000
Millers Lake, Idaho Springs, Colo			30,000
Loch Lomond, Idaho Springs, Colo			5,000
Soda Creek, Idaho Springs, Colo			10,000
Clear Creek, Idaho Springs, Colo			10,000
Lake Creek, Leadville, Colo			35,000
Rock Creek, Leadville, Colo			20,000
Savage Lakes, Thomasville, Colo			10,000
Crystal Lake, Malta, Colo			15,000
Conejos River, Antonito, Colo			25,000
Chicago Creek, Idaho Springs, Colo			5,000
Eagle Lake, Thomasville, Colo			10,000
Fryingpan River, Thomasville, Colo			15,000
Little Thompson River, Lyons, Colo			20,000
St. Vrain River and tributaries, Lyons, Colo			65,000
Texas, Mera, and Colony lakes, Westcliffe, Colo			25,000
Clear Lake, Georgetown, Colo			5,000
Fish Lakes, Leadville, Colo			20,000
Eagle River, Berrys Ranch, Colo			25,000
Grissley Creek, Glenwood, Colo			50,000
Fryingpan River, Ivanhoe, Colo			75,000
Platte River, Baileys, Colo			75,000
Hunter and Maroon creeks, Aspen, Colo			25,000
Brush Creek, Eagle, Colo			15,000
Marshall Creek, Chester, Colo			10,000
Beaver Creek, Aberdeen, Colo			10,000
Elk Creek, Gunnison, Colo			5,000
Goose Creek, Wagon Wheel Gap, Colo			35,000
Boulder Creek, Black Hawk, Colo			45,000
Gypsum Creek, Gypsum, Colo			15,000
Fish Pond, Buffers Spur, Colo			5,000
Alex. Van Boxel, Cimarron, Colo	20,000		
Crystal Lake, Hailey, Idaho			15,000
Lake Ethel, Nampa, Idaho			10,000

Details of distribution—Continued.

Species and disposition.	Eggs.	Fry and fingerlings.	Adults and yearlings.
Black-spotted trout—Continued.			
Hayden Lake, Rathdrum, Idaho			10,000
Blue Lake, Priest River, Idaho			8,000
Trout Ponds, Henrys Lake, Idaho		100,000	
R. A. Osborn, St. Anthony, Idaho	25,000		
Walter Green, St. Anthony, Idaho	25,000		
C. A. Coffman, St. Anthony, Idaho	25,000		
Six Mile Creek Pond, Toston, Mont			10,000
Duck Creek, Bonner, Mont			10,000
Lake Alvord, Troy, Mont			9,000
Upper Dry Wolf Creek, Monarch, Mont			9,000
Twin Lakes, Columbia Falls, Mont			3,000
Pritchard Lake, Chester, Mont			4,500
Fish Pond, Chester, Mont			7,500
Spring Lake, Chester, Mont			9,000
Corrall Brook, Chester, Mont			6,000
Little Boulder Creek, Boulder, Mont			10,000
South Miners Coolee Creek, Shelby Junction, Mont			9,000
Morgan Pond, Maudlow, Mont			5,000
Gooseberry Creek, Shelby Junction, Mont			9,000
Blacktail Deer Creek, Dillon, Mont			10,000
Red Spring Creek, Harlowton, Mont			20,000
Little Belt and Highwood creeks, Belt, Mont			18,500
Belt and Deep creeks, Great Falls, Mont			9,000
Neil Creek, Great Falls, Mont			9,000
Sixteen Mile Creek, Bakers Siding, Mont			10,000
Scotts Lake, Red Rock, Mont			5,000
Sixteen Mile Creek, Broadwater County, Mont			20,000
Spring Creek, Harlowton, Mont			15,000
Rock Creek, Harlowton, Mont			10,000
Chimney Lake, Toston, Mont			1,000
Prickly Pear Creek, Helena, Mont			15,000
Birch and Little Sheep creeks, Lima, Mont			15,000
Upper Pecos River, Glorieta, N. Mex			5,000
Trout Brook, Bernalillo, N. Mex			5,000
North Powder Lake, Haines, Oreg			10,000
Trout Ponds, Norton, Oreg			5,000
Little Spearfish Creek, Spearfish Falls, S. Dak			30,000
Box Elder Creek, Nemo, S. Dak			25,000
Spring Creek, Hill City, S. Dak			10,000
East Fork Spearfish Creek, Elmore, S. Dak			20,000
Spearfish Creek, Elmore, S. Dak			47,500
Middle and East Forks of Spearfish Creek, Elmore, S. Dak			12,500
Upper and East Fork of Spearfish Creek, Elmore, S. Dak			25,000
Lower East Fork of Spearfish Creek, Elmore, S. Dak			25,000
Spearfish Creek, Spearfish, S. Dak			60,000
Crow Creeks, near Spearfish, S. Dak			30,000
Trout Ponds, Spearfish, S. Dak			15,000
Whitewood Creek, Englewood, S. Dak			10,000
B. & M. R. R. Ponds, Englewood, S. Dak			5,000
Tributary of Box Elder Creek, Rochford, S. Dak			3,500
Tributary of Spring Creek, Hill City, S. Dak			3,500
Squaw Creek, Hermosa, S. Dak			5,000
Fish Pond, Pringle, S. Dak			5,000
North Fork of Rapid Creek, Rochford, S. Dak			5,000
Jim Creek, Nemo, S. Dak			5,000
Red Butte Creek, Salt Lake City, Utah			10,000
Freeman Lake, Newport, Wash			3,000
O'Reilly River, Newport, Wash			3,000
Trout Lake, Hood River, Wash			7,000
South Fork of Stillaguamish River, Everett, Wash			10,000
Samish Lake, Samish, Wash			2,000
Local Trout Creek, Northport, Wash			5,000
A. J. McNab, Lake Nebogemain, Wis	25,000		
Streams in Big Horn Mountains, Sheridan, Wyo			20,000
Wyoming Fish Commission, Laramie, Wyo	100,000		
S. E. Land, Laramie, Wyo	50,000		
Minister of agriculture and public works, Brussels, Belgium	10,000		
Total	280,000	100,000	1,488,500
Brook trout:			
Big Spring Creek, Tuscambia, Ala			200
Lode Creek, Leadville, Colo			1,000
Fish Lake, Montevista, Colo			2,000
Cimarron River, Cimarron, Colo			2,000
Little Cimarron River, Cimarron, Colo			2,000
Van Boxel Lake, Cimarron, Colo			6,000
Cimarron Fish Lakes, Cimarron, Colo			1,000
Frying Pan River, Basalt, Colo			8,000
Cottonwood Creek, Buenavista, Colo			2,000
Clear Creek Ponds, Granite, Colo			2,000

Details of distribution—Continued.

Species and disposition.	Eggs.	Fry and fingerlings.	Adults and yearlings.
Brook trout—Continued.			
Frying Pan River, Sloane, Colo			1,000
Thomasville, Colo		75,000	2,000
Cache la Poudre River, Fort Collins, Colo		10,000	3,000
Crystal River, Redstone, Colo			2,000
Nichols Lake, Crested Butte, Colo			2,000
Fall River, Idaho Springs, Colo		5,000	2,500
Banning Lake, Colorado Springs, Colo			1,000
Fish Lake, Colorado Springs, Colo			2,000
Taylors Lake, Aspen, Colo			10,000
Eagle River and Lake, Berrys Station, Colo		25,000	20,000
Spring Creek, Montrose, Colo		15,000	1,000
Chicago Lake, Idaho Springs, Colo			500
Chinn Lake, Idaho Springs, Colo			500
Englewood Pond, Thomasville, Colo			2,000
Animas River, Durango, Colo			2,000
Platte River, Buffalo, Colo			6,000
Arkansas River, Leadville, Colo			2,000
Sarles Lake, Rockwood, Colo		5,000	
Spring Creek, Thomasville, Colo		5,000	
Spring Lake, Thomasville, Colo		10,000	
Boulder Creek, Dillon, Colo		30,000	
Little Turkey Creek, Colorado Springs, Colo		10,000	
Gardner Lakes, Port Collins, Colo		10,000	
Snow Mass Lake, Aspen, Colo		10,000	
Waugh Creek, Freshwater, Colo		10,000	
Fish Lakes, Leadville, Colo		5,000	
Loveland, Colo		10,000	
Trout Lake, Buenavista, Colo		5,000	
Echo Lakes, Minturn, Colo		5,000	
Lake Peterson, Boulder, Colo		5,000	
North Boulder Creek, Boulder, Colo		10,000	
Blue River, Breckinridge, Colo		10,000	
St. Vrain Creek, Lyons, Colo		50,000	
Cascade Creek, Cascade, Colo		10,000	
Edwards Lake, Crestone, Colo		10,000	
Chicago Creek, Idaho Springs, Colo		5,000	
Bear Creek, Idaho Springs, Colo		5,000	
Loch Lomond, Idaho Springs, Colo		5,000	
Silver Lake, Idaho Springs, Colo		5,000	
Vance Creek, Idaho Springs Colo		5,000	
Lake Hassell, Idaho Springs, Colo		5,000	
Platte River, Chase, Colo		10,000	
Cliff, Colo		5,000	
Baileys, Colo		10,000	
Buffalo Creek, Colo		10,000	
North Fork of South Platte River, Buffalo Creek, Colo		5,000	
Platte River, Estabrook, Colo		10,000	
Cassells, Colo		5,000	
Kline, Colo		5,000	
North Fork of South Platte, Shawnee, Colo		20,000	
Muldoon, Colo		5,000	
Buckhorn Creek, Loveland, Colo		5,000	
Tarryall Creek, Lake George, Colo		10,000	
Cimarron River, Montrose, Colo		10,000	
Naylor Club Lake, Georgetown, Colo		10,000	
Dallas and Cow creeks, Ridgway, Colo		10,000	
Smith Creek, Baileys, Colo		10,000	
Lake Lenore, Ouray, Colo		10,000	
Tusco Creek, Delnorte, Colo		10,000	
Roaring Fork Creeks, Rico, Colo		10,000	
Dolores River, Rico, Colo		20,000	
Scotch Creek, Rico, Colo		10,000	
Taylor Creek, Rico, Colo		10,000	
Elk Creek, Pine Grove, Colo		10,000	
Ground Hog Creek, Rico, Colo		5,000	
Bear Creek, Idaho Springs, Colo		5,000	
Trout Lake, Montevista, Colo		5,000	
Grand Lake, Georgetown, Colo		10,000	
Tomiche Creek, Parlins, Colo		25,000	
Uncompahgre River and tributaries, Ridgway, Colo		40,000	
Goose Creek, Wagon Wheel Gap, Colo		25,000	
Pienas Creek, Delnorte, Colo		10,000	
Crystal River, Placita, Colo		10,000	
South Platte River, Dome Rock, Colo		5,000	
Big Thompson River, Loveland, Colo		10,000	
North Fork of South Platte, Pine Grove, Colo		5,000	
Rock House Brook, Redding Ridge, Conn		15,000	
Aspetuck River, Redding Ridge, Conn		20,000	
Miames River, Greenwich, Conn		20,000	
Twin Lakes, Twin Lakes, Conn			3,000
Applicant at Seymour, Conn			1,000

Details of distribution—Continued.

