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THE PENNSYLVANIA STATE
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COMMONWEALTH OF PENNSYLVANIA
BOARD OF FISH COMMISSIONERS

**COMBINED
BIENNIAL REPORT**

For the Period Ending
May 31, 1946

HARRISBURG, PENNSYLVANIA



B693
P 5110
1946 46

Owing to the war and shortage of paper, no biennial report was published during 1944.

This is a combined biennial report with material and statistics complete to May 31, 1946.



LETTER OF TRANSMITTAL

HIS EXCELLENCY GOVERNOR EDWARD MARTIN,
Harrisburg, Pennsylvania

Sir:

Conforming to provisions of Article V, Section 504, of the Administrative Code, we present herewith Biennial Report of Operations of the Board of Fish Commissioners for the period ending May 31, 1946. Some of the statistical data has been compiled for the calendar year 1946 so those who fish in Pennsylvania will have a complete picture of present day activities.

Respectfully,

BOARD OF FISH COMMISSIONERS

C. A. French, Commissioner of Fisheries

E. W. Nicholson

M. L. Peek

John L. Neiger

Joseph Critchfield

Clifford J. Welsh

C. A. Mensch

W. M. Roberts

COMMONWEALTH OF PENNSYLVANIA
BOARD OF FISH COMMISSIONERS

C. A. FRENCH, *Commissioner of Fisheries*
C. R. BULLER, *Chief Fish Culturist*

MEMBERS—BOARD OF FISH COMMISSIONERS

C. A. French, Commissioner of Fisheries
Edgar W. Nicholson, Philadelphia
M. L. Peek, Radnor
John L. Neiger, Scranton
Joseph Critchfield, Confluence
Clifford J. Welsh, Erie
C. A. Mensch, Bellefonte
W. M. Roberts, New Castle
H. R. Stackhouse, Secretary to Board

SUPERINTENDENTS OF HATCHERIES

Wayne County Hatchery No. 1—J. L. Zettle, Superintendent, Pleasant Mount
Erie Hatchery No. 2—Edwin Hahn, Superintendent, Erie, Erie County
Corry Hatchery No. 3—Merrill Lillie, Corry, Erie County
Bellefonte and Spring Creek Hatchery No. 4—Dewey Sorenson, Bellefonte, Centre County
Torresdale Hatchery No. 5—John Wopart, Holmesburg, Philadelphia County
Union City Hatchery No. 6—A. G. Buller, Union City, Erie County
Reynoldsdale Hatchery No. 7—T. R. Sorenson, Reynoldsdale, Bedford County
Tionesta Hatchery No. 8—Bernard Gill, Tionesta, Forest County
Huntsdale Hatchery No. 9—T. J. Dingle, Huntsdale, Cumberland County
Linesville Hatchery No. 10—F. K. Riedel, Linesville, Crawford County

**TO THE STOCKHOLDERS OF THE
BOARD OF FISH COMMISSIONERS**

During the years covered by this report, your Board and its employees were primarily engaged in helping to win the war. Sixty-one of its employees answered the call, two of whom paid the supreme sacrifice.

Pennsylvania is looked upon as one of the outstanding states of the Union in hatching, propagation, and distribution of fish. In addition to our distribution to the public waters of the Commonwealth, it was our privilege in 1945 to establish fishing ponds for convalescent veterans at Valley Forge General Hospital and DeShon Hospital. In 1946, the Navy Hospital at Philadelphia was included in this program. These pools were stocked with large sized fish and afforded recreation for the veterans of these institutions.

From reports, these projects are most successful and have been under competent instructors. In a letter from the Commanding Officer of one of the projects, he stated: "Those taking part in the privilege have been enthusiastic and much pleased with results, and it has been most beneficial to them."

The Fish Commissioner's Post War Rehabilitation and Construction program will do much toward increasing fishing in public waters. It is estimated that it will require \$759,354 to carry on this work, which will consist of a hatchery development and construction program. Plans and specifications are already available for the greater part of this work, which will cover construction of ponds, building of bulkheads, extension of electrical systems, hatching houses, garages, and the completion of work already started at the Pymatuning Sanctuary, which will be the largest fresh water fish hatchery in the country.

The distribution program has been regrouped so that in many cases adjacent areas can be reached on one trip by truck, thereby reducing the number of miles traveled.

Owing to the severe shortage of trucks all operating equipment was conserved so it would be possible to complete distribution even though it took considerably longer than in previous years. The present fleet of trucks has been reduced to fifteen, many of which have already covered more than 100,000 miles.

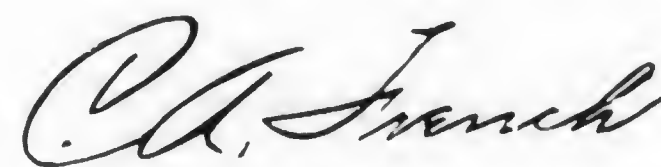
It is gratifying to report that both spring and mid-season stocking programs have been maintained which were the heaviest in the history of the Commonwealth.

It is estimated that during 1946 the distribution of trout will total approximately 2,000,000 brook, brown and rainbow of more than legal size, thereby fulfilling the promise that upon the return of our fighting men several hundred thousand additional trout would be planted in our streams and waters which are open to public fishing.

A real job has been done during the last biennium with the younger group, which means so much to the future fishing of Pennsylvania.

The Board's educational program covering relations between the land owner and the fisherman has greatly improved.

We invite your consideration of the brief report of the Board's activities which follow. Fishing is still the most popular pastime in the field of sports and by the present reports covering the sale of licenses, it will be well over the 500,000 mark, which means at least a million fishermen on the streams and lakes throughout the Commonwealth.



C. A. FRENCH,

Commissioner of Fisheries.



EDITORIAL

We salute you, soldier!

To you fine fellows now streaming back across the sea, we doff our hat! To say that we are glad for your return would put it quite mildly—we are MIGHTY GLAD and join with your loved ones back home here in pouring forth our affection and admiration.

While you were gone the folks on the home front held fast. We kept the faith—and we prayed for you, too.

Your friends in the sports circles have been busy. Plans for permanent recreational centers have been formulated and in many cases actual construction work has long since begun.

Yes, the fishermen have not forsaken you and with the return of materials available again, the future surely holds much in store for improved facilities and the ultimate advancement of the sport so near and dear to you.

Sportsmen's clubs and organizations—all over Pennsylvania—are working hard in programs the like of which, we are sure, you will want to join and take part.

While we, too, have been handicapped, we did not let down. The Fish Commission has been pounding right along in complete harmony with the more than a thousand clubs and the multitude of nimrods everywhere.

And so—to you who will return for keeps—to you who will needs depart for further battle in distant Asiatic lands, We—

SALUTE YOU, SOLDIER!

—THE PENNSYLVANIA ANGLER.



Honor Roll

PENNSYLVANIA FISH COMMISSION

- | | |
|-------------------------|------------------------|
| * FRED E. BLANEY | x BUDD BROOKS |
| * ROLLAND D. CRONK | x GEORGE MAGARGEL |
| x CLARENCE GRIFFY | x ROBERT BROWN |
| x DALE ARNER | EARL HENRY MARSH |
| x JOHN ALSPAUGH | x DONALD L. HOUSER |
| x ALTON JONES | x ALBERT BRUNGART |
| x MAHLON BREON | x JOHN C. LOCKHART |
| x JACK SAXION | x GLEN R. SPENCER |
| x PAUL POORMAN | x CHARLES F. STARK |
| x CHARLES KUSTANBAUTER | x GORDON C. BURDICK |
| x BUDD SAMPSELL | x NORMAN LEONARD BLUM |
| x HAROLD STITZER | x WARD M. SAMPSELL |
| x NORMAN SICKLES | x JOSEPH P. MEYERS |
| GERALD PARKER | x ALBERT E. BESECKER |
| x VINCENT OSWALD | x JAMES ARTHUR MAY |
| x WARREN HAMMER | x DANIEL J. O'NEILL |
| x ROY SMITH | JOHN F. G. RIEDEL |
| x WESLEY BECKWITH | PAUL PECHART |
| x LEROY SORENSON | RAY E. LAIR |
| x SPENCER POTTER | x KENNETH ALEY |
| x BENJAMIN DONLEY | x WILLIAM E. McILNAY |
| x JAMES PETERS | x FRANK KIRCHNER |
| x ARTHUR BRADFORD | x ALEX P. SWEIGART |
| x MELBOURNE SORENSON | x C. W. SHEARER |
| x CYRIL REGAN | x LESTER C. OGDEN |
| x ANDREW SAVAGE | x GEORGE W. CROSS |
| NEVIN LEDANE | x RICHARD HEFFERAN |
| x GEORGE FOX | x FREDERICK E. STONE |
| THEODORE J. DINGLE, JR. | CLARENCE S. HUTCHINSON |
| x CHARLES EGLINGER | JAMES FRANCIS HANNA |

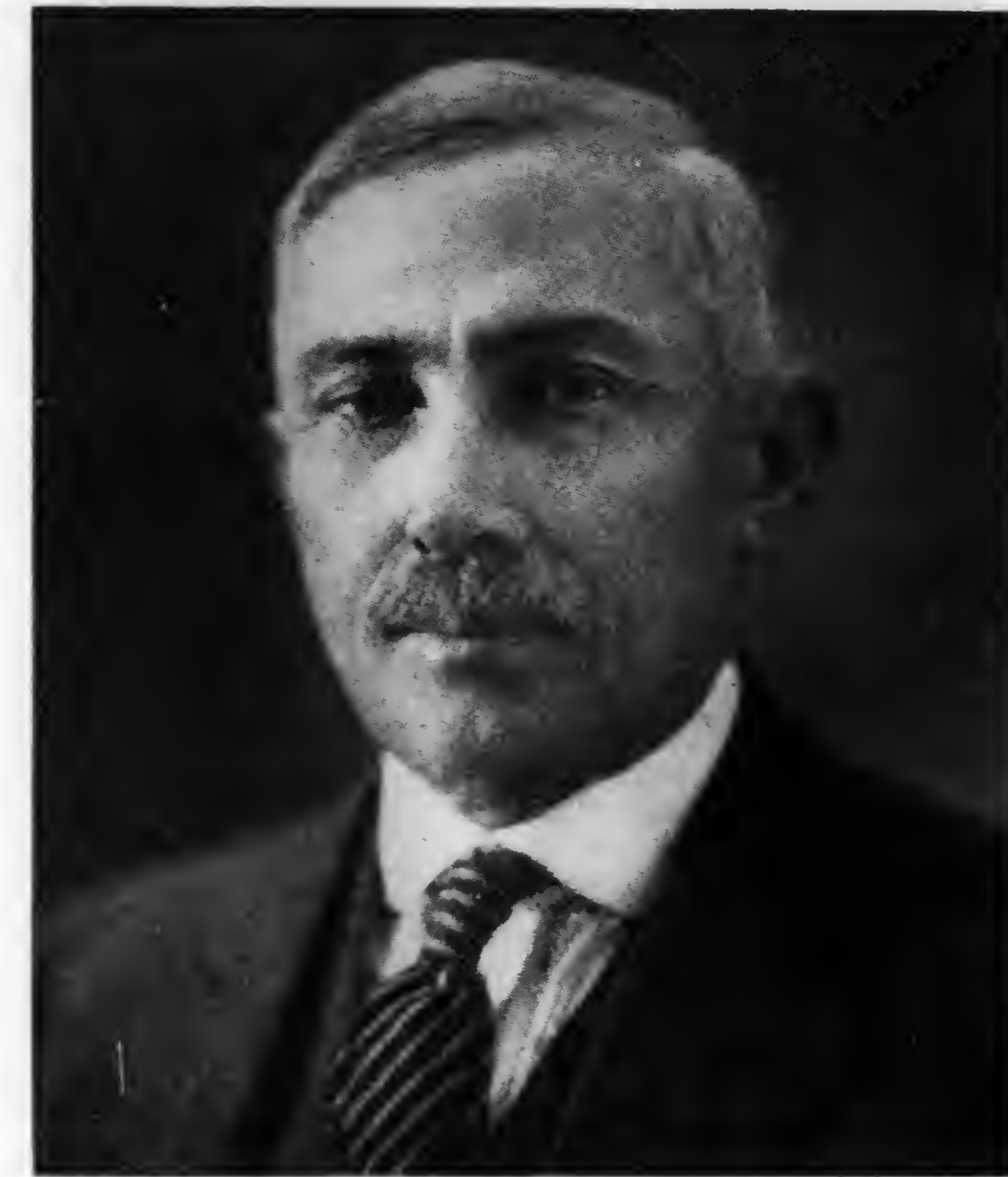
RALPH BERKEY

*Made Supreme Sacrifice
xDischarged

*"That Government of the People—by the People and
for the People—Shall not Perish from the Earth"*

—A. LINCOLN

MEMORIAL



NATHAN R. BULLER,

1860-1945

Born in Maytown, Lancaster County, December 1, 1860, where he graduated from High School, Nathan R. Buller began to work at Pennsylvania's first Fish Farm in 1877 at the age of 17. Thirty-four years later in 1911, he was appointed Commissioner of Fisheries by Governor Tener and served through the ensuing five administrations under Tener, Brumbaugh, Sprout, Pinchot and Fisher—retiring at the end of the Fisher administration in 1931.

Long after his passing, the name "Nate" Buller, as he was so commonly known, will be remembered wherever fishermen gather. He will be remembered for his devout industry in fish culture, for his relentless determination in advancing the general best interest and welfare of fishermen everywhere and for his kindness toward those whom he employed. The fifty-six years he devoted to fish culture in Pennsylvania won for him a most enviable position in that field of endeavor and recognized him as an outstanding authority throughout the nation.

A gentleman of the old school—A loyal and faithful public servant—A man of sterling character—has passed on.

We join the host of "Nate" Buller's friends in paying our signal salute to a courageous man and to a former Commissioner of Fisheries of the Commonwealth of Pennsylvania.

WOUNDED U. S. VETERANS AT VALLEY FORGE HOSPITAL HAVE OWN FISHING LAKE

Convalescent war veterans at Valley Forge General Hospital had their own official opening of the trout season Friday, April 20, 1945, when two-acre Gotwals Lake, a mile and a half from the hospital, was dedicated by Governor Edward Martin, through whose efforts the lake was heavily stocked with trout from the State Fish Commission.

Made available to the veterans by Dr. J. Elmer Gotwals, Phoenixville physician, the lake was the scene of eager angling by the soldiers the moment the dedication ended—and, to the delight of the G. I.'s, the trout cooperated splendidly.

Governor Martin, commenting that the present session of the State General Assembly has made it possible for men and women in uniform to procure free fishing licenses, promised further: "You can be sure when the trout season ends, the Fish Commission will restock the lake with warm water species so you may have fishing throughout the year.

"Every generation has been forced to pay a price to retain our freedoms," he added. "This has been the most terrible war in history."

The Chief Executive said 14,500 Pennsylvanians have died in service; 57,200 have been wounded, 6,150 were war prisoners, and 7,700 were missing in action.

"This nation has done much to make our armed forces the best-trained, the best-equipped, and the best-fed in the world . . . yet, because war is war, our forces have known hunger, cold, wounds, disease and a lack of spiritual aid.

"We must all unite to bring the war to a quick and victorious end and never allow ourselves to forget those who served."

At the end of the impressive ceremonies, 300 huge rainbow trout weighing from one to five pounds each, were lowered into the two-acre pond from a truck that had brought them in a tank from the State Fisheries. A dozen VFGH patients, who had been awaiting the signal with fishing rods in hand, strung out along the banks of the pond, and eleven minutes later, Lt. William LaForce had caught the first fish.



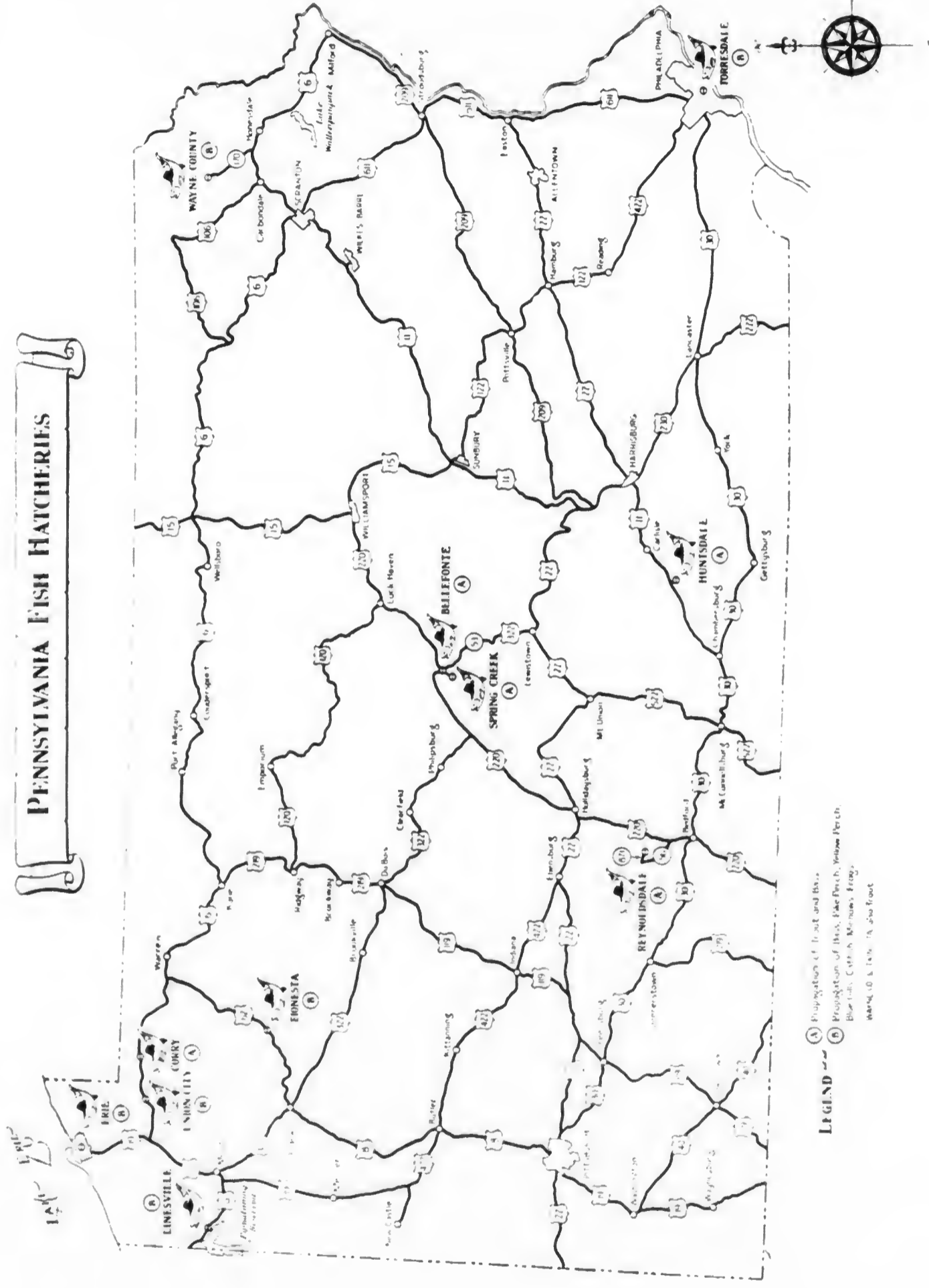
Also participating in the ceremonies were Colonel W. W. Vaughan, commanding officer of the hospital; Lieutenant Colonel Seymour Fisher, executive officer; Captain Charles M. McAleer, public relations officer; Dr. Gotwals, and Major General Milton Baker, superintendent of Valley Forge Military Academy.

