

January 1966

Pennsylvania

ANGLER

Pennsylvania Fish Commission

100
YEARS



Fighting for the Conservation of
Pennsylvania's Natural Resources

Pennsylvania Fish Commission

Centennial

1866-1966

AS PRESIDENT of the Pennsylvania Fish Commission, I cordially invite Pennsylvanians to help us celebrate our Centennial Year. The 100 years from 1866 to 1966 is a long, long time for any business to survive the world of changes and backwashes of social and industrial upheavals and the distress of numerous wars. Few organizations can boast of such longevity.

The swift-moving events in a fast-moving world since the end of the Civil War when the Fish Commission was born, also swept away forever the last frontiers of unregulated fisheries and fishing as it was enjoyed by the American Indian and early settlers.

The kaleidoscope of the coming and going of the years unfolded the new, often ugly, pattern of what sport fishing was to become. As each new year slid into history, history was continually being made by men in their efforts to turn back the clock to the Colonial days of unconcerned, carefree angling. The polluted tide rolled them all aside and we have only traces of what once was the ideal, the utopia still mourned.

No body of men, no organization in the Space Age of today and in the Age of Infinity tomorrow can ever hope to return to the Edens of yesterday. We can only, as stumbling, fallible humans, seek to keep open minds, clear eyes on our present-day problems and hope we can contribute something worthwhile from our generation to the future. We are urged not to look backward into time because it disturbs our equilibrium, but how can we evaluate the future if we cannot compare it with the past?

In this Centennial issue of the "Pennsylvania Angler" some of the breath of the past is inhaled into words and pictures, faded, frozen in time. With the old is presented the new in the form of a financial and progress report to the fishermen.

While our methods of doing business have changed in 100 years, the old problems are still with us. Our programs largely depend upon Old Mother Nature much as they did in 1866.

The struggle is keener, more intense, with each era. It demands strong, young, vigorous and progressive people to succeed in any business today. We, of the Commission, have reason to believe in our programs, our staff and our workers. They, too, will make their mark on our future history.

ROBERT M. RANKIN, *President*
PENNSYLVANIA FISH COMMISSION

**PENNSYLVANIA
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DIRECTORY**

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Contents

- 2 FISH, FISHING AND FISHERIES OF PENNSYLVANIA IN COLONIAL TIMES
- 8 EARLY FISH HATCHERIES IN PENNSYLVANIA—Alex P. Sweigart
- 14 FINANCIAL REPORT, PENNSYLVANIA FISH COMMISSION, FISCAL YEAR JULY 1, 1964-JUNE 30, 1965—John M. Smith, Comptroller
- 18 WATERCRAFT SAFETY REPORT
- 21 PENNSYLVANIA FISH COMMISSION REPORT TO THE SPORTSMEN
 - 21 Administration
 - 21 Propagation and Distribution
 - 22 Research and Fish Management
 - 24 Law Enforcement
 - 24 Public Relations
 - 25 Real Estate
 - 25 Engineering
- 28 DO-IT-YOURSELF TIP UP

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Fish, Fishing and Fisheries of Pennsylvania In Colonial Times

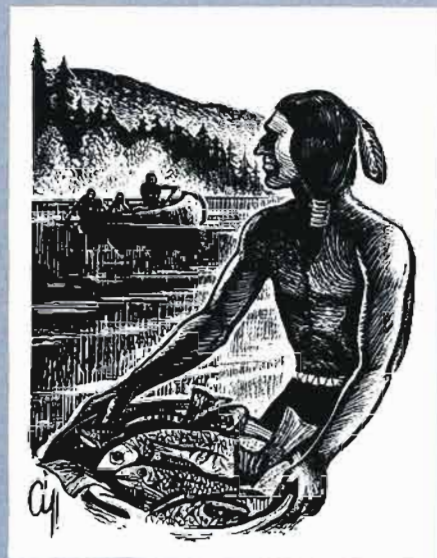
LESS than three hundred years ago the rivers and streams within the confines of what is now the State of Pennsylvania were fairly alive with fish. Shad, herring and other migratory fishes annually ascended the Susquehanna and Delaware rivers and their tributaries in such vast multitudes that, according to one old writer, the still waters seemed to fill with eddies, while the shallows were beaten into foam by them in their struggles to reach the spawning grounds. As the rivers of Alaska are said to be filled today with salmon, so were the Susquehanna and Delaware described to have been with other fishes some two hundred and fifty years ago.

As the rivers were in those days with migratory fish, so were the mountain and meadow streams with trout. Whenever the water conditions were at all favorable, this great game fish lived in countless numbers, and like the shad and other migratory fishes, grew to much larger size than are now commonly found. Even catfish, suckers and other finny members of life in those early days reached a greater fullness of growth.

At that time, the Indians, of what is now Pennsylvania, throughout its whole extent, and indeed, for some distance north, west and south depended almost wholly on the fish supply for food. These people could with much truth be called fish-eaters. Proof of this is found in every ancient Indian village site, where the ashes and charcoal of primeval camp fires have preserved bones of animal food devoured by the redskinned hunters. In every case, no matter whether the village was located beside a large water course or at some distance from it, bones of fishes have been found among the camp fire ashes. Bones of deer, elk and bear, the principal animal food of the Indians, are also discovered in great quantity, but insignificantly so when compared with the number of fish bones found.

If further proof be wanting as to the great dependence on fish, it is found in the ancient shell heaps on the sea coast, the accumulations of the Indians who visited the ocean annually from miles inland for mollusks which they smoked for winter use. Among these shell heaps are discovered numerous fish spears and hooks, together with abundant remains of fishes. Thus, while mollusk gathering was the primary object of the ocean visits, the Indians kept well in mind the value of sea fishes as an article of food.

It is by the remains of bones found in the ashes also that the great size of the fish of those days, as compared with those of the present, can be determined. Bones of catfish and suckers of more than double the size of those



now caught are frequently found, skeletons of trout, which must have weighed when in the flesh from two to four pounds are quite common, and there are no lack of remains of shad which would have tipped the scales fairly at twelve pounds.

As might be expected, depending so largely on this class of food supply, the Indians were expert fishermen. Men, women and children engaged regularly in the calling, not only to supply immediate wants, but for future needs, preserving their stock by sun and smoke curing. John Ogelby, a well-known writer, in treating of the New England Indians says: "In the trade of fishing they are very expert, being experienced in all baits for different kinds of fishes. . . . Since the English came they are furnished with English hooks and lines, for before they made the latter of hemp, being more curiously wrought and of stronger material than ours and hooked with bone hooks. . . . They make likewise very strong sturgeon nets, with which they catch sturgeon of twelve feet or more in length. Their cordage is so even, soft and smooth that it looks more like silk than hemp." The same skill and knowledge possessed by the Indians of New England were had by those in and about the Commonwealth of Pennsylvania, and undoubtedly both were the results of long acquaintance and practice.

Another writer says: "The Indians always carry hooks and small harpoons with them whenever they are on a hunting party; but at certain seasons of the year they go

out purposely to fish, either alone or in parties. They make use of the neat and light canoes made of birch bark . . . and venture with them into spacious rivers."

It will thus be seen that the savages who occupied the soil of America before the white men were no tyros in the art of fish catching. They were learned in all that pertained to it. In the pursuit they used weirs and traps, seines, gill and scoop nets; spears, bows and arrows and gigs; hand, pole and set lines. They even knew how to stupify fish by using intoxicating substances. Besides these things they constructed pens and preserves in which fish could be kept alive until wanted. To the children mainly were left the use of the bow and arrow in fish killing, and in this art, by no means easy of acquirement, they were, according to Loskiel, a Moravian missionary, adept.

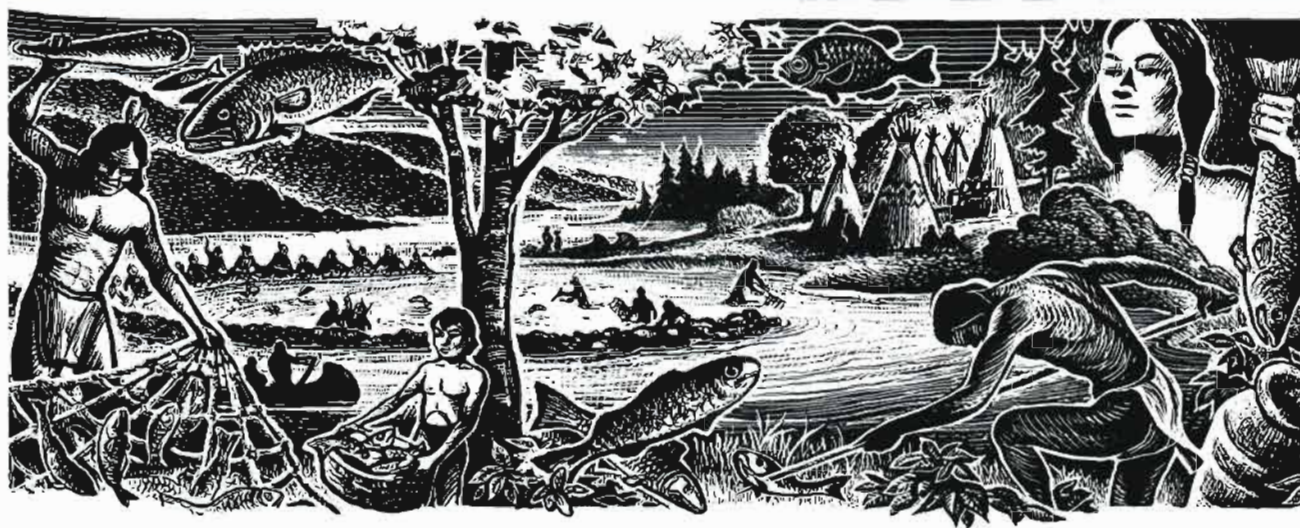
These youthful hunters appear to have followed this species of game hunting with the greatest assiduity, for fish arrowheads are found in great abundance in the valley of the Delaware south of Trenton, on the Susquehanna river shores, particularly near Columbia, as well as in and about nearly all the creeks and streams entering these two rivers. While the youngsters eagerly waded the shallow brooks in pursuit of the speckled trout, or sluggish moving sucker, their favorite resorts were the creeks which were affected by the tides. Here, when the water was high the boys and young men were fond of congregating and shooting the river fishes as they swam up to feed. The arrow heads were peculiary adapted to the use for which they were intended, and entirely unlike in shape those used for the killing of land animals. The arrow heads were often as much as five and six inches long and very narrow, and on account of their slender character only the hardest and choicest stone was used.

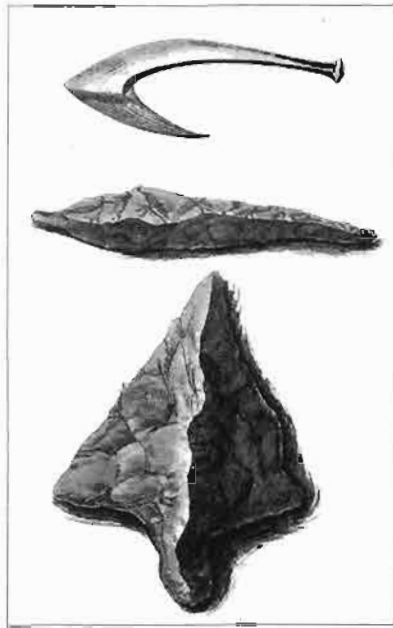
Whenever the streams were shallow, a favorite method of catching fish was by the use of drive-ways. As soon as the shad and herring appeared on their annual journey to the spawning beds no time was lost by the Indians. Large stones were placed close together in the water so as to make a huge V shaped pen, much after the pattern of the brush built drive-ways used by them for capturing land

animals. Then every redskin in the village or villages, if friendly relations were in order, men, women and children fell in line across the river, and moved slowly towards the open end of the drive-way, yelling at the top of their voices and beating the water vigorously with brush, which each were armed with. Affrighted, thousands of fish fled straight to the pen built for them, and when they were well within, escape was barred by a huge net stretched across the entrance. Thus the fish were imprisoned to be slaughtered at leisure by their captors.

In 1680, Mahlon Stacy, one of the first settlers of New Jersey, wrote a letter to a brother in England, in which he gave a somewhat similar method used by the Indians for fish catching . . . "fish in their season are very plentiful. My cousin, Revell, and I, with some of my men, went last third month into the river (the Delaware) to catch herrings, for at that time they came in great shoals into the shallows. We had neither rod nor net, but, after the Indian fashion, made a round pinfold, about two yards over and a foot high, but left a gap for the fish to go in at, and made a bush to lay in the gap to keep the fish in; and when that was done, we took two long birches and tied their tops together, and went about a stone's cast above our said pinfold; then hauling these birch boughs down the stream, where we drove thousands before us, but so many got into our trap as it would hold. And then we began to haul them on shore, as fast as three or four of us could, but two or three a time, and after this manner, in half an hour, we could have filled a three-bushel sack of as good, large herring as ever I saw." . . . And though I speak of herrings only, lest any should think we have little of other sorts, we have great plenty of most sorts of fish that I ever saw in England, besides several other sorts that are not known there, as rocks, catfish, shads, sheepsheads, sturgeons; and fowls plenty."

Seines and gill nets had lead lines made of small, circular, flat stones, having two deep notches to keep the lines from slipping. These "leads" have been found by the thousands in the Delaware and Susquehanna rivers. One of the most curious finds of these relics was made by





INDIAN FISHING IMPLEMENTS

Dr. C. C. Abbott, formerly curator of the Archaeological Department of the University of Pennsylvania, from whom the greater number of the facts contained in this chapter are obtained. Some years ago, in a mud deposit on the banks of the Susquehanna, Dr. Abbott came upon a series of about thirty seine "leads" stretched in an irregular line about eighteen inches apart. From their position and other evidence found in connection therewith, it was apparent that they formed part of a net which had been set and then abandoned.

Ice fishing with gill nets was also a favorite method with the Indians and these were let beneath the ice with wonderful skill and effect.

The best cord with which the nets and fishing lines were made was fashioned from what is termed Indian hemp, botanically known as *Apocynum cannabinum*. It grew in great abundance in the old corn grounds, in woods, on hills and high glades. The stalks could readily be divided into filaments and easily prepared. The net twine was manufactured almost exclusively by the women. They simply gathered a certain number of filaments in one hand and rolled them rapidly upon their bare thighs until thoroughly twisted, locking from time to time the ends with a fresh supply of the hempen fibre. This cord was strengthened and dressed with a mixture of grease and wax and drawn over a smooth groove in a stone.

That gigging and spearing were carried on to an enormous extent is shown by the countless number of spear heads and gig heads found by archaeologists and relic hunters every year. The spears were either tipped with barbed bone or with long slender pieces of chipped stone of a flinty character.

On the gigs the Indians expended a vast amount of time, care and workmanship, for these were as a rule much more delicately chipped than any other implement of their size. Although found in great abundance along the Delaware and the Susquehanna rivers, almost without exception they are of exquisite finish. As the gigs were for the pur-

pose of spearing the larger fish and even sturgeon, and also for the capture of the larger water turtles like "snappers" only the finest stones could be used, thus no fish gigs are found except made of jasper and quartz. It is interesting to note that gigs seem to have been used almost exclusively by the Indians of Pennsylvania and New Jersey; for although plentifully found in both these states, this implement is rarely come upon elsewhere.

Hooks were usually fashioned from bone or stone and occasionally of bird claws (probably of the hawk). So effective were these articles that many white people used them in preference to their own brought from abroad.

The dipsies for hand and pole lines were also very carefully and symmetrically modelled. The most elaborate and handsome were fashioned of hematite and shaped like a common plumb bob. Some had the upper portion grooved and were encased in netting, while others had holes drilled through them and were fastened to the line without the precaution of a net to prevent loss.

Harriot, a writer of 1585, thus quaintly describes the Indian methods of fishing:

"They haue likewise a notable way to catche fishe in their Rivers, for whereas they lacke both yron and steele, they fasten vnto their Reedes or longe Rodds the hollow taylor of a certain fishe like to a sea crabb, in steede of a poynte, wherewith by nighte or day they stricke fishes and take them off into their boates. They also know how to vse the prickles and prickes of other fishes. They also make weares, with settinge opp reeds or twigs in the water, which they soe plant one with another that they growe still narrower and narrower, as appeareth by this figure. Ther was neuer seene among vs soe cunninge a way to take fish withall, whereof sondrie sorts as they fownde in their rivers vnlike vnto ours, which are also of a verye good taste. Doubtless yt is a pleasant sighte to see the people, sometymes wadinge, and goinge sometymes sailinge in those Rivers, which are shallowe and not deepe, free from all care of heaping opp Riches for their posterite, content with their state, and lininge frendlye together of those things which god of his bountye hath giuen vnto them, yet without givinge hym any thankes according to his deserte.