Species and disposition.	Eggs.	Fry and fingerlings.	Adults and yearlings.
Brook trout—Continued.			
Gravel Creek, Blackfoot, Idaho			2,000
Silver Creek, Hailey, Idaho			2,000
Bon Air Lakes, Spencer, Idaho			2,000
Bonanza Lake, Spirit Valley, Idaho			3,000
Thorps Lake, Rathdrum, Idaho			1,500
Lake George, Lenore, Idaho			1,000
Waterworks Lake, Bloomington, Ind		20,000	
Tributary of Galena River, Rolling Prairie, Ind		20,000	
Trout Brook, Laporte, Ind		5,000	
Snymagill Creek, McGregor, Iowa			2,000
Bloody Run, McGregor, Iowa			2,500
Maquoketa River, Manchester, Iowa		5,000	
Spring Branch, Manchester, Iowa		5,000	
Sawyer Pond, Greenville, Me		10,000	
Clearwater Lake, Farmington, Me		15,000	
Barnum Pond, Farmington, Me		10,000	
Sweet Pond, Farmington, Me		10,000	
Sand, North and Norcross Ponds, Farmington, Me		15,000	
Gull Pond, Farmington, Me		10,000	
Tufts and Dutton Ponds, Farmington, Me		15,000	
Long and Square Ponds, Springvale, Me		20,000	
Canaan Lake, Rockland, Me		25,000	
Hobbs Pond, Rockland, Me		15,000	
Meadow and Branch brooks, Rockland, Me		10,000	
Norris Pond, Blue Hill, Me		4,000	
Unity Pond, Unity, Me		15,000	
South Lake, Warren, Me		20,000	
Green Lake, Otis, Me		125,000	
Lake Cobbosseecontee, Augusta, Me		50,000	
Black Brook, Brownfield, Me		15,000	
Tripp Pond, Mechanic Falls, Me		10,000	
Sandy Pond, Thorndike, Me		15,000	
Lake Thompson, Oxford, Me		15,000	
Embden Lake, North Anson, Me		15,000	
Hancock Pond, North Anson, Me		10,000	
Sand Pond, North Anson, Me		10,000	
Spruce Pond, North Anson, Me		10,000	
China Lake, Waterville, Me		15,000	
Lake George, Skowhegan, Me		10,000	
Little Pond, Franklin, Me		10,000	
Otter Ponds, Bingham, Me		40,000	
Chase Pond, Bingham, Me		10,000	
Fish Pond, Bingham, Me		10,000	
Austin Brook, Bingham, Me		10,000	
Rowe Ponds, Bingham, Me		25,000	
Lake Sebasticook, Newport, Me		20,000	
Mooselookmegunticook Lake, Hemis, Me		15,000	
Quantabacook Pond, Belfast, Me		15,000	
First Debsconeague Pond, Old Town, Me		15,000	
First Hurd Pond, Old Town, Me		15,000	
Pond and stream, Cumberland Junction, Me		5,000	
Holeb Pond, Greenville, Me		15,000	
Spring Lake, Bigelow, Me		5,000	
Lake Anasagunticook, Canton, Me		15,000	
Sebago Lake, Sebago Lake, Me		175,000	
Nickerson Lake, Houlton, Me		15,000	
Pattens Ponds, Ellsworth, Me		25,000	
Marston Pond, Brownfield, Me		5,000	
Branch Pond, Dedham, Me		25,000	
Tunk Ponds, Sullivan, Me		25,000	
Heart Pond, East Orland, Me		1,475	
Penemagnau Creek, Calais, Me		15,000	
Billings Pond, Ellsworth, Me		15,000	
Little Houston Pond, Katahdin Iron Works, Me		14,000	
Phillips Lake, Dedham, Me		25,000	
Lake Hebron, Monson, Me		20,000	
Green Lake, Green Lake, Me		1,388	
Alamoosook Lake, Orland, Me			111
Heart Pond, Orland, Me			532
Parmachenee Club, Camp Caribou, Me	50,000		
Maine Fish Commission, Greenville, Me	320,000		
Rock Gay Creek, Cumberland, Md			1,000
Deer Creek, Belair, Md			650
Brownings Dam, Oakland, Md			1,400
McHenry Branch, Oakland, Md			300
North Branch Brook, Springfield, Mass			1,000
Reservoir, Cottage City, Mass		15,000	1,000
Stream and pond, Fall River, Mass			1,333
Lyon Brook, Fall River, Mass			1,333
Kirby Brook, Fall River, Mass			1,334
Emerson Brook, Uxbridge, Mass			3,000

Details of distribution—Continued.

Species and disposition.	Eggs.	Fry and fingerlings.	Adults and yearlings.
Brook trout—Continued.			
City reservoir, Worcester, Mass		15,000	2,000
Knollwood Cemetery Pond, Sharon, Mass			1,000
Plymouth River, Higham, Mass			1,000
Two mountain brooks, New Lenox, Mass			1,500
Trout Brook, Springfield, Mass		20,000	
Coonemessett River, Falmouth, Mass		25,000	
Massachusetts Fish Commission, Wilkinsonville, Mass	25,000		
Massachusetts Fish Commission, Hadley, Mass	25,000		
Looking Glass River, Portland, Mich		25,000	
Spring Brook, Kalamazoo, Mich		15,000	
Portage Creek, Kalamazoo, Mich		15,000	
Murray Lake, Grand Rapids, Mich		10,000	
McKinley Creek, Clare, Mich		10,000	
Russell Creek, Clare, Mich		20,000	
Trout Creek, Clare, Mich		10,000	
Branch of Tobacco River, Clare, Mich		10,000	
Murray Lake, Mosley, Mich		10,000	
Cedar Creek, Harrison, Mich		20,000	
Joas Creek, Harrison, Mich		15,000	
Lemon Creek, Berrien Springs, Mich		20,000	
Wright Pond, Greenville, Mich		5,000	
Berridge Creek, Greenville, Mich		15,000	
Turk Lake Creek, Greenville, Mich		15,000	
Brush Creek, Alpena, Mich		15,000	
Browning Lake, Iron Mountain, Mich		15,000	
Bird Creek, Holly, Mich		15,000	
Tributaries of Flint River, Oxford, Mich		25,000	
Millikan Creek, Onaway, Mich		25,000	
Wild Cat and Little Wolf Creeks, Alpena, Mich		30,000	
Silver Creek, Alpena, Mich		20,000	
Fish Pond, Milford, Mich		5,000	
Rifle River, Ogemaw, Mich		10,000	
Au Sable River, Cheney, Mich		10,000	
Pigeon River, Sallings, Mich		10,000	
Sturgeon River, Gaylord, Mich		25,000	
Stewart River, Vanderbilt, Mich		15,000	
North Branch Au Sable River, Lovells, Mich		30,000	
Hale and Smith creeks, Hale, Mich		35,000	
Silver and Gold creeks, East Tawas, Mich		35,000	
Pine Lake, Au Sable, Mich		30,000	
Local trout streams, Farwell, Mich		10,000	
Marquette River, Nirvana, Mich		10,000	
Marquette River, Baldwin, Mich		20,000	
Dannaher River, Baldwin, Mich		10,000	
Little Manistee River, Canfield, Mich		20,000	
Bear Creek, Kaleva, Mich		10,000	
Rapid River, Rapid City, Mich		10,000	
Buckhorn Creek, Holly, Mich		1,000	
Maple River, Peelston, Mich		95,000	
Local streams, Emery Junction, Mich		150,000	
Grace Harbor, Washington Harbor, Mich		10,000	
Spring Brook trout hatchery, Kalamazoo, Mich	25,000		
Crooked Creek, Reno, Minn			1,000
McCarthy and Hall creeks, Floodwood, Minn		10,000	900
Lester, French, and Sucker rivers, Duluth, Minn		20,000	
Fischer Creek, Duluth, Minn		5,000	
Talmage Creek, Duluth, Minn		12,230	
Hanging Horn Stream, Carleton, Minn		5,000	
Lester River, Duluth, Minn		10,000	
Poplar River, Lutsen, Minn		10,000	
Rocky Run Creek, Proctor, Minn		10,000	
Spring Brooks, Northfield, Minn		25,000	
Missouri Fish Commission, St. Joseph, Mo	20,000		
Horseshoe Lake, Dillon, Mont			1,000
Judilo River, Harlowton, Mont			1,000
Reservoir, Big Timber, Mont			2,000
Artificial Lake, Butte, Mont			2,000
Spring Creek, Whitehall, Mont			3,000
Spring Creek, Harlowton, Mont			2,000
Fish Pond, Harlowton, Mont			2,000
Rock Creek, Browns, Mont			1,000
Fitzpatrick Lake, Sweet Grass, Mont			1,000
Nebraska Fish Commission, South Bend, Nebr	50,000		
J. P. Morrill, Verdi, Nev	5,000		
Thompson Brook, Exeter, N. H			2,000
Lake Winnepecket, Warner, N. H			2,000
Greenough Pond, Colebrook, N. H			2,000
Strafford Bogs, Groveton, N. H			2,000
Swift Brook, West Ossipee, N. H			2,500
Grass Brooks, Potter Place, N. H			2,000
Cole Pond and stream, Potter Place, N. H		10,000	4,000

Details of distribution—Continued.

Species and disposition.	Eggs.	Fry and fingerlings.	Adults and yearlings.
Brook trout—Continued.			
Brown Pond, Lang, N. H			2,000
Spring Brooks, Northampton, N. H			2,000
Wild Meadow Brook Pond, Grafton, N. H		20,000	3,000
Brickyard Brook, Nashua, N. H			500
Trout Brook, Nashua, N. H			500
Sunapee Lake, Newbury, N. H			3,000
Trout Brooks, Hollis, N. H			500
Trout Pond, Hudson, N. H			241
New Hampshire Fish Commission, State waters, Colebrook, N. H		30,000	3,000
Home Hill Brook, Plainfield, N. H		20,000	
Bear Camp and Swift rivers, Center Sandwich, N. H		30,000	
Isinglass River, Dover, N. H		25,000	
Town Farm and Rum Brooks, Epping, N. H		30,000	
Goffstown Reservoir, Manchester, N. H		15,000	
Bowman Brook, Manchester, N. H		20,000	
Pleasant Pond, Manchester, N. H		15,000	
Lake Massabesic, Manchester, N. H		25,000	
Mantee Brook, Manchester, N. H		20,000	
Silver Brooks, Warner, N. H		20,000	
Christine Lakes, Percy, N. H		10,000	
Indian River, Canaan, N. H		20,000	
Webster Lake, Franklin, N. H		10,000	
Nash Ponds, Groveton, N. H		10,000	
A. N. Bigelow, Branchville, N. J	20,000		
Beaver River, Beaver, N. Y			1,000
Fish Ponds, Booneville, N. Y			500
Silver Spring Creek, Booneville, N. Y			1,000
Montfredy Brook, Syracuse, N. Y		10,000	1,000
Isatsawassa Creek, Rensselaer, N. Y		20,000	
Wolf Creek, Cuba, N. Y		25,500	
Three Ponds, Saratoga Springs, N. Y		20,000	
Carpenter Brook, Halfway, N. Y		25,500	
Pleasant Lake, Pleasant Lake, N. Y		50,000	
Fish Pond, Schenectady, N. Y		10,000	
Twitchel Creek, Beaver River, N. Y		60,000	
Trout streams, Watertown, N. Y		75,000	
Duel and Black Creeks, Carthage, N. Y		75,000	
Little River, Star Lake, N. Y		75,000	
Oswegatchie River, Newton Falls, N. Y		50,350	
Smith Creek, Harrisville, N. Y		25,000	
Caldwell Clark Creek, Lake Bonaparte, N. Y		30,000	
Indian River, Natural Bridge, N. Y		20,000	
Blanchard Creek, Natural Bridge, N. Y		20,000	
B. B. Smith Creek, Natural Bridge, N. Y		10,000	
Sand Hill Creek, Natural Bridge, N. Y		5,000	
Robt. Henry Creek, Natural Bridge, N. Y		10,000	
Tidd Creek, Natural Bridge, N. Y		10,000	
Green Lake, Lake Bonaparte, N. Y		20,000	
Fish Creek, Harrisville, N. Y		20,000	
Taylor Brook, Pierpont Manor, N. Y		15,000	
Silver Lake, Big Moose, N. Y		10,000	
Preston Ponds, Tahawas, N. Y		10,000	
Tichnor and Hazzard brooks, Chenango Forks, N. Y		10,000	
Dark Hollow and Wheeler brooks, Greene, N. Y		19,000	
Thomas Brook, Whitney Point, N. Y		4,000	
Casey Brook, Norwich, N. Y		10,000	
Linville River, Montezuma, N. C			300
Applicant at Morrisville, N. C			200
Beaver Creek, Wishek, N. Dak			500
Sand Lake, Pleasant Lake, N. Dak			500
Spring Pond, Ontario, Ohio		15,000	
Tributaries of Mad River, Bellefontaine, Ohio		35,000	
Spring Lake, Wickliffe, Ohio		10,000	
Water Works Ponds, Coshocton, Ohio		2,000	
Fish Pond, Cuyahoga, Ohio		5,000	
Newark, Ohio		5,000	
Trout Lake, DeGraff, Ohio		5,000	
Applicant at West Liberty, Ohio		3,000	
Fish Pond, Bellefontaine, Ohio		5,000	
Willow Lake, La Grande, Oreg			5,000
Nenacinum River, Seaside, Oreg			39,975
Clackamas River, Stone, Oreg			29,901
Mill Creek, The Dalles, Oreg		2,500	
Upper Eight Mile Creek, Endersley, Oreg		2,500	
Fifteen Mile Creek, Dufur, Oreg		5,000	
Bear Creek, Umatilla County, Oreg		10,000	
McKai Creek, Glencoe, Oreg		5,000	
Emery Creek, Glencoe, Oreg		5,000	
Rock Creek, Bakers Ferry, Oreg		3,500	

Details of distribution—Continued.