Other guests included: C. A. French, Commissioner of Fisheries; George Bloom, secretary to Governor Martin; John Powell, of the State Workmen's Insurance Fund; State Senator James Scarlett, Chester County, and Mark Abrahams, chairman of the Philadelphia Stage Door Canteen's athletic committee.



Also participating in the ceremonies were Colonel W. W. Vaughan, commanding officer of the hospital; Lieutenant Colonel Seymour Fisher, executive officer; Captain Charles M. McAleer, public relations officer; Dr. Gotwals, and Major General Milton Baker, superintendent of Valley Forge Military Academy.

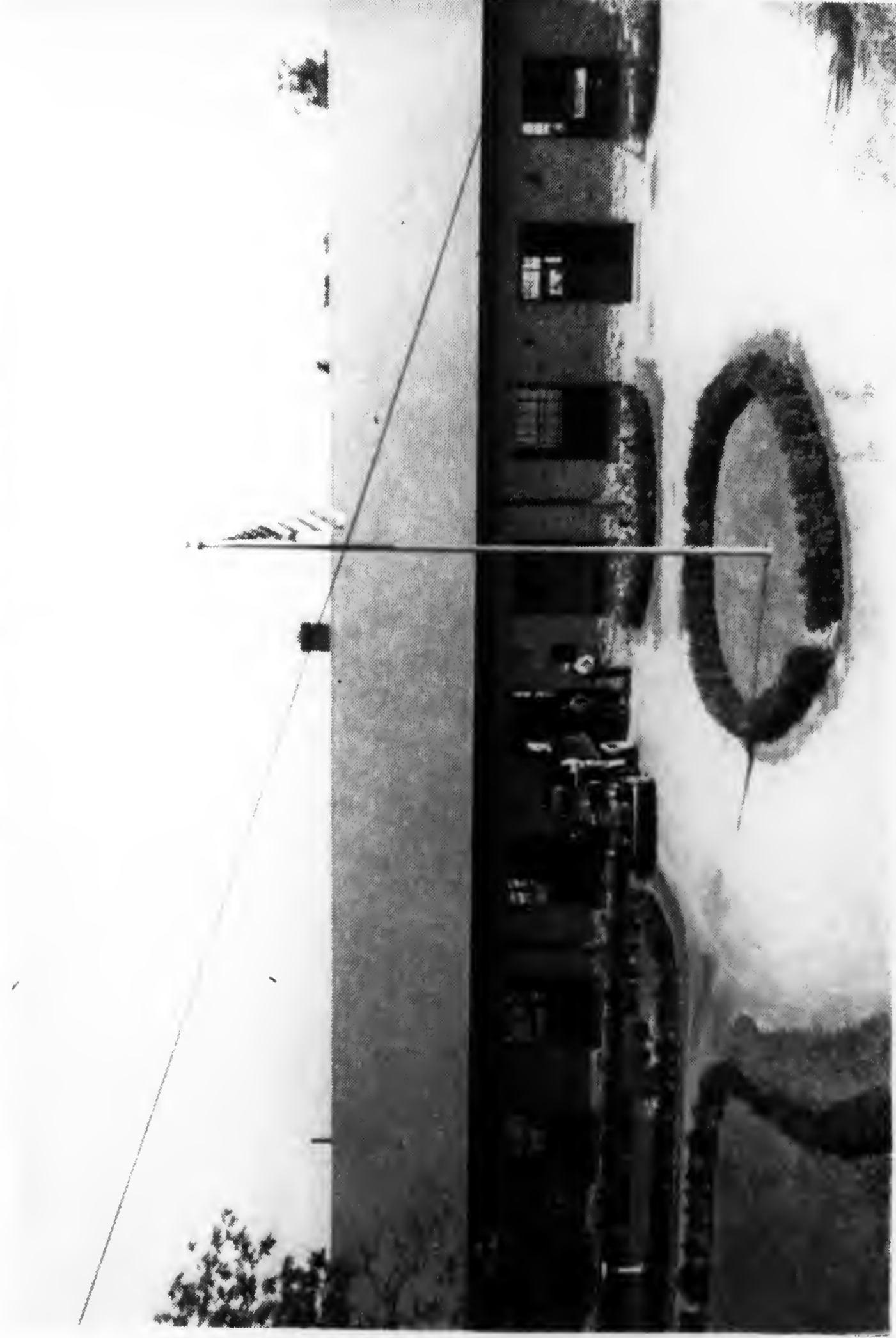
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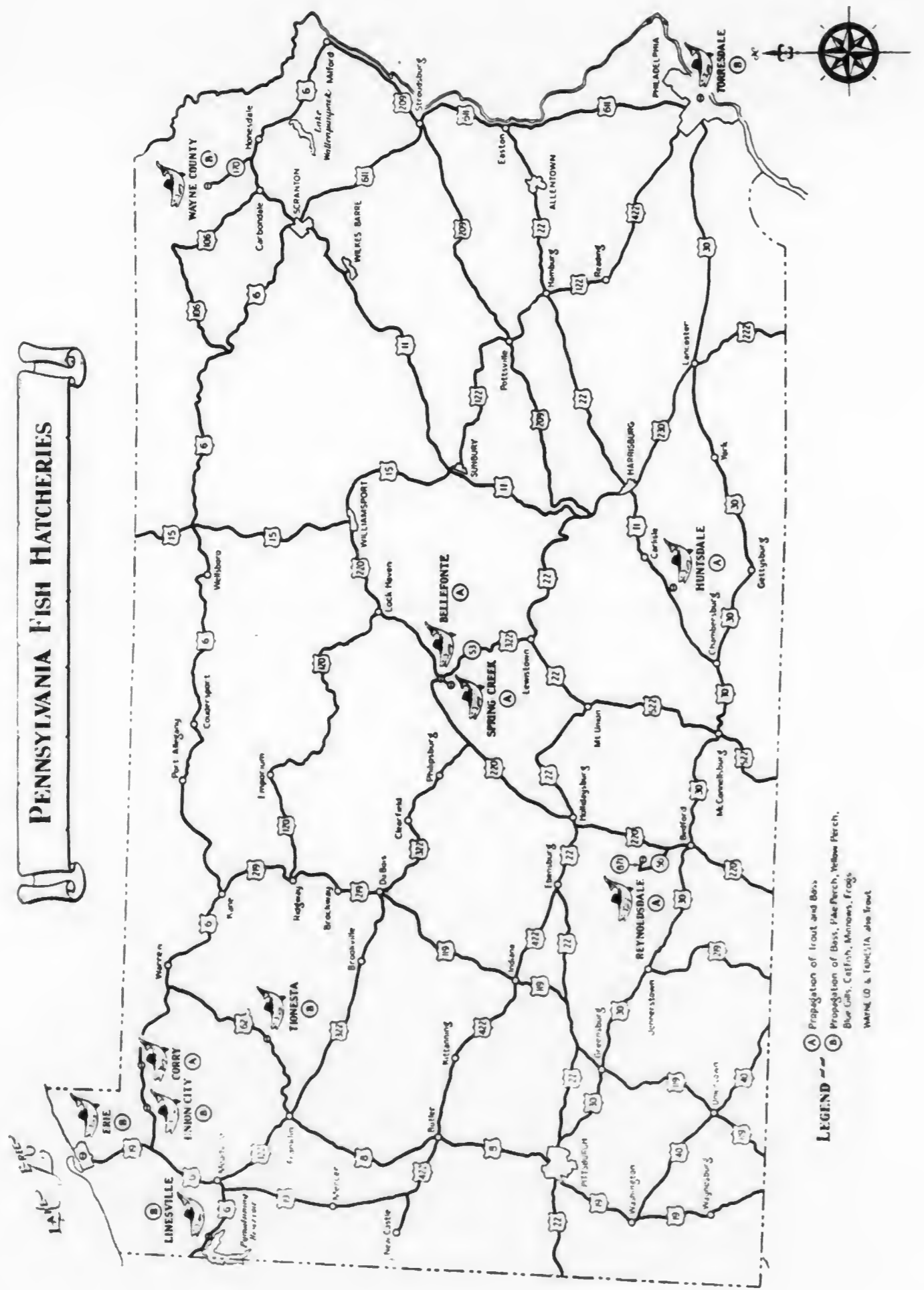
HAVE YOU EVER VISITED ONE OF OUR HATCHERIES?

(For Location See Map.)

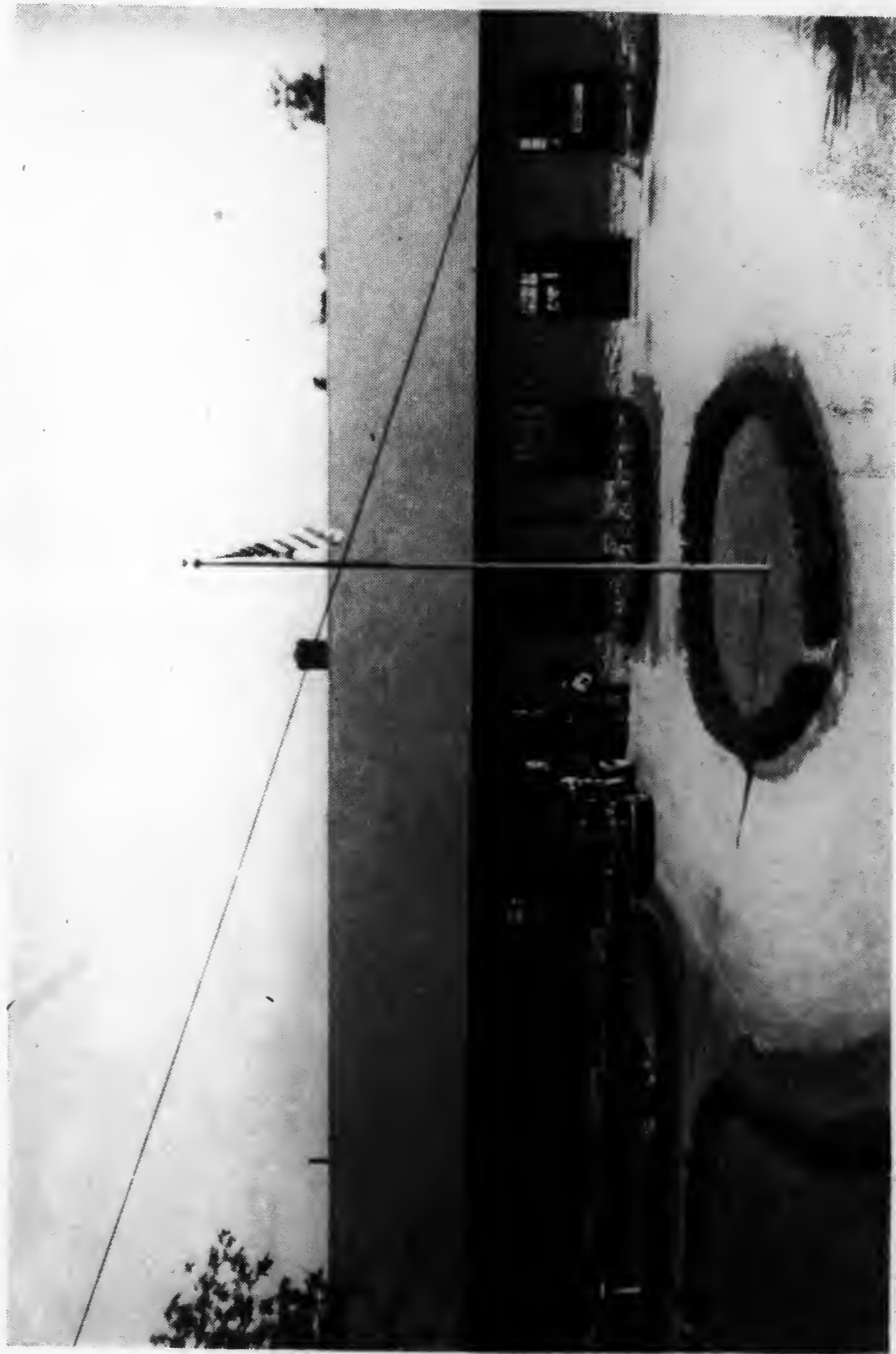
For additional information, see the following pages.



PENNSYLVANIA'S HATCHERIES



HAVE YOU EVER VISITED ONE OF OUR HATCHERIES?
(For Location See Map.)
 For additional information, see the following pages.