"So sauage is this people and deprived of the true knowledge of god. For they haue none other than is mentioned before in this worke."

Besides telling us how the Indians catch fish, Harriott also tells us how they cook them. He says:

"After they haue taken store of fishe, they gett them vnto a place fitt to dress yt. Ther they sticke vpp in the grownde 4 stakes in a square roome and lay 4 potes vpon them and other ouer thwart the same, the same like vnto an hurdle of sufficient heighte, and lyaing their fishe upon this hurdle, they make a fyre vnderneathe to broile the same, not after the manner of the people of Florida, which do but schorte (schorche) and harden their meate in the smoke only to Reserue the same during all the winter. For this people, reseruinge nothinge for store, thei do broile, and spend away all att once, and when they haue further neede they roste or seethe fresh, as we shall see hereafter. And when as the hurdle can not holde all the fishes, they hange the Reste by the fyrres on sticks sett vpp in the

grounde a gainste the fyres, and than they finishe the reste of theire cookerye. They take good heede that they bee not burnt. When the first are broyled they lay others on that weare newlye brought, continuing the dressinge of their meate in this sorte vntil they thincke they haue sufficient."

The vast abundance of fish in the rivers and streams of the colony of Pennsylvania excited the astonishment of the early European settlers, prepared as they had been beforehand by tales of the multitude of animal life in the new country.

William Penn. in a letter from Philadelphia dated January 9, 1683, to the Duke of York, writes that: "Our rivers have also plenty of excellent fish and waterfowl, as sturgeon, rock shad, herring, cod fish, flat-heads, roach and perch and trout in inland streams.

The fame of the fishing, especially that of the shad of the Susquehanna, even reached the hardy and thrifty settlers of Connecticut, and many of them left their homes in that part of the country and came to and settled in the picturesque Wyoming Valley, from Wyoming to Tioga Point, now known as Athens. They brought their nets with them and each neighborhood established a fishery for its own accommodation. For a long time the chief food of these hardy people was taken from the river. Soon after their arrival trouble arose between them and the government of Pennsylvania over the right of possession of the Wyoming Valley, and a war was begun, which lasted for thirty years. It was not until after the Revolutionary war when all differences were settled that the fishing industries of the Susquehanna were allowed to be conducted in peace.

The early shad fisheries were not common property. The owner of the soil was the owner of the fishery, and no one was allowed to fish without a permit. When the owners were not using the seines they often hired them out to others and took pay in fish. The seiner's share was always one-half the catch.

The Sunbury Beacon of Monday, April 26, 1830, says: "Not less than from four to five thousand shad were caught on Saturday last within a quarter of a mile below the dam. Upward of 500 were taken by one dip net—and several others averaged two and three hundred each. We understand that several hundred were caught with dip nets yesterday."

As the river was ascended the shad appear to have decreased in number but increased in size. The opinion seems to be general that the great size obtained by the Susquehanna shad was due to the long run up the fresh water stream (carrying the idea of the survival of the fittest); nearly everyone who recollects them insisted on putting their weight at almost double that of the average Delaware shad of today. A Mr. Harvey, speaking of the Luzerne County shad, said, "Some used to weigh eight or nine pounds, and I saw one weighed on a wagger which turned the scales at thirteen pounds."

The price of the shad varied, according to their size, from 4d. to 25 cents, depending of course, upon their scarcity or abundance. A bushel of salt would at one



EARLY INDIAN FISHING METHODS

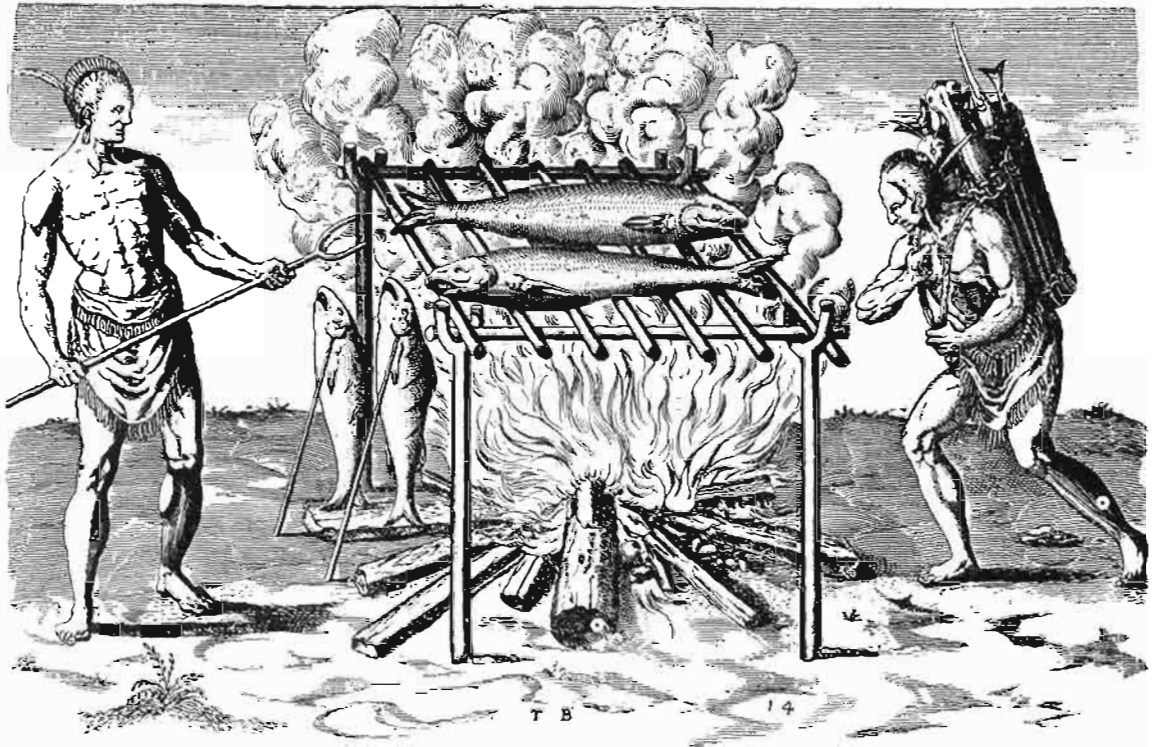
time bring a hundred shad. One gentleman once gave twenty barrels of shad for a good Durham cow.

Every family along the river having any means whatever, had its half barrel or more of shad salted away each season, and some smoked shad hanging in their kitchen chimneys. Country folks from a radius of fifty miles came to the Susquehanna to get their winter supply. People journeyed from the New York state line on the north, and from Easton on the east, at the Junction of the Delaware and the Lehigh Rivers. Among the seekers for this splendid food fish that joined this army were large numbers of residents from and about Philadelphia.

All of these people, or a large portion of them, camped on the river bank, and they brought with them whatever they had of a marketable nature in payment. From the New York line and Easton was brought maple sugar and salt; from Milton, cider and whiskey and a mixture of the two called "cider royal". The Quaker City folks brought leather, iron and commodities of a like nature.

It is unfortunate that, as compared with the Susquehanna river, little is known of the early fisheries of the Delaware, though it was said that the original Dutch and German settlers either did not know of or did not make use of the seine for fish catching until long after the Connecticut colonies in the Wyoming Valley.

However, one of the first stipulations William Penn made with the Delaware Indians at a council held in the forest, was that he and his colonists should have the right to fish in the river Schuylkill. Whatever may have been the amount of fishing in the lower Delaware in the early days of the colony, it appears certain that as much attention was not given it as might have been until the middle of the eighteenth century. In 1764, however, a fish market was erected in Philadelphia, but even then for some time, it is said, not many fish were sold except in cool weather.



In Martin's History of Chester appears the following: "In 1683 it is stated that they (fish) were 'exceedingly plentiful,' and the early fishermen could take 600 at a draught. They were proportionately cheap. Six rock fish could be bought for a shilling; six shad for the same, and oysters for two shillings a bushel."

In the upper waters of the Delaware the earliest shad fisheries seem to have been established somewhere about 1751, and presumably was known as the Point fishery, and was a "day" fishery. That is, contrary to the usual custom, no hauls were made at night.

Mr. William C. Crawford, of Matamoras, in a communication to the Milford Dispatch of November 5, 1891, relates the following method adopted in his early days at the "Yankee" fishery about 1826 and later: "During these years," he says, . . . "the fishing was done in the daytime and thousands were taken at a haul. The fishermen's nets (with ropes) reached across the river where they started, a half a mile below where the Milford bridge stands. The men on each shore walked down, and a canoe that would hold five men, four to pole and one to hold the rope, was at each end, with smaller canoes to watch for hitches, and when opposite the point of the Minisink Island the canoes left the shore and met on the point of the island.

The Delaware fairly swarmed with herring, and there were more curses than blessings heaped on them when a shad net got clogged with the hony little things. But somewhere in the 30's, George B. Mitchell began curing herring. The industry in a short time became a very large one, requiring many hands, for the work was so well done, the herring given such a delicious flavor by Mr. Mitchell's process they became speedily well known all over the United States, and so eagerly sought for that for years it

was difficult to supply the demand.

In those days the herring was also looked upon as possessing considerable medicinal virtues. A salt herring applied to the soles of the feet of a patient afflicted with fever would draw the "humours downward and thereby relieve the head." When taken inwardly it brought relief to pestilential fevers since "it is certain that it dries the stomach exceedingly, causes an appetite and immoderate thirst and settles a subverted and nauseating Stomach." The ashes of the fish cured sciatica, dropsy and pains of the throat, and the flesh applied to the wound of the venomous "Pester," "supposed" says a writer of the middle half of that century, "by the ancients to be the fiery serpent of the Israelites," a cure would be effected. Even the bones of the herring finely powdered and mixed with other ingredients was a valuable medicine for fully a dozen dangerous maladies.

A new industry was started in the Delaware River around 1873 in the vicinity of Chester, the catching of sturgeon. For years few people ate sturgeon, though occasionally a family would fry a few steaks and serve them with cream. The roe was considered worthless except as bait with which to catch eels and perch or to feed to the hogs. The sturgeon were taken in long drift nets, made of heavy twine and managed usually by two persons to a boat. These fish weighed from 50 to 100 pounds each. The flesh was shipped to New York daily, packed in ice, and served in the hotels in that city in the form of steaks. Large quantities of it were smoked and in some cases sold as smoked salmon. The roe, or eggs, were sent to Germany and converted into caviar, and often reshipped to this country and consumed generally by the German population.

The Schuylkill River was once a famous shad river, but by 1830, through dams and pollution, the fish no longer went upriver to spawn. The early shad fisheries, however, furnished families along the banks with a large portion of their food supply. Many of the shad were caught in pens, but another method of fishing was also adopted. Racks extending from shore to shore were placed in the stream with their bars so close together that the fish could not pass. The shad crowded against the racks in such numbers as sometimes to push each other out of the water. As many were taken as were wanted, and the rest struggled in unsuccessful efforts to escape the impediment. This plan, though effectual, was very wasteful and destructive, and awakened the angry opposition of those who lived further up the river. These fisheries were the source of continual jealousies and disputes, and their regulation was the subject of much early legislation. Finally, in 1738, the exasperated adversaries up the river organized a force of volunteers, collected a fleet of canoes and set sail intent upon desperate deeds and in the full anticipation of success. They broke the racks away from their moorings and sent them adrift down the stream. The fishermen at first tried to with soft words to stay the destruction, but were unsuccessful. They fled to the settlement and summoned every man who could handle an oar or wield a club. Thus reinforced they returned to the encounter and made a furious assault upon the enemy. The beaten squadron fled rapidly down the Schuylkill and the fishermen returned to their homes. This is perhaps the only Naval battle ever fought upon the Schuylkill.

After the racks had been removed from the Schuylkill, fishing instead of being an occasional pursuit for the whole neighborhood, became a regular avocation, and was conducted by a few skilled persons, who gave their time and attention to it. Pools were cleared away in the River and the fish were hauled into the shore by means of seines.

"The Islands, since they contained the best landing places, grew to be very valuable. Four hundred shad were caught at Long Ford in a haul, which is the largest upon record. Twenty-three hundred were caught in one night at the Island opposite Phoenixville.

In 1820 "there were fisheries at Longaker's Pool, where the railroad now crosses the Schuylkill at the mouth of the tunnel, at Buckwalter's Pool, near Buckwalter's Island; at the mouth of the French Creek, at Long Ford, Green Hill, Perkiomen and Valley Forge. At Buckwalter's in 1812, one hundred shad were caught in a seine at one time.

"When Samuel Lane owned the Bull Tavern, he had an arrangement with the fishermen at the mouth of the Pickering, that he was to furnish them each morning with a quart of whiskey, and they were to give him in return a shad weighing eight pounds. The contract was continued for some years with mutual satisfaction. After a time, however, shad deteriorated so much in quality that those of that weight became extremely rare. Finally, one morning the fishermen saw 'Old Sammy' coming along as usual with his quart jug, and, on looking over their captures, no fish of the requisite proportions could be found. In this unfortunate emergency a happy thought occurred to one of them, and, seizing the largest of the fish, he held its mouth

open while a comrade filled in pebbles enough to give it the proper weight. The old man carried it off to his home, saying it was a heavy fellow, but the whiskey contract was afterward abandoned."

One of the most valuable of the shad fisheries on the Schuylkill, near Philadelphia, was at Manayunk. Before the beginning of the present century there had been made in the river, from time to time, a succession of rude dams from one to three feet high. These dams extended only a portion of the way across the river and were intended merely to force the water into a particular channel. Between the island at Manayunk and the western shore was one of these dams, forcing the water into a narrow channel on the eastern side. The fishermen at this fishery used to station their boats with their seine at the head of this island and a man at the lower end to watch the shoals of shad coming up, and when he saw them he would give the signal to the party in the boat, who immediately ran out with the seine, going downward.

Some of the old residents along the Schuylkill river near Philadelphia, relate marvelous tales of the catches of fish to be made in their boyhood days, and some of them almost surpass belief. One of these who spoke in a more moderate strain was Godfrey Schrouf, a one-time resident of the Falls of Schuylkill. He related to a friend about seventy years ago, that in his younger days he could often catch with his dip-net 3,000 catfish in one night; the perch and rockfish were numerous and large. Often he has caught 30 to 80 pounds of a morning with the hook and line. Other persons who were neighbors of Mr. Schrouf asserted that there was nothing extraordinary in a catch of 3,000 catfish in one night in a dip-net. Up to the year 1817, they say, more than that number were taken repeatedly in the same period of time. It has been claimed that so plentiful were this species of fish, that one scoop of the dip-net has brought up more catfish than could be lifted into the boat by one man. There were said to have been people at the Falls in those days, who, in the fishing season which lasted some three months, made enough by catching shad in a simple scoop or dip-net to support their families in fish for a whole year. In their work they anchored or fastened to the rocks in the rapids, the small boats from which they fished; some of the particular stations were more valuable than others, and there was much rivalry in the early spring who should first get possession of favored spots, which the boat never left during the whole season; if it did, by a rule among themselves, any one else was at liberty to take possession.

The catfish were the kind known as the white catfish, a migrating species that came from the sea annually in immense numbers, so numerous in some instances as to blacken the narrow passages of the river. They came regularly on or about May 25, the run lasting some two or three weeks. They were caught in immense numbers during the season, put in artificial ponds made for the purposes, and taken out as wanted during the summer and fall months. They were delicious eating and the people thereabouts learned the art of cooking them so well that thousands of people were attracted thither, and the fame of the Schuylkill catfish, waffles and coffee became of more than local fame.

Early Fish Hatcheries in Pennsylvania

By ALEX P. SWEIGART

(Excerpt from the Report of the State Commissioners of Fisheries—1892-93-94)

"This was briefly the condition of affairs in Pennsylvania about the close of the Civil War: One dam impeded the passage of shad in the Delaware, and others near the mouths of the Schuylkill and Lehigh and on the Susquehanna prevented this food fish from ascending the waters at all. Through these obstructions, destructive fishing and water pollution, the shad fisheries of the Schuylkill and Lehigh were utterly destroyed, the Susquehanna nearly so, and those of the Delaware were run at a loss. The mountain lakes were in a bad condition, and the trout streams generally were either utterly ruined or yielded poor returns. Pennsylvania was not alone in this deplorable situation. The waters of the other Middle states and the New England states were little, if any, better. General alarm was felt, and Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York and Pennsylvania appointed, through the respective legislatures, commissioners to investigate the extent of the trouble and report on the best method of restoring the fishing interests. Pennsylvania's commissioner was Mr. James Worrall, of Harrisburg. His appointment was the result of a convention held at Harrisburg in the early part of 1866. At this convention a law based on a Massachusetts enactment of the year previous was drawn with great care and passed promptly by the Legislature, then in session, and signed by the Governor (Honorable Andrew G. Curtin) on March 30. This law, after reciting that by the construction of a dam across the Susquehanna, shad, salmon and other fish were prevented from passing up the said stream to the great detriment and injury of persons and communities along said river, provided that the several companies owning or interested in dams on the Susquehanna, or in the North or West Branches of the same, between tide-water and Wilkes-Barre on the West branch should, within six months from the passage of the act, erect such under gates, sluices, chutes, or other devices in all dams as would permit the free passage of shad, salmon and other fish up said streams.