Species and disposition.	Eggs.	Fry and fingerlings.	Adults and yearlings.
Brook trout—Continued.			
Clear Creek, Clear Creek, Oreg		17,500	
Clackamas River, Clackamas, Oreg		13,990	
Ten Mile Creek, Seuferts, Oreg		10,000	
La Bish Creek, Chemawa, Oreg		7,500	
Ford Creek, Chemawa, Oreg		3,500	
Panther Creek, Carlton, Oreg		5,000	
Cain Creek, Carlton, Oreg		5,000	
North Fork of Macham Creek, Wilbur, Oreg		25,000	
Scappoose Creek, Scappoose, Oreg		10,000	
Johnson Creek, Milwaukie, Oreg		2,000	
Hamilton Creek, Bonneville, Oreg		5,989	
Trout Lake, Marietta, Pa			500
Stony Fork Creek, Wellsboro, Pa			400
Steele Run, Wellsboro, Pa			200
Spring Brook, Wellsboro, Pa			200
Four Mile Run, Wellsboro, Pa			200
Stowells Creek, Wellsboro, Pa			200
Fellows Creek, Columbia Cross Roads, Pa			200
Rattlesnake Run, Wetham, Pa			1,000
Harlemans Run, Lock Haven, Pa			200
Lick Run, Lock Haven, Pa			500
Fishing Creek, Lock Haven, Pa			500
Baker Run, Lock Haven, Pa			200
McElhattan Run, Lock Haven, Pa			400
Cherry Run, Lock Haven, Pa			400
Queens Run, Lock Haven, Pa			400
Chatham Run, Lock Haven, Pa			200
Hayes Run, Lock Haven, Pa			200
Twin Run, Lock Haven, Pa			200
Cedar Run, Lock Haven, Pa			100
Bull Run, Lock Haven, Pa			200
Fish Pond, Reading, Pa			100
Daniels Brook, Ulysses, Pa			300
Lead Run, Jamison City, Pa			150
Pigeon Run, Jamison City, Pa			150
West Branch of Fishing Creek, Jamison City, Pa			350
East Branch of Fishing Creek, Jamison City, Pa			350
Meeker Run, Jamison City, Pa			150
Trout Run, Jamison City, Pa			150
Craig Run, McElhattan, Pa			200
Cedar Run, McElhattan, Pa			100
Grayham Run, McElhattan, Pa			200
Paddy Run, McElhattan, Pa			200
Spring Run, McElhattan, Pa			200
Lusk Run, McElhattan, Pa			200
Ferney Run, McElhattan, Pa			200
Sixpenny Creek, Birdsboro, Pa			200
Glade Run, Kane, Pa			200
Little Mahanoy, Ashland, Pa			200
McGinty Dam, Ashland, Pa			100
Sherman Valley Brook, Hopewell, Pa			200
Raven Run, Riddlesburg, Pa			200
Branch of Blacklick Creek, Ebensburg, Pa			200
Barren Run, Ebensburg, Pa			200
Crooked Creek, Little Marsh, Pa			200
Beaver Creek, Pottstown, Pa			200
Freeman Run, Austin, Pa			500
Trout Run, Trout Run, Pa			400
Clover Creek, Martinsburg, Pa			200
Fisher Dam, Shamrock, Pa			100
Old Log Cabin Brook, Honesdale, Pa			400
Cacoosing Creek, Sinking Spring, Pa			200
Sansom Pond, Shenandoah, Pa			100
Young Creek, Conshohocken, Pa			200
Spring Brook, Linesville, Pa			200
Alwine Run, Johnstown, Pa			200
Oven Run, Stoyestown, Pa			200
Muncy Creek, Nordmont, Pa			200
Trout Pond, Lansdowne, Pa			100
Clover Creek, Altoona, Pa			600
Bear Run, Wellsboro, Pa			200
Branch of Yellow Creek, Curry, Pa			400
Dalton Creek, Johnstown, Pa			200
Bushkill Creek, Stroudsburg, Pa			200
Spring Run, Martinsburg, Pa			200
Elk Run, Jamison City, Pa			200
Panther Run, Jamison City, Pa			150
Deserters Run, Jamison City, Pa			150
Big Run, Jamison City, Pa			200
Muncy Creek, La Porte, Pa			200

Details of distribution—Continued.

Species and disposition.	Eggs.	Fry and fingerlings.	Adults and yearlings.
Brook trout—Continued.			
Chilliquakie Creek, Washingtonville, Pa			300
Cold Run, Pottstown, Pa			300
Tumbling Run, Pottstown, Pa			300
Trout Pond, Georgiaville, R. I		20,000	
Reservoir, Wagner, S. Dak			400
Pease Creek, Geddes, S. Dak			2,000
Beaver Creek, Buffalo Gap, S. Dak			3,000
Fish Pond, Spearfish, S. Dak			5,000
Spearfish Creek, Spearfish, S. Dak		52,000	12,000
McCrery Lake, Kimball, S. Dak			200
Fish Pond, Fort Meade, S. Dak		10,000	
Castle Creek, Hill City, S. Dak			5,000
Fish Pond, Wessington, S. Dak			600
Fawndale Ponds, Whitewood, S. Dak			10,000
Box Elder Creek, Black Hawk, S. Dak			4,950
Spearfish Creek, Elmore, S. Dak			10,000
Fish Pond, Deadwood, S. Dak			1,000
Willow Springs Pond, Nemo, S. Dak			1,500
Honey Peak Creek, Hill City, S. Dak			1,000
Upper Spearfish Creek, Elmore, S. Dak		20,000	
Fish Pond, Piedmont, S. Dak		5,000	
Rapid Creek, Rochford, S. Dak		10,000	
Castle Creek, Rochford, S. Dak		10,000	
Watercress Creek, Spearfish, S. Dak		15,000	
Fleurdelis Creek, Fairburn, S. Dak		15,000	
Norse Creek, Tilford, S. Dak		10,000	
Spring Creek, Spearfish, S. Dak		5,000	
Fish Ponds, Spearfish, S. Dak		10,000	
Pond and stream, Spearfish, S. Dak		5,000	
Box Elder and Jim creeks, Nemo, S. Dak		20,000	
Box Elder Creek, Nemo, S. Dak		5,000	
South Box Elder Creek, Roubaix, S. Dak		10,000	
Squaw Creek, Maurice, S. Dak		7,000	
Barren Fork Creek, McMinnville, Tenn			75
John Sharp, Utah Fish Commission, Murray, Utah	50,000		
Frog Pond, St. Johnsbury, Vt			1,500
Trout streams, Calais, Vt			1,500
Little Leach Pond, Averill, Vt			1,000
Leach Pond, Averill, Vt		20,000	898
Caspian Lake, Greensboro, Vt			500
Darling Pond, Groton, Vt		75,000	655
Trout Pond, West Hartford, Vt			1,000
Noyes Lake, Chittenden, Vt		20,000	400
Lake Mansfield, Stowe, Vt		20,000	4,500
Beaver Pond, Proctor, Vt			3,000
Cold River, Clarendon, Vt			676
Clyde River and Derby Pond, Island Pond, Vt		20,000	
Pico Lake, Rutland, Vt		50,000	
Johnsons Brook, Brattleboro, Vt		20,000	
Ayers Brook, Randolph, Vt		20,000	
Hatch and Mason ponds and brooks, Randolph, Vt		10,000	
Three trout ponds, Newbury, Vt		20,000	
Silsby Pond, Newbury, Vt		5,000	
Black Pond, Plymouth, Vt		20,000	
Meccawe Pond, Redding, Vt		15,000	
Sprague Pond, Walden, Vt		10,000	
Langdon Pond, Montpelier, Vt		15,000	
Big Fish Pond, Sutton, Vt		5,000	
May Pond, Barton, Vt		15,000	
Otter Creek, Mount Tabor, Vt		20,000	
Lake Mitchell, Norwich, Vt		35,000	
Caswell Creek, St. Johnsbury, Vt		8,000	
Beaver Meadow Brook, Pasumpsic, Vt		10,000	
Trout brooks, St. Johnsbury, Vt		3,000	
Vermont Fish Commission, Colebrook, N. H	50,000		
Dry River, Harrisonburg, Va		8,000	26
Tributaries of Difficult Run, Vienna, Va			2,000
Lake Alfred, Blossburg, Wash			2,000
Lake Amelia, Blossburg, Wash			2,000
Lake Lewis, Blossburg, Wash			2,000
Lake Perkins, Blossburg, Wash			2,000
Harris Lake, Blossburg, Wash			2,000
Trout Lake, Hood River, Wash			2,000
Washtucna Lake, Washtucna, Wash			2,000
Wilson Creek, Wilbur, Wash			2,000
Crab Creek, Sprague, Wash			5,000
South Fork of Stillaguamish River, Everett, Wash			1,000
Skykomish River, Skykomish, Wash			2,000
Fau Lake, Deer Park, Wash			2,000
Trout pond, Fairfield, Wash			500

Detail of distribution—Continued.

Species and disposition.	Eggs.	Fry and fingerlings.	Adults and yearlings.
Brook trout—Continued.			
Green Lake, Seattle, Wash			500
Trout pond, Seattle, Wash			2,000
North Branch of Spokane River, Milan, Wash			2,000
Fish Pond, Tacoma, Wash			250
O'Reilly River, Newport, Wash			10,000
Local Trout Creek, Northport, Wash			3,000
Star Lake, Auburn, Wash		10,000	
Lewis Gilbert, Milan, Wash	20,000		
Clover Creek, Lake View, Wash		10,000	
Cheat River, Huttonsville, W. Va			1,000
Branch of Deep Creek, Morgantown, W. Va			200
Elk and Houston rivers, Centralia, W. Va			500
F. A. Degler, Cheat Bridge, W. Va	50,000		
Sportsmen's Association of Cheat Mountain, W. Va	50,000		
Stony Creek, Marlinton, W. Va			300
Otter Creek, Augusta, Wis			1,800
Thompson Creek, Augusta, Wis			1,000
Beef River, Augusta, Wis			1,800
Brown Creek, Augusta, Wis			900
Bear Grass Creek, Augusta, Wis		8,000	
Sand Creek, Augusta, Wis		8,000	
Eagle Valley Brook, Fountain City, Wis			1,800
Spring Brook, West Salem, Wis			1,000
Mill Brook, Tomah, Wis		10,000	2,000
Squaw and Ash creeks, Sparta, Wis			2,000
Burns Creek, Bangor, Wis			1,000
Hall Creek, Alma Center, Wis			900
Storkwell Creek, Alma Center, Wis			900
Bovee Creek, Alma Center, Wis			900
Arno Creek, Alma Center, Wis			900
North Branch of Coon Creek, La Crosse, Wis		10,000	1,000
Chipmunk Creek, La Crosse, Wis			1,000
Krall Creek, La Crosse, Wis			1,000
Withee Creek, Sechlerville, Wis			800
Marine Creek, Fairchild, Wis			900
McLaren Creek, Fairchild, Wis			900
Soper and Davis creeks, Sparta, Wis			1,000
Stillwell Creek, Sparta, Wis			500
Rush Creek, Baldwin, Wis			900
Kenyon Creek, Black River Falls, Wis			625
Allen Creek, Black River Falls, Wis			625
Trout Run, Black River Falls, Wis			625
Squaw Creek, Black River Falls, Wis			625
Rock and Beaver creeks, Rice Lake, Wis			1,800
State Line Brook, Foxboro, Wis			1,350
Stony Creek, Black River Falls, Wis			900
South Branch, Alma Center, Wis			900
North Branch of Pike River, Dunbar, Wis			1,000
Balsam River, Foxboro, Wis			1,350
Trout pond, Appleton, Wis			1,000
Inlet to Elbow Lake, Wausaukee, Wis			1,000
Iron and Brule rivers, Marinette, Wis			1,000
Beaver River, Galesville, Wis			900
Billings Creek, Glendale, Wis		10,000	
White Creek, New Lisbon, Wis		10,000	
Pigeon Creek, Alma Center, Wis		10,000	
Moores Creek, Norwalk, Wis		20,000	
Spring Creek, Norwalk, Wis		10,000	
Hay Creek, Augusta, Wis		8,000	
Gates Creek, Osseo, Wis		10,000	
Flick Creek, Fairchild, Wis		10,000	
Morrill Creek, Fairchild, Wis		10,000	
Marvins Creek, Fairchild, Wis		10,000	
Beef River, Osseo, Wis		10,000	
Blacktail Creek, Hulett, Wyo			10,000
Trout ponds, Beulah, Wyo		10,000	
Glenn Creek, Yellowstone National Park, Wyo		9,000	
Willow Creek, Yellowstone National Park, Wyo		18,000	
Indian Creek, Yellowstone National Park, Wyo		11,000	
Wyoming Fish Commission, Sheridan, Wyo	135,000		
Claude M. MacDonald, Tokyo, Japan	25,000		
Total	920,000	5,222,422	437,340
Lake trout:			
Twin Lakes, Salisbury, Conn		20,000	
Connecticut Fish Commission, Windsor Locks, Conn	250,000		
Spirit Lake, Spirit Lake, Iowa		15,000	
Lake Okoboji, Spirit Lake, Iowa		15,000	
Mountain Lake, Tolland, Mass		20,000	
Lake Esau, Presque Isle, Mich		100,000	

Detail of distribution—Continued.