PENNSYLVANIA'S HATCHERIES

**No. 1
WAYNE COUNTY**



**Species
Propagated**

Trout
Bass
Pike Perch
Yellow Perch
Bream
Catfish
Minnows
Suckers
Frogs

**COMBINATION WARM WATER AND TROUT
HATCHERIES**

**No. 2
ERIE**



**Species
Propagated**

White Fish
Herring (Cisco)
Blue Pike
Yellow Perch
Pike Perch

**No. 3
CORY**



**Species
Propagated**

Trout
Bream
Catfish

**No. 4
BELLEFONTE AND SPRING CREEK**



**Species
Propagated**

Trout
Bream
Catfish
Bass

Latest Stream
Improvement
School for
Fishermen

**No. 1
WAYNE COUNTY**

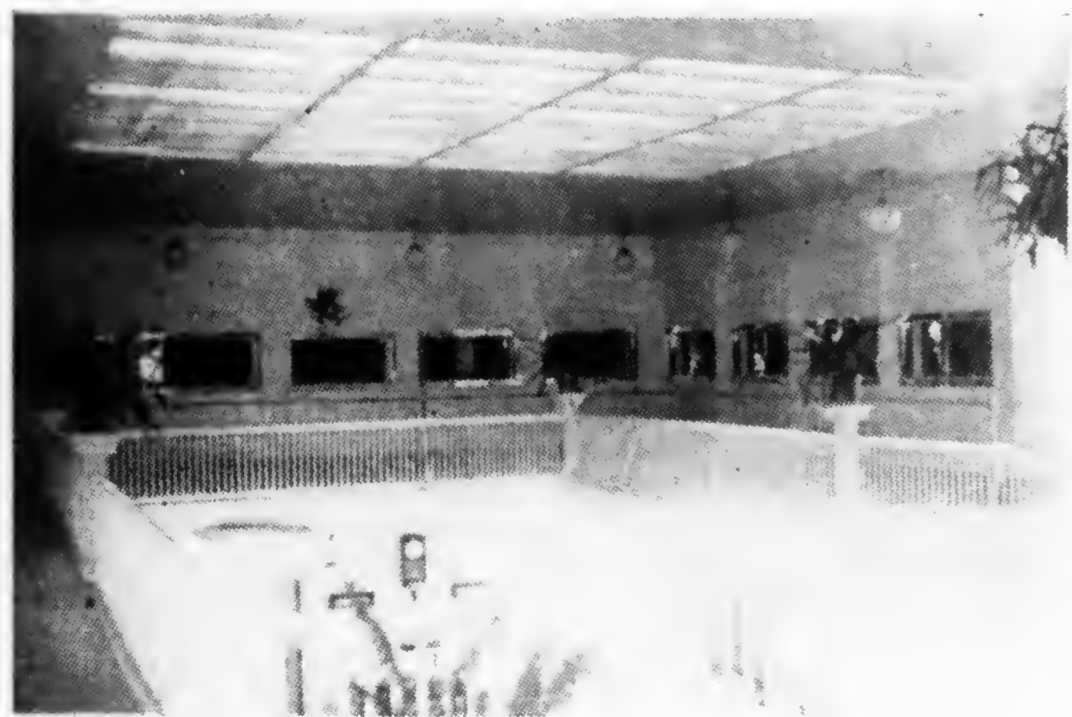


**Species
Propagated**

Trout
Bass
Pike Perch
Yellow Perch
Bream
Catfish
Minnows
Suckers
Frogs

**COMBINATION WARM WATER AND TROUT
HATCHERIES**

**No. 2
ERIE**



**Species
Propagated**

White Fish
Herring (Cisco)
Blue Pike
Yellow Perch
Pike Perch

16

**No. 3
CORY**



**Species
Propagated**

Trout
Bream
Catfish

**No. 4
BELLEFONTE AND SPRING CREEK**



**Species
Propagated**

Trout
Bream
Catfish
Bass

Latest Stream
Improvement
School for
Fishermen

17

No. 5
TORRESDALE



Species
Propagated

Bream
Catfish
Yellow Perch
Pike Perch
Minnows
Bass
Frogs

No. 6
UNION CITY



Species
Propagated

Bream
Catfish
Yellow Perch
Pike Perch
Minnows
Bass
Frogs

No. 7
REYNOLDSDALE



Species
Propagated

Trout
Bass

No. 8
TIONESTA



Species
Propagated

Trout
Catfish
Pike Perch
Yellow Perch
Bream
Minnows
Frogs

No. 9
HUNTSDALE



Species
Propagated

Trout
Bass
Bream
Catfish

No. 10
LINESVILLE

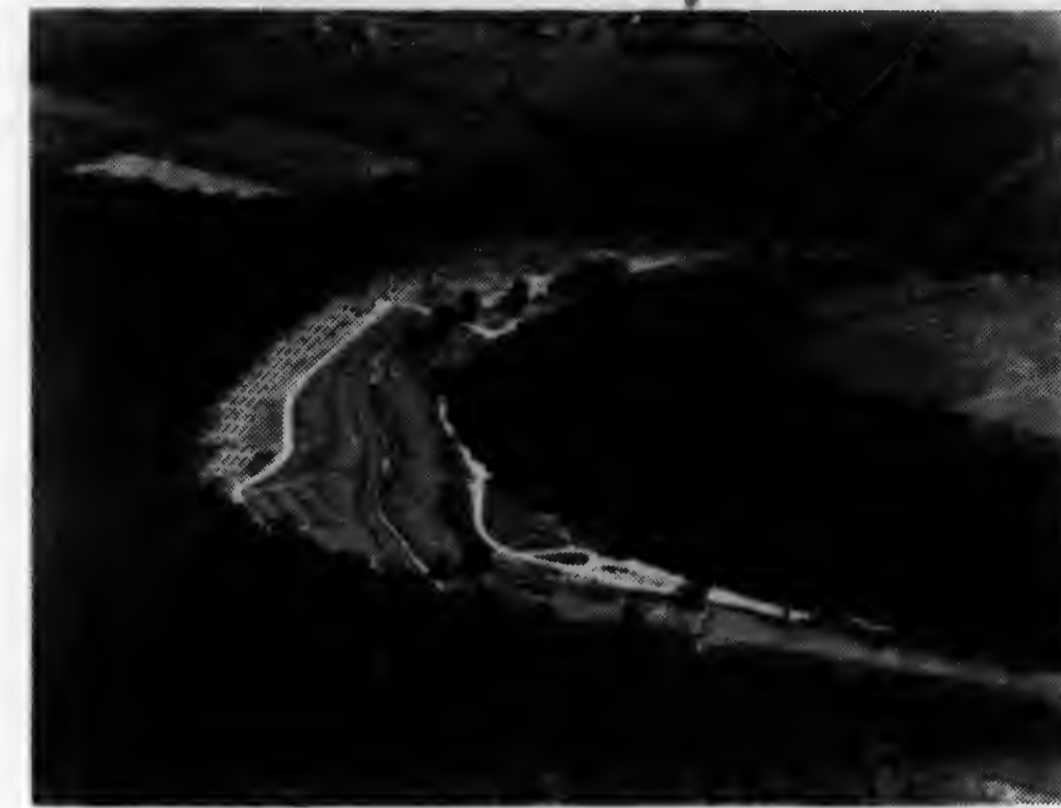


Species
Propagated

Black Bass
Yellow Perch
Catfish
Bream
Pike Perch

When completed, this
will be one of the
largest warm water
fish farms in the
country.

SPRING CREEK PROJECT



This is the Spring Creek Project which has been so popular with the fishermen of the Commonwealth.

Before the war, this project was visited by approximately 20,000 persons yearly which included visitors and fishermen from many states of the Union.

This development shows what intelligent stream improvement can do by not only improving the fishing, but also the food which is so necessary in any stream if we are to maintain fishing.

The article in the report on the Spring Creek Project will give you information on rules and regulations, location, etc.



SPOT NEWS

PENNSYLVANIA'S FISH COMMISSION

HATCHERIES

Pennsylvania has ten major fish hatcheries located in various parts of the Commonwealth. In addition to this, there is also the Spring Creek Project located about three miles from Bellefonte which is visited by approximately 20,000 persons annually from Maine to California. In addition to the model fish hatchery, there is a mile of improved stream showing what intelligent stream improvement will do towards not only increasing fishing, but in building up the food supply. Visitors are always welcome at any of the Board's hatcheries where competent guides are available.

HIGHLIGHTS

It is said that fishing, hunting, and other forms of recreation pour annually millions of dollars into the cash registers of American business men. It is estimated that 13,000,000 licensed fishermen and hunters were responsible for at least \$1,000,000,000 in revenue to a wide variety of business establishments. In the last two years, fishermen have increased by more than 1,000,000. This is not an idle statement for in Pennsylvania, fishing licenses have increased more than 150,000 in the last year.

Pennsylvania's Fish Commission is entirely self-supporting.

Receives no appropriation from Legislature.

In 1945, 426,823 licenses were issued and the annual receipts were \$690,660.41.

FISHERMAN'S DOLLAR

How 1945 fisherman's dollar was spent:

- 64.20¢—Hatching, Propagation and Distribution of Fish
- 21.43¢—Salaries and Expenses of Wardens
- 6.14¢—Administration
- 5.99¢—Department of Revenue
- 2.06¢—Publicity
- 0.18¢—Research, etc.

PRODUCTION

Pennsylvania's hatcheries in 1945 reached an all-time high for production in number and pounds of fish produced.

The number distributed of the principal species are as follows:

Brook, Brown,		
Rainbow Trout	7" to 20"	1,575,905
Black Bass	1" to 14"	414,685
Catfish	5" to 13"	261,145
Bream	3" to 8"	199,836

During 1946, the Board hopes to distribute approximately 2,000,000 legal-size trout.

APPROVED FISHING WATERS OPEN TO PUBLIC FISHING

5,700 miles of approved trout waters.

3,800 miles approved for warm-water fish.

139,400 acres lakes and ponds approved for stocking with warm-water fish.

In addition to inland waters, fishing is provided for thousands in the bay and lake at Erie, Delaware River, etc.

Fifteen hundred (1500) tons of fish food purchased yearly.

Research and scientific laboratory maintained at Bellefonte Hatchery.

Fleet of tank trucks transport fish to the streams in same condition as when they left the hatchery.

Present program at Hunt Dale and Bellefonte Hatcheries will more than double capacity of these plants.



BELLEFONTE HATCHERY
Cold Storage House

PROTECTION—OFFICERS' TRAINING SCHOOL

Fifty-one (51) men trained in the various activities of the Board, patrol the public waters of the Commonwealth.

PUBLIC INFORMATION

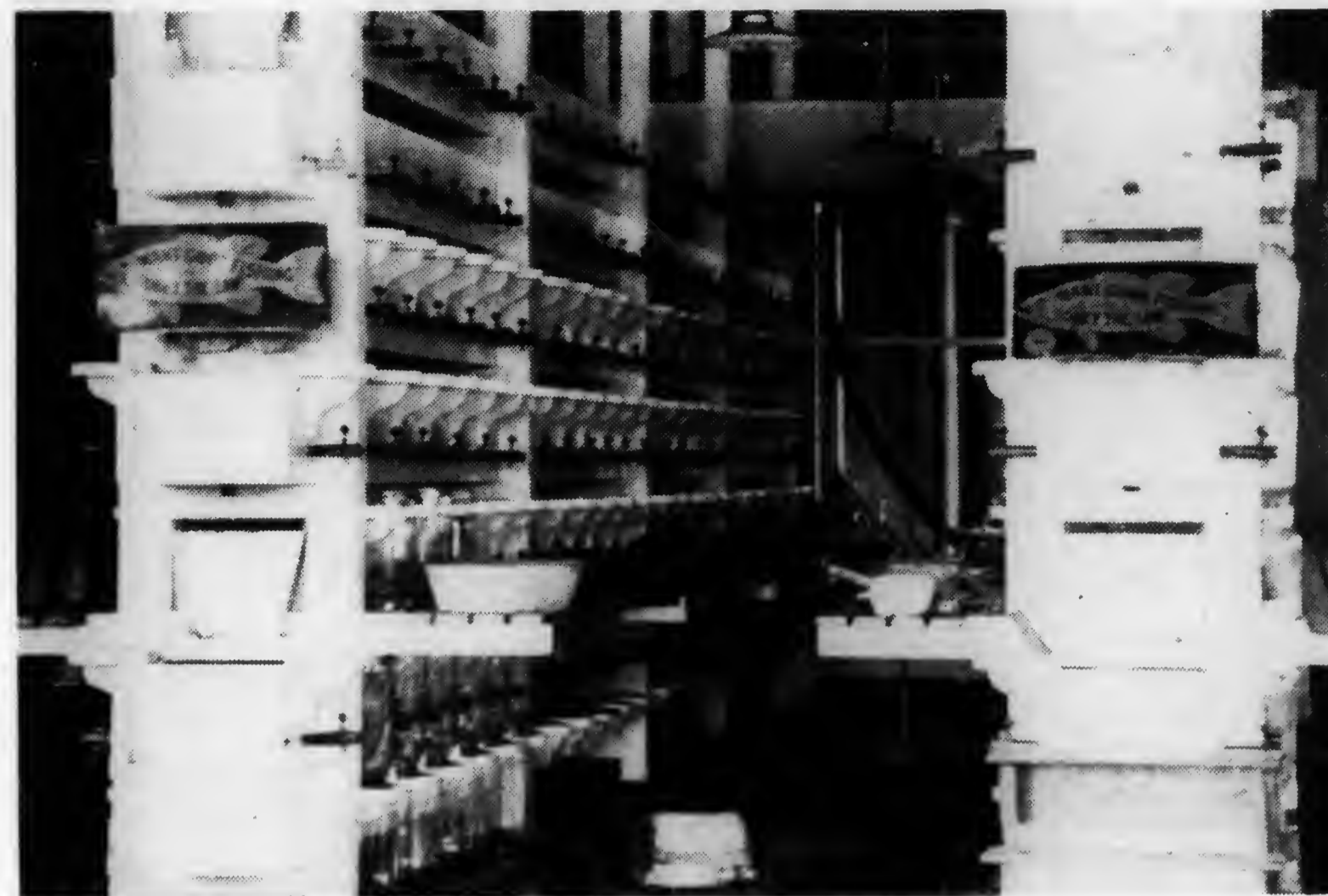
Bureau of Public Information is maintained on where to fish.
Information furnished free of charge.

Pennsylvania has many excellent waters for trout, bass, wall-eyed pike, muskellunge, sunfish, catfish, etc., located in various parts of the Commonwealth.

A booklet on the subject is available to those interested and at the same time for those who are non-residents of the State, a map and booklet of accommodations is also available.

By getting in touch with the Pennsylvania Fish Commission at Harrisburg, information will be supplied on the locality where the fisherman desires to go or he will be referred to waters in various parts of the State which should be to his liking.

Remember the Pennsylvania Fish Commission is ready and willing to serve the fishermen at all time.



ERIE HATCHERY
Battery of Jars Used in Incubation of Pike Perch

SUMMARY OF PRINCIPAL ACTIVITIES

During the period of this report, the Fish Commission maintained a high standard in all activities and increased production which is its main function, thereby contributing to the recreation of the many citizens of the Commonwealth during those years when it was so sorely needed.

The main thought was to cooperate to the fullest extent with the war effort and at the same time endeavor to preserve those things which our fishermen cherish and for which so many thousands were fighting on our far-flung battle front.

Those who remained at home had their fishing greatly curtailed by long hours of work. The serious shortage of gas made it impossible to reach favorite fishing grounds, but fishermen as a whole accepted the restricted fishing and like any other good citizen, cooperated in every way possible toward helping to win the war.

The following is a complete report of the various activities.



BELLEFONTE HATCHERY
Cold Storage House

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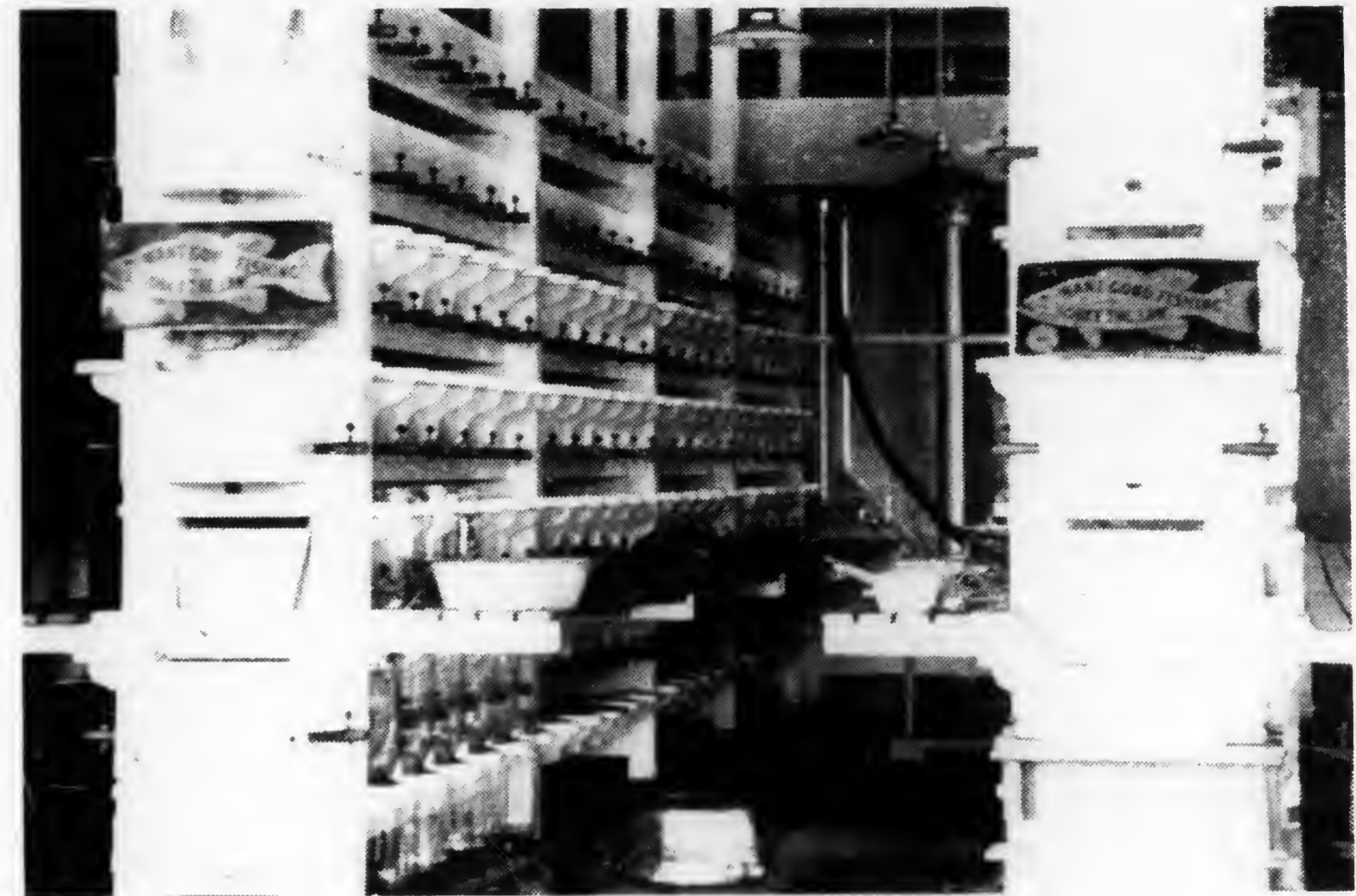
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**COMMONWEALTH OF PENNSYLVANIA
BOARD OF FISH COMMISSIONERS
Harrisburg**

Fish Stocked in the Waters of Pennsylvania—1945

<i>Species</i>	<i>Approximate Size</i>	<i>Number</i>	<i>Total</i>
Brook, Brown and Rainbow Trout	7" to 20"	1,575,905	
Black Bass	1" to 14"	414,685	
Catfish	5" to 13"	261,145	
Bream	3" to 8"	199,836	
Frogs (Embryo)		323,500	
Carp	10" to 20"	86,970	
Yellow Perch	Adult	47,495	
Suckers	3" to 5"	5,850	
Minnnows	1½" to 6"	97,136	
Pickerel	7" to 18"	2,212	
Calico Bass	7" to 11"	9,270	
Pike Perch	Adult	1,028	
Goldfish		130	
			3,025,162
<i>Fry and Fingerling</i>			
Trout	Fingerling	1,982,988	
Yellow Perch	Fry	56,250,000	
Blue Pike	Fry	870,000	
Pike Perch	Fry	525,000	
Cisco	Fry	2,520,000	
			62,147,988
Grand Total			65,173,150



REYNOLDSDALE HATCHERY HOUSE AND PONDS

HATCHING, PROPAGATION, AND DISTRIBUTION

Through the excellent cooperation of the Board's many employees, the work at the hatcheries maintained a high standard and distribution was increased over that of previous years. More than fifty employees were in the service and those who remained took pride in doing their part to maintain fishing.

BASS

Due to the marked success in growing bass in the portable tanks and wire nursery batteries sufficient brood bass were acquired to produce the offspring, and ample nursery areas were allotted. Increased production was necessary because of the increased acreage of waters to be stocked under the policy of stocking bass in lakes and ponds of over 40 acres.

It is gratifying to report that both spring and mid-season stocking programs have been maintained which were the heaviest in the history of the Commonwealth.

During 1945, the following fish were distributed. This represents fish which in most instances were able to care for themselves and were distributed with the assistance of those who are members of the various sportsmen groups throughout the Commonwealth.

COMMONWEALTH OF PENNSYLVANIA
BOARD OF FISH COMMISSIONERS
Harrisburg

Fish Stocked in the Waters of Pennsylvania—1945

<i>Species</i>	<i>Approximate Size</i>	<i>Number</i>	<i>Total</i>
Brook, Brown and Rainbow Trout	7" to 20"	1,575,905	
Black Bass	1" to 14"	414,685	
Catfish	5" to 13"	261,145	
Bream	3" to 8"	199,836	
Frogs (Embryo)		323,500	
Carp	10" to 20"	86,970	
Yellow Perch	Adult	47,495	
Suckers	3" to 5"	5,850	
Minnows	1½" to 6"	97,136	
Pickrel	7" to 18"	2,212	
Calico Bass	7" to 11"	9,270	
Pike Perch	Adult	1,028	
Goldfish		130	
			3,025,162
<i>Fry and Fingerling</i>			
Trout	Fingerling	1,982,988	
Yellow Perch	Fry	56,250,000	
Blue Pike	Fry	870,000	
Pike Perch	Fry	525,000	
Cisco	Fry	2,520,000	
			62,147,988
Grand Total			65,173,150



REYNOLDSDALE HATCHERY HOUSE AND PONDS

HATCHING, PROPAGATION, AND DISTRIBUTION

Through the excellent cooperation of the Board's many employees, the work at the hatcheries maintained a high standard and distribution was increased over that of previous years. More than fifty employees were in the service and those who remained took pride in doing their part to maintain fishing.