"A second section of the law provided that, if the owners of said dams neglected or refused to construct sluices as would allow the free passage of fish up the said river within six months after the passage of the act, they should be liable to a fine of two hundred dollars, to be recovered as debts of like amount are recoverable by law.

"As soon as the act was passed and became a law, Mr. Worrall entered upon his duties and endeavored to enforce its provisions."

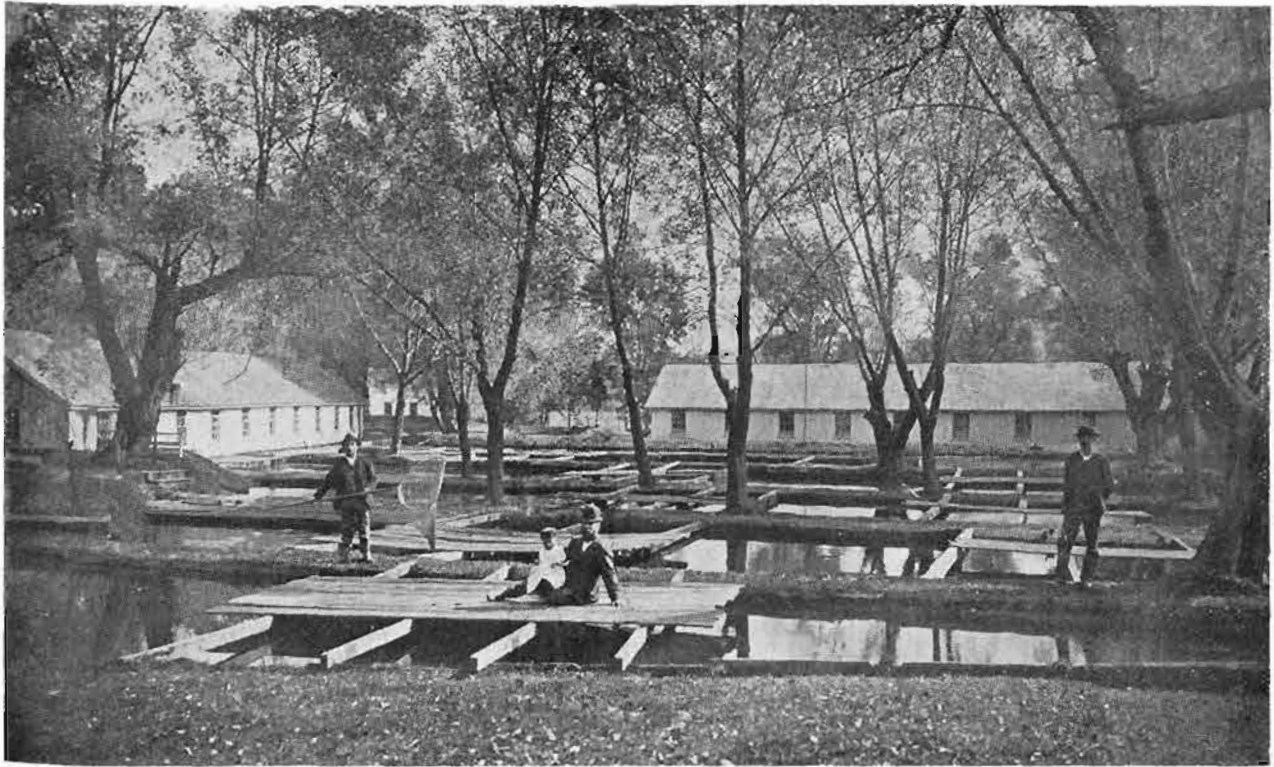
MARRED by a slaughter of fish and game unparalleled in American history, the waning years of the nineteenth century served to impress in the public mind a vital need for conservation of our wildlife resources. This was the era of the market hunter and the market fisherman, a period in Pennsylvania when the supply of fish and game was generally believed inexhaustible. Market stalls in Philadelphia and other eastern cities were glutted with furred and feathered game, including the now extinct passenger pigeon, and fresh water species of fish life.

On the Susquehanna and Juniata Rivers and the Delaware, market fishermen plied an active trade with net, spear, and fish basket. Under this intensive system of commercial fishing, even the vast quantities of fish life in Pennsylvania waters showed an alarming decrease. Gradually public sentiment crystallized to the realization that drastic measures to reduce the kill would be necessary, and in 1866, the Fish Commission was created by an Act of Assembly. This first act provided for only one Commissioner to be appointed by the Governor to fill the office. In 1873 the body was reorganized, the number of Commissioners being increased to three. Six years later, three more members were added, the Commission thereafter comprising six members until it was reorganized in June, 1903, into the Department of Fisheries.

During its early years of existence, the Commission had a difficult time in enforcing the fish laws and in other phases of its work. Following is an interesting excerpt from the report of the State Commissioners of Fisheries for 1881:

"These (kiddles or fish-baskets)", the report declares, "as we have shown before, are forbidden in Magna Charta. They were put down with the strong hand by the people in the time of King John, and we believe have never since been allowed in any part of the British Islands. The law in respect to them must be strengthened; they must be declared nuisances and destroyed wherever seen.

"It is due to the Pennsylvania raparians of the Susquehanna that they should be abolished in Maryland, for there is no greater enemy of anadromous fishes than just these vile death-traps. What they cannot take or use for their owners they destroy, so that others cannot use them, and millions upon millions of small fish are caught in them annually, only to be shoveled out into the current—putrid and useless for any conceivable purpose—manure, perhaps, only excepted . . . Fishing associations have recently been springing up all throughout the country, and laboring to bring back to our streams their wonted supplies of wholesome and cheap food. Let these direct their atten-



EASTERN HATCHERY AT ALLENTOWN

tion to the fishery laws, so that fair play may . . . be exhibited."

Splendid support to the early work of the Commission was given by newspapers throughout the state. The following comment appeared in the report of the State Commissioner of Fisheries for 1896:

"Undoubtedly the trend of public sentiment in favor of the work of the Fish Commissioners has been materially assisted by the influential newspapers of the state. These have performed yeoman service in the support and extension of fish culture and fish protection, and to them the Commissioners desire to express their appreciation of the extent to which this valuable and welcome assistance was given."

Again, from the same report:

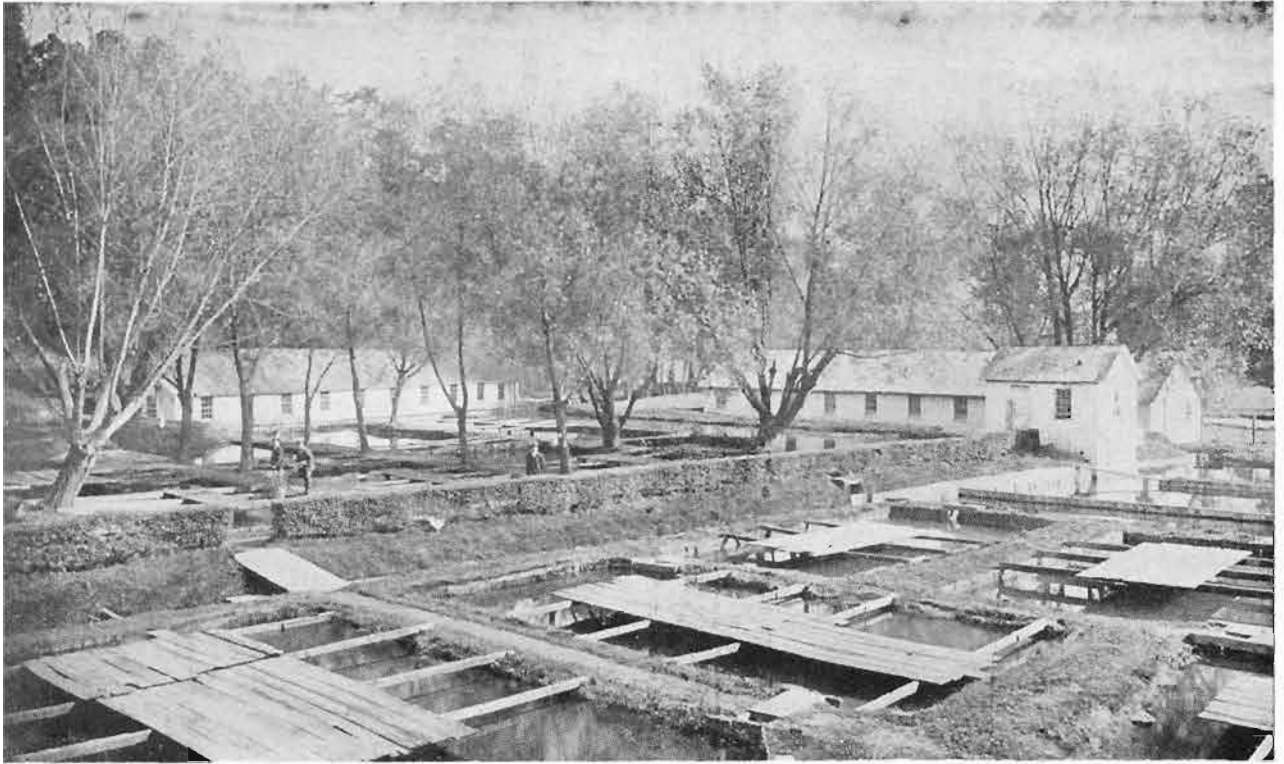
"The general looseness of many of the fish laws are a source of great anxiety to the Commissioners for they assist in counteracting the benefits of their work. As many of the laws stand, it is only with great difficulty that convictions for illegal fishing can be secured, and with still greater difficulty can adequate punishment be meted out to offenders. In most of the laws governing or protecting fishes, the measure of punishment is largely discretionary with the officials before whom the offender is haled, instead of mandatory as it should be. In other acts, the wording is so obscure or loosely worded that they are practically inoperative. Again, there are existing evils for which there are at present either no laws at all, or where they do exist, the penalties are so absurdly light as to have absolutely no deterrent effect."

Under conditions such as these, the foundations for Pennsylvania's system of fish conservation, as we know it today, were laid. Handicapped by lack of funds (which had to be appropriated by the Legislature) the growth of the hatchery system was extremely slow during the nineteenth century.

Early Fish Hatcheries

First of the state fish hatcheries to be established was the Marietta hatchery, located about two miles from Marietta, Lancaster County, on a spring known as the Hoover Spring, one of the group of famous Donegal Springs. By 1873, this trout hatchery was in operation. It comprised one acre of ground, purchased with the option to use as much of the water as was believed necessary. Cost of the property was \$2,000. Later, insufficient water was one of the major causes in abandoning this hatchery.

Another hatchery, well known during the 'nineties was the Eastern Hatchery, located on the Little Lehigh River, about four miles above the city of Allentown. Virtually all of the trout waters in eastern Pennsylvania were dependent upon the trout fry produced at this hatchery, which was established in 1876. From it, the mountain brooks of the Poconos, streams of the Blue Ridge mountain range, and low temperature tributaries of the Lehigh, Schuylkill, Juniata and middle Susquehanna rivers received their trout for stocking. Under the capable management of John P. Creveling, this hatching station increased its



TROUT PONDS—EASTERN HATCHERY

THE DONEGAL SPRING, NEAR MARIETTA IN LANCASTER COUNTY, SITE OF PENNSYLVANIA'S FIRST STATE FISH HATCHERY—A SHAD HATCHERY—ESTABLISHED IN 1873 AND DISCONTINUED A FEW YEARS LATER. HATCHING PONDS WERE BUILT IMMEDIATELY BELOW IN THE SPRING RUN WHICH FLOWS INTO THE DONEGAL CREEK, TRIBUTARY TO THE SUSQUEHANNA RIVER.





WESTERN HATCHERY AT CORRY

capacity for output to the utmost by 1894. The Allentown hatchery was established at the site of the Trexler Trout Hatchery.

That lack of sufficient funds for propagation of fish was a major drawback in development of the hatcheries is evident from the following comments concerning the Eastern Hatchery, which appeared in the report of the Board for 1896.

"There are two buildings used in the work of rearing trout, one of which is used as a nursery or holding house for the young trout from the time they have absorbed their sacs to the period when they are ready for shipment to applicants. The station is admirably located, unfortunately it is located on leased land, and it is therefore undesirable to make any permanent improvements thereon. The two hatching houses are in a deplorable condition. On one occasion last winter after a heavy snowfall, the weight of the snow crushed in part of the roof of one of the buildings, and broke several rafters. The structure was temporarily repaired at the time and is now undergoing further patching. The other building is, if anything, in worse shape. The rear wall is fully four inches out of plumb, and has had to be shored up from the outside and strengthened by braces on the interior. If the State owned this property, permanent improvements could be undertaken and the work of the commission greatly enlarged.

The Western Station

The Western Station, located near Corry in Erie County, was established about 1875. It was one of the two hatcheries of the commissioners at which the work of hatching salmonoid fishes was carried on. The lot owned by the State was source to several large springs. Containing 84 hatching troughs which, when run at full capacity could accommodate about 1,500,000 brook trout fry, the hatching house, according to an early report of the Board, was a plain structure "admirably designed for the work."

"This is less than one-half the number which is demanded annually from the Corry hatchery for stocking the southern tier of the State, but it is the limit which can be turned out. Indeed it is seldom that as many as a million and half fry can be accommodated. This number can only be turned out when the winters are mild enough to permit the early shipment of fish."

On the grounds at Corry in 1896 were 31 ponds, used for retaining and caring for the brood trout, and for the temporary storage of warm water species of fish taken from Lake Erie for distribution to applicants in all sections of the State. William Buller was at that time in charge at Corry. First of the superintendents at this hatchery, which today is one of the most important trout producing units in the State, was Seth Weeks, from whom the property was purchased and who, prior to the time of purchase, conducted a small commercial trout hatchery at the site.

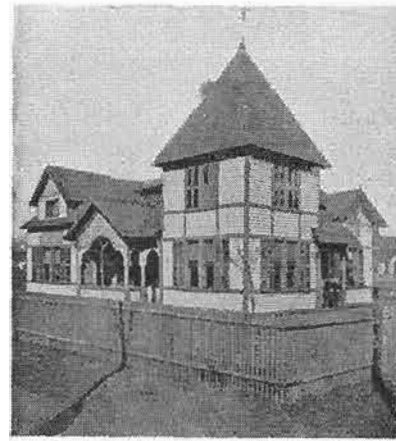
Concerning the establishment of the Western Station at Corry, the following interesting lines are taken from an early report of the Board:

"It was particularly well situated; its area was a little more than nine acres embraced in a compact oblong form. Smith street, a thoroughfare extending to it from Corry, divided the property in two parts, one of which, the lower, is heavily wooded, chiefly with white pine, one of the most graceful of American evergreens. About two miles from the center of Corry, nearly the whole area of the lot is gemmed with springs of delicious water, but as the property has a gently inclined surface, except on one portion, there was no extra dampness or moisture. The streams which run from the springs flow over heavy blue clay; thus the water, though clear as crystal, appears dark by reflection, a color rarely seen in spring water. So intense, indeed, is this reflection, that, except on very sunny days, the bottoms of the trout ponds cannot be seen. But murky though the waters appear, they are for the entire year of a singularly even temperature, varying scarcely a degree in winter or summer, and fishes of all kinds seem to grow rapidly and thrive, for at the present time there are brook trout in the ponds which, for size, are more like shad.

"Besides the springs and woods a pond or two graced the grounds and there were also a very comfortable dwelling house and a large barn. This barn was an ancient edifice, and had been at one time a primitive sawmill, one of the very first in that section of the country. The timbers in it are of enormous strength and look as though they would last a thousand years.

"For the purchase of the property the Legislature appropriated \$2,000, and for the immediate improvement \$3,000. With a portion of this latter money a first class hatching house was erected. It was sixty feet long by thirty feet wide, and contained troughs of the most approved pattern, and much better adapted to the purpose for which they were intended on account of the magnificent supply of water of the most uniform flow. The new acquisition was named the Western Hatchery on account of its being on the Pacific Ocean side of the Allegheny mountains, and Mr. Weeks, the former owner, was made superintendent. During the first year, there were hatched and distributed from this new hatchery one hundred and fifty-four thousand brook trout (fry) and eighteen thousand five hundred salmon trout (fry). Besides these there was planted in the ponds on the grounds three thousand adult brook trout, and two hundred fifty salmon trout.