Species and disposition.	Eggs.	Fry and fingerlings.	Adults and yearlings.
Lake trout—Continued.			
Arnold Lake, Harrison, Mich		100,000	
Long Lake, Howell, Mich		200,000	
Clark and Loon lakes, Watersmeet, Mich		200,000	
Chief or Trout Lake, Iron Mountain, Mich		200,000	
Lake Michigan, Charlevoix, Mich		3,100,000	
near Beaver Island, Mich		575,000	
Mackinac City, Mich		650,000	
Lake Huron, Alpena, Mich		1,000,000	
North Point, Mich		1,000,000	
Scarecrow Island, Mich		1,000,000	
Big Reef, Mich		380,000	
Detour, Mich		1,000,000	
Lake Superior, Rock Harbor, Mich		140,000	
Washington Harbor, Mich		140,000	
Marquette, Mich		1,000,000	
Todds Harbor, Mich		360,000	
Eagle Harbor, Mich		320,000	
Long Point, Mich		320,000	
Ontonagon, Mich		960,000	
Keystone, Mich		480,000	
Fish Island, Mich		120,000	
Tobins Harbor, Mich		200,000	
Whitefish Point, Mich		1,000,000	
St. Marys River, Bay Mills, Mich		400,000	
Hay Lake, Hay Lake, Mich		800,000	
Turtle Lake, Turtle Lake, Mich		50,000	
Michigan Fish Commission, Detroit, Mich	1,000,000		
Leech Lake, Walker, Minn		30,000	
Lake Pulaski, Buffalo, Minn		14,000	
Lake Superior, Poplar River, Minn		260,000	
Grand Marais, Minn		280,000	
Chicago Bay, Minn		220,000	
Grand Portage, Minn		320,000	
Two Harbors, Minn		640,000	
Duluth, Minn		200,000	
Newfound Lake, Bristol, N. H		30,000	
Squaw and Black Nit ponds, Meredith, N. H		80,000	
Spofford Lake, Chesterfield, N. H		20,000	
Lake Winnepesaukee, Weirs, N. H		20,000	
Squam Lake, Ashland, N. H		20,000	
Chas. B. Clarke, Concord, N. H	500,000		
Pleasant Lake, Pleasant Lake, N. Y		20,000	
St. Lawrence River, Cape Vincent, N. Y		46,280	
Otsego Lake, Cooperstown, N. Y		49,750	
Lake Ontario, near Cape Vincent, N. Y		766,600	
off Grenadier Island, N. Y		1,256,000	
Dutch Point, N. Y		450,000	
Tibbetts Point, N. Y		530,000	
St. Lawrence River, off Carlton Island, N. Y		20,000	
James Annin, Caledonia, N. Y	10,000		
W. H. Boardman, Fulton Chain, N. Y	200,000		
New York Fish Commission, Caledonia, N. Y	2,500,000		
Maumee River, Toledo, Ohio		3,500	
Triangle and Nash lakes, Lane and Lincoln counties, Oreg		18,000	
Hawthorne Lake, Portland, Oreg		1,000	
Meadow Lake, Yamhill County, Oreg		26,498	
Saxton Mill Pond, Spartanburg, S. C		20,000	
Sunset Lake, Orwell, Vt			3,012
Holland Pond, Holland, Vt		15,000	
Big Averill Pond, Averill, Vt		30,000	
Caspian Lake, Greensboro, Vt		49,900	
Willoughby Lake, Westmore, Vt		40,000	
Crystal Lake, Barton, Vt		36,000	
Stone Pond, Glover, Vt		20,000	
Vermont Fish Commission, Roxbury, Vt	250,000		
Lake Sequalitchew, Lake View, Wash		24,950	
Lake Superior, Madeline Island, Wis		320,000	
Ashland, Wis		470,000	
Wyoming Fish Commission, Sheridan, Wyo	500,000		
J. B. Fielding, Upper Downing, England	25,000		
Lake Superior, Ross Point, Ontario		360,000	
Total	5,235,000	22,022,478	3,012
Scotch sea trout:			
Phillips Lake, Bangor, Me			3,000
Craig Pond, East Orland, Me			3,837
Alamoosook Lake, Orland, Me		7,694	
G. H. Richards, Wenaumet, Mass	10,000		
Total	10,000	7,694	6,837

Details of distribution—Continued.

Species and disposition.	Eggs.	Fry and fingerlings.	Adults and yearlings.
Golden trout:			
Round Pond, Conway, N. H.		10,000	
Lake Tarleton, Pike Station, N. H.		10,000	
Lake Sunapee, Sunapee Lake, N. H.		49,950	
Total		69,950	
Grayling:			
South Platte River, Florissant, Colo.		10,000	
Fryingpan River, Thomasville, Colo.		30,000	
Platte River, between Grant and Cliff, Colo.		30,000	
Eagle River, Berrys Station, Colo		30,000	
Clear Creek, Lansing, Iowa		25,000	
Village Creek, Lansing, Iowa		25,000	
Heart Pond, Orland, Me		17,822	
Craig Pond, Orland, Me.		17,761	
Craig Brook, Orland, Me		750	
Spring Pond, Horricon, Mich.		20,000	
Bird Creek, Holly, Mich.		10,000	
Baldwin and Sanborn creeks, Baldwin, Mich.		85,000	
Au Sable River and tributaries, Grayling, Mich		85,000	
Michigan Fish Commission, Paris, Mich	100,000		
Lester River, Duluth, Minn		24,000	
Minnesota Fish Commission, State Waters, Duluth, Minn		100,000	
Dr. Justus Ohage, St. Paul, Minn.	10,000		
Missouri Fish Commission, St. Joseph, Mo.	50,000		
Eureka Ponds, Anaconda, Mont			9,925
Prickly Pear Creeks, Helena, Mont		50,000	
Prickly Pear Creek Lake, Prickly Pear Junction, Mont		50,000	
Rock Creek, Harlowton, Mont.		50,000	
Bakers Ponds, Anaconda, Mont.		25,000	
Bozeman Creek, Bozeman, Mont		66,000	
Bridger Creek, Bozeman, Mont.		84,000	
Stone Creek, Bozeman, Mont		50,000	
Waste Ditch, Bozeman, Mont.		100,000	
Fish ponds, Bozeman, Mont		50,000	
W. M. Keil, Tuxedo, N. Y	20,000		
New York Fish Commission, Caledonia, N. Y.	50,000		
John Sharp, Utah Fish Commission, Murray, Utah	100,000		
Caspian Lake, Greensboro, Vt		20,000	
Brule River, Winnie Bayou, Wis.		75,000	
E. Bryant, for Wisconsin Fish Commission, Bayfield, Wis.	200,000		
Fox Creek, Sheridan, Wyo.			8,000
Wyoming Fish Commission, Laramie, Wyo.	100,000		
S. E. Land, Laramie, Wyo	25,000		
Total	655,000	1,130,333	17,925
White-fish:			
Bates Lake, Hastings, Mich		250,000	
Dowd, Leach, and Middle lakes, Hastings, Mich		250,000	
Lake Michigan, Charlevoix, Mich		15,000,000	
Mackinac City, Mich.		12,000,000	
Off Manistique, Mich.		2,000,000	
Detroit River, off Belle Isle, Mich.		19,500,000	
Detroit, Mich		56,000,000	
Lake St. Clair, Lake St. Clair, Mich.		32,000,000	
Lake Huron, off North Point, Mich		15,000,000	
Scarecrow Island, Mich.		10,450,000	
Presque Isle, Mich		8,000,000	
Sturgeon Point, Mich		4,500,000	
Detour, Mich.		15,000,000	
Forester, Mich		4,050,000	
Turtle Lake, Turtle Lake, Mich.		500,000	
Hay Lake, Hay Lake, Mich		5,000,000	
Soo Rapids, Sault Ste. Marie, Mich.		3,000,000	
Lake Superior, Whitefish Point, Mich.		15,000,000	
Marquette, Mich		6,000,000	
Ontonagon, Mich.		10,600,000	
Fishermans Home, Mich.		6,400,000	
Grace Harbor, Mich		4,800,000	
Otsego Lake, Cooperstown, N. Y.		600,000	
Lake Ontario, Dutch Point, N. Y.		26,090,000	
Lake Ontario, near Cape Vincent, N. Y.		4,830,000	
St. Lawrence River, off Cape Vincent		1,080,000	
St. Lawrence River, off Carleton Island, N. Y.		2,300,000	
New York Fish Commission, Caledonia, N. Y.	8,100,000		
Lake Erie, off Ballast Island Shoal, Ohio		23,000,000	
Bass Island, Put-in Bay, Ohio		28,800,000	
Kelley Island, Ohio		40,000,000	
Isle St. George, Middle Ground, Ohio		20,000,000	

Details of distribution—Continued.

Species and disposition.	Eggs.	Fry and fingerlings.	Adults and yearlings.
White-fish—Continued.			
Lake Erie, off Port Clinton, Ohio		38,200,000	
Light-House Point, Put-in Bay, Ohio		10,500,000	
North Bass Reef, Ohio		10,000,000	
Starve Island Reef, Ohio		10,000,000	
Toledo, Ohio		10,000,000	
Storm Island Reef, Put-in Bay		10,000,000	
Pennsylvania Fish Commission, Erie, Pa	48,160,000		
Lake Sequalitchew, Lake View, Wash		730,000	
Lake Superior, Ashland, Wis		1,800,000	
Wisconsin Fish Commission, Madison, Wis	55,000,000		
Total	111,260,000	483,230,000	
Pike perch:			
Simonton Lake, Elkhart, Ind		500,000	
Yellow Creek and lakes, Silver Lake, Ind		1,000,000	
Silver, Rickle, and Hulbert lakes, Silver Lake, Ind		500,000	
Kankakee River, Riverside, Ind		1,500,000	
Caldwell Lake, Claypool, Ind		400,000	
Beaver Dam Lake, Claypool, Ind		400,000	
Mud Lake, Claypool, Ind		400,000	
Carr Lake, Claypool, Ind		400,000	
Homan Lake, Claypool, Ind		400,000	
Grove Lake, Columbia City, Ind		500,000	
Mississippi River, Dubuque, Iowa			500
Spirit Wood Lake, Jamestown, N. Dak			75
Lake Maxinkuckee, Culver, Ind		10,000,000	
Potomac River, Sycamore Island, Md		540,000	
Potomac River, Anglers Club House, Md		1,260,000	
Town Line Lake, Coral, Mich		500,000	
Miner Lake, Miner Lake, Mich		1,000,000	
Michigan Fish Commission, Detroit, Mich	50,000,000		
Missouri Fish Commission, St. Joseph, Mo	10,000,000		
Walser Pond, Webster, N. H		1,000,000	
Round and Stump ponds, Nashua, N. H		1,000,000	
Massabesic Lake, Manchester, N. H		1,000,000	
St. Lawrence River, off Carlton Island, N. Y		4,860,000	
Grass Bay, N. Y		2,000,000	
Cape Vincent, N. Y		1,340,000	
Lake Erie, off Middle Bass Island Reef, Put-in Bay, Ohio		15,000,000	
Ballast Island Reef, Put-in Bay, Ohio		20,000,000	
Magara Reef, Port Clinton, Ohio		20,000,000	
North Bass Reef, Put-in Bay, Ohio		20,500,000	
Catawba Island, Ohio		20,000,000	
Locust Point Shoals		20,000,000	
Toledo, Ohio		10,000,000	
Conneautee Lake, Cambridge, Springs, Pa		500,000	
Clarion River, Foxboro, Pa		800,000	
Lake Nephawin, Canton, Pa		500,000	
St. Clair, White, and Wahlamah lakes, Gough, S. C		1,900,000	
Salem Pond, Derby, Vt		500,000	
Fairfield Pond, Sheldon, Vt		899,000	
Vermont Fish Commission, Swanton, Vt		16,000,000	
Total	60,000,000	177,099,000	575

Details of distribution—Continued.