BASS

Due to the marked success in growing bass in the portable tanks and wire nursery batteries sufficient brood bass were acquired to produce the offspring, and ample nursery areas were allotted. Increased production was necessary because of the increased acreage of waters to be stocked under the policy of stocking bass in lakes and ponds of over 40 acres.

It is gratifying to report that both spring and mid-season stocking programs have been maintained which were the heaviest in the history of the Commonwealth.

During 1945, the following fish were distributed. This represents fish which in most instances were able to care for themselves and were distributed with the assistance of those who are members of the various sportsmen groups throughout the Commonwealth.

STREAM AND LAKE SURVEYS

Arrangements have been made for the employing of a competent aquatic biologist to supervise a stream and lake study to determine a stocking policy for all waters.

This will be a most important function of the Board and will include the gathering of data showing what species of fish now predominate, what is necessary to create ideal conditions for growth and reproduction—the carrying capacity—size, and how many, to fully utilize the food resources—and other information which might prove beneficial in making the waters more productive.

The war made it necessary to postpone all stream and lake investigations as the entire personnel entered the armed service.

PROTECTION

This is one of the three major functions of the Board. About 25 per cent of the men entered the service and owing to the man power shortage it was not possible to fill the vacancies with men of the necessary requirements to carry on the work. This made it necessary to redistribute the various districts throughout the Commonwealth so the men who were left could cover those areas and give at least some protection.

The majority of those in the service returned and protection will be returned to normal before the end of the year.

The war made it necessary to discontinue the officers' training school which was so valuable to the operation of this branch of the service. It is hoped the school can be reopened in 1947.

VISUAL EDUCATION

The Board completed excellent motion pictures in color depicting various activities of the Board. These were of great assistance during the war years when recreation was so important to our citizens who were engaged in the various industries. This program has been instrumental in creating new sportsmen groups and maintaining interest in the various activities of the Board.

JUNIOR CONSERVATIONISTS

Much progress has been made in the organization of Junior Conservationists groups in all sections of the Commonwealth. The future of conservation rests with the youth of tomorrow and the Junior



UNION CITY HATCHERY

Conservation groups have been doing a grand job. In most instances certain standards for the awarding of merit badges have been set up providing that those qualifying must know the principal natural resources of their locality—the principal fish, birds and animals—their seasons and how protected—and must assist in conservation projects, fighting forest fires, checking erosion, building shelters, planting trees, etc. A supporting program such as this will bear real fruit in the future.

LEGISLATION

At the 1943 session of the Legislature, legislation was enacted providing that for the duration of the war, any person with the necessary qualifications who is in service with the armed forces of the United States, shall be issued a fishing license upon application to any county treasurer within the Commonwealth without the payment of the license fee provided for the use of the Commonwealth.

At the 1945 session of the Legislature this legislation was further amended providing for the issuance of free fishing licenses for the duration of the war to those in the armed forces of the United States who are hospitalized or in a convalescent camp within the Commonwealth of Pennsylvania.

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Another popular amendment was one providing for the use of boats equipped with a motor not in excess of six (6) horsepower to be used in that portion of Pymatuning Lake extending from the main dam near Jamestown northwardly to the causeway at or near Espyville. This is a very popular recreational area located in portions of Crawford and Mercer Counties.

PENNSYLVANIA IS A POPULAR FISHING AND RECREATION AREA

In closing, it might be well to mention that Pennsylvania is a favorite State with fishermen and vacationists. During the last three years the number of those seeking recreation in Pennsylvania have grown beyond all estimates. Nineteen forty-six has witnessed a great increase in the number of fishermen in our waters. A conservative estimate indicates that we have 200,000 more than in any previous year, which means an army of well over 500,000 licensed fishermen.

VAST PROGRAM OF STREAM MANAGEMENT TO BEGIN IN PENNSYLVANIA

A program of stream and lake management, based on a painstaking and scientific study of the public fishing waters of Pennsylvania, will be begun next spring by the Board of Fish Commissioners, under the supervision of Professor Gordon L. Trembley, chief aquatic biologist of the Commission. Its purposes will be twofold:

1. To improve the fishing in lakes, ponds and streams.
2. To provide for the most efficient and intelligent use of the millions of fish of all species which are reared in the hatcheries of the State and distributed in public waters.

Mr. Trembley already is assembling equipment for the work at the laboratory of the Bellefonte Hatchery, which is to be enlarged to provide for the vast amount of research that will enter into the program. Because of its nature, however, the actual work cannot be begun until next spring.

The project is one which will take years to complete, for it entails a scientific study of all public fishing waters within the borders of the State. A similar project in a nearby State required fifteen years to complete.

It is emphasized that the program in no wise contemplates any reduction of the production of fish in State hatcheries and of the stocking program.

Stripped of technicalities, the plan is to survey lakes, ponds, and streams to determine their suitability for various species of fishes and then to maintain those waters at the peak of their fish-bearing capacity and efficiency.

"Perpetual stocking of State-grown fish never in itself will solve the problem of the tremendous pressure on our fishing waters," says C. R. Buller, chief fish culturist of the Commission, who is cooperating with Professor Trembley in the program. "Intelligent management of our public fishing waters is the only complete and permanent solution."

"This is no magic formula, no promise of over-night miracles," Mr. Trembley points out. "Successful completion of the project will require years of scientific study and work, plus the full understanding and cooperation of the sportsmen of Pennsylvania. Nor will the work begin in any sensational way. Of necessity, it must move slowly at first, but before it is completed we hope to extend it to cover every lake, pond and stream in the State."

Professor Trembley brings to the project extensive training and wide experience. Himself an enthusiastic fisherman, he began his scientific education at Hobart College, Geneva, N. Y., and later did three years of graduate work at Cornell University, specializing in fisheries biology.

He gained practical experience by assisting for five summers in a biological survey of the fishing waters of New York State, and for two years he was on the staff of the conservation department of that State, specializing in the management of fish hatcheries.

Later he became assistant professor of fish culture at the Pennsylvania State College, where he taught the subjects of limnology and fish culture and also conducted fisheries research work. At the same time he engaged in trout stream studies and surveys of the migration and growth of trout. During vacations he surveyed waters for private clubs in Pennsylvania, New York and Connecticut.

During the war he engaged in full-time teaching at the college and in extensive studies of farm ponds, including pond fertilization.

In the following, Dr. Trembley outlines his program of lake and stream management, the basic purposes of which is to establish a sound fish management plan for our public waters and hence to improve fishing in the public waters of the Commonwealth.

INTRODUCTION

Fisheries biologists now recognize that if we are to realize the greatest benefits from our inland waters it will be necessary to adopt a systematic plan of fish management. The first step in establishing such a program is to acquire basic data and general information on each individual body of water—whether it be stream, pond or lake. For only after a water area has been investigated from every possible standpoint and the factors contributing toward poor or good fishing assessed, will it be possible to manage that water intelligently.

In the past we have relied largely on one measure alone to provide good fishing—that is to stock more fish. In a State such as Pennsylvania the human factor is exceedingly important—the fishing pressure being so heavy that we cannot expect nature alone to produce sufficient fish to guarantee good fishing. This is particularly true of streams, which are apparently “fished out” more readily than lakes. For this reason fish propagation and stocking will perhaps always play a leading role in heavily-fished waters.

It is safe to assume that in the past some waters have been overstocked while others have been understocked. The basic reason for indiscriminate stocking of any water is usually a lack of knowledge of the conditions existing in that water.

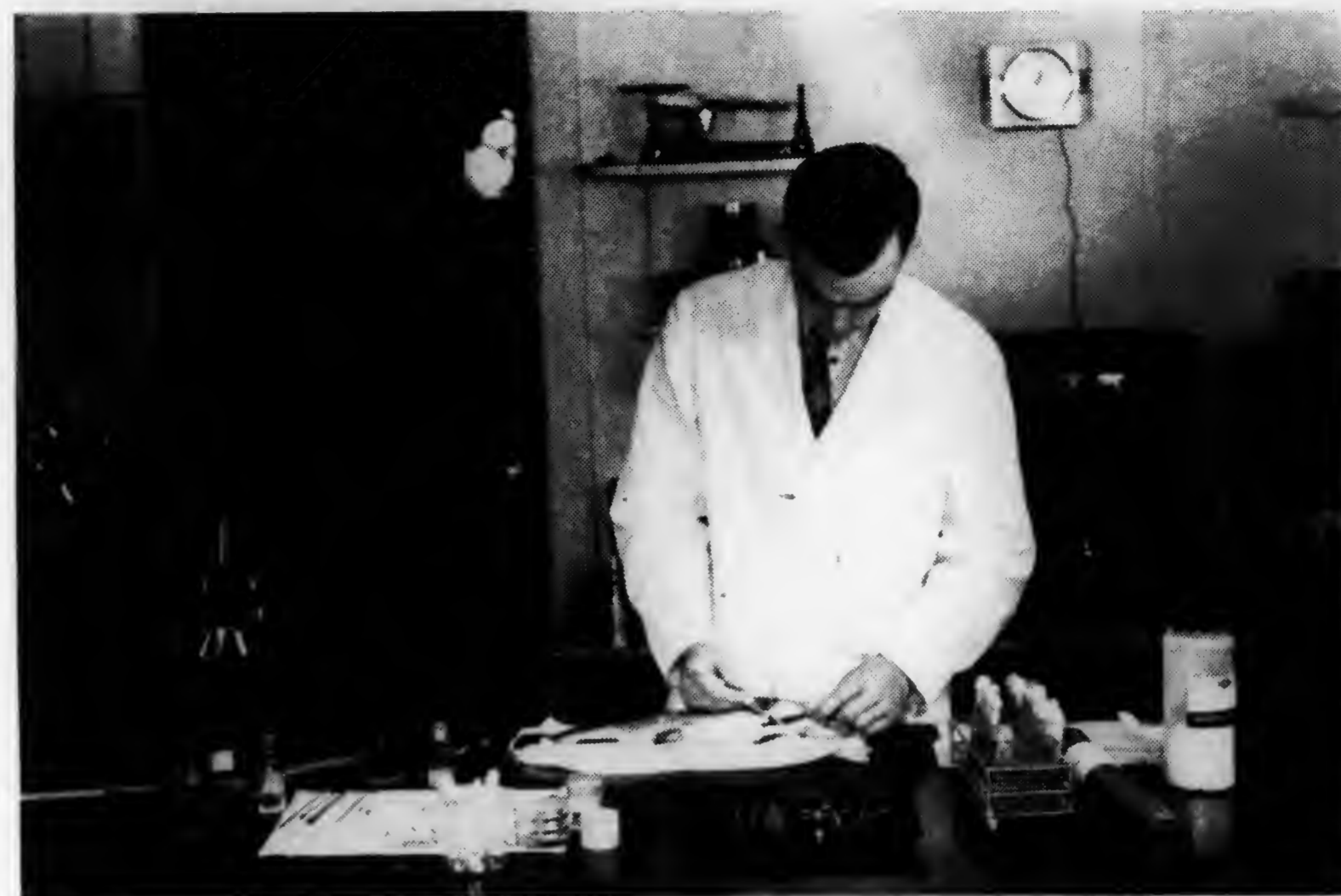
Therefore, in order to utilize the hatchery output to the greatest possible advantage and to proceed toward a sound management plan for the waters of the Commonwealth, the following proposals are made:

1. That a comprehensive study of all public fishing waters of Pennsylvania—to be known as a Stream and Lake Survey—be undertaken as soon as is expedient.

2. That whenever special problems arise, either as a result of information obtained on the Survey, or otherwise, they be investigated.

3. That the information obtained in one and two above be made available for use to the members of the Board and to the Chief Fish Culturist and that the Pennsylvania Fish Commission publish these findings as reports for the public.

An outline for the proposed investigations is given:



BELLEFONTE HATCHERY

Pathologist Arthur Bradford Examines Trout

I. A STREAM AND LAKE SURVEY OF PENNSYLVANIA

Objectives: 1. To provide information for a sound stocking program.

2. To build a management plan for the public fishing waters of the State.

Previous work and present outlook on the subject: Before the war a limited survey of streams and lakes was begun in Pennsylvania. This was abandoned during the war and has been carried on by one or two men since that time. Because of insufficient personnel this work has become largely one of “trouble shooting,” that is the investigation of only those waters where the greatest problems existed.

Other States such as New York, Michigan, Connecticut and Maine have either completed or are now conducting such programs. Results of these investigations have been published and are now available.

Procedure: The waters of the State are largely drained by several river systems, outstanding among which are the Ohio, Susquehanna and Delaware. One of the first steps will be to select an area for investigation such as the West Branch of the Susquehanna or the

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Upper Delaware. The area selected will then be the subject of intensive investigation until all waters there have been covered. From there the Survey will move to adjacent waters and proceed in this manner until the entire State is covered.

A general outline for procedure follows. The work on lakes will naturally vary from that on streams but, for the sake of brevity, both types of work are grouped together.

1. *History*: Planting records, fishing intensity, fishing success.

2. *Physical Studies*: Altitude, character of watershed and shore line, fluctuations, tributaries, springs, barriers, diversions, gradient, width, depth, volume, velocity, temperature, type bottom, cover, color of water, accessibility.

3. *Chemical Studies*: Chemical analysis of water, source and type of pollution, analysis of bottom soils.

4. *Biological Studies*: Fishes present, age groups, fish populations, vertebrates other than fishes, aquatic vegetation, kinds and abundance of fish food, plankton studies, bottom food, organisms studies, parasites, predators, spawning areas and success of natural propagation, turbidity, effects of pollution on plant and animal life.

5. *Special Studies*: (See later.)

6. *Recommendations*: The information gathered will be used to write a recommendation for the management of each water.

Personnel: The Survey should probably start on a small scale until the proper equipment and personnel can be obtained and the many problems of techniques and methods worked out. When the Survey gets into "full swing" it will be necessary to have the services of a chemist, a botanist, an ichthyologist and perhaps other specialists. These men would be hired during the summer months and would prepare a report of their findings.

Duration: Such a program is a long-range one. It is impossible to state how long it would require to cover all public waters. Within certain limits, the greater the number of personnel the sooner the work can be completed.

II. SPECIAL PROBLEMS

Several important problems now exist in the waters of the State and undoubtedly many others will appear as the waters become better known. It is proposed that these problems be investigated when opportunity permits. Several examples are given below.

Creel Census: A criterion for the success of any fish planting is the number of fish from such a planting which are caught by anglers. Information on this very important problem may be obtained by employing a creel census. As commonly used, this involves the mark-



Pathologist Arthur Bradford Litrates Water Sample as Clerk Budd Brooks Looks On.

ing of the fish planted and a creel check during the fishing season. It yields information not only on the percentage of planted fish recaptured (and hence the value of the planting) but also data on the relative efficiency of spring, open-season and fall plantings and on the movements of fish after planting. Creel censuses have been found to be extremely valuable for such purposes, in fact they represent at present the only means of evaluating the success of plantings. A single creel census was conducted in Spring Creek, Centre County, in 1939. The results are now available in published form. It is suggested that, when facilities and personnel permit, creel censuses be used in a number of representative selected areas in the State. A further source of information can be used in collecting general data of this kind. This is by utilizing wardens to collect such information as number of fishermen per unit area of water, and creel checks. When collected over a period of years, this data would be of considerable significance.

Experimental Management: As the waters of the State are studied and are better understood it will be advisable to carry on certain trial management plans in selected waters. For example, it is now known that some lakes hold too many species of fishes and that as a result, fishing is poor. Here it might be well to remove the entire population, by radical means if necessary, and then set up a new combination of species in the proper balance.

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An all too frequent complaint of fishermen in some areas is that the fish are all small. Obviously planting more small fish here would not help the situation. A special study of this problem should be made.

Scale Studies: Scale studies have been found to be an excellent means of checking the growth rate of fishes. A series of bass scales, collected largely by wardens, has been used to determine the average growth in various waters of the State. Although the collection is relatively small, several important points have been brought to light in this study. For example, some waters of the State are producing 10-inch bass in two years, whereas, in other waters as much as four or five years are required to attain this length. This imposes the question as to why bass should grow twice as fast in one water as in another. Other interesting cases have arisen from this study.

It is important that this study be continued and expanded and that the problems arising from such studies be investigated. Scale studies will prove to be a major means for checking the growth rate of any standing population of fishes. To that end it is suggested that wardens cooperate even more than in the past in the collection of scales. A special attempt should be made to obtain scales from "problem" types of waters. Collections will be made from all waters studied on the Survey.

Water Fertilization: The high fish production obtained in ponds which have been artificially fertilized is well known. It is safe to say that fertilizers will play an important part in future management plans for standing waters. We need more basic experiments on fertilizing Pennsylvania waters. We need to know, among other things, within what size limits of lakes fertilization is feasible.

New Waters: There is a definite trend in the country today to build dams, thus impounding new waters. It is reasonable to expect that many new water areas will appear in Pennsylvania in the future. As the Pennsylvania Fish Commission will undoubtedly be called upon to manage these waters, we should begin experiments at once to determine the best means of handling them.

Temporary Surveys: Frequently there will be a need for immediate investigation of waters which are not being currently covered by the Survey. Such questions as the conditions of certain streams in midsummer, legal aspects (ownership, postings), accessibility and recent pollutions often must be answered before fish plantings can be made. Hence, there is a definite need for such "trouble shooting" and this work should continue. The results of this type of work will be of immediate use in the stocking program and will be correlated with the future operations of the Survey.

JUNIOR CONSERVATIONISTS

JUST WHAT IS A BOY?

A boy is a bundle of mischief, decorated with tousled hair and freckles. He doesn't like to work, or to study, or to get dressed up. He has an enormous appetite and a flare for adventure.

He asks questions all the time . . . gets under your feet when you are busy . . . pesters you for nickels and dimes to spend . . . yowls when somebody scrubs behind his ears.

It's a relief at times to get away from his noisy clatter.

But wait!

A boy also is the man of the future. He will carry on what you have started . . . make and enforce your laws . . . sit in your legislatures and congress and courts . . . run your churches and prisons, your schools and corporations . . . take the fate of humanity into his hands.