"Soon after Colonel Gay became one of the Fish Commissioners, Mr. Weeks resigned his position of superintendent. But there was no difficulty in filling his place. For some time Colonel Gay had been observing the work of Mr. William Buller, Mr. Creveling's assistant (at the Allentown hatchery), and it was characterized by so much intelligence and faithfulness that he was at once offered the vacant position. . . . The appropriation for improvement had not gone very far beyond the erection of a hatching house, and like necessary matters, so that when Mr. Buller arrived at Corry to take charge it seemed like an endless task to make an orderly place of it.



ERIE HATCHERY

"Colonel Gay accompanied Mr. Buller to the hatchery and the two, undismayed by the Augean stable-like appearance of the place, went each manfully to work. They labored early and late. The fallen timber and underbrush and tangled vines were cleared away, the overplus of trees cut down to give the rest room to spread, the marsh was drained, logs and stumps taken from the ponds, and the place generally put in ship-shape condition, and a new office and sleeping room was built. Eight additional ponds were constructed, a handsome carriage drive built, a number of winding gravel walks laid out, a good portion of the property sodded, some fountains erected, two or three rustic bridges thrown across the streams and ravine, and the whole place given a park-like appearance, all at a trifling cost, for being deeply interested in his work, everything was done either by Mr. Buller himself or under his direct supervision, and the State, as a result, received all the benefit.

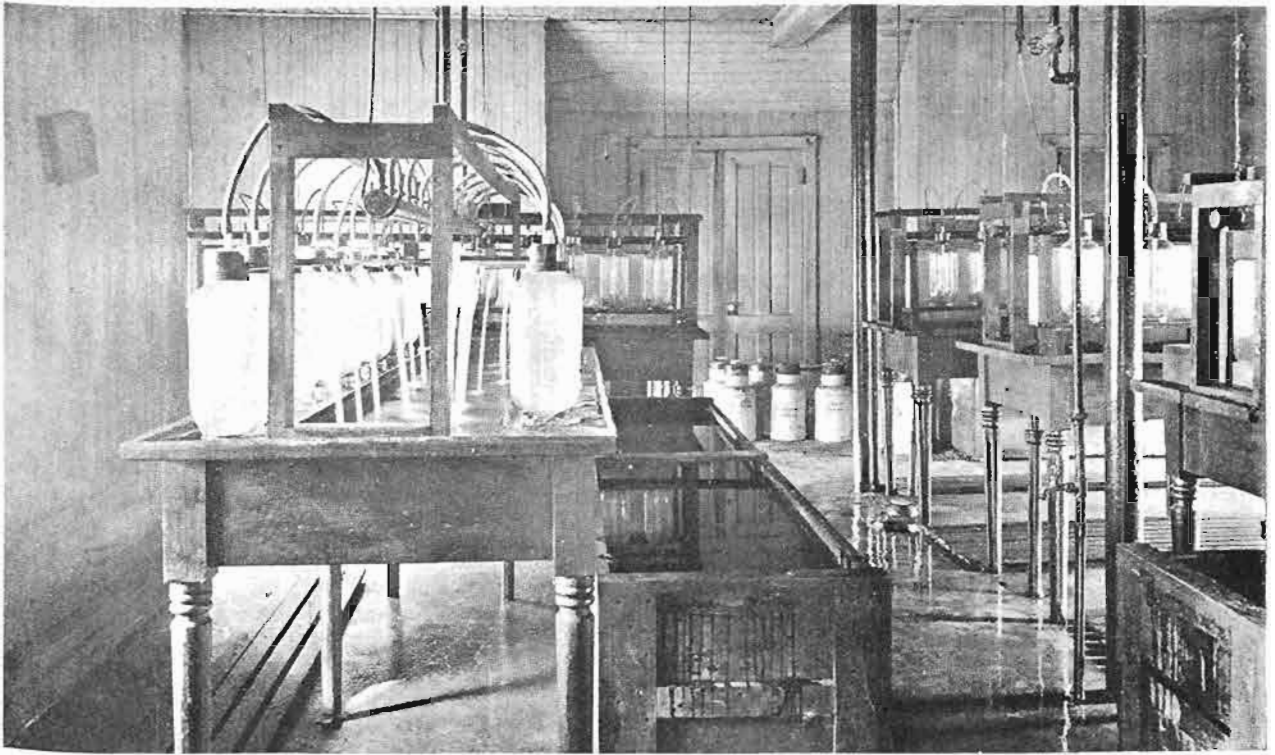
"So attractive was the place made that it speedily became a resort for the people of Corry."

The Erie Hatchery

In the early days of fish culture in Pennsylvania, the Board was extremely proud of the Erie hatchery, declared to be "from an architectural standpoint . . . the handsomest of the stations under the control of the Pennsylvania Board of Fish Commissioners."

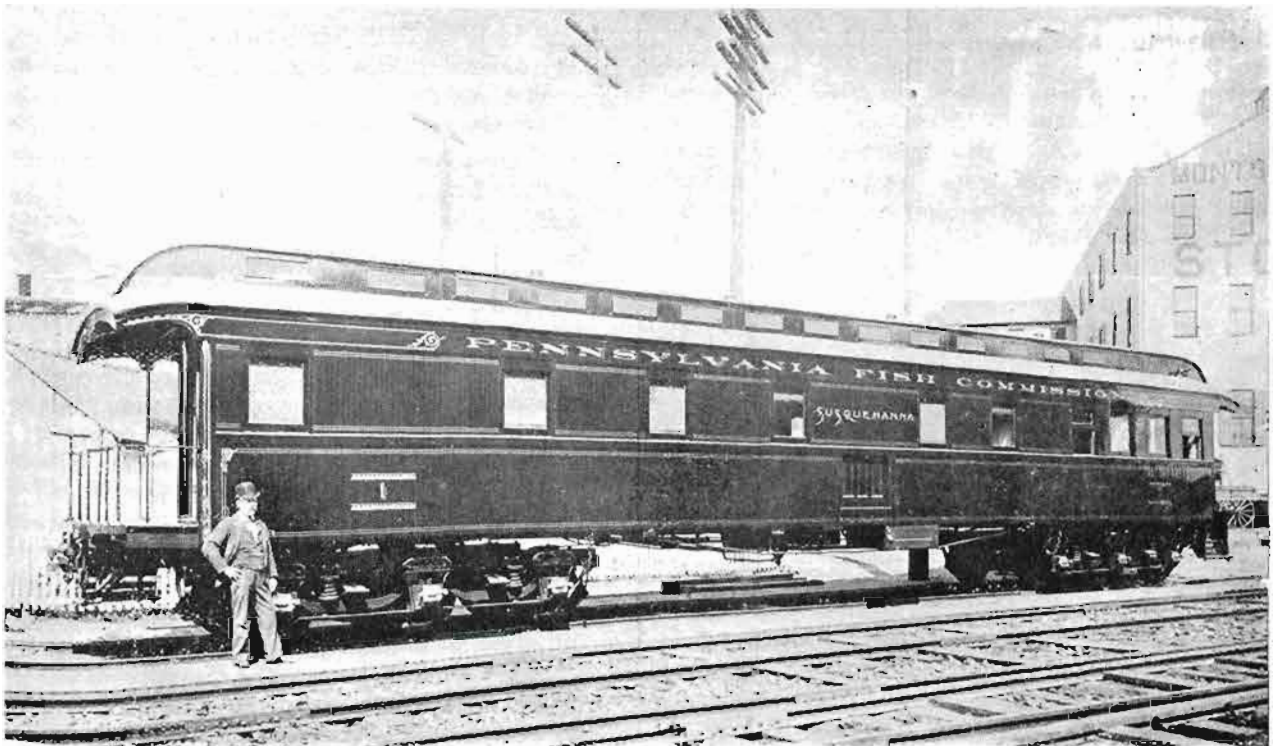
This hatchery, a story and half frame building, fronted thirty feet on Sassafras street and about fifty feet on Second street in the city of Erie. It was observed in an early report that "from the outside there is nothing to indicate the character of the work carried on within except perhaps it is a weather vane, cut in the form of a fish which surmounts the roof. Indeed the lines of the structure are so drawn that they give the impression that it is rather the residence of a man of more than moderate means than a place in which to incubate fish eggs."

It was to the Erie station that eggs of the white fish and lake herring from Lake Erie were taken and hatched. Eggs of the wall-eyed pike or pike-perch were likewise hatched at this station, which was also under the supervision of William Buller. These eggs were incubated in McDonald hatching jars, each of which had a capacity of 150,000 white fish eggs. Most of the work at the Erie hatchery was carried on between October and May.



ERIE HATCHERY INTERIOR VIEW

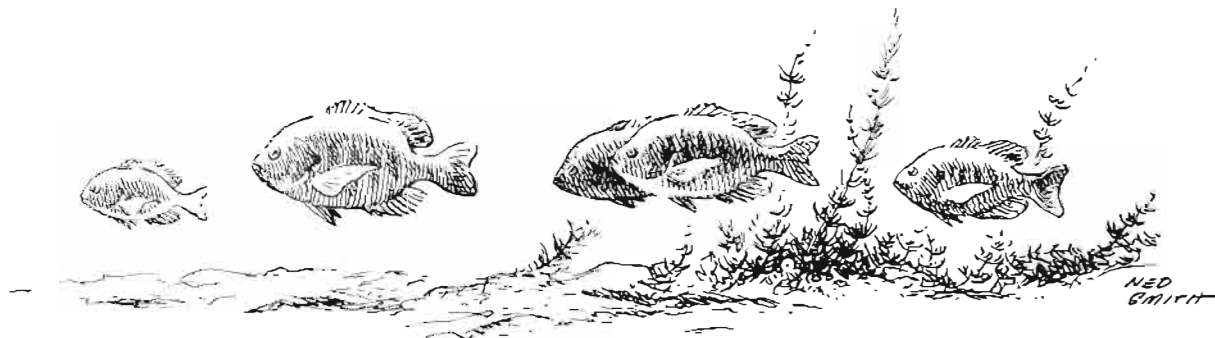
PENNSYLVANIA FISH COMMISSION RAILROAD CAR



FINANCIAL REPORT PENNSYLVANIA FISH COMMISSION

FISCAL YEAR JULY 1, 1964

TO JUNE 30, 1965



By JOHN M. SMITH, Comptroller

FOR THE benefit of Pennsylvania's anglers and sportsmen, the financial transactions of the Pennsylvania Fish Commission during the fiscal year beginning July 1, 1964, and extending through June 30, 1965 are presented in detail in the following statements, charts, and schedules. Expenditures made by other departments of the Commonwealth authorized to spend monies from the Fish Fund are included in order to show a complete record as to the status of the Fish Fund.

The Fish Commission is a self supporting organization which receives no support from the tax revenues of the State. The operations of the Commission are financed entirely by income derived from the sale of fishing licenses, collection of fines due to Fish Law violations, monies received from the Federal Government under provisions of the Dingell-Johnson Act whereby the Federal Excise Tax on fishing equipment is distributed to the various states and territories, and from other varied activities which are listed in Schedule II of this report.

To assist in the interpretations of the schedules contained in this report, the following explanation is offered:

Schedule No. 1 analyzes the cash on hand as of June 30, 1965. This schedule shows the accrued liabilities existing at the close of the fiscal period and the provision for necessary working capital resulting in the

net balance available for expenditures during Fiscal Year 1965-66.

Vouchers payable represents invoices in the amount of \$7,896.29 which had been submitted to the Auditor General and State Treasurer for payment prior to the close of business on June 30, 1965 but remain unpaid as of that date.

The amount of \$258,668.37 is set aside for the payment of Fish Commission commitments to purchase feed, fuel, materials, supplies, rentals, utility expenses, and accrued payrolls which were unpaid at the end of the fiscal period.

The Department of Revenue is authorized by law to issue all fishing licenses and Fish Fund monies are appropriated to cover the required expenses. The sum of \$2,496.40 is reserved to cover the outstanding bills for this activity.

Since the greater portion of the Commission's revenues are deposited to the Fish Fund during the last three months of the fiscal year, it becomes necessary to provide a sufficiently large cash reserve at the start of the fiscal period in order that adequate funds will be available to permit the Commission to function and to pay its obligations during the first nine months when expenditures exceed revenues. In order to meet

SCHEDULE NO. I
 CONSOLIDATED STATEMENT OF FINANCIAL POSITION
 AS OF JUNE 30, 1965

| | | |
|-------|--|----------------|
| CASH | | \$2,174,981.78 |
| LESS: | LIABILITIES AND WORKING CAPITAL: | |
| | VOUCHERS PAYABLE | \$ 7,896.29 |
| | ENCUMBRANCES—PENNSYLVANIA FISH COMMISSION | 258,668.37 |
| | ENCUMBRANCES—DEPARTMENT OF REVENUE | 2,498.40 |
| | RESERVE FOR WORKING CAPITAL | 1,000,000.00 |
| | | 1,269,061.06 |
| | NET BALANCE AVAILABLE FOR EXPENDITURE DURING | |
| | FISCAL YEAR 1965-1968 | \$ 905,920.72 |

these requirements, a cash reserve of \$1,000,000.00 is required as of July 1, 1965.

The remaining amount of \$905,920.72 is available for the operations of the Fish Commission during the following fiscal year.

Schedule No. II shows a net cash balance of \$1,624,796.57 in the State Treasury at the beginning of the fiscal year July 1, 1964. Revenues from all sources during the year amounted to \$2,835,743.65 which, when added to the beginning balance provides a total of \$4,460,540.22 available to the Commission to finance the operations during the 1964-65 fiscal year.

From these funds, the Commission expended \$2,109,599.33 and other State Departments disbursed \$183,855.40, for a grand total \$2,293,454.73 including \$7,896.29 vouchers "in transit in fiscal offices at June 30, 1965." The cash balance in State Treasury to credit of the "Fish Fund" at June 30, 1965 amounts to \$2,174,981.78.

Revenues received during the 1964-65 fiscal year showed an increase of \$247,606.00 over the prior fiscal year. It is encouraging that increases occurred in the sale of resident, non-resident and tourist fishing licenses.

Schedule III shows the expenditures made by the Fish Commission in compliance with Legislative Act No. 673, Session of 1959 and Act No. 485, Session of 1963.

Expenditures are classified by the nature of the activity to which they apply. This schedule indicates that the Commission exceeded the mandated requirements for this fiscal period by \$373,474.99.

Schedule No. IV and V shows the financial condition of the "Boating Fund" as of June 30, 1965, the first full fiscal year of operations. Charts are included to present in graphic form the revenues and expenditures for the fiscal period covered by the report. The charts are self explanatory.

The Commonwealth has many controls and safeguards to insure accurate records and accounts and the judicious expenditure of funds. Under the provisions of Article IV, Section 402 of the Fiscal Code, the

Auditor General is required to audit the records and accounts of all Commonwealth Departments, Boards and Commissions at least once a year. The formal audit of the Fish Commission for the year ended June 30, 1965 has not been completed but as the records and accounts are in good order, no problems are anticipated.

Other controls imposed on all departments, Boards and Commissions are:

1—Mandatory requirement that all expenditures shall be audited by the Auditor General and the State Treasurer before payment.

2—The daily mandatory reporting of all financial transactions to the Bureau of Accounts in the Office of Administration.

3—The Control exercised by the Governor's Budget Secretary over all budget matters.

4—The periodic verification of Commission accounts with those maintained by the Department of the Auditor General, State Treasury and the Bureau of Accounts of the Office of Administration.