Species and disposition.	Adults and yearlings.
Cat-fish:	
Benton Pond, Seale, Ala	300
Buzzard Pond, Eufaula, Ala	300
Turner Fish Pond, Eufaula, Ala	300
Clubs Pond, Eufaula, Ala	300
Mill Pond, Columbia, Ala	100
Potomac River, Fish Lakes, D. C	30,000
Lake Ella, Umatilla, Fla	300
Brickyard Pond, Columbus, Ga	500
Ockmulgee River, Macon, Ga	1,000
Hudson Pond, Hamilton, Ga	200
Bussey Pond, Cuthbert, Ga	500
Hood Creek, Bostick, Ga	300
Fish Ponds, Atlanta, Ga	450
Bullochville, Ga	900
Greenville, Ga	200
Stinson, Ga	200
Mississippi River, Dubuque, Iowa	43,500
Maquoketa River, Manchester, Iowa	2,800
Cedar River, Cedar Rapids, Iowa	7,000
Wapsipinnicon River, Independence, Iowa	4,820
Spirit Wood Lake, Jamestown, N. Dak	2,000
Total	95,970
Pickerel:	
Maquoketa River, Manchester, Iowa	200
Wapsipinnicon River, Independence, Iowa	105
Mississippi River, Dubuque, Iowa	500
Total	805
Yellow perch:	
Maquoketa River, Manchester, Iowa	500
Cedar River, Cedar Rapids, Iowa	300
Wapsipinnicon River, Independence, Iowa	300
Spirit Wood Lake, Jamestown, N. Dak	600
Total	1,700
Buffalo-fish:	
Mississippi River, Dubuque, Iowa	200,000
Total	200,000
Black bass:	
Big Cave Creek, Gadsden, Ala	300
Betheas Lake, Faundale, Ala	100
Mill Pond, Birmingham, Ala	150
Ingrams Mill Pond, Opelika, Ala	300
Mill Pond, Attalla, Ala	100
Spring Lake, Epes, Ala	200
Mill Pond, Brantley, Ala	500
Avery Lake, Goldhill, Ala	150
Fletchers Lake, Opelika, Ala	150
Oak Lake, Hooks, Ala	50
Locust Warrior River, Warrior, Ala	800
Black Warrior River, Warrior, Ala	200
Town Creek, Town Creek, Ala	300
Mill Pond, Spruce Pine, Ala	200
Town and Short Creeks, Guntersville, Ala	200
East Sheffield Lake, Tuscumbia, Ala	200
Chambliss Mill Pond, Montgomery, Ala	300
Simmons Spring, Florence, Ala	100
Bradley Mill Pond, Millport, Ala	200
Briggs Mill Pond, Jasper, Ala	300
Blackwater Mill Pond, Jasper, Ala	150
Jones Mill Pond, Waverly, Ala	150
Oxford Lake, Anniston, Ala	200
Lake Baxter, Birmingham, Ala	200
Eufaula Fish Club Pond, Eufaula, Ala	350
Applicants in Alabama	3,160

Species and disposition.	Adults and yearlings.
Black bass—Continued.	
Verde River, Jerome, Ariz	75
Sycamore Creek, Jerome, Ariz	225
Railroad Reservoir, Williams, Ariz.	100
Reservoir, St. David, Ariz	150
Clear Lake, Pine Bluff, Ark	75
Lake Taylor, Pine Bluff, Ark	75
Ouachita River, Malvern, Ark	300
McHenry Fish Pond, Malvern, Ark.	300
Artificial Lake, Eureka Springs, Ark	75
Little River, Wilton, Ark	150
Grassy Lake, Wilton, Ark	150
Fish Lake, Earle, Ark	200
Applicants in Arkansas	900
Applicant at Lamar, Colo	75
Mudge Pond, Sharon, Conn	100
Washbands Ponds, Seymour, Conn.	50
Applicant at Brightwood, D. C	100
Crescent Lake, Clermont, Fla	100
Lake Ella, Umatilla, Fla	200
Lake Helen, Lake Helen, Fla	300
Fish Lake, Clearwater, Fla	500
Applicants in Florida	550
Cumber Mill Pond, Morris Station, Ga	150
Bell Branch Pond, Haddocks, Ga	75
Artifical Lake, Box Springs, Ga	100
Swift Creek Mill Pond, Macon, Ga.	200
McCalls Pond, Macon, Ga	200
Spring Branch, Upatoie, Ga	150
Mill Pond, Howard, Ga	150
Smoors, Ga	100
Savannah River, Grovetown, Ga	300
St. Elmo Lake, Columbus, Ga	100
Lake Carmichael, Gracewood, Ga	250
Augusta Game Club Pond, Augusta, Ga	250
King Lake, Box Springs, Ga	300
Caldecott Lake, Atlanta, Ga	150
Roundabout Pond, Kirkland, Ga	200
Lake Benson, White Sulphur Springs, Ga	100
Mill Pond, Greenville, Ga	200
Ruby Lake, Fort Valley, Ga	100
Fish Lake, Cussetta, Ga	500
Holly Springs Lake, Americus, Ga.	150
Mill Pond, Hazlehurst, Ga	200
Lake Mohignac, Box Springs, Ga	400
Panther Creek, Reynolds, Ga	350
Coleman Lake, Coleman, Ga	489
Applicants in Georgia	3,520
Long Lake, Mitchell, Ill	400
Lonetree Lake, Lonetree, Ill	500
Cherokee Fish Lakes, East St. Louis, Ill	250
Black Walnut Lake, Goodenow, Ill.	100
Spring Lake, Barrington, Ill	300
Spring Lake, Wheaton, Ill	300
Scotts Lake, Belleville, Ill	150
Fox River, Olney, Ill	500
Pine Terrace Lake, Crete, Ill	250
Ahern Lake, Columbia, Ill	100
Clear Lake, Columbia, Ill	150
Gilmore Lake, Columbia, Ill	200
Long Pond, Columbia, Ill	300
Kneipp Lake, Belleville, Ill	300
Priester Lake, Belleville, Ill	150
Artificial Lake, Olney, Ill	100
Jacks Run Lake, Freeburg, Ill	200
Burghardt Lake, Belleville, Ill	150
Kretzer Lake, Harristown, Ill	200
Soldiers Home Lake, Danville, Ill.	200
Applicants in Illinois	1,900
Lake Maxinkuckee, Culver, Ind	800
Winona Lake, Winona, Ind	800
Webster Lake, North Webster, Ind.	300
Lake Wawassee, Wawassee, Ind	800
Tippecanoe Lake, Leesburg, Ind	400
Fall Creek, Malot Park, Ind	150
Car Lake, Claypool, Ind	300
Homan Lake, Claypool, Ind	300
Mud Lake, Macy, Ind	150
Lake Manitou, Rochester, Ind	300

Details of distribution—Continued.

Species and disposition.	Adults and yearlings.
Black bass—Continued.	
Gravel Lake, Adamsville, Ind	150
Black River, New Harmony, Ind	275
Indian Pond, Elnora, Ind	200
Swan and Snider Ponds, Washington, Ind	200
Kankakee River, Kouts, Ind	300
Notre Dame Lake, South Bend, Ind	250
White River, Muncie, Ind	500
Tippecanoe River, Winamac, Ind	300
Tippecanoe River, Monticello, Ind	500
Big Walnut Creek, Greencastle, Ind	300
Huff Lake, Argos, Ind	100
Fall Creek, Indianapolis, Ind	300
St. Joseph Lake, South Bend, Ind	300
Pretty Lake, Plymouth, Ind	200
Gravel Pit, Ossian, Ind	100
Indian Creek, New Albany, Ind	300
Sugar Creek, Crawfordsville, Ind	300
White River, Castleton, Ind	500
White River, Winchester, Ind	300
Wabash River, Williamsport, Ind	500
Sugar Creek, Thorntown, Ind	300
Mine Pond, Clarks, Ind	200
Blue River, Shelbyville, Ind	500
Lewis Reservoir, Lewis, Ind	650
Shriner Lake, Columbia City, Ind	300
Round Lake, Columbia City, Ind	300
Cedar Lake, Columbia City, Ind	300
Quarry Pond, Bloomington, Ind	150
Clements Mill Pond, Chrisney, Ind	83
Canning Factory Pond, Chrisney, Ind	167
Walnut Fork of Eel River, Greencastle, Ind	300
Simonton Lake, Elkhart, Ind	200
Wabash River, Gibson County, Ind	275
Applicants in Indiana	4,700
Spring Lake, Davis, Ind. T	100
Rock Creek, Davis, Ind. T	200
Mountain Stream, Talihina, Ind. T	200
Shannon Pond, Purcell, Ind. T	100
Bratcher Lake, Ardmore, Ind. T	100
Fish Lake, Ardmore, Ind. T	100
Applicants in Indian Territory	875
Fish Lake, Buffalo Center, Iowa	500
Fish Lake, Corydon, Iowa	500
Boyer River Mill Pond, Dow City, Iowa	750
Crane Creek, Riceville, Iowa	500
North Fork of Maquoketa River, Dyersville, Iowa	1,000
Maquoketa River, Manchester, Iowa	3,000
Cedar River, Cedar Rapids, Iowa	4,000
Wapsipinnicon River, Independence, Iowa	3,380
Mississippi River, Dubuque, Iowa	5,000
Little Turkey River, Waucoma, Iowa	200
Applicants in Iowa	800
Smoky Hill River, Enterprise, Kans	300
Wisner Creek, Hutchinson, Kans	400
Spring Lake, Abilene, Kans	300
Connor Creek, Connor, Kans	200
Little Arkansas River, Hutchinson, Kans	300
Spring Lake, Nashville, Kans	100
North Fork of Sappy Creek, Oberlin, Kans	50
Spring Creek, Coldwater, Kans	200
Willow Lake, Bavaria, Kans	50
Little Arkansas River, Wichita, Kans	600
Spring Creek, Grainfield, Kans	150
Lake Chanute, Olathe, Kans	150
Elkhorn Creek, Lincoln Center, Kans	300
Rock Creek, Sabetha, Kans	300
Mule Creek, Wilmore, Kans	200
Hazel Dell Lake, Garnett, Kans	75
West Park Lake, Parsons, Kans	250
Black bass—Continued.	
Wea Creek and Bull Creek, Paola, Kans	150
Rattlesnake Creek, Macksville, Kans	200
Saline River, Grinnell, Kans	300
Spring Branch, Prairie View, Kans	150
Branch of Solomon Creek, Topeka, Kans	350
Lakeview Lake, Larned, Kans	200
Fish Lake, Hilltop, Kans	600
Dennis Lake, Manhattan, Kans	200
McDowell Creek, Manhattan, Kans	300
Blue River, Manhattan, Kans	150
Baldwin Creek, Manhattan, Kans	150
King Creek, Manhattan, Kans	150
Deep Creek, Manhattan, Kans	150
Wild Cat Creek, Manhattan, Kans	300
Pfeil Creek, Manhattan, Kans	150
Mill Creek, Manhattan, Kans	150
Eureka Lake, Manhattan, Kans	150
Lowland Lake, Muscotah, Kans	200
Mulberry Creek, Dodge City, Kans	300
Players Lake, Pittsburg, Kans	250
Spring Pond, Coldwater, Kans	150
Applicants in Kansas	4,050
Rolling Fork Creek, Lebanon, Ky	200
Spring Lake, Covington, Ky	300
Dix River, Lancaster, Ky	600
Oak View Lake, Versailles, Ky	150
Deaf Mute Institute Pond, Danville, Ky	100
Geigers Lake, Henshaw, Ky	200
Cumberland River, Pineville, Ky	400
Reservoir, Springfield, Ky	180
Clear Creek, Shelbyville, Ky	200
Kinniconick River, Vanceburg, Ky	600
Railroad Reservoir, Cumberland Falls, Ky	825
Elkhorn Creek, Georgetown, Ky	300
Little River, Hopkinsville, Ky	400
Jones Pond, Nolin, Ky	100
Lake Reba, Richmond, Ky	200
Spring Lake, Madisonville, Ky	200
Mill Creek, Fredonia, Ky	200
Willow Pond, Hodgensville, Ky	200
Livingston Creek, Fredonia, Ky	400
Waterworks Reservoir at Springfield, Ky	180
Ilsley Lake, Ilsley, Ky	100
Guiest Creek, Shelbyville, Ky	300
Clear Creek, Shelbyville, Ky	300
Bull Skin Creek, Shelbyville, Ky	150
Tyler Pond, Shelbyville, Ky	100
Wild Cherry Pond, Brent, Ky	250
Barber Pond, Hopkinsville, Ky	200
Green River, McKinney, Ky	300
Fern Lake, Middlesboro, Ky	400
Floyds Fork Creek, Fisherville, Ky	100
Washiers Pond, Hodgensville, Ky	100
Applicants in Kentucky	5,750
Sunrise Lake, Mansfield, La	150
City Park Lake, New Orleans, La	225
Chaplin Lake, Natchitoches, La	150
Lake Marie, Natchitoches, La	150
Manheim Pond, Robeline, La	75
Red Bayou, Shreveport, La	200
Youskee Lake, Shreveport, La	200
Lake Julia, Brevelle, La	100
Mill Pond, Keithville, La	75
Spring Branch, Lafayette, La	150
Magnolia Lake, Verry, La	175
Banner Pond, Kentwood, La	100
Applicants in Louisiana, La	525
Antietam Creek, Hagerstown, Md	100
Chevy Chase Lake, Chevy Chase, Md	100
Applicant at Cumberland, Md	50
Percival Pond, Orleans, Mass	75
Factory Pond, Fall River, Mass	75
Lake Acoaxet, Fall River, Mass	75
Middleboro Lakes, Rock, Mass	50

Details of distribution—Continued.