So—Instead of running away from his clatter, make him your buddy. Mould his character and his ideals and his ambitions.

The real problem facing conservationists today is the education of the youth of the country, and we believe Pennsylvania has accomplished as much as any State in the Union.

There are approximately one thousand organized clubs and associations and they have shown a keen interest in the younger generation. It is through these various groups that much progress has been made.

Many children's pools have been established and thousands of youngsters under the license age are being cared for.

The project at Spring Creek which is known throughout the country is teaching many youngsters the rudiments of good sportsmanship. Instruction is also given in the art of fly fishing.

As we have said many times before, when these groups are taken out into the open they certainly are going to be better representatives of the community in which they live, and eventually, citizens of which you and I can well be proud.



YOUTH

*The hope of yesterday
The expectation of today
The promise of tomorrow.*

STREAM POLLUTION

By HONORABLE JAMES H. DUFF

Attorney General of the Commonwealth of Pennsylvania



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The pollution of the streams of Pennsylvania has proceeded unchecked for more than a century. Insignificant at first, it has grown with the development of mining and industry and the expansion of congested areas of population. In recent years and particularly since the outbreak of World War II, pollution has mounted so greatly and has now become so vast in the aggregate that it threatens the health, welfare and security of the people of the Commonwealth.

Almost all the great centers of population of Pennsylvania are now wholly dependent upon the streams of the State for domestic water supplies, as are the various enterprises of the State, large and small, for supplies of water for industrial uses.

Yet, preposterous as it is, the more we have become dependent upon our streams for every kind of water supply, the more we continue to add to their corruption. In some areas of the State not a single stream remains unpolluted, even to the smallest tributaries.



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An impartial examination of all the facts concerning our water supplies makes it clear that the continuation of the present course of pollution, considered in conjunction with the alarming decline in the levels of underground water tables, is bound to result in disaster.

Apart from the vital health and economic aspects of pollution, we have been grossly neglectful of our streams in their social implications.

Today in Pennsylvania the water of the great rivers in the most thickly populated areas in Philadelphia and Pittsburgh are so vile in their contamination that swimming is prohibited under penalty of the law. In these congested areas where recreation is so necessary for the welfare of the community almost all types of aquatic recreation have been practically eliminated by reason of stream pollution.

It is estimated that the City of Philadelphia pours into the great rivers traversing her boundaries approximately three hundred million gallons of raw sewage per day. Pittsburgh pours less raw sewage into the rivers per day only in the proportion that her population is less. With the high bacterial count, necessarily incident to such gross pollution, the full reliability of such water for domestic use, even after the employment of the most scientific methods of treatment, is open to serious challenge.

There is definite evidence that the great wave of gastro-enteritis that descended from one city to another down the Ohio River Valley during the extremely low water in the drought of 1930 was water-borne.

In the terrible and mysterious disease of infantile paralysis, while it has not been demonstrated that the virus is disseminated through public water supplies, neither has it been disproven. Tests have satisfactorily established the conclusion that the activated sludge treatment of sewage will destroy the polio virus, indicating the further wisdom of treating sewage instead of discharging it untreated into our streams.

In the aftermath of the current war, with the inevitable introduction into the United States of deadly viruses and germs and diseases from all the dark corners of the world and the consequent and inevitable dissemination of new kinds of fecal poisons into our streams through untreated sewage, our post-war plans must anticipate greater not less challenges to public health through stream contamination.

The pollution of our streams by mines, mills and municipal sewage is highly menacing to industry itself. Right now pollution has a tendency to challenge the industrial supremacy of the State so far as concerns Pennsylvania as the best location for industrial enterprise.

The United States Army Engineers' Report to the Secretary of War in 1943 estimated that in the area adjacent to Pittsburgh alone more than one million tons of acid waste per year is dumped into the streams. In this locality it has been established that acid wastes cause calculable damage to installations of two million dollars a year without endeavoring to compute the great amount of intangible damages almost impossible of ascertainment. Like or similar damage is caused elsewhere in the streams of the State, varying only in degree dependent upon the amount and kind of pollution. It is sheer folly to contemplate with equanimity the continued growth of a menace that thus threatens every phase of the activities of the people of the Commonwealth. Water is necessary not only to live but is almost as essential in order to make a living.

The principal sources of stream pollution may be succinctly listed as follows:

- I. Industrial Wastes.
- II. Municipal Sewage.
- III. Mining Operations.
 1. Sulphuric Acid Water from mine drainage.
 2. Coal wastes and silt from mining and processing operations of anthracite coal.
 3. Deterioration and gradual erosion and washing away of old mine dumps.
 4. Washing away and deposit in streams of loose soil and rock debris from coal stripping operations.
- IV. Soil Erosion.
 1. From unscientific farming.
 2. Improper deforestation.

I.

Of the various kinds of pollution in our streams that caused by Industrial Wastes is probably the most easily reparable. Industry is not only better organized to decide upon and bring about desirable plant changes but is also equipped better financially to make them immediately effective.

From the technical legal viewpoint almost all industrial waste in our streams is violative both of the common and statutory law of our State, despite the fact that it has been permitted to continue almost unmolested.

Rather than await the termination of the war to institute a vast number of suits on a State-wide basis, or such other measures as might then seem desirable, the Department of Justice determined to write the heads of the various industries of the State, apprising them of the great seriousness of the existing situation and requesting them to make plans now for installations after the war, when material is available, to end industrial waste in our streams as far as the same is reasonably practical.

At this point it seems desirable to define what is meant by reasonably practical; because it might be interpreted as indicating that the purpose was merely to seem to want to clean up the streams without really intending, in fact, to seriously try to do so. Very definitely this is not the purpose. On the other hand it should be made perfectly clear that in an industrial age like our own it is not physically possible to restore the streams to their pure and uncontaminated condition as they were when this State was agricultural rather than industrial as it now predominantly is. There are, however, definite standards of good water for an industrial age and it is those good standards that our program should attempt to attain.

A spot check on the replies so far received from the heads of industry in Pennsylvania indicates not only that industry generally realizes the existing dangers of our water supplies but also that it is willing to make the installations requisite to bring about the fundamental change necessary to provide a general cleanup of the streams of Pennsylvania. Needless to say, those refusing collaboration will be proceeded against in due order by process.

II.

Municipal Sewage presents a more difficult problem on the financial side. Many municipalities do not have the borrowing power, under the State Constitutional Debt Limitation Restriction, to raise the funds necessary to purchase and install the required facilities for sewage disposal. This seems to be the greatest barrier. To meet this objection it is suggested that Municipal Sewage Disposal Authorities be established to be operated on commercial basis. The disposal of sewage is just as necessary and proper a municipal function as garbage disposal or fire and police protection and in the end just as vital to the welfare of the community as the furnishing of gas, electricity and water. Certainly with the great quantities of sewage to be disposed of and the relatively fixed quantities per unit of population to be counted upon, a reasonable charge per unit could be made that would assure the soundness of the investment undertaken to provide the facilities for the disposition of such sewage.

Under existing conditions in the Commonwealth the installation of municipal sewage disposal plants is neither a fad nor a luxury but a definite necessity. This is a Post-War public work of the kind that would add permanently to the welfare and security of the people of the State.

III.

Of the various kinds of pollution caused by mining operations as outlined in the foregoing schedule, all are capable of solution by known and available methods with the exception of acid mine drainage.

The use of these available methods should immediately be made compulsory by amendments to existing statutes or process or both.

Coal wastes and silt from mining and processing operations of anthracite coal have heretofore been dumped unrestrictedly and directly into the streams on which the plants were located.

This practice has resulted in vast accumulations of silt in such streams of which the Schuylkill is a conspicuous and terrible example. Much of this silt represents vast waste of natural resources because it contains a large percentage of reclaimable and usable coal. The accumulation of this silt in stream beds has become a serious public menace, by creating mud and silt flats that interfere with boating and other aquatic sports, by filling up water intakes and interfering with municipal water supplies, by amalgamating with municipal sewage in the bottom and banks of the stream and creating a health hazard, and by maintaining a permanent threat to industry and population in low-lying areas by making almost certain the overflowing of the streams in times of high water as a result of the clogging of the channels.

The Department of Justice has ruled that with presently available facilities the corruption of streams by the aforesaid methods is an actionable wrong and the Commonwealth has joined with the City of Philadelphia against a large number of companies to prevent the continuation of this practice. A large number of other actions will be initiated unless pending negotiations for amicable compliance are promptly forthcoming. Definitely this phase of the corruption of water supply can very clearly be solved beyond a preadventure by an amendment to existing law unqualifiedly outlawing the practice.

By like or similar methods the silt deriving from the gradual erosion and washing away of old mine dumps will be adequately disposed of.

Among the remaining phases of pollution for consideration is the deposit in streams of rock debris and loose silt from coal stripping operations. These coal stripping operations, in so far as they leave loose material that will readily find its way into the streams, are subject to the same criticism and for the same reason as that urged against the deposit coming from anthracite operations. A bill to amend this situation should and will be presented at the coming session of the General Assembly.

Acid mine drainage presents a considerably more difficult and formidable problem; so difficult and formidable in fact that the mine operators seem to have taken for granted that it was a necessary evil about which nothing could or would be done. The frightful devastation already wrought by acid mine water, especially in the bituminous fields of the State, is now on so gigantic a scale that it can no longer be placidly accepted with unconcern; particularly when it is realized that the present enormous damage has been caused in mining less than one-third of the available coal with two-thirds still to come.

In the way of prevention, existing laws should be amended to provide that no unpolluted waters may be polluted by acid mine water without a State permit being first granted and no such permit should be granted in any case where it should prove to be reasonably practical to pump acid waters into nearby streams already polluted.

In the opening of new coal fields, rather than pollute clear waters where the distance to polluted waters is so great as to make drainage transportation thither by the individual operators prohibitively expensive, the State in the public interest should pay such part of the cost as it might be definitely determined to be impracticable for the operator to pay, whereby such streams could be saved. These facts should be determined by a commission set up for that purpose or by some present existing agency of the Commonwealth.

As to streams already polluted by acid mine drainage, certainly some plan should be devised and restrictions imposed, whereby at least primary treatment should be made of acid waters at operating mines rather than dump them absolutely untreated into the public water supply. As to abandoned mines, there should be a requirement that all openings should be sealed at the expense of the owner and further statutory restriction should be immediately imposed requiring all stripping operations around the face of coal to be refilled so that it will be possible after abandonment to seal off the air from the coal seam and thus prevent the formation of acid mine water.

Since production of bituminous coal is so vital to the prosperity and welfare of the Commonwealth and since also it is highly com-

petitive with coal produced in other States which strive for the same markets, the Commonwealth very properly could and should appropriate a substantial sum of money biennially to contribute toward the scientific solution of the problem of the elimination of sulphuric acid from waste mine waters. A regular and reasonable expenditure of public money for this purpose would seem very definitely in the public interest.

IV.

The last enumerated source of pollution, by Soil Erosion, is actually covered by the report on Land, Use and Conservation submitted by Dean S. W. Fletcher of the School of Agriculture of the Pennsylvania State College and the Honorable Miles Horst, Secretary of Agriculture.

In conclusion it ought to be emphasized that now is definitely the accepted time to do something aggressively on this most important problem. It has already been neglected far longer than the seriousness of the situation warranted. In some quarters the criticism will be made that the concern herein expressed is unwarranted. Any serious examination of the facts immediately dispels that argument. It will cost the State money, it will cost industry money, it will cost mills and mines money, and it will cost municipalities money, but it is money that must be spent and must be spent now because we face a problem that must be solved now. To defer action will cost a lot more money later and possibly it will then be too late.

PURIFICATION OF WATERS

(All prosecutions for violations are made at the direction of the Department of Health, Sanitary Water Board.)

There is no one subject which is of more importance to fishermen than that of pollution, or none which is receiving more attention.

This Board is and has been doing everything within its power to correct conditions and the entire warden service is at the disposal of the Sanitary Water Board for investigations and prosecutions on fish killings. Most of the fishermen are aware that the pollution of waters is under the control of the Department of Health, Sanitary Water Board.

Your Fish Commission was responsible for the prosecution of many violations, the correction of others, and where it was possible, accepted contributions in excess of the fine where considerable damage was done.

The penalty under the Fish Law is \$100.00. Our records show that during the time covered by this report, \$5500 was received in contributions in addition to the prosecutions which were made.

The Sanitary Water Board, of which the Commissioner of Fisheries is a member, has set up a well rounded program and for those who are interested we quote herewith an address presented by H. E. Moses, Chief Engineer, Pennsylvania Department of Health at the 35th Annual Convention of State Association of Boroughs, Reading, Pennsylvania.

PROGRESS IN STREAM POLLUTION CONTROL

By H. E. MOSES

Chief Engineer, Pennsylvania Department of Health

(Presented at 35th Annual Convention of State Association of Boroughs, Reading, Pa.)

The program of the Sanitary Water Board for Statewide control of stream pollution has now been underway for two years, and it may be profitable to consider what progress has been made and what the future holds. This is particularly true for this Association since the municipalities in the State are directly affected because of the necessity of providing for treatment of municipal sewage. Before reporting upon the present status of the program, it will be of interest to briefly review the conditions which led up to this effort of the Commonwealth to control stream pollution.

Pennsylvania is a State of many streams. It has been estimated that there are approximately 100,000 miles of named streams in the Commonwealth. There are six principal drainage basins; the Delaware River on the east draining 15 per cent of the State's area; next to it on the west is the vast Susquehanna River Basin which drains 50 per cent of the State's territory; and beyond that is the Ohio River Basin which drains about 35 per cent of the area. There are three smaller basins: the Genesee on the north; the Potomac on the south; and the Lake Erie watershed on the northwest.

Through these main rivers and their tributaries are drained the 45,000 square miles of Pennsylvania territory in which reside approximately ten million people. In this State there are a thousand incorporated municipalities comprising 49 cities, 923 boroughs, and one incorporated town. Outside of these places there are many areas densely populated, lying in the township territory and usually close to the incorporated municipalities. Beyond are the strictly rural sections of Pennsylvania.

All the cities of the State, most of the larger boroughs, and many of the township communities have public sewer systems, and through these systems there is contributed to the streams of the State vast quantities of untreated sewage. Although there are about 350 sewage treatment works, these in general are not found in the large communities where the great bulk of the sewage originates.

Added to the sewage contamination of the streams is that contributed by harmful wastes resulting from industrial processes. These are of great variety since Pennsylvania is one of the most important industrial States in the Union. Some of the most important from a pollution standpoint are the wastes from coal mines, steel mills, pulp and paper mills, tanneries, distilleries, canneries, milk plants, textile mills, dye houses, and many others. Such wastes added to the municipal sewage impose a heavy burden on the streams of the State.

This situation is of particular importance because most of our public water supplies are taken from surface streams. True, these supplies are protected by filtration and chlorination, but a supply taken from a contaminated stream is always under a potential hazard. Some eight million people in Pennsylvania use public water supplies; hence the significance of stream pollution in that connection is quite obvious.

The Pennsylvania Department of Health is 41 years old, having been created in 1905. During this entire period the Department has striven earnestly to bring about improvement of the streams of the State. Progress along that line has been made, although not of a spectacular character.

In 1905 the so-called Purity of Waters Act was passed giving the Department jurisdiction over the discharge of sewage into State waters. No jurisdiction was granted to control industrial wastes discharge, but power to do so was conferred upon the Sanitary Water Board, which is a Board within the Department of Health, in 1937. Additional authority was granted to the Board by an Act passed on June 4, 1945, which amended the 1937 Act and is usually referred to as the Brunner Bill. This Act relates to industrial wastes and extends the scope of the earlier laws, introducing some new features and increasing penalties for violation of the Act.

One significant thing should be noted in connection with the 1937 law. It marked a definite change in the conception of the use of a stream. Prior to that time it was customary to think of stream pollution generally as it might affect public health, without much consideration as to other uses of the stream; but in 1937 the term pollution was re-defined and the conception of clean and unclean streams was established. Consequently, pollution was defined as meaning noxious and deleterious substances rendering unclean the waters of the Commonwealth to the extent of being harmful or inimical to the public health, or to animal or aquatic life, or to the use of such waters for domestic water supply, or industrial purposes, or for recreation. This is a far broader conception of stream pollution than existed prior to the 1937 Act, and this same idea was

further emphasized in the 1945 Act and the restrictions made more binding.

Passage of the later laws reflects a change in the thinking of the public as relates to streams. Earlier, emphasis was chiefly placed upon the protection of streams used for public water supply and there was a passive tolerance of a measure of stream pollution. Not so today. The public are demanding first of all that they be furnished with a safe and acceptable water supply, but at the same time they are demanding clean streams. They must have a good appearance and must be suitable for bathing, fishing, and other forms of recreation. This demand has been upheld by court decisions establishing the right of the people to have their streams preserved against all other consideration.

SANITARY WATER BOARD PROGRAM

Thus, in 1944 Pennsylvania streams were carrying a heavy pollution load, accentuated during the war period. Realizing this and thinking the time favorable to inaugurate an extensive program of stream improvement, after careful deliberation the Sanitary Water Board undertook its present-day program of Stream Pollution Control. It was decided to make this of State-wide application because conditions everywhere throughout the Commonwealth were susceptible of improvement. It had the further advantage of universal application, thus relieving the Board of charges of discrimination against one municipality over its neighbor. All are treated alike, the only rule being that if they pollute State waters, this pollution must cease.

As a beginning, the Bureau of Sanitary Engineering made a careful appraisal of the streams of the State and placed them in three general classes, namely, those unpolluted from artificial sources, streams polluted by sewage and industrial wastes, and those impregnated with acid, particularly resulting from the mining and processing of coal.

The Sanitary Water Board then proceeded to give State-wide publicity to its program by holding ten hearings at different places throughout the Commonwealth and inviting the attendance of all those interested in the subject, such as municipal officials, industrialists, stream conservationists, engineers, chemists, and the average citizen.

The Board at each hearing explained in detailed fashion its purpose and aims, and announced its proposed policy of stream pollution control, to wit: that all sewage must be treated "at least to a primary degree" with such additional treatment that might be required in

individual cases; also, that an equivalent degree of treatment would be required of industrial wastes. An exception was made of sewage now being discharged into streams impregnated with acid mine drainage where it did not appear to be in the public interest to require treatment at this time because of the effect of the acid water on the sewage.