SCHEDULE NO. II
PENNSYLVANIA FISH COMMISSION
STATEMENT OF REVENUE, EXPENDITURES AND CASH BALANCES
FISCAL YEAR JULY 1, 1964 TO JUNE 30, 1965

REVENUE

| | |
|--|----------------|
| Cash in State Treasury to Credit of "Fish Fund" July 1, 1964 | \$1,624,796.57 |
| Less: Unpaid Vouchers in Fiscal Offices as of June 30, 1964 | -0- |
| Net Cash Available for Expenditures as of July 1, 1964 | \$1,624,796.57 |
| Receipts July 1, 1964 to June 30, 1965 | |
| Resident Fishing Licenses | \$2,320,483.72 |
| Non-Resident Fishing Licenses | 126,021.80 |
| Live Bait Dealers' Licenses & Miscellaneous Permits & Fees | 3,223.00 |
| Tourist Fishing Licenses | 41,871.30 |
| Lake Erie Licenses | 1,724.00 |
| Commercial Hatchery Licenses | 7,075.00 |
| Fee Fishing Lake Licenses | 8,040.00 |
| Fish Law Fines | 27,305.00 |
| Interest on Securities | 25,825.76 |
| Interest on Deposits | 5,947.88 |
| Sale of Unserviceable Property (Department of Property and Supplies) | 1,216.00 |
| Contributions from Restocking Streams | 36,803.24 |
| Contributions from Federal Government (Dingell-Johnson Act) | 148,518.97 |
| Sale of Publications | 25,837.83 |
| Rental of Fish Commission Property | 5,580.00 |
| Miscellaneous Revenue—Fish Commission | |
| Miscellaneous Revenue—Revenue Department | 44,460.15 |
| Refunds of Expenditures—Not Credited to Allocations | |
| Sale of Vehicles (Department of Property and Supplies) | |
| Total Receipts from All Sources | \$2,835,743.65 |
| Total Funds Available During Year | \$4,460,540.22 |

CLASSIFICATION OF EXPENDITURES BY ORGANIZATIONAL UNITS

| Classification of Expenditures | Executive and General Administration | Propagation | Fishery Management and Research | Law Enforcement | Conservation Education | Land and Waters Management | Engineering and Development | Commission Total |
|--|--------------------------------------|--------------|---------------------------------|-----------------|------------------------|----------------------------|-----------------------------|------------------|
| Salaries | \$102,784.54 | \$586,682.65 | \$116,774.49 | \$299,391.69 | \$29,693.50 | \$ 72,078.30 | \$ 79,120.39 | \$1,286,525.56 |
| Wages | 2,781.35 | 18,636.71 | 7,375.83 | 770.94 | -0- | 13,660.31 | 4,929.63 | 48,154.77 |
| Professional & Special Services | 20,159.86 | 314.97 | 480.66 | 968.23 | 9,508.06 | 1,008.45 | 151.49 | 32,591.72 |
| Printing | 16,733.60 | 341.82 | 196.40 | 156.47 | 35,622.74 | 518.12 | -0- | 53,569.15 |
| Postage & Freight Communications | 2,582.72 | 727.99 | 340.89 | 1,943.72 | 8,519.60 | 134.00 | 174.01 | 14,422.93 |
| Utilities & Fuel | 5,565.32 | 35,333.76 | 4,762.18 | 9,086.97 | 957.36 | 1,484.35 | 1,424.64 | 58,614.48 |
| Travel | 10,985.79 | 6,962.54 | 4,904.66 | 79,066.84 | 3,155.87 | 4,719.09 | 2,293.57 | 111,188.38 |
| Memberships Dues & Subscriptions | 172.00 | 9.00 | 141.45 | -0- | 59.50 | 20.00 | 55.00 | 456.95 |
| Insurance | 438.63 | 3,856.52 | 1,317.47 | 1,126.03 | 204.81 | 536.98 | 324.08 | 7,804.52 |
| Motorized Equipment Supplies & Repairs | 818.49 | 28,451.42 | 2,971.98 | 332.01 | 334.80 | 2,783.76 | 2,788.74 | 38,481.20 |
| Contracted Repairs & Maintenance Services | 1,656.96 | 1,551.95 | 1,041.53 | 230.60 | 489.42 | 362.02 | 188.31 | 5,521.89 |
| Rent of Real Estate | -0- | 2,825.00 | 300.00 | 699.49 | 135.00 | 262.00 | -0- | 4,221.49 |
| Rent of Equipment | 950.11 | 214.24 | 70.20 | -0- | -0- | 565.50 | -0- | 1,800.05 |
| Miscellaneous Materials & Supplies | 2,325.95 | 13,913.29 | 7,046.64 | 1,794.29 | 5,286.25 | 1,376.81 | 2,755.87 | 34,499.10 |
| Fish Food & Other Agricultural Supplies | -0- | 145,306.13 | 482.67 | -0- | -0- | -0- | -0- | 145,788.80 |
| Motor Vehicles | -0- | -0- | 1,566.58 | -0- | -0- | -0- | -0- | 1,566.58 |
| Equipment, Machinery & Furniture | 250.20 | 1,509.46 | 1,471.78 | 72.00 | 2,099.28 | 1,871.34 | 5,121.46 | 12,395.52 |
| Land & Waters | -0- | -0- | -0- | -0- | -0- | 20,000.00 | -0- | 20,000.00 |
| Buildings & Structures | -0- | -0- | -0- | -0- | -0- | -0- | 207,035.91 | 207,035.91 |
| Non-Structural Improvements | -0- | -0- | -0- | -0- | -0- | -0- | 17,455.57 | 17,455.57 |
| Refund of Receipts | 5.00 | -0- | -0- | -0- | -0- | -0- | -0- | 5.00 |
| Grants & Subsidies | -0- | -0- | 7,500.00 | -0- | -0- | -0- | -0- | 7,500.00 |
| Total Expenditures by Fish Commission | \$167,310.52 | \$846,637.45 | \$158,745.39 | \$395,639.28 | \$96,066.09 | \$121,381.93 | \$323,818.67 | \$2,109,599.33 |
| Plus: Expenditures by Other State Departments | | | | | | | | |
| *Department of Revenue—Printing Fishing Licenses, Tags and Miscellaneous Forms | | | | | | | | \$ 43,876.01 |
| *Department of State—Contributions to Employees' Retirement System | | | | | | | | 88,808.00 |
| *Department of Labor and Industry—Contributions to Social Security | | | | | | | | 48,098.86 |
| *Department of Property & Supplies—Payment of General State Authority Rentals | | | | | | | | 3,076.53 |
| TOTAL EXPENDITURES | | | | | | | | \$2,293,454.73 |

| | |
|---|----------------|
| Cash Balance June 30, 1965, Available for Expenditures in 1965-1966 Fiscal Year | 2,167,085.49 |
| Plus: Unpaid Vouchers in Fiscal Offices as of June 30, 1965 | 7,896.29 |
| Cash Balance in State Treasury to Credit of "Fish Fund" June 30, 1965 | \$2,174,981.78 |

* These items are paid out of the "Fish Fund" upon requisition drawn by other departments and are included for a complete presentation of the "Fish Fund" finances.

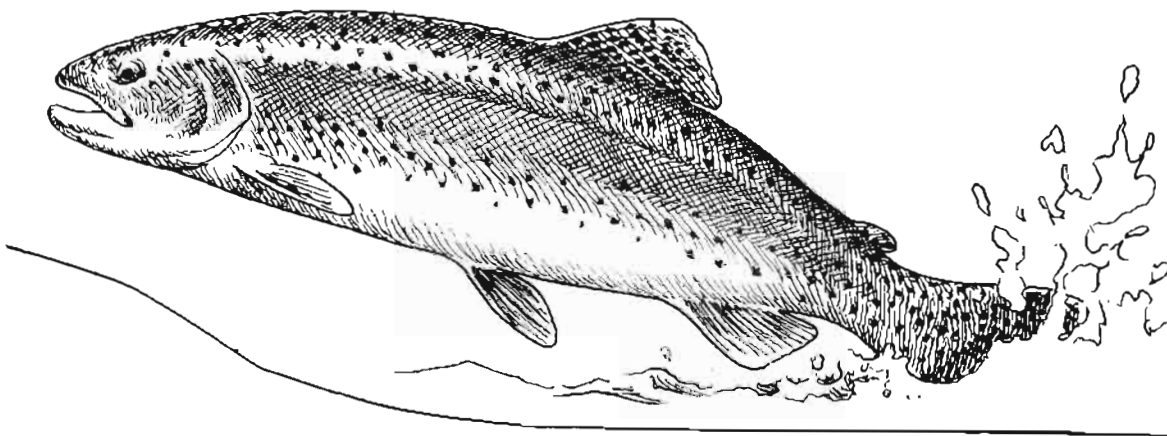
SCHEDULE NO. III

EXPENDITURES IN COMPLIANCE WITH ACT NO. 673, SESSION OF 1959 AND ACT NO. 458, SESSION OF 1963.

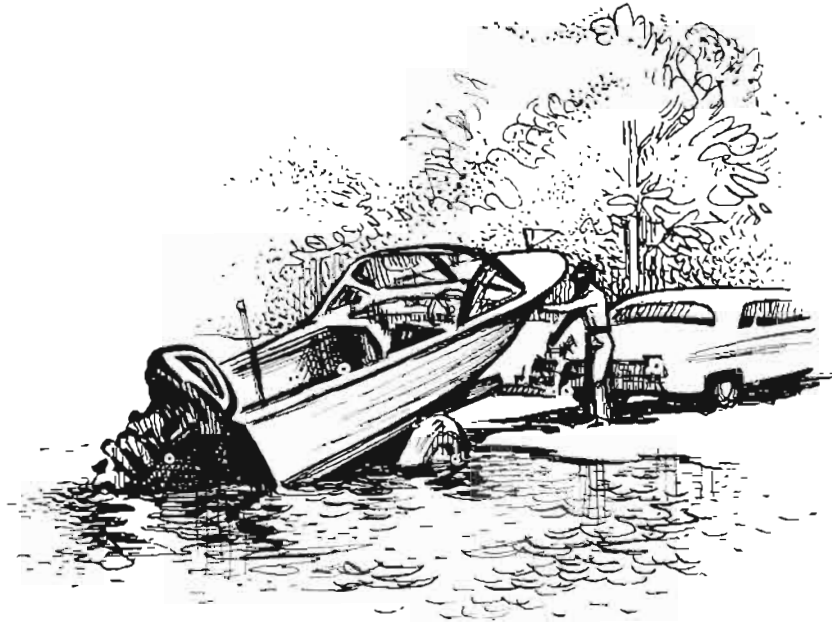
| | Fishery Management and Research | Acquisition of Lands and Fishing Waters | Management and Maintenance of Lands and Fishing Waters | Development of Lands and Fishing Waters | Totals |
|---|--|--|---|--|--------------|
| SALARIES AND WAGES | \$124,150.32 | \$12,141.50 | \$73,597.11 | \$ 84,050.02 | \$293,938.95 |
| Salaries | 116,774.49 | 12,141.50 | 59,936.80 | 79,120.39 | 267,973.18 |
| Wages | 7,375.83 | — | 13,660.31 | 4,929.63 | 25,965.77 |
| OTHER OPERATING EXPENSES | 24,056.73 | 2,219.82 | 11,552.16 | 10,155.71 | 47,984.42 |
| Professional and Special Services | 480.66 | 966.00 | 42.45 | 151.49 | 1,640.60 |
| Printing | 196.40 | — | 518.12 | — | 714.52 |
| Postage and Freight | 340.89 | — | 134.00 | 174.01 | 648.90 |
| Communications, Utilities and Fuel | 4,762.18 | 106.90 | 1,377.45 | 1,424.64 | 7,671.17 |
| Membership Dues and Subscriptions | 141.45 | 20.00 | — | 55.00 | 216.45 |
| Travel | 4,904.66 | 930.85 | 3,779.24 | 2,293.57 | 11,917.32 |
| Insurance | 1,317.47 | 50.70 | 486.28 | 324.08 | 2,178.53 |
| Motorized Equipment Supplies and Repairs | 2,971.98 | 89.58 | 2,694.18 | 2,788.74 | 8,544.48 |
| Contracted Repairs and Maintenance Service | 1,041.53 | 25.00 | 337.92 | 188.31 | 1,592.76 |
| Rent of Real Estate | 300.00 | — | 262.00 | — | 562.00 |
| Rent of Equipment | 70.20 | — | 565.50 | — | 635.70 |
| Miscellaneous Materials and Supplies | 7,046.64 | 21.79 | 1,355.02 | 2,755.87 | 11,179.32 |
| Fish Food and Other Agricultural Supplies | 482.67 | — | — | — | 482.67 |
| Other Services and Supplies | — | — | — | — | — |
| EQUIPMENT | 3,038.34 | — | 1,871.34 | 5,121.46 | 10,031.14 |
| Motor Vehicles | 1,566.56 | — | — | — | 1,566.56 |
| Equipment, Machinery and Furniture | 1,471.78 | — | 1,871.34 | 5,121.46 | 8,464.58 |
| OUTLAY FOR LANDS, STRUCTURES AND IMPROVEMENTS | — | 20,000.00 | — | 224,491.48 | 244,491.48 |
| Land | — | 20,000.00 | — | — | 20,000.00 |
| Buildings and Structures | — | — | — | 207,035.91 | 207,035.91 |
| Non-Structural Improvements | — | — | — | 17,455.57 | 17,455.57 |
| GRANTS | 7,500.00 | — | — | — | 7,500.00 |
| TOTALS | \$158,745.39 | \$34,361.32 | \$87,020.61 | \$323,318.67 | \$603,945.99 |

STATEMENT OF RECEIPTS AND EXPENDITURES—ACT NO. 458—SESSION OF 1963

| Fiscal Year | Resident Licenses Sold | Non- Resident Licenses Sold | Minimum To Be Expended | Expenditures | Over (°) or Under (—) Minimum |
|-------------|------------------------------|--------------------------------------|------------------------------|--------------|-------------------------------------|
| 1964-65 | 447,890 | 13,252 | \$230,471.00 | \$603,945.99 | \$373,474.99° |



WATERCRAFT SAFETY



THIS continued to be a busy period in the growing Watercraft Safety Program. The Educational Committee of Boating Safety readied Pennsylvania's public instruction course, and the last two weeks in April and the first week in May it was presented on a "pilot" basis in four (4) areas of the Commonwealth. One hundred sixty-seven persons took and satisfactorily completed the course, which is entitled "Boating Pleasure."

The Educational Committee consists of eminently qualified individuals who have been or are affiliated with the U. S. Power Squadrons and U. S. Coast Guard Auxiliary. They are Mr. Gustave F. Straub, USPS, Chairman; Dr. Charles G. Grosscup, USPS; Mr. George K. Robinson, USPS; Mr. Norman H. Beebee, USCC Auxiliary, USPS, and member of the Commonwealth's Advisory Board; Mr. Richard H. Stuber, USCG Auxiliary and USPS; and Mr. James Toggart, USCG Auxiliary and USPS. Commodore W. J. Garry of the USCG Auxiliary sat with the group in an advisory capacity.

Plans were made to hold a critique on the course early in the next fiscal year before sending it to the printers for the following spring's expanded program. The U. S. Coast Guard Auxiliary and U. S. Power Squadrons conducted the "pilot" courses and will continue in the immediate future to assist Commission personnel until our people are sufficient in numbers and training to take over complete instructor duties.

A compact 4" x 8½" booklet entitled "Pennsylvania Pleasure Boating Requirements" was prepared to provide ready information on numbering procedures; laws affecting boating, including Act 400, the Motor Boat Law; and the motor boat regulations. Plans and drafts were pre-

pared for the publishing of five (5) folders: "Boat Trailering", "Numbering and Equipment Summary", "Marine Parades, Regattas, Races, Tournaments and Exhibitions," "Water Skiing, Aquaplaning, and Similar Activities," and "The Uniform Waterway Marker System".

Exams were conducted to hire full time motor boat specialists. Two excellent men were hired before the end of the fiscal year. They are, Dean E. Klinger, to patrol in the southeast area, and Alvin H. Wright, to operate the "Perca" on Lake Erie in the northwest. The hiring of one or two other men for the northeast and southwest areas was expected to follow shortly after the end of the fiscal year. These men were assisted by the hiring of seven (7) part time security officers on various water areas in the Commonwealth.

The Watercraft Safety Officers will augment the regular warden force and will be used among other things to patrol in areas of high boating density, investigate boating accidents, instruct in our public education program, and keep the warden force abreast of new developments in the boating field.

By June 30, 1965, the number of registered boats in Pennsylvania had risen to 94,922 from the figure of a year before which was 78,691.

In an attempt to mark some of the hazards on our waterways, 270 buoys and their ground tackle were ordered, of which 40 are to be equipped with lights. An additional 54 lights were ordered for the marking of bridges. In excess of 500 other aids were installed by private organizations in compliance with the Uniform Waterway Marker System.