Species and disposition.	Adults and yearlings.
Black bass—Continued.	
Roden Pond, Lynn, Mass	50
Silver Lake, Plympton, Mass	150
Crane Pond, Newburyport, Mass	150
Applicant at Hamilton, Mass	50
Boardman Lake, Traverse City, Mich	450
Gull Lake, Yorkville, Mich	1,000
Crooked Lake, Watersmeet, Mich	500
Big Platte Lake, Beulah, Mich	500
Burgess Lake, Greenville, Mich	300
Coady Lake, Coral, Mich	300
Devils Lake, Devils Lake, Mich	500
Whites Lake, Kalamazoo, Mich	300
Eagle Lake, Edwardsburg, Mich	1,000
Juno Lake, Edwardsburg, Mich	500
Christiana Lake, Edwardsburg, Mich	500
Round Lake, Hanover, Mich	300
String of Lakes, Oxford, Mich	300
Stony Lake, Oxford, Mich	300
Bald Eagle Lake, Oxford, Mich	500
Pleasant Lake, Leslie, Mich	300
Klinger Lake, White Pigeon, Mich	500
Holland Lake, Sheridan, Mich	300
Bailey Lake, Claire, Mich	500
Eagle Lake, Willmar, Minn	500
Pike Lake, Duluth, Minn	1,000
Madison Lake, Mankato, Minn	1,000
Lake Minnewaska, Glenwood, Minn	1,000
Fish Club's Lake, Holly Springs, Miss	300
Beech Spring, Topton, Miss	125
Tupelo Park Lake, Tupelo, Miss	250
Artificial Lake, Tupelo, Miss	250
Spring Branch, Myrtle, Miss	150
Arundel Lake, Meridian, Miss	300
Horseshoe Lake, Aberdeen, Miss	400
Lower Dead River, Aberdeen, Miss	250
Tibbs Lake, West Point, Miss	350
Spring Lake, Macon, Miss	200
Mill Pond, Olive Branch, Miss	150
McPherson Lake, Mhoon Valley, Miss	250
Mooreville Park Lake, Corinth, Miss	200
Tuscumbia River, Corinth, Miss	200
Alligator Lake, Columbus, Miss	100
Buttahachie River, Greenwood Springs, Miss	200
Tombigbee River, Bigbee, Miss	200
Aberdeen, Miss	200
Columbus, Miss	200
Donald Lake, Baldwyn, Miss	100
Chatauqua Lake, Crystal Springs, Miss	150
Tchula Lake, Tchula, Miss	200
Silver Creek, Yazoo City, Miss	200
Yokanookany River, McCool, Miss	100
Big Black River, Pickens, Miss	200
Applicants in Mississippi	10,900
James River, Aurora, Mo	300
James Fork of White River, Aurora, Mo	250
Duck Lake, Schell City, Mo	100
Woods Pond, Shelbina, Mo	100
Spring Lake, Schell City, Mo	100
Greenwood Lake, Greenwood, Mo	100
Clear Lake, Bois d'Arc, Mo	150
Pond and stream, Joplin, Mo	150
Cutoff Lake, Brunswick, Mo	248
Pryor Lake, Redbridge, Mo	100
Montgomery Lake, Saginaw, Mo	100
Shipman Springs, Ritchie, Mo	75
James River, Galloway, Mo	75
Herrells Branch, Neosho, Mo	16
Applicants in Missouri	325
Flat Willow, Harlowton, Mont	300
Hogue Lake, Columbia Falls, Mont	200
Lake Blaine, Kalispel, Mont	300
Boorman Lake, Kalispel, Mont	300
Echo Lake, Kalispel, Mont	300

Species and disposition.	Adults and yearlings.
Black bass—Continued.	
Gilkerson Lake, Harlowton, Mont	200
Applicant at Cinnabar, Mont	200
Fish Lake, Whitman, Nebr	300
Box Butte Creek, Hay Springs, Nebr	150
Lake Ericson, Greeley, Nebr	200
Red Willow Pond, Indianola, Nebr	200
Indian Creek, Benkelman, Nebr	140
Applicants in Nebraska	250
Lamprey River, New Market, N. H	50
Spring Lake, Portales, N. Mex	75
Spring River, Roswell, N. Mex	375
Ojitos Creek, Springer, N. Mex	75
Alamositos Creek, Springer, N. Mex	150
Applicants in New Mexico	1,025
Canisteo River, Addison, N. Y	100
Black Brook, St. Joseph, N. Y	50
Snyder Lake, West Sandlake, N. Y	50
French Broad River, Hot Springs, N. C	150
Spring Creek, Hot Springs, N. C	100
Ochlawakee Creek, Hendersonville, N. C	50
Spirit Wood Lake, Jamestown, N. Dak	6,525
Fish Lake, Rolla, N. Dak	806
Willow Lake, Rolla, N. Dak	500
Sanborn, N. Dak	500
Spring Lake, Edgerley, N. Dak	200
Fish Lake, Kulm, N. Dak	150
Wagner Lake, Sidney, Ohio	150
Pond and stream, Greenwich, Ohio	150
St. Joseph Lake, Carthage, Ohio	100
Waterworks Lake, Blanchester, Ohio	200
Hazledell Pond, Clinton, Ohio	100
Cliff Lake, Springfield, Ohio	185
Beaver Creek, Springfield, Ohio	375
Maumee River, Antwerp, Ohio	300
Sandy Lake, Ravenna, Ohio	500
Grand River, West Farmington, Ohio	500
Vermillion Lake, Ashland, Ohio	500
Middle Basin Pond, Coshocton, Ohio	90
Applicants in Ohio	1,930
Threemile Creek, Weatherford, Okla	200
Spring Branch, Woodward, Okla	400
Deer Creek, Deer Creek, Okla	200
Salt Lake, Yeldell, Okla	200
Yost Reservoir, Guthrie, Okla	200
Frisco River, Guymon, Okla	900
Spring Lake, Woodward, Okla	400
Sanders Pond, Okarche, Okla	100
Crutcho Creek, Oklahoma, Okla	200
North Canadian River, Oklahoma, Okla	400
Applicants in Oklahoma	2,500
West Branch Susquehanna River, Muncy, Pa	100
Allegheny River, Tidioute, Pa	300
Twolick Brook, Blairsville Junction, Pa	100
Susquehanna River, Lockhaven, Pa	500
Loyalhanna Creek, Latrobe, Pa	205
Allegheny River, Oil City, Pa	300
Lake Boquet, Latrobe, Pa	75
Oswayo Creek, Shinglehouse, Pa	100
Conococheague Creek, Chambersburg, Pa	50
Conneaut Lake, Cambridge, Pa	450
Sunnyside Pond, Volant, Pa	100
Waterworks Reservoir, Washington, Pa	225
Red Bank Creek, Maysville, Pa	300
Applicants in Pennsylvania	120
Rhode Island Fish Commission, Westerly, R. I	250
Rhode Island Fish Commission, Providence, R. I	250
Mill Pond at Tiverton, R. I	50

Details of distribution—Continued.

Species and disposition.	Adults and yearlings.
Black bass—Continued.	
Silver Lake, Wakefield, R. I.	75
Roost Pond, Beaufort, S. C.	50
Drayton Swamp, Sheldon, S. C.	250
Pacolet River, Converse, S. C.	350
Sheldon Preserve Pond, Sheldon, S. C	100
Reedy and Saluda rivers, Greenville, S. C	150
Seneca River, Calhoun, S. C.	100
Saxton Mill Pond, Spartanburg, S. C.	100
Fair Forest Creek, Spartanburg, S. C.	150
Reedy River, Greenville, S. C	450
Mill Pond, Greenville, S. C	50
Rock Quarry Pond, Edgefield, S. C.	200
Reedy River, Laurens, S. C.	100
Enoree River, Fountain Inn, S. C.	300
Whitney Pond, Spartanburg, S. C.	100
Applicants in South Carolina	1,175
Artesian Lake, Tyndall, S. Dak.	300
Eads Lake, Tyndall, S. Dak	300
Mackintosh Lake, Tyndall, S. Dak.	300
Foot Creek, Aberdeen, S. Dak	900
James River, Huron, S. Dak.	1,043
Lake Donald, Huron, S. Dak	143
Shoe Creek, Huron, S. Dak	243
Whitestone Creek, Wilmot, S. Dak.	500
Whiteclay Creek, Pine Ridge Agency, S. Dak	500
Emanuel Creek, Springfield, S. Dak	1,200
James River, Mitchell, S. Dak	500
Alexandria, S. Dak.	644
Lake Tetonkaha, Volga, S. Dak.	500
Turkey Creek, Volin, S. Dak	500
Frasin Lake, Mitchell, S. Dak.	100
Lake Kampeska, Watertown, S. Dak	500
Antelope Creek, Rosebud, S. Dak.	300
Lake Chilohwee, Canova, S. Dak	143
Applicants in South Dakota	1,700
Red River, Clarksville, Tenn.	261
Horse Creek, Bethel Springs, Tenn	125
Elk Fork Creek, Sadlersville, Tenn	300
Millpond, Lawrenceburg, Tenn.	100
Piney River, Nunnelly, Tenn.	200
McKinstry Pond, Oakland, Tenn	125
Beaver Creek, Huntingdon, Tenn.	900
Big Pigeon River, Newport, Tenn.	75
Railroad Reservoir, Winfield, Tenn	825
Idaho Creek, St. Bethlehem, Tenn.	183
Applicants in Tennessee	2,801
Artificial Lake, Chesterville, Tex.	50
Lower State Lake, Rusk, Tex	200
Spring Creek, Hillsboro, Tex.	50
Old Reservoir, Jacksonville, Tex.	100
Old River Bed Pond, Marlin, Tex.	1,000
Poynors Lake, Athens, Tex	50
New Years Creek, Stone, Tex	1,000
Mosque Creek, Maria, Tex	700
Bold Spring Lake, West, Tex.	200
Hurst Lake, Fort Worth, Tex	500
Alligator Lake, Fort Worth, Tex.	400
Clear Fork of Trinity River, Fort Worth, Tex	370
Trinity River, Fort Worth, Tex	750
Mill Pond, Greenville, Tex.	100
Trippett Lake, Fort Worth, Tex	300
Lake Watts, Waco, Tex	150
Daniel Lake, Lerens, Tex	275
Fish Pond, Laredo, Tex	400
Fish Lake, Corsicana, Tex	300
Bass Lake, Waco, Tex	75
Highland Club Lake, Dallas, Tex.	400
Fish Lake, Elgin, Tex	500
Oak Lake, Waco, Tex.	300
Oltorf Lake, Marlin, Tex	300
Clear Lake, Longview, Tex.	500
Mound Lake, Longview, Tex.	300
McKinley Lake, Longview, Tex.	300
Spring Creek, Plano, Tex	500
Mitchell Lake, Nacogdoches, Tex.	1,000
Tubbins Mill Pond, Nacogdoches, Tex	1,000
Black bass—Continued.	
Old River Lake, Nacogdoches, Tex.	2,000
Conch Creek, Miami, Tex	400
Rock Creek, Hallettsvile, Tex	1,000
Washita River, Canadian, Tex	900
Comanche Creek, Pecos, Tex	1,000
Westude Lake, Crockett, Tex.	800
Graham Lake, Overton, Tex.	500
Elmendorf Lake, San Antonio, Tex.	500
Gordon Lake, Paris, Tex	1,075
Fish Lake, Brownwood, Tex	400
Sweetwater Lake, Sweetwater, Tex	200
Railroad Lake, Wills Point, Tex	500
Buffalo Bayou, Houston, Tex	200
Pecan Springs, Austin, Tex	75
Erwin Lake, Honey Grove, Tex.	800
Fish Lake, Claude, Tex	1,150
Lake Nevill, Longview, Tex	100
Fish Pond, Marlin, Tex	300
Elm Creek, Ballinger, Tex	1,000
Fish Pond, Rosebud, Tex	300
West Lake, West, Tex	175
Wanoreck Lake, Rockdale, Tex.	100
Brandon Canal, Altair, Tex	1,000
Walnut Spring, Austin, Tex.	50
Waterworks Pond, Taylor, Tex	200
Lake Kuykendall, Taylor, Tex.	200
The Lake, Elkhart, Tex.	1,500
Lake Wichita, Wichita Falls, Tex.	500
Crescent Lake, Wichita Falls, Tex.	500
Fish Lake, Greenville, Tex	400
Sportsmens Lake, Petty, Tex	125
Willard Lake, Waco, Tex.	200
Lake Park Lake, Tyler, Texas.	1,000
Moores Lake, Tyler, Tex	500
Camp Creek Lake, Higgins, Tex	200
Coldwater Creek, Strafford, Tex.	400
Clear Creek, Canadian, Tex	300
Lake Alford, Wills Point, Tex.	350
Howell Lake, Wills Point, Tex	300
Finney Lake, Wills Point, Tex	300
Owen Lake, Wills Point, Tex.	500
Montague Pond, Wills Point, Tex.	150
Fish Lake, Wills Pond, Tex	300
Fish Lake, Overton, Tex	300
Lake Surprise, Overton, Tex	300
Lake Eloise, Waco, Tex.	1,150
Springdale Lake, Sherman, Tex.	250
Colorado and Lampasas rivers, Lampasas, Tex.	1,000
Tributary of Lampasas River, Lampasas, Tex.	1,000
Sulphur Fork of Lampasas River, Lampasas, Tex.	200
Fish Lake, Dallas, Tex	1,000
Orphans' Home lakes, Orphans Home, Tex.	800
Fish Lake, Livingstone, Tex	400
Chapman Lake, Overton, Tex	100
Parish Lake, Crockett, Tex.	250
Reddin Lake, Naples, Tex.	1,375
Mann Lake, West, Tex	400
Trinity Lake, Dallas, Tex	3,000
Fish Lake, Dallas, Tex.	1,000
Fish Lake, Hamshire, Tex.	1,000
Fish Pond, Lufkin, Tex.	1,000
Watson Lake, Stone, Tex	500
McGlanthery fish tank, Corsicana, Tex	200
Fish Lake, Santa Anna, Tex.	50
Johnsons Pond, West, Tex.	100
Swindall tank, Terrell, Tex	100
Lake Polk, Temple, Tex.	800
Gageby Creek, Canadian, Tex	400
Hackberry Creek, Canadian, Tex.	400
Private lake, Canadian, Tex.	150
Spring Park Lake, Palestine, Tex.	500
Sour Lake, Sour Lake, Tex	2,500
Artificial Lake, Lott, Tex.	100
Newtons Lake, Pilot Point, Tex.	200
Wood Lake, Sherman, Tex	600
Honey Grove Lake, Honey Grove, Tex	800