Following the hearings, the Sanitary Water Board considered the verbatim notes made at the hearings and such briefs and other information as may have been submitted. Then it officially adopted the proposed Program of Stream Pollution Control and began the issuance of written official notices to municipalities and to industries.

These notices required the recipient to proceed with the preparation of plans for treatment works, the plans to be submitted to the Sanitary Water Board for approval within approximately one year, and to make quarterly reports as to the progress being made. The degree of treatment required was specified in each case. It should be noted that this is a requirement for the preparation and submission of plans only and not for the actual construction of the plant. That will follow at a later date when conditions for construction are more favorable than at present.

As of June 1, such notices have been sent to 508 municipalities and institutions, and to 352 industries discharging harmful wastes to State waters. Additional ones will follow until all known polluters have been included.

Of the municipalities under notice, 239 have retained the services of engineers for preparation of the required plans. This total does not include 126 municipalities in the metropolitan Pittsburgh district. In Allegheny County, the Allegheny County Sanitary Authority has been established, one of whose purposes will be to handle at least the preliminary phases of report and plan preparation for the 126 municipalities in that area. This number added to the 239 municipalities above, increases the total number of municipalities providing engineering services to 365, or more than half of those notified to prepare plans. This indicates real progress, especially since some of the municipalities were not notified until quite recently.

Not included in the above totals are notices issued to anthracite coal operators requiring them to adopt measures to prevent the discharge into State waters of coal mine silt. 152 applications have been received from anthracite collieries for approval of plans for treatment works, this covering nearly all of the anthracite coal breakers using the wet method of coal preparation. As a matter of fact, a number of treatment works have already been constructed, and a

large volume of silt which under former conditions would have reached the streams is now being reclaimed. Delay in building similar works has been occasioned chiefly by the difficulties in obtaining labor and materials.

The effects of the silt control program of the Sanitary Water Board are already being felt by the dredgers of coal from the rivers and tributaries. A partial survey of this matter disclosed that the amount of coal entering the streams from anthracite collieries has been reduced over the past year, and a number of the operators are anticipating the time when it will no longer be profitable to operate.

An interesting phase of the silt problem is the removal of approximately 30,000,000 cubic yards of silt from the Schuylkill River. The Water and Power Resources Board received an appropriation of \$5,000,000 to begin such removal from Norristown to the headquarters of the Schuylkill, and request has been made of the Federal Government for similar removal of the silt deposits from Norristown in the mouth of the stream at Philadelphia. It is understood that actual removal of the silt will begin in the near future, making a start in a program which will extend over a period of five or six years.

Another phase of the mine drainage problem is that of the acid water which in general is exempted from the provisions of the anti-stream pollution laws. Some modification of this exemption was made by the Brunner Bill in 1945, making unlawful such discharge into "clean waters" of the Commonwealth which are being devoted or put to public use at the time of such discharge. The Department of Health is authorized to divert acid mine water from the watersheds of clean streams to a point or points of discharge into streams already contaminated. Mine operators are required to file plans of their drainage systems and notices to this effect have been sent to 2500 operators of bituminous coal mines, and thus far more than 1500 mine drainage reports have been received.

In order to aid in this program, the 1945 General Assembly appropriated money to the Department of Health and specified four items of work relating to stream pollution control, namely, \$4,250,000 for State aid in the preparation of plans for treatment works; \$500,000 for mine sealing; \$1,700,000 for acid mine water diversion and silt control; and \$175,000 for research. This money is available until the purpose is accomplished, unless succeeding Legislatures make changes.

The money for State aid is an outright grant to municipalities, municipal authorities, or private corporations, the latter being confined to a limited field. Financial aid for the preparation of plans for treatment works may be given to municipalities and municipal authorities

in a sum not to exceed 50 percent of the actual cost of detailed construction plans and specifications of sewage treatment works, intercepting sewers, pumping stations and other necessary appurtenances, as approved by the Sanitary Water Board. The grant will be awarded based on percentages of the approved estimated cost of construction. They are higher for the small projects and range from 6.50 percent for works to cost up to \$10,000, to 3.30 percent up to \$10,000,000. The State's share may not exceed 50 percent, and the municipality or municipal authority must be responsible for the remainder. With the application for State aid there must be submitted an engineering report and a complete break-down of the estimated cost of construction. These estimates are to be based upon the 1942 price level, and the decision as to the amount of the grant will be made by the Sanitary Water Board, whose decision shall be final.

Municipalities may receive funds for the preparation of plans from the Post-War Planning Commission which received an appropriation of \$1,000,000 to assist municipalities in preparing plans for all types of public projects including water works and sewerage. Such aid is usually confined to the sewer collecting system, while the State aid from the Department of Health is applied specifically to plans for treatment works. A third source of revenue for post-war public works plans is from the Bureau of Community Facilities of the Federal Works Agency. \$1,128,396 were allotted to Pennsylvania for this purpose, and a bill is now in Congress to provide additional funds. While the money from the Department of Health and from the Post-War Planning Commission is an outright grant, that secured from the Federal agency is a loan without interest and must be repaid when the project planned with Federal assistance reaches the construction stage.

All of the foregoing provide assistance for the preparation of plans only. No money has yet been provided by either Federal or State agencies for the payment of cost of construction, although the matter has received consideration both in the Pennsylvania Legislature and in Congress. What the future holds in this respect cannot be predicted. However, this fact is clear—municipalities may receive Federal and State aid for the preparation of plans for treatment works which are needed to properly protect the waters of the Commonwealth.

It must be obvious that the program thus described is a long-term one, comprehensive in its nature, and will be far reaching in its effects. Despite difficulty in obtaining adequate competent personnel, your Department of Health has succeeded in building up its engineering force so as to enable it to undertake this program on a large scale. State aid can be granted to municipalities for plan preparation without undue delay.

Surveys are being made of mining territory with a view to the prompt beginning of mine sealing, whose beneficial results were demonstrated several years ago. Active work is underway in connection with the diversion of acid mine drainage, and the results of the silt control program have been recited above. Negotiations have about been concluded with the Mellon Institute for research on several problems relating to the contamination of our streams, and further projects in this field are under careful consideration.

Pennsylvania has set an example for the entire Nation, and its Program for Stream Pollution Control is being watched with great interest. The conditions of our streams today are the result of many years of bad practice and they cannot be corrected over night. However, definite progress along this line can be claimed, and with the cooperation of the public the effort now being made to restore the streams to a usable condition can be brought to ultimate success.

SAFE HARBOR FAVORITE OF HOSTS OF ANGLERS

Safe Harbor, site of the giant water power project on the Susquehanna River, has become the favorite fishing spot of thousands of Pennsylvania anglers. And as a result, it also is becoming known throughout the East for the big fish taken from its waters.

There are certain regulations imposed by the Safe Harbor Water Power Corporation, but the project supervisor and the guards report that the rules are carefully obeyed by the vast majority of visitors to the spot.

Fishing is permitted every day from daylight to dark, with no special restrictions when the angling is done from a boat. Many fishermen, however, prefer to fish from the draft tube bridge.

The season of good angling at Safe Harbor runs from March until the end of November.

There is excellent fishing for catfish, suckers, and perch during the months of March, April, and May. Also, plenty of big carp are taken from these waters.

Perhaps the favorite fish, however, is the walleyed pike, otherwise known as the Susquehanna Salmon. The best season for this species of fish is September, October and November.

Fishing for smallmouth bass also is excellent, especially in September, and the best method for this kind of angling is from a boat.

Plugs, bucktails, and other artificial lures of all kinds, especially for use with casting rods, produce excellent catches. Live baits ranked as favorites are minnows and stone catfish.

Thousands of anglers fish each season at Safe Harbor. From June 30 to July 13, 1946, a total of 2,331 anglers were registered here. Week-ends may produce anywhere from 300 to 400 anglers, and the opening day of the 1946 bass season had a total registration of 395 men, women, and children.

Salmon have been caught up to 9½ pounds. Thirty-inch channel catfish have also been taken at Safe Harbor.

In cooperation with the Board of Fish Commissioners, the Pennsylvania Water and Power Company installed a lighting system for the benefit of the fishermen, which permitted night fishing from the dams under their control.



A LANCASTER FISHERMAN GOING TO TRY HIS LUCK
AT SAFE HARBOR

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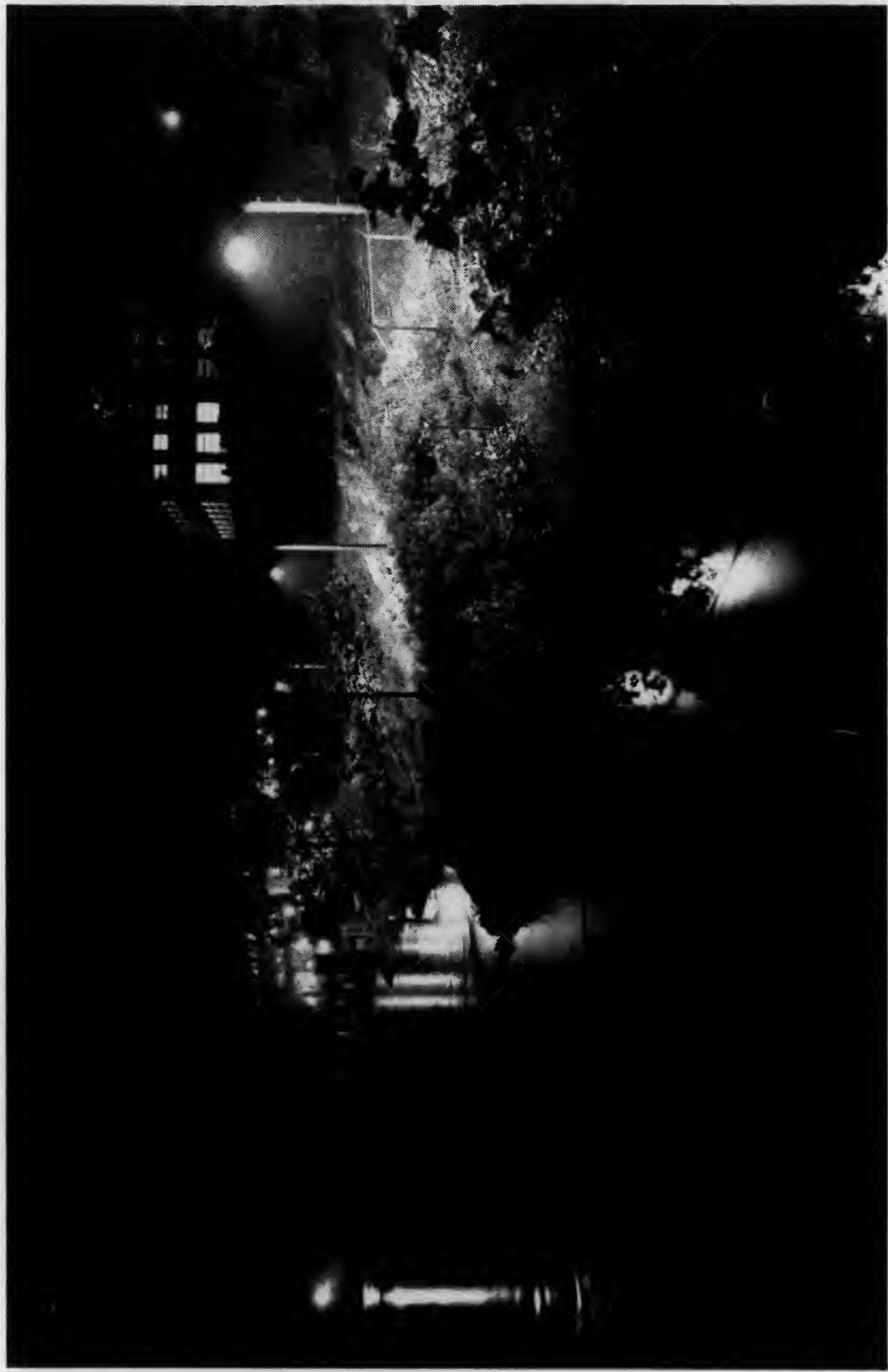
A LANCASTER FISHERMAN GOING TO TRY HIS LUCK AT SAFE HARBOR



NIGHT VIEW OF LIGHTING ALONG HOLTWOOD TAIRACE



FRANK BENTLY OF LANCASTER—TAKEN AT SAFE HARBOR DAM



NIGHT VIEW OF LIGHTING ALONG HOLLYWOOD TAIRACE



FRANK BENTLY OF LANCASTER TAKEN AT SAFE HARBOR DAM



FISHERMEN BELOW SAFE HARBOR TAILRACE



CHARLES HOAK OF LANCASTER HOLDING THREE SALMON



FISHERMEN BELOW SAFE HARBOR TAILRACE



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DELAWARE CANAL



ADMINISTRATIVE BUILDING AT SPRING CREEK PROJECT, BELLEFONTE

PENNSYLVANIA'S SPRING CREEK PROJECT BETTER KNOWN AS "FISHERMAN'S PARADISE"

There are thousands of miles of trout streams and hundreds of thousands of fishermen in the State of Pennsylvania—but a section of Spring Creek, in Centre County, that is only a mile in length produces more big fish and attracts more rabid anglers than any other stream, or combination of streams, in the Keystone State. And it is fished each year from approximately the middle of May until the middle of July, (season set by the Board) while the State trout season runs from April 15 to July 31.

They call it the Fisherman's Paradise.

In the 1946 season there were 21,882 anglers—including 3,409 women—registered at the Paradise.

They caught 29,906 trout, 9,469 of which they killed.

The biggest of the season—the biggest, in fact, since the Paradise has existed—was a brown trout 30½ inches long that weighed 17 pounds. It was landed by Francis Partsch, of Johnstown, Pa.

That gives a general idea of what fishing is like at the Paradise—of why it attracts fishermen from all over the East.

Spring Creek is a limestone stream of fairly large size. Fed by springs, its temperature remains relatively low during the summer. It contains an abundance of natural forage for trout. When the State Fish Commission decided to fence off a section of the stream and



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convert it into the Paradise, to be enjoyed under special regulations, it gave the fish some extra breaks.

Two large dams were constructed, to form deep, slow pools. Stumps and other obstructions were anchored in the water. Stone deflectors were built to serve not only to produce broken riffles but also to provide shelter for the trout in the stream.

The Paradise was heavily stocked with tackle-busting trout, easily obtained from among the brood stock at the trout hatchery which also is located along the stream. And, to make sure the supply would not run short, the Paradise is stocked weekly with hundreds of fine fish throughout the open season each summer.

A small brook which flows into the main stream also is included within the Paradise and is reserved exclusively for women and children. This stream also is liberally stocked.

For obvious reasons, fishing in a stream such as this under ordinary conditions would have but one result: A tremendous slaughter of fish—and fishing so easy that it soon would cease to be sporting.

But there are extraordinary rules at the Paradise.

No angler is permitted to wade in the water; nor may he have assistance from anyone in landing a fish, no matter how big it may be.

No bait of any kind may be used. In fact, mere possession of bait is regarded as evidence of a violation of the regulations.

No spinners may be used.

The angler must fish with wet flies, including streamers and buck-tails, or dry flies. But the hooks on which they are mounted must be barbless.

The visitor may catch as many fish as he pleases—or rather as he can—but he is permitted to kill only two, and once two fish are in his possession he must stop fishing.

Each person is limited to five visits to the Paradise each season, and on leaving the place after a day's angling he must report the number of fish he caught and must produce the fish he killed—to be measured and weighed and entered in the records.

The only requirement needed for fishing at the Paradise is a Pennsylvania fishing license, either resident or non-resident. There is no fee. The angler registers as he enters the Paradise, is handed a card on which the regulations are printed, and is given a large yellow button, bearing a number, which he must wear while on the property.

Fishing begins at a fixed hour each morning and ends at a fixed time each evening. A hoarse-voiced siren sounds the signal for the fishing to begin and bleats again when it is time for the anglers to pack up their tackle and start for home.

There is ample parking space, convenient good drinking water and toilet facilities, and a booth at which refreshments are sold.

The grounds about the Paradise are a well kept park—with shrubbery and trees just where they will vex the fly caster most. Part of



WINTER SCENE NEAR FISHERMAN'S PARADISE, BELLEFONTE, PENNA.

the project is in open country, and for the angler who likes to be as near nature as possible a section flows through a dense, rugged woods.

Fish wardens patrol the Paradise. They are for a double purpose—to apprehend violators and to help novice anglers. That they find the visitors a remarkably well behaved lot is attested by the fact that last year, with 21,882 registrations of anglers, there were fewer than half a dozen arrests for violation of Paradise regulations.

Catching the lunker trout in the Paradise is by no means easy, and the deflectors and other obstructions in the water are not the whole reason. In the limestone water of Spring Creek the trout have learned to feed on minute organisms. Not very often do the really large trout feed on the surface.

Bucktails and streamers are the most popular lures. Some of them run to enormous size.