• • •

SCHEDULE IV
PENNSYLVANIA FISH COMMISSION
STATEMENT OF REVENUE, EXPENDITURES AND CASH BALANCES
FISCAL YEAR JULY 1, 1964 TO JUNE 30, 1965
REVENUE

| | | |
|---|--------------|--------------|
| Cash in State Treasury to Credit of "Boating Fund" July 1, 1964 | | \$114,485.38 |
| Receipts July 1, 1964 to June 30, 1965 | | |
| Motor Boat Registration Fees—Fish Commission | \$302,381.00 | |
| Motor Boat Registration Fees—Delaware River Navigation Commission | 27,506.10 | |
| Motor Boat Fines—Fish Commission | 3,245.00 | |
| Miscellaneous Revenue—Fish Commission | 9.53 | |
| Motor Boat Fine—Delaware River Navigation Commission | 405.00 | |
| | ----- | |
| Total Receipts from all Sources | | \$333,546.83 |
| | | ----- |
| Total Funds Available During Year | | \$448,032.01 |

CLASSIFICATION OF EXPENDITURES BY ORGANIZATION UNITS

| <u>Classification of Expenditures</u> | <u>Administration</u> | <u>Law Enforcement</u> | <u>Boating Fund Total</u> |
|---|-----------------------|------------------------|-----------------------------------|
| Salaries | \$23,209.00 | \$17,195.00 | \$40,404.00 |
| Wages | —0— | 1,758.00 | 1,758.00 |
| Professional & Special Services | 87.00 | 91.97 | 178.97 |
| Printing | 8,555.74 | 127.50 | 8,683.24 |
| Communication & Postage | 591.95 | 313.54 | 905.49 |
| Travel | 1,907.78 | 7,909.55 | 9,817.33 |
| Insurance & Memberships | 87.91 | 176.57 | 264.48 |
| Motorized Equipment Repairs | 304.77 | 1,369.44 | 1,674.21 |
| Contracted Repairs & Maintenance Services | 4,131.12 | 1,692.54 | 5,823.66 |
| Rent of Real Estate & Equipment | —0— | 1,195.96 | 1,195.96 |
| Maintenance & Miscellaneous Supplies | 3,949.13 | 1,321.54 | 5,270.67 |
| Motor Vehicles, Boats & Equipment | 2,555.19 | 6,746.91 | 9,302.10 |
| | ----- | ----- | ----- |
| Total Expenditures by Fish Commission | \$45,379.59 | \$39,898.52 | \$85,278.11 |
| | ----- | ----- | ----- |
| Plus: | | | |
| Expenditures by Other Departments | | | |
| Department of Revenue—Provide forms for registration of motor boats | | \$50,843.15 | |
| Department of State—Contributions to Employees' Retirement System | | 1,528.00 | |
| Department of Labor & Industry—Contribution to Social Security | | 585.72 | |
| Delaware River Navigation Commission | | 18,058.35 | 69,015.22 |
| | | | ----- |
| Total Expenditures | | | \$154,293.33 |
| | | | ----- |
| Cash Balance in State Treasury to credit of the "Boating Fund" at June 30, 1965 | | | \$293,738.68 |

* These items are paid out of "Boating Fund" upon requisition drawn by other departments and are included for a complete presentation of the "Boating Fund" finances.

SCHEDULE NO. V
CONSOLIDATED STATEMENT OF FINANCIAL POSITION
AS OF JUNE 30, 1965

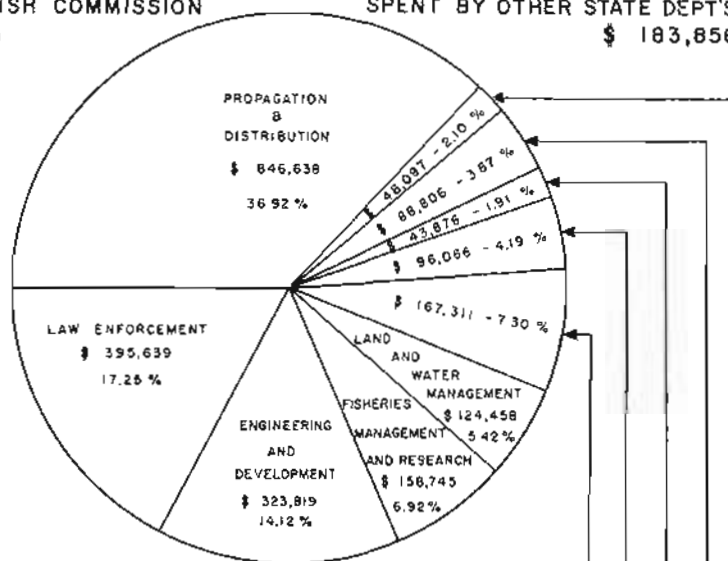
| | | |
|-------|---|--------------|
| CASH | | \$293,738.68 |
| LESS: | LIABILITIES AND WORKING CAPITAL: | |
| | VOUCHERS PAYABLE | \$ 3,243.43 |
| | ENCUMBRANCES—PENNSYLVANIA FISH COMMISSION | 34,037.23 |
| | ENCUMBRANCES—DEPARTMENT OF REVENUE | 28,646.01 |
| | RESERVE FOR WORKING CAPITAL | 100,000.00 |
| | | ----- |
| | NET BALANCE AVAILABLE FOR EXPENDITURE DURING FISCAL YEAR 1965-1966 | \$127,812.01 |

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA FISH COMMISSION

HOW THE FISHERMAN'S DOLLAR WAS SPENT
EXPENDITURES FOR THE FISCAL YEAR JULY 1, 1964 TO JUNE 30, 1965
TOTAL \$ 2,293,455

SPENT BY FISH COMMISSION
\$ 2,109,599

SPENT BY OTHER STATE DEPT'S.
\$ 183,856



EXECUTIVE AND GENERAL ADMINISTRATION

| | | |
|-------------------------------|-----------|--------|
| DIRECTOR'S OFFICE | \$ 41,870 | 1.93 % |
| COMPTROLLERS' OFFICE | 26,374 | 1.15 % |
| GENERAL ADMINISTRATION | 47,609 | 2.08 % |
| SERVICE DIVISION | 35,401 | 1.54 % |
| AUDITOR GENERAL'S AUDIT COSTS | 15,689 | .68 % |
| WATERCRAFT SAFETY DIVISION | 358 | .02 % |

CONSERVATION EDUCATION

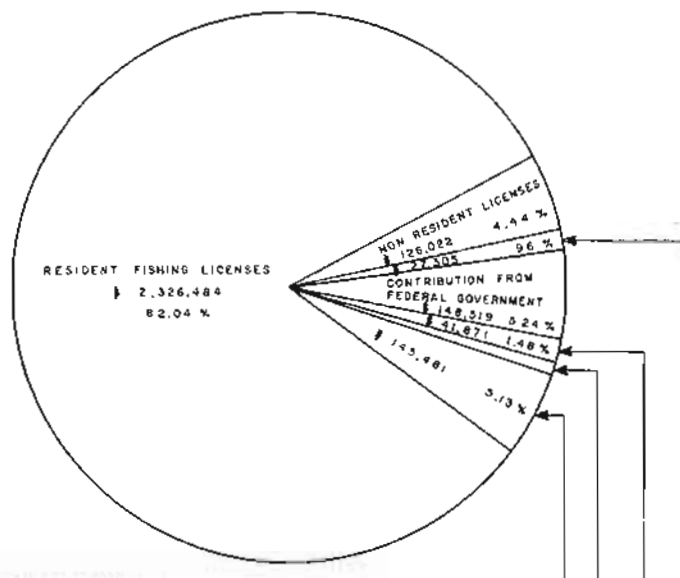
DEPARTMENT OF REVENUE (PRINTING & ISSUING LICENSES)

DEPARTMENT OF STATE (STATE EMPLOYEES' RETIREMENT FUND)

DEPARTMENT OF LABOR & INDUSTRY (SOCIAL SECURITY TAXES)

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA FISH COMMISSION
REVENUE SOURCES - FISH FUND

RECEIPTS FOR THE FISCAL YEAR JULY 1, 1964 TO JUNE 30, 1965
TOTAL \$ 2,835,744



MISCELLANEOUS REVENUE

| | | |
|--------------------------------------|-----------|--------|
| MISCELLANEOUS REVENUE | \$ 44,460 | 1.57 % |
| CONTRIBUTIONS FOR RESTOCKING STREAMS | 36,603 | 1.29 % |
| SALE OF PUBLICATIONS | 25,838 | .91 % |
| INTEREST ON SECURITIES | 25,826 | .91 % |
| INTEREST ON DEPOSITS | 5,948 | .21 % |
| RENTAL OF COMMISSION PROPERTY | 5,590 | .20 % |
| SALE OF UNSERVICABLE PROPERTY | 1,216 | .04 % |

MISCELLANEOUS LICENSES

| | | |
|------------------------------|-----------|-------|
| MISCELLANEOUS LICENSES | \$ 20,062 | .71 % |
| FEE FISHING LAKE LICENSES | 8,040 | .29 % |
| COMMERCIAL HATCHERY LICENSES | 7,075 | .25 % |
| SPECIAL EEL & MISC. LICENSES | 3,223 | .11 % |
| LAKE ERIE LICENSES | 1,724 | .06 % |

TOURIST FISHING LICENSES

FINES - FISH LAW

Pennsylvania Fish Commission

Division Reports to the Sportsmen

FISCAL YEAR JULY 1, 1964 TO JUNE 30, 1965

ADMINISTRATION

THE Division of Administration is primarily a service division for the Fish Commission. Its main functions are budget, procurement, personnel training and general services. It is responsible for legislation study and reporting, review and issue of numerous types of licenses and permits, regulation preparation, expenditure schedules, records and reports.

During this twelve month period an apparent leveling off of revenue declines occurred as a result of a license increase and upward trend in license sales, particularly during the latter half of the period. The austerity program continued during this fiscal year in anticipation of a continuing upward trend in license sales which will provide the revenue necessary for restoration of program cutbacks of previous years.

The approval of Project 70 on June 22, 1964, allotted \$5,000,000 to the Fish Commission for acquisition of lands for the conservation and propagation of fish and other aquatic life and for access sites on lakes and waterways for fishing and boating purposes and related administrative costs.

The personnel section of the division serves as liaison between the operating divisions and the State Civil Service Commission and Governor's Office of Administration. During this fiscal period a total of 202 personnel transactions were processed. At the present time approximately 87 employes are covered by Civil Service, which indicates an increase of nine over the last fiscal year. The total salary complement was increased from 247 to 263. This increase was due primarily to personnel employed for Project 70.

The following licenses and permits were reviewed and issued by the division:

| | |
|---|-----|
| Artificial Propagation Licenses | 239 |
| Live Bait Dealer's Licenses | 260 |
| Regulated Lake Licenses | 273 |
| Net Permits | 305 |
| Draw Down Permits | 126 |
| Transportation Permits | 69 |
| Scientific Collector's Permits | 62 |
| Dynamite Permits | 16 |

The following permits were reviewed and acted upon in conjunction with other State agencies:

| | |
|------------------------------------|-----|
| Mine Drainage Permits | 574 |
| Highway Channel Changes | 298 |
| Stream Clearance Permits | 45 |
| Dam Construction Permits | 46 |
| Water Allocation Permits | 25 |

—PAUL F. O'BRIEN

PROPAGATION AND DISTRIBUTION

With the exception of muskellunge fingerling and certain warm water species, production was slightly under the same period the previous year, especially in the trout species. However, the experimental fall stocking of certain streams, plus fall lake stocking should make up most of the difference. The production of muskellunge fingerling almost tripled over last year. Walleye fingerling more than doubled the numbers produced the same period last year.

The new trout unit at Pleasant Mount is in production this year. Excellent results have been experienced so far.

The first phase of renovation at the Huntsdale hatchery is underway and should be completed by next fall. There will be a slight reduction in numbers at that station due to the renovation program. However, with the new unit in operation at Pleasant Mount and a slight increase at some of the other stations, it is felt trout production next year will show an increase over this year. Studies and preliminary plans for renovation at other hatcheries are underway. We are confident the renovation program will continue at an accelerated pace until all stations have been modernized.

The attached is a summary report of all fish stocked in the waters of Pennsylvania, including trout stocked by Federal hatcheries in the Federal-State Cooperative Stocking Program.

A report of trout stocked in public waters by the Cooperative Nurseries is also included.

The Cooperative Nursery Program has been revised with a competent man placed in charge. It is felt with the help and advice this man will be able to supply, the production from these nurseries will increase substantially over the coming years.

REPORT OF DISTRIBUTION COOPERATIVE NURSERIES 1965

The following figures are from fingerlings furnished in the spring of 1964 and reported as being stocked from the Cooperative Nurseries during 1965.

| | |
|--|-----------------------------|
| Number of trout distributed in public waters reported by Cooperative Nurseries | 199,940 |
| Approx. weight distributed to public waters reported by Cooperative Nurseries | 45,490.40 lbs. |
| Fingerling stocked | 27,437 828.74 lbs. |
| Adults stocked | 172,503 44,661.66 lbs. |
| | 199,940 45,490.40 |

—HOWARD FOX

RECORD OF FISH STOCKED

FISCAL YEAR
July 1, 1964 to June 30, 1965

STATE HATCHERIES

| Species | Fry | | Fingerling | | Adult | | Total Fry & Fing | | Total Adult | |
|------------------------------|---------|--------|------------|----------|-----------|------------|------------------|----------|-------------|------------|
| | Number | Weight | Number | Weight | Number | Weight | Number | Weight | Number | Weight |
| Brook Trout | 305,000 | -0- | 452,044 | 3,203.25 | 451,471 | 123,015.68 | 757,044 | 3,203.25 | 451,471 | 123,015.68 |
| Brown Trout | -0- | -0- | 228,421 | 1,674.88 | 920,383 | 325,135.35 | 228,421 | 1,674.88 | 920,383 | 325,135.35 |
| Rainbow Trout | -0- | -0- | 418,500 | 1,877.53 | 703,319 | 271,690.68 | 418,500 | 1,877.53 | 703,319 | 271,690.68 |
| Lake Trout | -0- | -0- | 14,000 | 224.00 | -0- | -0- | 14,000 | 224.00 | -0- | -0- |
| Steelheads | -0- | -0- | 42,000 | 68.25 | -0- | -0- | 42,000 | 68.25 | -0- | -0- |
| Kamloop | -0- | -0- | 7,500 | 62.00 | -0- | -0- | 7,500 | 62.00 | -0- | -0- |
| Albino Brook Trout | -0- | -0- | -0- | -0- | 8 | 5.00 | -0- | -0- | 8 | 5.00 |
| | 305,000 | -0- | 1,162,465 | 7,109.91 | 2,075,181 | 719,846.71 | 1,467,465 | 7,109.91 | 2,075,181 | 719,846.71 |
| TOTAL TROUT STATE HATCHERIES | | | | | | | | | 3,542,646 | 726,956.62 |

FEDERAL HATCHERIES

| | | |
|--------------------------------|---------|------------------------|
| Brook Trout | 230,235 | 69,895.00 |
| Brown Trout | 95,070 | 25,780.00 |
| Rainbow Trout | 261,945 | 76,873.00 |
| | 587,250 | 172,548.00 |
| TOTAL TROUT FEDERAL HATCHERIES | | 587,250 172,548.00 |
| GRAND TOTAL ALL TROUT | | 4,129,896* 899,504.62' |

WARM WATER SPECIES

| | | | | | | | |
|--------------------------|------------|-----|---------|-----------|--------|------------|------------|
| Kokanee | -0- | -0- | 55,000 | 27.50 | -0- | -0- | |
| Walleye | 14,000,000 | -0- | 352,100 | 1,776.22 | 810 | 2,521.97 | |
| Muskellunge | 454,500 | -0- | 67,511 | 1,422.11 | -0- | -0- | |
| Northern Pike | 600,000 | -0- | 11,580 | 488.32 | 725 | 1,101.00 | |
| Chain Pickerel | -0- | -0- | -0- | -0- | 582 | 292.45 | |
| L.M. Bass | 105,000 | -0- | 197,750 | 6,259.40 | 1,480 | 970.05 | |
| S.M. Bass | -0- | -0- | 500 | 8.00 | 1 | 1.84 | |
| Brown Bullheads | -0- | -0- | -0- | -0- | 3,348 | 2,378.12 | |
| Channel Catfish | -0- | -0- | -0- | -0- | 696 | 723.17 | |
| Catfish | -0- | -0- | -0- | -0- | 200 | 121.00 | |
| White Crappie | -0- | -0- | -0- | -0- | 20,401 | 20,401.00 | |
| Black Crappie | -0- | -0- | -0- | -0- | 1,150 | 414.00 | |
| Yellow Perch | -0- | -0- | -0- | -0- | 1,442 | 405.06 | |
| Carp | -0- | -0- | -0- | -0- | 7,601 | 25,904.00 | |
| Bluegills | -0- | -0- | 3,630 | 36.15 | 6,469 | 1,900.90 | |
| Minnows | -0- | -0- | 5,500 | 213.40 | 5,000 | 50.00 | |
| Tiger Muskellunge | -0- | -0- | 8,600 | 12.04 | -0- | -0- | |
| Eels (Elvers) | 1,300,000 | -0- | -0- | -0- | -0- | -0- | |
| | 16,459,500 | -0- | 702,171 | 10,243.14 | 49,905 | 57,184.56 | |
| TOTAL WARM WATER SPECIES | | | | | | 17,211,576 | 67,427.70 |
| GRAND TOTAL ALL SPECIES | | | | | | 21,341,472 | 966,932.32 |

* Separate Report of Fish Stocked by Cooperative Nurseries Attached, but not included in this Report.