Details of distribution—Continued.

Species and disposition.	Adults and yearlings.
Black bass—Continued.	
San Gabriel River, Georgetown, Tex	1,500
Palace Lake, Elkhart, Tex	250
Spring Lake, Bonham, Tex	1,900
Seven Springs, Roanoke, Tex	100
Onion Creek, Manchaca, Tex	500
Bonita Lake, Marshall, Tex	1,000
Carlisle Lake, Chapel Hill, Tex	500
Paradise Creek, Vernon, Tex	400
Railroad Lake, Coleman Junction, Tex	100
Little Conch River, San Angelo, Tex	200
Tanks, Cactus, Tex	1,000
Fish Lake, Longview, Tex	175
Two Lakes, Marlin, Tex	500
Fish Lake, Terrell, Tex	100
Bois D'Arc Creek, Wetherford, Tex	450
Fish Pond, Aldine, Tex	400
Applicants in Texas	14,540
Echo Lake, Brandon, Vt	50
Eddy Pond, Rutland, Vt	50
South River, Grottoes, Va	50
Shenandoah River, Boyce, Va	50
Spring Lake, Parkersburg, W. Va	500
Big Sandy River, Naugatuck, W. Va	250
Kanawha River, Fishing Camp, W. Va	200
Elk River, Charleston, W. Va	207
Buffalo and Cross creeks, Wellsburg, W. Va	150
Tygarts Valley River, Fairmont, W. Va	150
Spring Run, Bunker Hill, W. Va	100
Elk River, Centralia, W. Va	100
Yellow River, Necedah, Wis	1,040
Diamond Lake, Drummond, Wis	1,000
Spread Eagle Lake, Florence County, Wis	500
Dinwiddie Lake, Sheridan, Wyo	200
Total	262,157
Crappie:	
Jones Mill Pond, Waverly, Ala	300
Spring Lake, Opelika, Ala	100
Blue Creek, Johns, Ala	100
Grassy Lake, Wilton, Ark	200
Mudge Pond, Sharon, Conn	100
Lonetree Lake, Lonetree, Ill	1,000
Toledo Reservoir, Toledo, Ill	150
Soldiers' Home Lake, Danville, Ill	790
Applicant in Illinois	50
Leatherwood Creek, Bedford, Ind	50
Indian Creek, Bedford, Ind	50
Salt Creek, Bedford, Ind	50
Patoka River, Jasper, Ind	25
White River, Noblesville, Ind	175
Waterworks Lake, Bloomington, Ind	25
Calumet Lake, Jasper, Ind	150
Stevenson Pond, Bloomington, Ind	25
Pigeon Creek, Boonville, Ind	120
Indian Creek, New Albany, Ind	25
Simonton Lake, Elkhart, Ind	200
Applicants in Indiana	50
Mountain Stream, Talihina, Ind. T	500
North Fork of Maquoketa River, Dyersville, Iowa	500
Maquoketa River, Manchester, Iowa	600
Cedar River, Cedar Rapids, Iowa	700
Wapsipinnicon River, Independence, Iowa	720
Mississippi River, Dubuque, Iowa	700,000
Applicant at Leon, Iowa	100
Spring Lake, Nashville, Kans	100
Spring Lake, Syracuse, Kans	100
Little Arkansas River, Wichita, Kans	200
Bull Creek, Paola, Kans	170
Crappie—Continued.	
Little Arkansas River, Halstead, Kans	200
McDowell Creek, Manhattan, Kans	150
Eureka Lake, Manhattan, Kans	230
Wild Cat Creek, Manhattan, Kans	255
Blue River, Manhattan, Kans	55
Baldwin Creek, Manhattan, Kans	55
Kings Creek, Manhattan, Kans	55
Deep Creek, Manhattan, Kans	55
Pfeil Creek, Manhattan, Kans	55
Mill Creek, Manhattan, Kans	55
Lake Chanute, Olathe, Kans	170
Fish Lake, Hill-top, Kans	200
Applicants in Kansas	855
Karlsruhe Pond, Newport, Ky	25
Fern Lake, Middlesboro, Ky	15
Cemetery Lake, Louisville, Ky	125
Reservoir, Slaughtersville, Ky	100
Barren River, Bowling Green, Ky	100
Kinniconick River, Vanceburg, Ky	175
Lake Mingo, Nicholasville, Ky	25
Spring Lake, Madisonville, Ky	100
Ilsley Lake, Ilsley, Ky	100
Nolin River, Nolin, Ky	100
Paynes Pond, Georgetown, Ky	77
Applicants in Kentucky	453
City Park Lake, New Orleans, La	125
Chaplin Lake, Natchitoches, La	200
Manheim Pond, Robeline, La	100
Red Bayou, Shreveport, La	200
Youseeka Lake, Shreveport, La	200
Lake Julia, Brevelle, La	200
Bayou Dorchita, Haughton, La	200
Yarbrough Lake, Mansfield, La	100
Applicant at Mansfield, La	100
Eagle Lake, Willmar, Minn	250
Leech Lake, Walker, Minn	250
Little Spring Creek, Waterford, Miss	200
Chautauqua Lake, Crystal Springs, Miss	200
Lutz Lake, Canton, Miss	200
Constantine Lake, Shuqualak, Miss	100
Fords Pond, Waterford, Miss	200
Mooreville Park Lake, Corinth, Miss	200
Buttahachie River, Greenwood Springs, Miss	200
Tombigbee River, Bigbee, Miss	200
Aberdeen, Miss	200
Columbus, Miss	200
Tchula Lake, Tchula, Miss	200
Yokanookany River, McCool, Miss	200
Big Black River, Pickens, Miss	200
Silver Creek, Yazoo City, Miss	200
Applicants in Mississippi	1,950
Duck Lake, Schell City, Mo	250
Lake Ericson, Greeley, Nebr	200
Private Lake, Greeley, Nebr	100
Rancocas River, Mt. Holly, N. J	50
Openaki Lake, Morristown, N. J	50
Spring Lake, Morristown, N. J	50
Elkwood Lake, Newark, N. J	50
Richmondtown Lake, Woodstown, N. J	50
Quick Pond, Swartswood, N. J	50
Fish Lake, Kingston, N. J	100
French Broad River, Hendersonville, N. C	100
Spirit Wood Lake, Jamestown, N. Dak	300
Springfield Lake, Akron, Ohio	100
Cliff Lake, Springfield, Ohio	90
Buck Creek, Springfield, Ohio	140
Pennypack Creek, Hatboro, Pa	200
Crystal Lake, Carbondale, Pa	100
Porters Lake, Stroudsburg, Pa	100
Deer Lake, Stroudsburg, Pa	150
Forest Lake, Stroudsburg, Pa	100
Lake Minisink, Stroudsburg, Pa	100

Details of distribution—Continued.

Species and disposition.	Adults and yearlings.
Crappie—Continued.	
Lake Taminent, Stroudsburg, Pa	100
Jones Lake, Montrose, Pa	390
Perkiomen Creek, Norristown, Pa	100
Schuylkill River, Norristown, Pa	100
Sugar Loaf Lake, Hazleton, Pa	250
Lake Clerno, Hoadleys, Pa	100
Juniata River, Huntingdon, Pa	400
Stone Creek, Huntingdon, Pa	200
Harveys Lake, Alderson, Pa	100
Frankstown Branch, Juniata River, Spruce Creek, Pa	150
Frankstown Branch, Juniata River, Barre, Pa	175
Aughwick Creek, Hopewell, Pa	50
Lake St. Clair, Latrobe, Pa	100
Raystown Branch of Juniata River, Hopewell, Pa	25
Raystown Branch of Juniata River, Riddlesburg, Pa	125
Raystown Branch, Juniata River, Everett, Pa	100
Raystown Branch, Juniata River, Saxton, Pa	225
Ludwig Run, Ebensburg, Pa	100
Conneaut Lake, Cambridge, Pa	100
Trough Creek, Mapleton, Pa	50
Twelve Mile Lake, Stroudsburg, Pa	100
Silver Lake, Morton, Pa	100
Applicant at Jermyn, Pa	50
Foot Creek, Aberdeen, S. Dak	700
James River, Huron, S. Dak	700
Lake Donald, Huron, S. Dak	150
Shoe Creek, Huron, S. Dak	200
James River, Mitchell, S. Dak	300
Frasin Lake, Mitchell, S. Dak	150
Beaver Creek, Huntingdon, Tenn	500
Orchard Pond, Tioga, Tex	45
Old River Bed Pond, Marlin, Tex	100
Restleys Creek, Dublin, Tex	200
Greens Creek, Clairette, Tex	100
Bosque River, Clairette, Tex	200
Four Ponds, Marfa, Tex	100
Crescent Lake, McNeil, Tex	500
Little Brazos River, Hearne, Tex	300
Onion Creek, Manchaca, Tex	100
Oltorf Lake, Marlin, Tex	150
San Gabriel River, Georgetown, Tex	350
Cannon Creek, Marfa, Tex	100
West Side Lake, Crockett, Tex	200
Elmendorf Lake, San Antonio, Tex	75
Waterworks Pond, Taylor, Tex	100
Washita River, Canadian, Tex	250
Dads Creek, Canadian, Tex	150
Du Tait Creek, Canadian, Tex	100
Beaver Lake, Canadian, Tex	30
North Creek, Canadian, Tex	100
White River, Canadian, Tex	50
Bear Creek, Manchaca, Tex	100
Club Lake, Austin, Tex	40
Applicants in Texas	985
Potomac River, Daysville, Va	200
Fish Pond, Winston, Va	200
Broad Run, Manassas, Va	200
Bull Run, Manassas, Va	200
Cedar Run, Manassas, Va	200
Occoquan Run, Manassas, Va	200
Fish Pond, Amherst, Va	200
Shadybrook Pond, Glencarlyn, Va	100
Piedmont Pond, Charlottesville, Va	200
Fish Pond, North Garden, Va	200
Tinker Creek, Hollins, Va	50
Fish Lake, The Plains, Va	200
North Fork Creek, North Fork, Va	200
Applicants in Virginia	400
Kanawha River, Fishing Camp, W. Va	1,000
Elk River, Charleston, W. Va	240
Sleepy River, Hancock, W. Va	200
Crappie—Continued.	
Cold Run Creek, Hancock, W. Va	200
Dinwiddie Lake, Sheridan, Wyo	200
Total	735,120
Rock bass:	
Sandy Creek Mill Pond, Opelika, Ala	200
Applicant in Alabama	100
Applicant in Arkansas	100
Mudge Pond, Sharon, Conn	200
Reservoir, Covington, Ga	100
Applicants in Georgia	400
Vermillion River, Danville, Ill	200
Applicants in Illinois	200
Waterworks Lake, Bloomington, Ind	200
Applicants in Indiana	700
Applicant at Dewey, Ind. T	200
Applicant at Harlan, Iowa	200
Fish Lake, Hilltop, Kans	500
Fall Creek, Caldwell, Kans	200
Applicants in Kansas	800
Reservoir, Slaughtersville, Ky	150
Fern Lake, Middleboro, Ky	200
Spring Lake, Madisonville, Ky	150
Applicants in Kentucky	200
Middleboro Lakes, Rock, Mass	400
Applicant at Northampton, Mass	200
Horseshoe Lake, Macon, Miss	300
Harpers Lake, Brooksville, Miss	300
Applicants in Mississippi	6,290
Fishing Club Pond, Glasgow, Mo	500
Woods Pond, Schell City, Mo	100
Spring Lake, Schell City, Mo	500
Eden Green Ponds, Chillicothe, Mo	200
Cutoff Lake, Brunswick, Mo	200
Fish Lake, Billings, Mo	500
Applicants in Missouri	800
Nebraska Fish Commission, South Bend, Nebr	1,000
Las Palomas Creek, Engle, N. Mex	400
North Spring River, Roswell, N. Mex	200
Applicants in New Mexico	600
Fish Lake, Rockville Center, N. Y	200
Rhetts Lake, Hendersonville, N. C	1,000
Mattamuskeet Lake, Elizabeth City, N. C	200
Applicants in North Carolina	500
Applicant at New Salem, N. Dak	200
Odell Lake, Lakeville, Ohio	200
Applicants in Ohio	500
Applicants in Oklahoma	1,100
Antietam Creek, Reading, Pa	200
Porters Lake, Stroudsburg, Pa	400
Aughwick Creek, Shirley, Pa	50
Harveys Lake, Alderson, Pa	400
Juniata River, Lewistown, Pa	300
Swatara Creek, Meyerstown, Pa	400
Cocalamus Creek, Mifflin, Pa	100
Ludwig Run, Ebensburg, Pa	200
Middle Creek, Fairfield, Pa	200
Applicants in Pennsylvania	100
Fish Pond, Allendale, S. C	400
Fish Lake, Carthage, Tenn	400
Duck Run, Columbia, Tenn	925
Mill Pond, Lawrenceburg, Tenn	800
Hurricane Creek, Waverly, Tenn	400
Aughtry Lake, Richland, Tex	500
Upper State Lake, Rusk, Tex	175
Bold Spring Lake, West, Tex	175
Creek, Carrizo Springs, Tex	250
Fish Lake, Waco, Tex	150
Gibson Lake, Palestine, Tex	75
Gordon Lake, Paris, Tex	500
San Gabriel River, Georgetown, Tex	1,000
West Lake, West, Tex	150
Railroad Lake, Walnut Springs, Tex	200