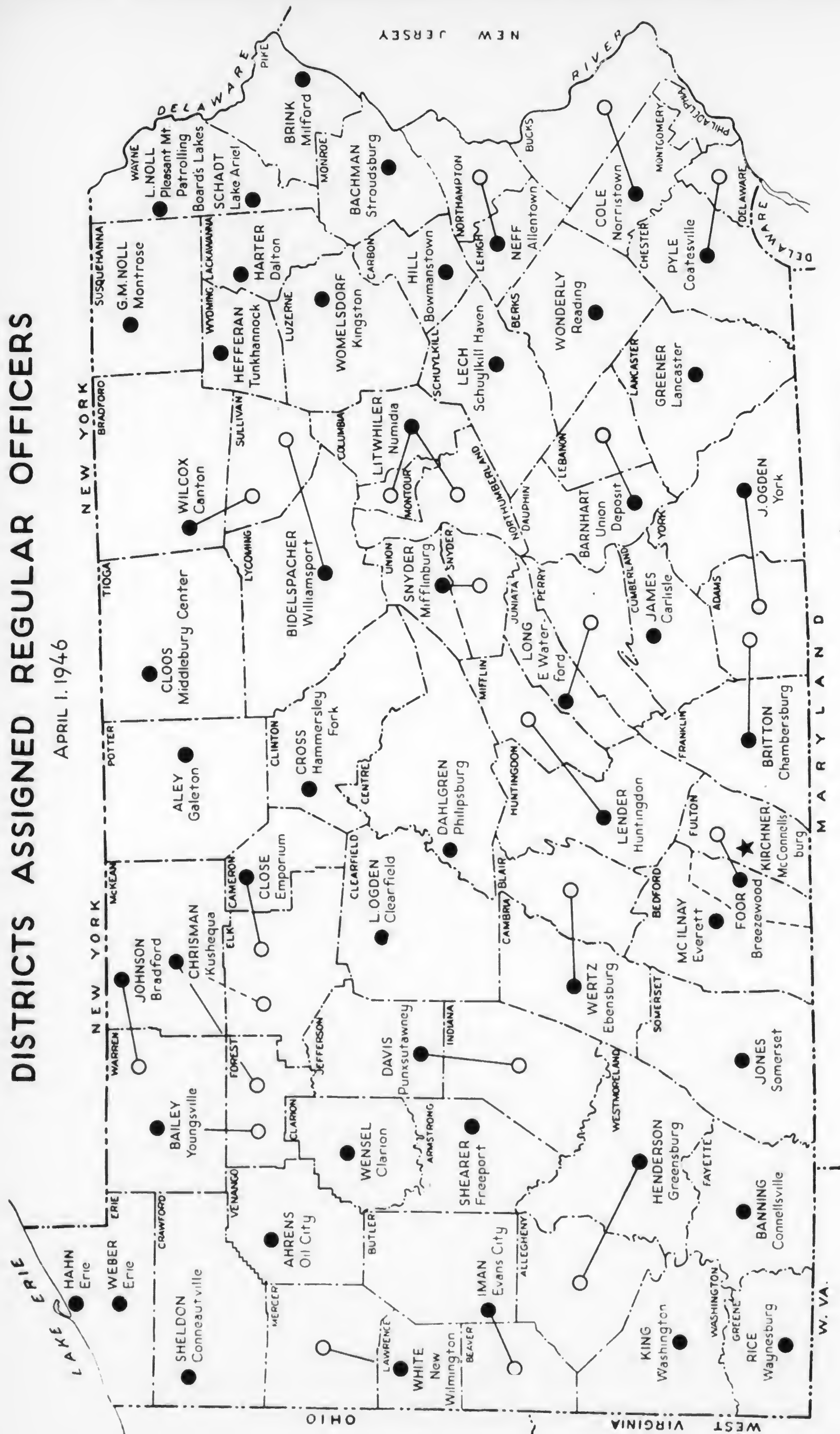
But tiny nymphs and wet flies also are good fish takers. The Johnstown angler, for example, took his record fish in 1946 on a wet fly in Size 16.

The trout are smart and wary too. So the angler often is in the position of having to use a fragile leader to fool the fish, even though the chances are ten to one that the fish he may hook will snap the leader as if it were made of sewing thread.

The Spring Creek project is only a few miles outside the town of Bellefonte, which is reached by Lakes-to-Sea Bus Line and the Pennsylvania Railroad, and is on State highway Route 220. There are ample hotel and tourist accommodations in the vicinity.

DISTRICTS ASSIGNED REGULAR OFFICERS

APRIL 1, 1946



★ On Military Leave



WARDEN FORCE

PROTECTION SERVICE

The protection service of the Board was considerably disrupted during the last few years as many of our men entered the armed forces—it was impossible to replace these men as those within the age group for officers were subject to military call.

At the outbreak of the war when so many men offered their services, the Board re-arranged the divisions and districts with the thought of rendering service to all communities. By re-allocating these districts it was required of officers to increase areas patrolled by 100 percent. During this year our force remained at about fifty regular men.

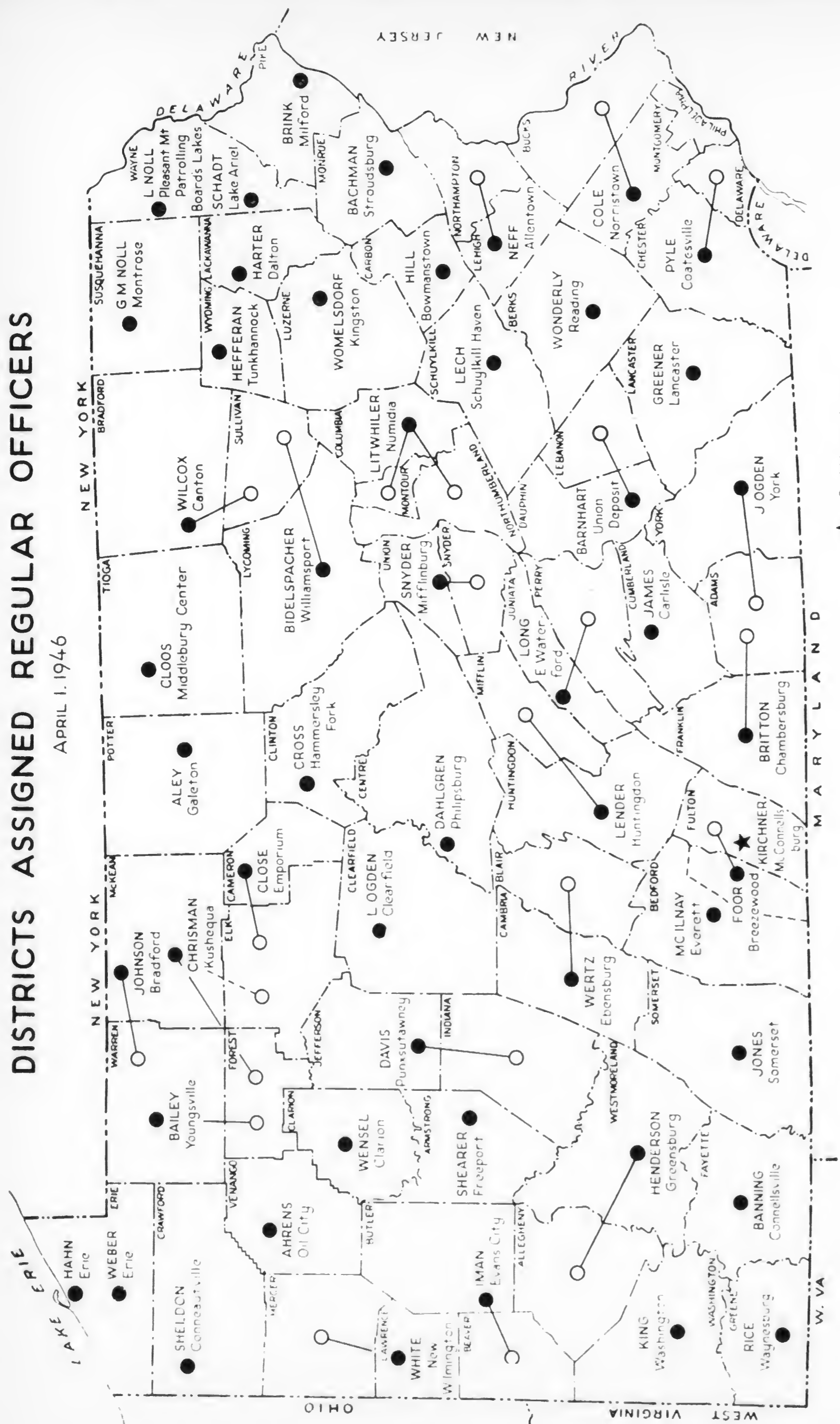
It was unfortunate that the regular training courses at the Spring Creek Project could not be kept up, but travel and food conditions made this impossible. It is hoped that this year a refresher course can be given at the school but it will only be for a short period of time and will be for instruction on new legislation, pollution, mine stripping, and related subjects.

In order to have a correct picture of the number of fatalities which could be attributed to fishing, the Board ordered a survey through its various officers. This survey showed there were only seven fatalities which would be attributed to persons fishing, one of which was caused by lightning. One accident of a broken leg was also reported.

The following statistics covering prosecutions and amount of fines collected will prove of interest.

DISTRICTS ASSIGNED REGULAR OFFICERS

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**STATEMENT OF PROSECUTIONS FOR
VIOLATIONS OF THE FISH LAWS—
CALENDAR YEARS 1943-1945**

	<i>Number of Arrests</i>		
	1943	1944	1945
Fishing without license	91	51	62
Lending license	11	6	2
Using borrowed or stolen license	2	2	4
Using unsigned license	—	—	—
Not displaying button	—	—	2
Non-resident fishing on resident license	3	2	—
Giving false information when obtaining fishing license	—	3	2
Fishing on State fish hatchery property	2	4	12
Fishing in posted waters	2	1	—
Fishing on Sunday without land owner's consent	3	—	3
Fishing in nursery waters	2	—	8
Illegal devices	40	44	29
Fish under legal size	72	58	69
Fish out of season	50	39	36
Exceeding creel limit	73	67	42
Illegal sale of fish	4	2	2
Aliens fishing	2	1	2
Interfering with officer	1	3	1
Rods not under control	10	3	2
Fishing with illegal nets	3	5	4
Operating eel chute without permits	2	—	—
Violation of motor boat law	16	38	23
Violation of the frog law	21	8	8
Violating rules and regulations of Board	16	13	24
Using explosives	—	4	—
Totals	417	354	337
Fines remitted by magistrates	\$9,565.00	\$8,294.35	\$10,200.00

While the Board has prosecutions for polluting waters, all cases must be handled through the Sanitary Water Board, Department of Health.

EEL CHUTE LICENSES

In the districts where eel chutes are legal, our officers report that the catch of eels has been steadily decreasing, which is no doubt due to the fact that migration is no longer possible in the Susquehanna basin owing to the construction of the large power dam at Conowingo, Maryland. The following returns were made on the licenses issued for 1945.

EEL CHUTE LICENSES—1945

	<i>Number of Licenses</i>	<i>Number of Pounds</i>	<i>Estimated Value</i>
<i>Juniata River</i>			
Juniata County	2	250	\$81.25
Mifflin County	12	930	351.00
Perry County	1	—	—
<i>Susquehanna River</i>			
Columbia County	1	22	6.60
Dauphin County	3	90	22.50
Lancaster County	1	—	—
Luzerne County	9	1,416	263.80
Northumberland County	5	180	52.00
Snyder County	2	50	15.00
Union County	2	—	—
<i>Delaware River</i>			
Pike County	5	1,020	196.00
Wayne County	1	100	30.00
Totals	44	4,058	\$1,018.15

MOTOR BOATS

In previous reports the Board has briefly stated the motor boat situation and made recommendations.

We regret that from all appearances motor boats are not only interfering with fishing, bathing, and other forms of recreation, but has reached the point in various sections of the Commonwealth where a real hazard has been created. A large percentage of motor boat owners are complying with and helping whenever possible, but unfortunately, there are those who have little regard for the rights of others.

Under the present law, licenses are issued by the Department of Revenue for any waters and it is the function of the Fish Commission to enforce the rules and regulations.

The main sources of trouble are caused:

1. By speed boats on large areas having no regard for fishermen or other recreationists.
2. By the operation of boats on small areas which creates a wash disturbing fishing and interfering with swimmers to the point where fatalities have occurred.
3. By reckless driving around boats for fishing and pleasure, snaring fishing tackle and in general having little regard for the public.

To overcome this, the Board's officers devote much time to the areas affected, but it stands to reason that they cannot devote their whole time to this. It is high time the motor boat groups which are organized set up a "Sportsmen's Creed" applying to their members. This might help to relieve the situation.

It is agreed that "all persons" have their rights, but no small group, which in this case numbers over 10,000, should destroy the pleasure of millions. The Board would be pleased to hear from motor boat operators and through cooperation something no doubt could be worked out.

Since the last Biennial Report was written, the Legislature approved a bill permitting the use of motor boats on Pymatuning.

It will be interesting to watch the area and see if the same conditions prevail as on other sections. This is under the control of the Department of Forests and Waters and they have set up the following regulations:

RULES AND REGULATIONS PYMATUNING LAKE

MOTOR BOATS

Motor boats of six (6) horsepower are now permitted in that portion of Pymatuning Lake extending from the main dam near Jamestown, northwardly to the causeway at or near Espyville. No boat shall be permitted on the lake within three hundred (300) feet of the dam.

OPERATORS UNDER 16 YEARS PROHIBITED

Persons under sixteen (16) years of age are prohibited from operating boats equipped with motors on Pymatuning Lake.

PYMATUNING LAKE IS UNDER THE CONTROL OF THE WATER AND POWER RESOURCES BOARD, DEPARTMENT OF FORESTS AND WATERS.

The following rules and regulations have been set up covering the operation of all classes of boats.

1. No hydroplanes or aquaplanes, nor any type of boat equipped with a motor in excess of six horsepower rating, shall be permitted anywhere on the Pymatuning Lake.
2. Sail boats, row boats, and canoes may be navigated upon the lake, except in the areas set aside as fish and game preserves. Boats equipped with a motor not in excess of six horsepower may be navigated upon that portion of the lake extending from the dam near Jamestown to the causeway across the lake from Espyville, Pennsylvania, to Andover, Ohio. No boat shall be permitted on the lake within three hundred (300) feet of the dam.
3. Owners of boats desiring to navigate the same upon the waters of Pymatuning Lake shall obtain a license or permit from the Commonwealth of Pennsylvania or the State of Ohio in which the owner is a resident or visitor. Pennsylvania residents shall submit written application, describing the boat, with the required fee for license for row boats, canoes and sail boats to the Department of Forests and Waters at the Administration Building, Pymatuning Project, Jamestown, Pennsylvania. Motor boat licenses must be obtained from the Pennsylvania Department of Revenue and may be obtained at the above location. Ohio residents shall obtain permits from the Division of Conservation and Natural Resources, at the Pymatuning Lake Office, Andover, Ohio.

The fee for a license shall be:

Row boats and canoes capable of carrying not more than five (5) persons, one dollar; larger craft, fifty cents additional for each person in excess of five.

Sail boats shall be computed as follows:

The length of hull in feet multiplied by greatest beam width in feet, divided by thirty shall represent amount in dollars. Fractions shall be counted to the nearest dollar.

License or permit fees except Pennsylvania motor boat licenses fees, shall be due on May first of each year. If deemed desirable, any applicant may be required to furnish satisfactory evidence of good character and personal responsibility prior to issuance of a license or permit.

The number of the license shall be displayed in a conspicuous place on the bow of the licensed boat. The number shall not be obscured in any manner and must be distinguishable for a distance of twenty-five (25) feet in daylight. If metal tag is furnished, it shall be firmly attached as described above.

Persons under sixteen (16) years of age are prohibited from operating boats equipped with motors on Pymatuning Lake.

4. Owners of boats shall navigate them with due regard to the safety and comfort of those aboard other craft as well as their own; any recklessness or violation of laws or rules governing the lake shall be cause for suspension or revocation of such boat owner's permit. The duration of such suspension shall be determined by the agency by which the license or permit is issued.

5. Proof that any boat is used for illegal or immoral purposes shall be just cause for revocation of boat owner's permit.

6. Boats at all times shall be maintained in a satisfactory state of repair.

7. Boats shall not be anchored within fifty (50) feet of any well-defined channel that is in common use by other boats.

8. No person shall be permitted to discharge fire arms from the shore of the reservoir, islands within the reservoir, or from boats thereon, except at legal targets or during authorized legal hunting. Discharge of fireworks or rockets is prohibited anywhere in the area except for distress signals.

9. No refuse of any description shall be deposited or thrown into the reservoir or along its shores.

10. The construction of authorized private landing docks by boat owners shall not give them exclusive privileges to said docks. All docks shall be considered available for public use for landing, loading and temporary mooring of boats. Private dock owners shall, however, be entitled to a reasonable, private use of their docks and upon complaint, other boat owners may be restricted to a limited use for loading and discharging passengers.

11. No dock, landing or boat house of any character shall be constructed without specific permission in writing from the department of the respective State in which the structure is to be built. Plans, specifications, location, etc., must be submitted for approval. The right is reserved to fix the fees for such permits.

12. No trees or other forest, herbaceous, or plant growth on the islands, along the shores of the reservoir, or on the said waters shall be cut, injured or destroyed.

13. Fishing shall not be permitted from bridges or from wing walls extending therefrom.

14. No one shall be permitted to monopolize the public docks or other facilities provided for public use in or near the reservoir.

15. Between the hours of one hour after sunset and one hour before sunrise and at other times when there is not sufficient light to render clearly discernible any other boat upon the waters of the reservoir at a distance of two hundred (200) feet ahead, all row boats and canoes shall display a light or lights on the front end, clearly discernible in all directions.

Sailing yachts shall display a white light aft and a combination lantern in the fore part lower than the aft light, showing green to starboard and red to port so fixed as to throw the light from right ahead to two points aloft the beam on their respective sides.

All boats equipped with motors shall have on the starboard or right side a green light, and on the port, or left side, a red light, so constructed, and of such design as to be visible at a distance of at least one mile. They shall also be equipped with a white light in the stern, clearly visible in all directions. The starboard and port lights shall not be visible across the bow, and must be lower than white light in the stern.

A white light is to be shown by boats at anchor which shall be visible all around the horizon, except in designated anchorage areas.

The use of searchlights will be permitted on boats operating upon the reservoir, only for landing, policing or rescue purposes.

16. The nests or young of any wild animals or birds shall not be disturbed or molested.

17. Boating, fishing and hunting are prohibited within any sanctuary or preserve.

18. Hunting is prohibited within the areas set aside for park or recreational purposes.

19. No sewage or any noxious or deleterious substances, liquid or solid, may be discharged into the lake waters except after complete treatment and under permit first approved by the Health Department of the respective State.

20. Hunting and fishing rights and the licensing and use of boats shall be reciprocal with the State of Ohio.

21. No boat owners shall carry passengers for hire or rent his boat or boats to other persons or parties either for cash remuneration or any gratuity, except the authorized boat liveries.

22. No boat propelled by any type of internal combustion motor of one or more cylinders including outboard motors, shall be operated on Pymatuning Lake unless the same is equipped with a muffling device supplied by the manufacturer of the motor for that particular model without modification to prevent excessive or unusual noise, which shall at all times be maintained in good working order. No person shall operate a motor boat with the cutout open or muffler removed. When muffling devices are not effective motor boat owners must immediately install satisfactory equipment.