RESEARCH AND FISH MANAGEMENT

ANY advances which are made for the improvement of fishing usually are initiated through research. Due to its implications, research played an important part in the program of this Division and cooperative agencies.

The testing of drugs for the possible control of whirling disease in trout continued during the past year. A drug which did show promise proved to be very toxic to trout and may be of little value for this reason.

The bio-assay study on the effect of certain physical and chemical conditions on American shad eggs and larvae continued for a second year. Tests not completed last year were emphasized. Eggs and larvae of shad were subjected to conditions in the laboratory similar to those which might occur in the polluted sections of the Susquehanna River.

The evaluation of aquatic herbicides continued. Information was obtained for a cooperative effort with the Pennsylvania State University Cooperative Extension Service to publish a manual on aquatic weed control for Pennsylvania. It is expected the manual will be available in the spring of 1966.

An additional cooperative project was initiated with the Pennsylvania State University Cooperative Extension Service on the effect on aquatic life of the recent DDT spraying for the fall cankerworm in Potter and Tioga counties. Samples of fish, crayfish, water, and stream bottom sediments were collected prior to the spraying operations and at intervals since the spraying. Particular attention is directed toward possible adverse effects on trout reproduction as well as the build-up of DDT in the tissues of trout and crayfish.

The Benner Spring Fish Research Station continued to give advice on methods of control of fish diseases in state, commercial, and sportsmen-operated cooperative nurseries. Commercial hatcheries continued to seek advice on hatchery construction and modern fish cultural practices.

In nutrition experiments, a pelleted formula primarily for brood trout is being tested on the fish at Benner Spring. Condition of the fish, coloration, and egg viability are the primary concern of these tests.

In addition to continued research on pigmentation of trout, many commercial diets were tested for consideration as production diets.

As a result of the pigmentation experiments conducted at Benner Spring the Pennsylvania Fish Commission has authorized a manufacturer of a commercial trout food to incorporate 2 per cent paprika in the diet of trout at one of the largest production hatcheries. The acceptance of these highly colored fish by anglers will be closely watched.

At the Benner Spring Station 448,343 legal trout weighing 139,457 pounds were transferred to the production hatcheries for distribution to public fishing waters.

In cooperation with geneticists at the Pennsylvania State University, soluble proteins of blood cells (hemoglobin), of blood serum (albumin, globulins, and lipoproteins), of eye lenses (globulins), and of tissues (enzymes in liver, heart, and muscle) were studied in inbred lines of each trout species and in hybrids between these lines. Differences found in these proteins have been determined to be inherited and thus will provide additional characters with which to distinguish different populations of trout. These studies are also aimed at determining if different protein types are associated with growth and reproduction so that superior strains may be selected through breeding of the appropriate combinations for protein types.

The Cooperative Fisheries Unit of the Pennsylvania State University, partly supported by Fish Commission funds, has been working essentially in two areas of aquatic biology: (1) studying the relationships of predators and prey and (2) examination of water quality as it is related to fisheries. The research projects of the Unit are as follows: pond morphometry as it is related to the maintenance of bass and golden shiner populations; the bowfin as a predator on bluegills; the behavior of smallmouth bass as related to cover in flowing water; population ecology of the white sucker; effects of petroleum brine on trout streams; effects of the insecticide, Sevin, and a biological control agent, *Bacillus thuringiensis*, on an aquatic ecosystem; and aquatic life as related to high stream acidity.

A thesis was completed on the study of the bowfin which established a curve for the different sizes of bowfin with respect to their daily food ration of bluegills.

Another study determined that juvenile smallmouth bass utilize individual pieces of cover by excluding other bass from such protection. They are highly territorial. Further work is contemplated for next summer in relating this territoriality to cover as found in the Raystown Branch of the Juniata River.

A doctoral thesis on the white sucker revealed that this species does not move great distances and is slow in repopulating areas of the stream from which it is removed.

Seasonal changes in aquatic invertebrates affected by petroleum brine has been continued in the Allegheny National Forest area. The Unit is presently determining the species and abundance of the insects affected by a recent spraying in Potter county for the control of the fall cankerworm. The Unit has been following the seasonal changes in acidity and the changes in aquatic invertebrates in a natural acid stream near State College.

Management activities in this Division were again restricted because of previous drastic reductions in manpower. Generally, only matters of major importance could be considered.

Biologists assisted in improvement work on three streams, worked with channel change inspections, and, using electro-fishing gear, collected fish population samples where pollution was suspected.

The kokanee project in Upper Woods Pond, Wayne County, was followed and approximately 32 quarts of eggs were taken from the adults in this lake. The young resulting from these eggs were planted back into the lake at various sizes.

The number of "high-pressure" area trout plantings was increased last year. These weekly trout plantings in heavily utilized areas were very popular with the sportsmen of these regions. Because of public acceptance and the increased trout utilization, it is hoped that in the future this program can be extended to cover the entire state.

Because the range of muskellunge and northern pike is constantly being extended, an experiment was conducted to study the potential hybridization of these new fishes with the indigenous pike species and to identify if possible any resulting hybrids. A paper based on the taxonomy of these hybrids was co-authored with Dr. E. J. Crossman and published in the Fisheries Research Journal of Canada. A succeeding paper now in preparation will discuss the fertility of the crosses of pike and also the fertility of the progeny.

The muskellunge introductions have been very successful in some areas. At Falmouth on the Susquehanna River below Harrisburg, over 200 legal muskellunge were taken during the winter season last year. In one lake in the Northeast, a number of "tiger" muskellunge (hybrids between northern pike and muskellunge) were stocked. These fish were planted in the hope that they would be a control for the stunted panfish which are present and, of course, create some interesting fishing. Hybrids were used because they are relatively sterile and no danger could exist in establishing a predator fish in the trout waters below.

Ten thousand warmwater fish and ten thousand trout were marked in conjunction with the Atlantic Fishing Contest. The ten thousand warmwater fish consisted of a variety of species and sizes and were marked in lakes scattered throughout the Commonwealth. The number of tag returns from these and from the trout will provide some valuable information for future management.

A team composed of a fishery biologist, an engineer, and a real estate man made numerous investigations of land and water sites to determine their feasibility for acquisition under Project 70. Special emphasis was placed on areas in the Commonwealth suitable for hatcheries, fish impoundments, and for possible acquisition of permanent streams. For a more detailed accounting of accomplishments under this program, refer to the report of the Engineering Division.

Many miscellaneous problems received the attention of fishery management. Investigation of the effectiveness of wired areas, helping to plan cooperative nurseries, checking and helping to set up "fly-fishing only" areas and "fish-for-fun" areas were part of the assignment.

Lectures, displays, and tours for conservation groups were again part of the yearly program.

Oxygen tests were run at all depths on lakes currently being stocked with trout. These "oxygen profiles" are important to establish good management practices. Drastic changes were noted in some lakes during the past ten years.

In one of the miscellaneous experiments conducted during the year, the preference of minnows for traps made of various colored plastics and wire was studied. It was concluded that although there was variation in the catch, there was greater variation in relation to the trap location and the movement of the minnows on a particular day than there was in the color or type of trap.

The staff at the Benner Spring Fish Research Station acted as instructors for a two month period during the H. R. Stackhouse School of Fishery Conservation and Water Craft Safety. The biological portion of the program was held in the library-conference room at Benner Spring.

In January, 1965, the Northeastern Division of the American Fisheries Society met in Harrisburg and was hosted by the Pennsylvania Fish Commission. Technical information gleaned from the wealth of information presented was useful to the state's biologists.

Management biologists also assisted on County Planning Commissions, "A Wild River" float trip, and with special I & E projects.

—KEEN BUSS

LAW ENFORCEMENT

ON FEBRUARY 1, 1965, the Law Enforcement Division of the Pennsylvania Fish Commission was brought up to a full complement of officers. Ten young men, who, in late January, were the first graduates of the H. R. Stackhouse Fishery Conservation and Watercraft Safety School, were assigned to fill vacancies which in some instances had existed for more than two years.

The excellent training these new wardens received while attending our training school was evident in the manner in which they have conducted the affairs of the Fish Commission in their respective assignments.

Due to promotions and retirements within the law enforcement division, it was necessary for the State Civil Service Commission to conduct written and oral examinations in October, 1965, to secure another list of fish warden applicants for our training school which convened November 8th.

Another activity of the wardens and regional warden supervisors which has met with success is the fishing schools they have conducted on an experimental basis in some parts of our State. This part of the Commission's program will be enlarged. At these schools, persons are taught how to fish, where to fish, tackle to use, when to fish, etc. The enthusiasm displayed by the public at these schools of instruction far exceeded our expectations. It became necessary to have more wardens qualify as instructors for this course.

A fish warden's duties today are much more diversified than they were a decade ago. While law enforcement must be done and is an integral part of a warden's work, he has come to know that good public relations is just as important as any facet of his operations, and it is to that end your Commission has insisted we proceed.

—W. W. BRITTON

PUBLIC RELATIONS

THE number one job of the Public Relations Division is to tell fishermen and the people of the Commonwealth what the Pennsylvania Fish Commission is doing to improve fishing now and the plans for future improvement projects.

Public relations, in any organization, has hundreds of facets and the Fish Commission is no exception. Because of lack of space all programs cannot be listed, but a summary of the current programs are included herein.

During the past year the Public Relations Division has established more than 650 "Instant Information" centers throughout the Commonwealth. As a result of this new program, fishermen anywhere in the state can obtain up-to-the-minute information on Commission activities, when and where the fish are biting, best baits and lures, etc. All of these information centers have one of the Commission's Blue Books, which contain all of our publications and receive all news releases and weekly fishing conditions reports. They have a supply of checklists which enable fishermen and boaters to order any of the free or paid Commission publications and they are also agents for subscription sales to the PENNSYLVANIA ANGLER. The public relations staff keeps in close personal contact with these agents.

The circulation of the PENNSYLVANIA ANGLER has been climbing steadily. The magazine has added a section on camping and a monthly "fishing tips" column.

Instructional teams composed of district fish wardens have been organized to teach the "fundamentals of fishing" to youth groups in schools, adult classes in local YMCA's and YWCA's. These men demonstrate the various methods of fishing and present an illustrated lecture on fish identification.

The new "Fisherman's Guide to Pennsylvania Waters and Access Areas" was published during the year, and the second edition is now on press. The "Fly Tying Course" has proven extremely popular and is now in its third edition. Other Commission publications continue to be in great demand by the fishing and boating public.

The Commission's five slide lectures have been shown to hundreds of interested groups by district fish wardens and other Commission personnel. The Division is currently in the process of producing several new lectures to meet the demand for these educational and entertaining visual aids.

New mounted fish exhibits have been produced and were displayed at many county fairs, sportsmen's shows, field days and other events. The Commission's popular live

fish display was exhibited at all of the major sportsmen's shows, including Harrisburg, Allentown and Philadelphia.

In addition to weekly fishing reports, more than 60 special news releases were mailed to 2,200 newspapers, radio and TV stations, outdoor columnists and information agencies. "Fishing Lines" which contains interesting facts and figures about fish and fishing, was inaugurated this year and has proven extremely popular among outdoor writers, radio and TV.

The Division has answered thousands of mail requests for information and literature either by personal letter or by printed materials.

Division personnel have personally contacted Blue Book agents throughout the state, newspaper editors and columnists, radio and TV program directors and commentators and sportsmen's organizations. They have made many radio and TV appearances, and have addressed sportsmen's organizations, service clubs, educational and youth groups.

—GEORGE FORREST

REAL ESTATE DIVISION

DURING the fiscal year of 1964-65 a wide variety of work has been performed by the personnel of the Real Estate Division, working closely with all other Commission activities, including the many detailed reports constantly being requested by other State and Federal agencies.

Property investigations, agreements, leases, options and acquisition concerned with access areas, streams, new lake sites and existing lakes are the major important functions of this Division, thereby preserving the availability of water access for the future, assuring the public they will have a place to fish and boat.

In land acquisition work, three additional tracts of land were acquired to enlarge the proposed "Colyer Dam," currently under construction in Centre County. This land was acquired with Project 70 monies and Fish Fund monies.

Other land acquired with Project 70 monies included the Monongahela River Access in Washington County and a 67.61 acre access to the Susquehanna River, near Falmouth, Lancaster County.

In Beaver County, a long term lease agreement has been completed with the Borough of New Brighton, providing public access to the Beaver River.

Negotiations were initiated for the purchase of two tracts of land from the Pennsylvania Railroad for Washington County and Beaver County.

Investigations were made and options obtained on the proposed Four Mile Run Dam Site in Westmoreland County.

Cooperative programs with the United States Department of Agriculture, Soil Conservation Service (P. L. No. 566 Projects) include Briar Creek, Columbia County; Middle Creek, Snyder County; Marsh Creek, Tioga County; other areas being investigated include Mauch Chunk Creek, Carbon County; Sandy Creek, Mercer

County; Kaerchers Creek, Berks County and Harmons Creek in Washington County. Additional sites under this program are constantly being reviewed.

Under the General State Authority Program, headway was made on the acquisition of the East Bangor Dam Project in Northampton County. Settlement on seven of the properties surrounding this existing lake has been completed.

Other sites under investigation include East Branch of Martins Creek, Northampton County; Harvey's Lake, Luzerne County and more than ten major springs throughout the State.

—GLEN SPENCER

ENGINEERING DIVISION

DURING the 1964-65 fiscal year some major changes took place in the work of the Engineering Division. The initiation of the huge Project 70 Acquisition Program demanded that the present technical staff spend considerable time and effort on property investigations and evaluations until qualified technical people could be obtained to help carry out this Program.

Also the Engineering Division was assigned responsibility of maintaining all public property owned or controlled by the Commission throughout the Commonwealth. The maintenance personnel, who formerly worked with the Real Estate Division, were transferred to the Engineering Division, and the Maintenance Supervisor relocated his headquarters to the Bellefonte Field Office.

Major development projects completed during this period included work at Mountain Springs, Luzerne County. This development, which was completed in November, 1964, includes six miles of access road, four bridges, public use facilities and renovation of an existing concrete dam which forms a 40 acre fishing and boating lake. Before this project was undertaken, this facility was inaccessible and unsafe for public use. In addition, development of a 25 acre fish propagation lake known as Douglas Pond, located in Wayne County, was completed in October, 1964. This facility will be operated by the Pleasant Mount Hatchery and provides a badly needed warm water propagation lake.

Work was also completed, in August, on construction of 2100 lineal feet of new trout raceways at the Pleasant Mount Hatchery in Wayne County. This new development was the initial segment of the hatchery renovation program, and the completed facilities permit independent control and operation of each raceway section with a minimum of personnel. These units are presently in use and the resulting improvement in trout propagation is very encouraging.

High Point Lake, a 342 acre fishing lake, located in Somerset County was completed in June, 1965. This project, which was developed for the Fish Commission by the General State Authority on a contract basis, provides a huge fishing lake which is readily accessible to



the large population centers of southwestern Pennsylvania. Water is presently being impounded and it is hopeful that this facility will be ready for full public use in the near future.

Contracts were awarded for construction of Hammer Creek Dam in Lancaster County in January, 1965, and work started immediately. This project, which is also being developed for the Fish Commission by the General State Authority, will provide a 108 acre fishing lake upon its completion early in 1966. Work at the end of this fiscal year was about 30 per cent completed.

In October, 1964, construction of Colyer Lake, in Centre County, was begun on a force account basis. This project, which is being developed by Fish Commission personnel, was about 40 per cent completed at the end of the fiscal year and is scheduled for completion early in 1966. The development will provide a 77 acre fishing and boating lake along with the necessary access roads and public use facilities. Many unique fish management devices are included in this project in an effort to provide ideal fishing lake conditions. Some of these features are innovations in design for development of this type.

The maintenance personnel of the Engineering Division maintained 30 public fishing lakes presently owned or controlled by the Commission and more than 90 public access areas. These personnel were also trained and assisted in making major improvements to many of these public facilities. New regional headquarters were established at Tionesta, in the northwest region, and Indian-town Gap Military Reservation, in the southeast maintenance division. Eighteen areas located throughout the

Commonwealth were serviced on a contract basis for the first time in the history of the Commission. The purpose of this plan was to decrease traveling expenses and to permit the trained maintenance personnel to have more time to handle major maintenance requirements and property improvements. In most cases, this plan appears to be improving the overall Commission program.