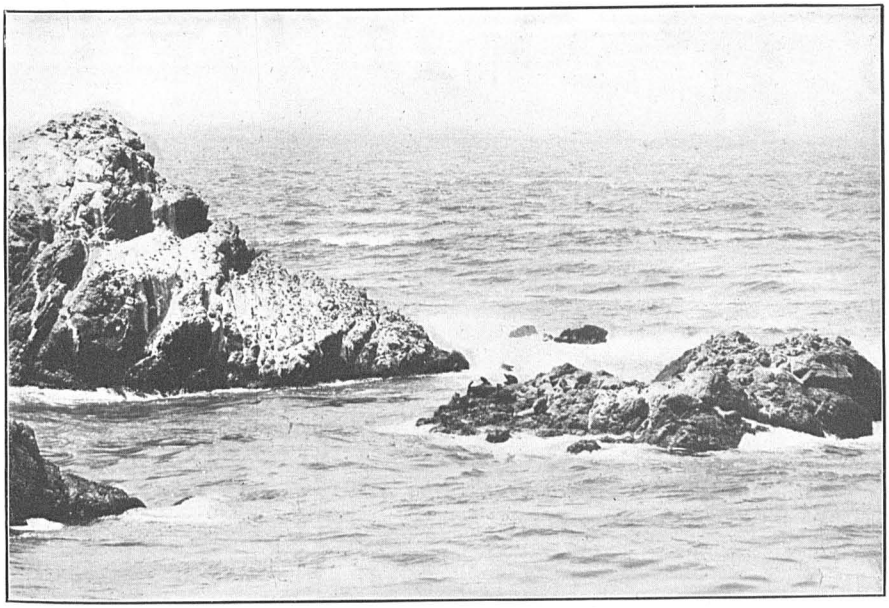
Details of distribution—Continued.

Species and disposition.	Adults and yearlings.
Rock bass—Continued.	
Railroad Lake, Cisco, Tex	350
Trinity River, Fort Worth, Tex	400
Fish Lakes, Chico, Tex	250
San Antonio, Tex	150
Applicants in Texas	830
Fish Pond, Richmond, Va	200
Spring Lake, Luray, Va	100
Tacoma Fish Club Pond, Richmond, Va	200
Wolf Creek Mill Pond, Abingdon, Va	200
Ice Pond, Danville, Va	150
James River, Lynchburg, Va	300
City Reservoir, Charlottesville, Va	200
Dowdy Creek, Petersburg, Va	200
Appomattox River, Petersburg, Va	200
Powell Creek, Petersburg, Va	200
Taylor Mill Pond, Warsaw, Va	200
Tinker Creek, Hollins, Va	200
Davis Branch, Catron, Va	200
Piney Creek Mill Pond, Clover, Va	200
Orrix Creek Mill Pond, Evington, Va	200
Goose Creek, Edwards Ferry, Va	1,300
Applicants in Virginia	800
Kanawha River, Fishing Camp, W. Va	300
Total	37,170
Strawberry bass:	
Verde River, Jerome, Ariz	400
Fish Lake, Ardmore, Ind. T	350
Lake Macia, Natchitoches, La	100
Chaplin Lake, Natchitoches, La	200
Youseeka Lake, Shreveport, La	200
Lake Ninock, Ninock, La	100
Scoutaway River, Lensburg, Mo	200
Clear Creek, Bois D'Arc, Mo	100
Lake of the Woods, Fulton, Mo	51
North Spring River, Roswell, N. Mex	200
Yost Reservoir, Guthrie, Okla	500
Spring Lake, Guthrie, Okla	500
Sanders Pond, Okarche, Okla	300
Applicant at Mulhall, Okla	150
San Gabriel River, Georgetown, Tex	200
Total	3,551
Warmouth bass:	
Soldiers Home Lake, Danville, Ill.	100
Total	100
Sun-fish:	
Verde River, Jerome, Ariz	200
Beaver Creek, Jerome, Ariz	300
Little River, Wilton, Ark	500
Soldiers Home Pond, Danville, Ill.	300
Maquoketa River, Manchester, Iowa	1,400
Cedar River, Cedar Rapids, Iowa	2,400
Wapsipinnicon River, Independence, Iowa	90

Species and disposition.	Adults and yearlings.
Sun-fish—Continued.	
Mississippi River, Dubuque, Iowa	600,000
North Spring River, Roswell, N. Mex	600
Spirit Wood Lake, Jamestown, N. Dak	250
Total	606,040
Bream:	
Mill Pond, Alabama City, Ala	100
Oak Lake, Hooks, Ala	500
Fish Pond, Inverness, Ala	200
Mill Pond, Inverness, Ala	200
Rodgers Lake, Letohatchie, Ala	200
Craddock Lake, Dadeville, Ala	100
Bloom Pond, Eufaula, Ala	800
Dent Pond, Eufaula, Ala	700
Thompson Pond, Eufaula, Ala	200
Chambliss Mill Pond, Montgomery, Ala	200
Jones Mill Pond, Waverly, Ala	200
Briggs Mill Pond, Jasper, Ala	100
Blackwater Mill Pond, Jasper, Ala	100
Ingrams Mill Pond, Opelika, Ala	1,000
Lake View, Opelika, Ala	100
Eley Pond, Union Springs, Ala	300
Howell Pond, Union Springs, Ala	100
Buzzard Pond, Eufaula, Ala	200
Spring Lake, Union Springs, Ala	150
Applicants in Alabama	1,550
Crescent Lake, Clermont, Fla	200
Lake Ella, Umatilla, Fla	110
Jaques Pond, Macon, Ga	100
Henderson Creek, Jasper, Ga	100
Mill Pond, Jonesboro, Ga	100
Sunnyside, Ga	50
Coleman Mill Pond, Cuthbert, Ga	300
Laza Creek, Talbotton, Ga	150
Juniper Pond, Juniper, Ga	200
Augusta Game Club Pond, Augusta, Ga	300
Spring Creek, Rome, Ga	200
Roundabout Pond, Kirkland, Ga	200
Mill Pond, Greenville, Ga	200
Kings Lake, Box Springs, Ga	300
Hills Fish Pond, Greenville, Ga	200
Brick Yard Pond, Columbus, Ga	500
Hoods Creek, Bostick, Ga	100
Hudson Pond, Hamilton, Ga	200
Crystal Lake, Cuthbert, Ga	209
Green Springs, Columbus, Ga	300
Hooks Mill Pond, Americus, Ga	500
Applicants in Georgia	2,850
Applicants in Mississippi	500
El Caney Lake, Crockett, Tex	150
Old River Bed Pond, Marlin, Tex	500
Crystal Lake, Palestine, Tex	500
Little Brazos River, Hearne, Tex	500
San Gabriel River, Georgetown, Tex	500
Waterworks Pond, Taylor, Tex	100
Trinity River, Fort Worth, Tex	500
Applicants in Texas	80
Total	17,699

Details of distribution—Continued.

Species and disposition.	Fry.
Cod:	
Woods Hole Great Harbor, Woods Hole, Mass	1,257,000
Vineyard Sound, Mass.:	
Robinsons Hole	32,265,000
Tarpaulin Cove	69,574,000
Nashewena Island	16,315,000
Quicks Hole	5,231,000
French Watering Place	3,132,000
Hadley Harbor	1,036,000
Atlantic Ocean, Gloucester, Mass	60,033,000
Rockport, Mass	23,158,000
Total	212,001,000
Flat-fish:	
Woods Hole Great Harbor, Woods Hole, Mass	113,996,000
Eel Pond, Woods Hole, Mass	13,621,000
Waquoit Bay, Waquoit, Mass	28,557,000
Hadley Harbor, Hadley Harbor, Mass	7,623,000
Buzzards Bay, Monument Beach, Mass	4,336,000
Total	168,133,000
Lobster:	
Fishers Island Sound, off Noank, Conn	1,151,000
Gulf of Maine, Maine:	
Goose Fair Bay	1,800,000
Portland Head	500,000
Cape Elizabeth	700,000
off Cape Porpoise	1,000,000
Small Point	1,500,000
Sequin Island	1,000,000
Cape Newagen	1,500,000
Pemaquid Point	1,000,000
West Boothbay Bay Harbor	1,000,000
Kennebunk Beach	500,000
Lobster—Continued.	
Gulf of Maine, Me.—Continued.	
Wood Island	1,000,000
Mouth of Indian Harbor	250,000
off Eastport Harbor	650,000
off Georges Island Harbor	500,000
Mickleridge Channel	1,000,000
Rockland Bay	1,500,000
off Cranberry Island Harbor	700,000
East End of Long Island	500,000
near North Point, Isle au Haut	200,000
Outer Bass Harbor	200,000
near Scoobic Island	200,000
Casco Bay, Maine:	
Diamond Cove	500,000
west side of Cow Island	500,000
off Peaks Island	500,000
south shore of Great Diamond Island	2,000,000
west side of Long Island	1,000,000
off Two Brothers Island	1,500,000
off Mackies Island	1,500,000
off Clapboard Island	1,500,000
Biddiford Pool, Me	1,000,000
Fore River, Portland Harbor, Me	1,500,000
Atlantic Ocean, Kittery Point, Me	5,400,000
York Harbor, Me	3,000,000
Gloucester, Mass	20,270,000
Rockport, Mass	1,800,000
Beverly, Mass	8,800,000
Boston, Mass	3,800,000
Manchester, Mass	370,000
Wellfleet Harbor, Wellfleet, Mass	932,000
Scituate Harbor, mouth of Scituate Harbor, Mass	1,017,000
Woods Hole Great Harbor, Woods Hole Harbor, Mass	1,118,000
Atlantic Ocean, Isle of Shoals, N. H	2,200,000
Wickford Harbor, Wickford, R. I	2,462,000
Total	81,020,000



SEA LIONS AT CLIFF HOUSE, SAN FRANCISCO.

PUPS ABOUT FOUR WEEKS OLD.