In addition to the major projects already described, the Engineering Division conducted its access area development program, conducted engineering investigations of proposed acquisition areas, coordinated the work of consulting engineering firms, prepared plans for the General State Authority program, and performed many other duties which are included in the following summary:

Engineering plans and specifications were completed for development of New Brighton Access Area, Beaver County; renovations to Huntsdale Hatchery, Cumberland County; construction of Colyer Lake (Segment II), Centre County; and development of public use facilities at the B & O Reservoirs, in Jefferson County. In addition, plans and specifications for development of Hammer Creek Dam, Lancaster County (CSA 199-6), and East Bangor Dam, Northampton County (CSA 199-8), were completed by consulting engineering firms during this period.

Engineering and topographic surveys were conducted, as required, on all the projects on which design plans were completed.

Property surveys were conducted on Huntsdale Hatchery, Cumberland County; Falmouth Access Area, Lancaster County; Big Spring, Cumberland County; Mancini Lake, Crawford County; Harvey's Lake, Luzerne County; Access Area, Washington County; Keystone Ordnance

Four Mile Run, Westmoreland County; New Brighton Access Area, Beaver County; Briar Creek, Columbia County and Sinking Creek, Centre County.

In addition to the projects having completed plans and specifications, topographic and engineering surveys were conducted on Falmouth Access Area, Lancaster County; Big Spring, Cumberland County; Speers Access Area, Washington County; Canonsburg Lake, Washington County; Corry Hatchery, Erie County; Harvey's Lake, Luzerne County; Youghiogheny Reservoir Access Area, Fayette County; Union City Hatchery, Erie County and New Brighton Access Area, Beaver County.

Preliminary investigations were conducted on Little Salt Lick Run, Cambria County; Robinson Run, Blair County; Roaring Run, Somerset County; Behr's Run, Schuylkill County; Roaring Creek, Columbia County; New Brighton, Beaver County; Rock Run, Indiana County; Straight Run, Indiana County; Kaerchers Creek, Berks County; Briar Creek, Columbia County and Amity Hall Access, Perry County, and other projects located in Lehigh, Berks, Bucks, Delaware, Chester, Cambria, Westmoreland, Potter, Luzerne and Wyoming Counties.

Development of the following projects was completed:

MOUNTAIN SPRINGS LAKE, LUZERNE COUNTY

Access road, parking area, sanitary facilities, boat launching ramp and renovation of existing dam which provides a 40 acre lake.

DOUGLAS POND, WAYNE COUNTY

25 acre warm water propagation lake.

PLEASANT MOUNT HATCHERY, WAYNE COUNTY

2100 lineal feet of new trout propagation raceways.

HIGH POINT LAKE, SOMERSET COUNTY

342 acre fishing lake with boat launching ramps, access roads, parking facilities and sanitary facilities.

WALNUT CREEK ACCESS AREA, ERIE COUNTY

Paved access roads, 200 car parking area, concrete boat launching ramp, sanitary facilities, boat loading and landing dock, and stream and flood control improvements.

Improvements were made at the following access areas:

MUSKRAT SPRINGS, JUNIATA COUNTY

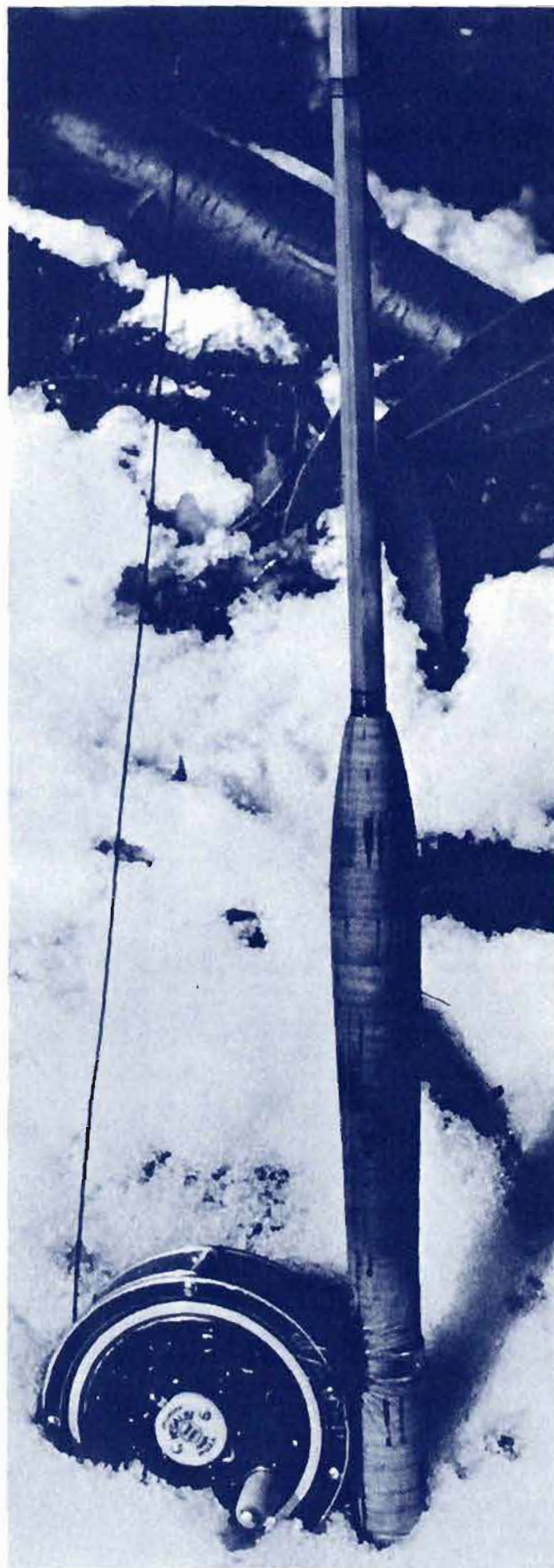
Installation of sanitary facilities.

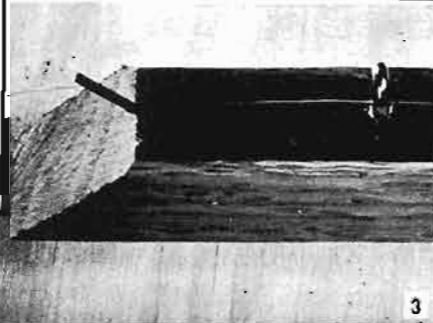
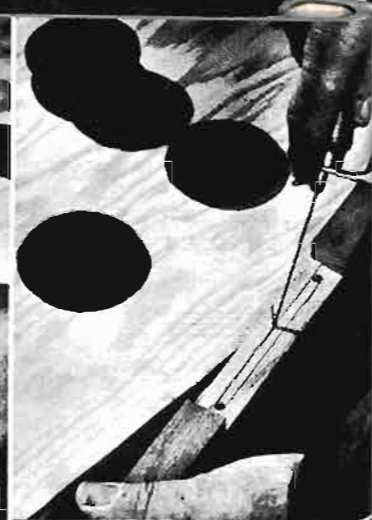
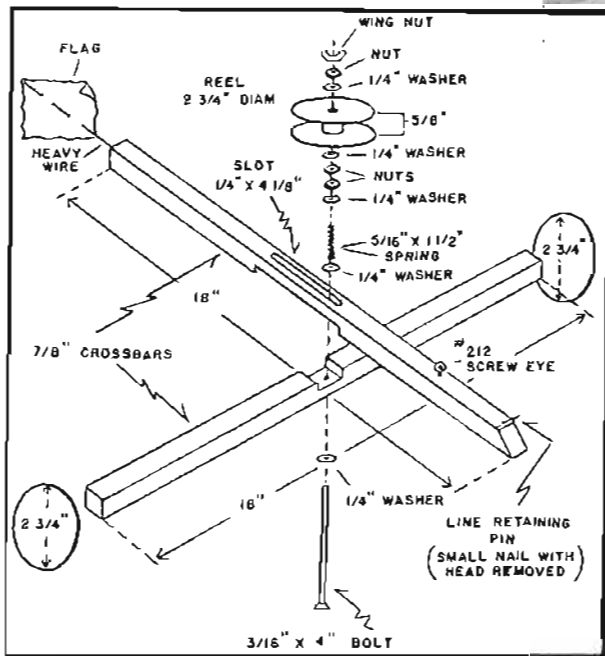
DUTCH FORK LAKE, WASHINGTON COUNTY

Installation of sanitary facilities.

Other major projects included review of plans for all highway construction projects within the Commonwealth; remodeling southeast regional office building at Indian-town Gap Military Reservation; emergency repairs to Hunter's Lake, Sullivan County; preparation of plans for development of the Brookville Fish for Fun project; preparation for plans for remodeling northwest regional office at Tionesta; construction of prefabricated toilets for future installation on Fish Commission projects, and the Engineering Division personnel also served as consultants and assisted other Divisions in the maintenance and operation of Fish Commission facilities.

—ERWARD MILLER





DO-IT-YOURSELF TIP UP

*Here's low-priced answer
to successful ice angling*

Simple construction makes this a natural for a bad-weather week end. Start by making a spool (1) from masonite circles 2 3/4 inches in diameter, fastened with small nails to each end of a 1-inch length of dowel.

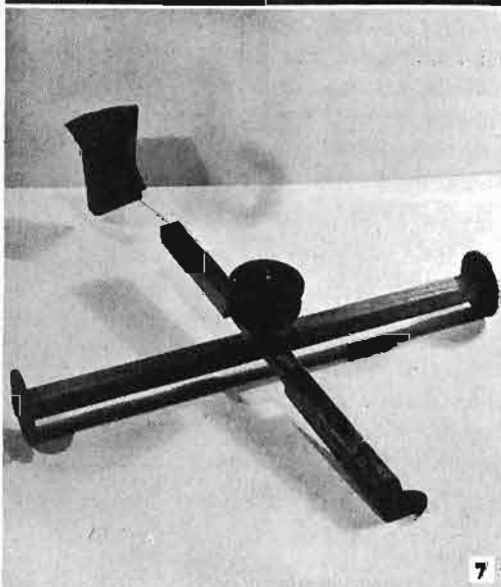
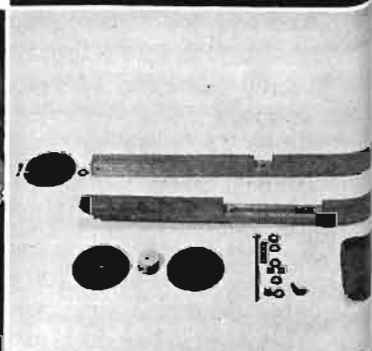
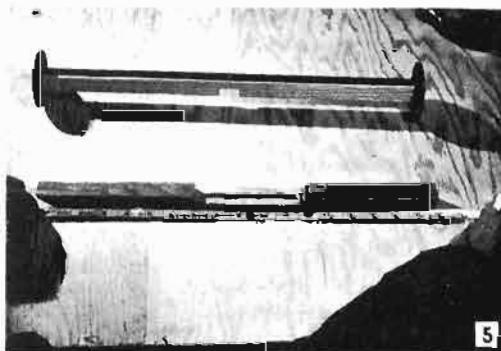
Cut a slot in the main beam with a coping saw (2) after drilling holes. A nail with the head removed (3) will hold the line while rig is set. Screw eye is only a line guide.

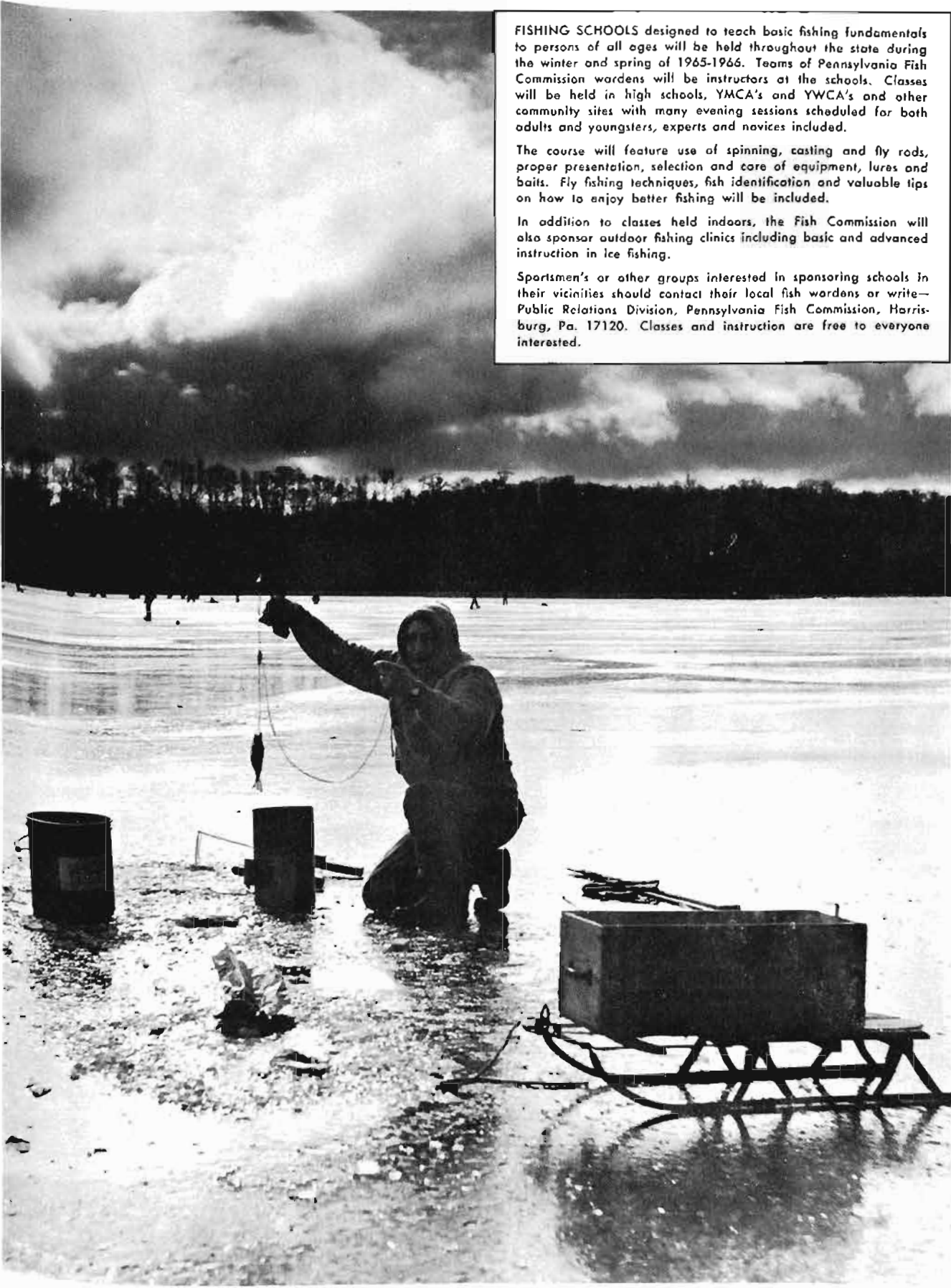
Fasten both wheels on the cross beam (4) with 3/4-inch screws, using washers inside to insure easy turning. The slip-slot on the main beam (5) should be off-center and about 5 inches long.

All materials needed for one tip up (6) will cost about 25¢ if bought at the store. Wood and some hardware can probably be found around the house to reduce the cost even more.

When completed (7 and 8), tension on spring holds cross beam but allows for sliding adjustment to counterbalance the weight and line under the ice. Spool should turn freely so fish can't feel resistance on the line.

Set rig has the line looped around the headless nail. When fish strikes, the main beam is pulled down into spudded hole, the line slips off the nail, and the flag alerts the angler.





FISHING SCHOOLS designed to teach basic fishing fundamentals to persons of all ages will be held throughout the state during the winter and spring of 1965-1966. Teams of Pennsylvania Fish Commission wardens will be instructors at the schools. Classes will be held in high schools, YMCA's and YWCA's and other community sites with many evening sessions scheduled for both adults and youngsters, experts and novices included.

The course will feature use of spinning, casting and fly rods, proper presentation, selection and care of equipment, lures and baits. Fly fishing techniques, fish identification and valuable tips on how to enjoy better fishing will be included.

In addition to classes held indoors, the Fish Commission will also sponsor outdoor fishing clinics including basic and advanced instruction in ice fishing.

Sportsmen's or other groups interested in sponsoring schools in their vicinities should contact their local fish wardens or write—Public Relations Division, Pennsylvania Fish Commission, Harrisburg, Pa. 17120. Classes and instruction are free to everyone interested.

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