23. No motor boat shall be operated in a reckless manner, nor at a rate of speed in excess of eight (8) miles per hour, nor at a rate of speed greater than will permit the boat to be brought to a stop within the assured clear distance ahead. Boats shall be operated at all times with due regard to the presence of other boats, bathers, or persons engaged in fishing or objects in or on the waters of the lake. The speed of all power boats shall be regulated so as to avoid danger or injury to canoes or row boats, by the effect of the waves or wash raised by power boats. In passing there should be at least one hundred (100) feet between the two crafts. Between sunset and sunrise this distance should be not less than one hundred fifty (150) feet. It is a violation for any person to operate a motor boat while in an intoxicated condition and such person is liable to prosecution, revocation of license or both.

24. All boats propelled by motors shall be equipped with fire extinguishers and life preservers, sufficient in number to take care of the occupants and size capacity of the boat. All boats carrying passengers for hire will have to be equipped with air tanks, life preservers, fire extinguishers, etc., in accordance with certificate of Public Convenience as granted by the Public Utility Commission.

25. The use of areas set aside for park or recreational purposes shall be in accordance with the rules for the administration of the respective State forests and parks, and violators thereof shall be subject to the penalties provided thereby.

For information on Pymatuning Regulations contact Secretary of Forests and Waters, Harrisburg, Pennsylvania.

The number of boats registered in Pennsylvania has grown from a few hundred in 1931 to more than 10,000 in 1945.

NURSERY WATERS

The following is a list of waters closed as nursery waters and those having special regulations. Also those nursery areas opened to fishing as of July 31, 1943.

The Board of Fish Commissioners has adopted a policy of not closing any water to fishing except those being used as fish farm areas by the Board, those within game refuges, or tributaries and waters which sportsmen groups desire to have set aside for experimental purposes. Before action is taken, all requests are investigated and surveyed by C. R. Buller, the Chief Fish Culturist, who makes his recommendations to the Board for their guidance.

**NURSERY WATERS OPENED TO FISHING
AS OF JULY 31, 1943**

<i>County</i>	<i>Name of Stream or Water</i>
BERKS	<i>Ontelaunee Lake</i> , section requested by Federated Sportsmen's Clubs of Berks County, also from new dam breast upstream to the old stone bridge, distance about one mile on west side. <i>Maiden Creek</i> —1,200 feet on west side below new dam breast. 1,800 feet on east side below new dam breast.
BUTLER	<i>Municipal Reservoirs</i> of Borough of Zelienople (to be posted by the borough).
CAMERON	<i>Crooked Run</i> , entire length. <i>Finley Run</i> , two miles. <i>Fishing Creek</i> , tributary to Driftwood Branch. <i>Big Spring or Big Spring Draft</i> , tributary to Wykoff Run. <i>Whippoorwill Run</i> , tributary to East Br. of Hicks Run, one mile long. <i>Little Fork</i> , tributary to Mix Run, one and one-half miles long.
CARBON	<i>Fireline Creek</i> (opened as of July 1, 1943).
CLEARFIELD	<i>All tributaries of Hazlett Run.</i> <i>All tributaries of Curry Run.</i>
CLINTON AND CENTRE	<i>Beech Creek</i> , from dam at Beech Creek to Orviston.
ELK	<i>Smith Run or Rocky Run</i> , entire length. <i>Hyvie Run or Spring Run</i> , entire length. <i>Falls Shanty or Auman Hollow</i> , entire length. <i>Falls Shanty</i> , three miles flowing into E. Br. of Kersey Run. <i>Spring Run</i> , from what is known as "Bony Gerg's Bridge" to source. This is headwaters of Spring Run and about five miles long.
LYCOMING	<i>Black Hole Creek</i> , from Water Company Dam downstream to Pennsylvania Railroad culvert, 1/4 mile.

MCKEAN	<i>Fly Brook</i> , tributary to Willow Creek, 2 1/2 miles. <i>Wintergreen Run</i> , tributary to Kinzua Creek, 2 miles. <i>Brown Valley</i> , tributary to N. Fork Sugar Run, 1 1/2 miles. <i>Right Hand Branch</i> of W. Branch of Tuna Creek, 1 mile. <i>Blind Robin</i> , tributary to Main Sugar Run, 2 miles. <i>North Fork of Colegrove Brook or Nigger Run</i> , tributary to Colegrove Brook.
MONTGOMERY	2 Ponds on Howard Beidler property at Abrams. 1 Pond on Frank Henkins property at Collegeville. 1 Pond on G. B. French property at Graterford. 2 Ponds on Joseph Hippel property at Norwood.
POTTER	To be opened April 15, 1943: <i>Blumendal Run</i> , tributary to Little Kettle Creek, 2 miles long. <i>Lutz Run</i> , tributary to Pine Creek, 1 mile long. <i>Upper Dry Run</i> , tributary to W. Br. of Pine Creek, 1 mile long. <i>Barns Brook</i> , tributary to Cushing Creek, 5 miles long. <i>Crowell Run</i> , tributary to Nine Mile Creek, 1 1/2 miles long. <i>Splashdam Run</i> , tributary to Lyman Run, 2 miles in Susquehanna District State Forest. <i>E. Fork of First Fork Sinnemahoning Creek</i> , tributary to Sinnemahoning Creek. <i>Stonelick Run</i> , tributary to E. Fork of First Fork of Sinnemahoning Creek. <i>Birch Run</i> , tributary to E. Fork of First Fork of Sinnemahoning Creek.
WARREN	<i>Four Mile Run</i> , tributary to Tionesta Creek, all tributaries and Long Run, also Ludlow Branch of same stream. <i>Farnsworth Run</i> , tributary to Tionesta Creek, from source to point 1 mile below Hermit Spring, also <i>Criswell Branch</i> . <i>Headwaters of Brown Run</i> , including all of Hook Run, Fluent Branch, also upper 1 1/2 miles of Brown Run.

**WATERS CLOSED AS NURSERY WATERS BY
THE BOARD OF FISH COMMISSIONERS
AND ALL FISHING PROHIBITED
UNTIL JULY 31, 1948**

<i>County</i>	<i>Name of Stream or Water</i>
BERKS	<i>Egelman's Reservoir.</i> <i>Orphanage Run or Seltzer Run or Hoffas Run</i> , tributary to Tulpehocken Creek—Three ponds and 500 yards of stream.
BLAIR	<i>Clover Creek</i> , tributary to Frankstown Branch, Juniata River from the point where Legislative Route No. 07001 crosses the stream at the Bedford County Line to the head of the stream, a distance of about two (2) miles. <i>Poverty Hollow Stream</i> , tributary to Piney Creek, about three (3) miles long.
CHESTER	<i>Headwaters of Chester Creek</i> —From and including Fern Hill Dam Reservoir, upstream 2 miles.
CLINTON	<i>Gottshall Run</i> —(stream closed for protection of water supply).
CRAWFORD	<i>Pymatuning Sanctuary.</i> <i>Northern and Shenango River</i> , below dam at Pymatuning Lake. <i>Sugar Lake</i> , special posters during spawning season.
JEFFERSON	<i>South Branch of North Fork Creek</i> , from Marshall Bridge to source.
LANCASTER	Stream running through Public Park at Lititz (exhibition). <i>Octoraro Creek</i> , portion of W. Branch.
LUZERNE	<i>Sugar Notch Dam</i> , about one-third. <i>Harveys Lake</i> , approximately 3 acres at the outlet neck.
LYCOMING	<i>All tributaries of Slate Run.</i> <i>All tributaries of Pleasant Stream.</i> <i>Portion of tributaries of Pine Creek.</i> <i>Portion of tributaries of Lycoming Creek.</i>
PIKE	<i>Portion of Pecks Pond</i> , above wire on E. Branch inlet. <i>Portion of Promised Land Lake.</i>

SCHUYLKILL	<i>Locust Creek</i> , about 6,000 feet. (Posted by Game Commission.)
SOMERSET	<i>Brush Creek</i> , tributary to Wills Creek, 3 miles. <i>Beaver Dam Creek</i> , from Sportsmen's Dam to source.
VENANGO	<i>Lower Two Mile Run</i> , section within Waltonian Park (exhibition).
WARREN	<i>Dedman Run</i> , tributary to Spring Creek, 1/2 mile. <i>Greeley Run</i> , tributary to Spring Creek, 3/4 mile long.
WAYNE AND PIKE	<i>Lake Wallenpaupack</i> , within 750 feet of the dam.

**STREAMS CLOSED AS NURSERY WATERS
UNTIL JULY 31, 1947**

<i>County</i>	<i>Name of Stream or Water</i>
JEFFERSON	<i>Bear Pen Run</i> , tributary to North Fork Creek. <i>Williams Run</i> , tributary to North Fork Creek.
JEFFERSON AND ELK	<i>Rattlesnake Creek</i> , tributary to Little Toby Creek, 3 miles, from 1/2 mile below Brockway Reservoir to source.
WESTMORELAND	<i>Little Pucketa Creek</i> , section between property of Arthur McKean and northern boundary of the wild-life property.

**STREAMS CLOSED AS NURSERY WATERS
UNTIL JULY 1, 1950**

LEBANON	<i>Indiantown Gap</i> , newly created lake on Indiantown Gap Military Reservation.
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NOTE: Under the provisions of the Game Code, all refuges are closed to hunting and fishing. If any streams within the refuges are open to public fishing, cardboard posters, so stating, are prominently displayed.

**WATERS HAVING SPECIAL REGULATIONS
EFFECTIVE UNTIL JULY 31, 1948,
EXCEPT AS NOTED**

Fishermen should be guided by rules and regulations posted along streams regarding size, season, number, etc.

SLATE RUN (Lycoming County).

Section open to fishing—From the junction of Cushman and Francis Branches down to its mouth at Big Pine Creek, approximately 8 miles.

Closed section—Partly in Potter, Tioga and Lycoming Counties—both Head Forks, the Cushman and Francis Branches, and all other tributaries closed as nursery waters.

DUNBAR CREEK AND TRIBUTARIES (Fayette County). (See posters along stream for special regulations.)

E. BRANCH CLARION RIVER (Elk County). Portion between Glen Hazel and Instanter. Regulations effective until July 31, 1951. (Request Elk County Sportsmen's Club.)

LAKE DOM (Westmoreland County). (Request of Westmoreland Sportsmen's Association.)

LYNN RUN (Westmoreland County). Laurel Hill Trout Nursery on this stream.

MARKLE'S POND (Westmoreland County). (Request of Westmoreland Sportsmen's Association.)

NORTH FORK CREEK (Jefferson County). From 2,000 feet below Egypt Bridge to the source. (Improved stream.) (Jefferson County Sportsmen's Association.)

YELLOW BREECHES CREEK (Cumberland and York Counties). Section from New Cumberland to mouth, about 300 yards. Number of trout to be taken in any one day limited to two (2). (Request of West Shore Sportsmen's Association.)

RECREATIONAL DEMONSTRATION AREAS:

Beaver County—Raccoon Creek
Bedford County—Blue Knob
Carbon County—Hickory Run
Somerset County—Laurel Hill

Recently these areas were turned over to the Department of Forests and Waters by the Federal authorities. The rules and regulations which were in effect will still prevail unless otherwise posted. For additional information, contact the Department of Forests and Waters.

LAKE PLEASANT (Erie County). (Request of Erie County Sportsmen.)
Number of trout to be taken in any one day limited to six (6).
Effective until *July 31, 1947.*

SPRING CREEK ON PENITENTIARY GROUNDS. Open to public fishing with rod, hook and line during trout season, April 15th to July 31st, 7 A. M. to 10 P. M., E. S. T. Fishermen not permitted on the property between 10:30 P. M. and 6:30 A. M., E. S. T.

BUFFALO CREEK (Washington County). Closed from December 1st to June 30th. (Washington Sportsmen's Association.) (Five (5) years—until July, 1949.)

SPRING CREEK PROJECT (Warren County). Regulations on section flowing Clough property. (Request of Northwest Division of Pennsylvania Federation of Sportsmen.)

FULLER BROOK (McKean County). Fishing restricted to women only. (Request of Hon. E. Kent Kane.)

ZELIENOPE SPORTS CLUB LAKE (Butler County). Number of bass to be taken in any one day limited to four (4), not less than 12 inches in length. (Request of Zelienville Sportsmen.)

TIONESTA DAM (Forest County). Area below the outlet of Tionesta Dam, down stream a distance of 250 feet.

PANTHER HOLLOW LAKE, SCHENLY PARK (Allegheny County). Request of City of Pittsburgh.)

CARNEGIE LAKE, HIGHLAND PARK (Allegheny County). Request of City of Pittsburgh.

YOUNG WOMAN'S CREEK (Clinton County). Portion between Gravel Lick Bridge and Seven Mile Bridge. Request of Elks Country Club.

NEW LEGISLATION

Owing to the state of emergency the Federation of Sportsmen's Clubs introduced as little legislation as was possible and those laws which were enacted were for the better protection of fish.

A most popular amendment to the License Law was providing that for the duration of the war, any person with the necessary qualifications who is in service with the armed forces of the United States, shall be issued a free fishing license, upon application to any county treasurer within the Commonwealth, without the payment of the license fee provided for the use of the Commonwealth.

During 1944, over 5,000 free licenses were issued to service men and in 1945 more than double this amount.

The following is a summary of the various acts:

AMENDMENTS TO THE FISH LAW 1943 SESSION OF THE LEGISLATURE

Act No. 14—This Act amends sections 20(c), 50(c), 72 and 265 of the Fish Law of 1925 by allowing both pickerel and perch to be taken through holes in the ice with not more than 5 tip-ups during the months of December and January, Sundays included.

Act No. 33—This Act amends section 213 of the Fish Law of 1925 which now provides that it is unlawful for any person to sell or offer for sale any bait-fish or fish-bait taken from any waters of this Commonwealth when not artificially propagated and sold pursuant to an artificial propagation license granted by the Board.

Act No. 83—This Act amends section 254 of the Fish Law of 1925 by providing that whenever any stream is stocked with trout during the open season for trout, the Board of Fish Commissioners may close such stream, or any part thereof, to fishing for a period of any number of days not exceeding five days after the same has been stocked.

Act No. 115—This Act amends section 50(f) of the Fish Law of 1925 by providing that the Board of Fish Commissioners is authorized to adopt appropriate rules and regulations governing the taking of fish by trolling from a moving boat electrically propelled or propelled by an internal combustion motor. Such rules and regulations shall specify the waters within the Commonwealth in which such trolling may be engaged in. It shall be unlawful to engage in such trolling in violation of the rules and regulations duly adopted by the Board of Fish Commissioners.

Act No. 145—This Act amends section 220 of the Fish Law of 1925 providing that for the duration of the present war, any person with the necessary qualifications who is in service with the armed forces of the United States, shall be issued fishing license, upon application to any county treasurer within the Commonwealth, without the payment of the license fee provided for the use of the Commonwealth.

The application for the issuance of a license in such case shall, in addition to the other information required, give the serial number of the branch of service to which the applicant is attached, together with the applicant's rank, company, battalion, regiment, division, and other military organization.

In addition to the amendments to the Fish Code, the following laws were also enacted:

Act No. 133—This Act amends "The Penal Code" by adding a new section as follows:

"Section 699.7. Undersized Lobsters.—Whoever captures, takes or has in his possession, any lobster measuring less than three and one-eighth inches ($3\frac{1}{8}$ "") from the rear of the eye socket along a line parallel to the center line of the body shell (carapace) to the rear end of the body shell (carapace), shall, upon conviction thereof in a summary proceeding, be sentenced to pay a fine not exceeding fifty dollars (\$50) and in default of the payment of such fine and costs shall be sentenced to imprisonment not exceeding thirty (30) days."

Act No. 281—This Act amends the Act of April 13, 1942, which provides for the protection of property, prevention of sabotage, etc., by providing that all Forest Fire Wardens, Foresters and Forest Rangers, all Fish Wardens and all Game Protectors have the same powers as are by law conferred upon Constables and other Peace Officers and such officers may arrest on view without first procuring a warrant therefor, persons detected by them violating any of the provisions of said Act or detected under such circumstances as to warrant the reasonable suspicion that such person or persons have committed, are committing or are about to commit any offense or offenses against the provisions of said Act.

Act No. 335—This Act provides that the State of Pennsylvania may enter into a compact with any one or more of the States of Maine, New Hampshire, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia and Florida and with such other states as may join to promote the better utilization of the fisheries, marine, shell and anadromous, of the Atlantic Seaboard and to create the Atlantic States Marine Fisheries Commission.

Under section 6 the sum of two hundred dollars (\$200), or as much thereof as may be necessary, is appropriated out of any moneys in the State Treasury not otherwise appropriated for the expenses of the Commission created by the compact.

AMENDMENTS TO THE FISH LAW 1945 SESSION OF THE LEGISLATURE

Act No. 23—This Act provides for the issuance of free fishing licenses for the duration of the present war to those in the armed forces of the United States who are hospitalized or in a convalescent camp within the Commonwealth.

Act No. 47—This Act amends section 220 of the Fish Law, authorizing the use of eel chutes in the Delaware River above Easton.

Act No. 125—This Act provides that boats equipped with a motor not in excess of six (6) horsepower may be used in that portion of Pymatuning Lake extending from the main dam near Jamestown northwardly to the causeway at or near Espyville.

Act No. 246—This Act provides that no motor of more than five (5) horsepower shall be operated in the inland waters of this Commonwealth in locations where such waters are one hundred eighty (180) feet or less in width. These restrictions do not apply to any motor boats or other watercraft engaged in commercial navigation.



COMMERCIAL FISHING OUT OF THE PORT OF ERIE

COMMERCIAL FISHING—LAKE ERIE

The commercial fishing out of the port of Erie has been one of the main sources of food supply during the war years. Production has been at an all-time high and during 1943, which is the last year for which statistics were compiled on the Great Lakes by the Department of the Interior, Lake Erie led all lakes in production with 27,114,600 pounds. Of this amount, Pennsylvania produced 2,974,500 pounds.

Pennsylvania has been one of the leaders in sponsoring legislation and regulations which would improve the industry and an inspection of the present set up will prove there are very few states using the limited gear permitted in Pennsylvania waters. Production could be considerably increased by allowing other types of gear, but it would be a real blow to fishing—statistics show this lake has been the main producer over a great period of years. By referring to the charts and statistics you will find the yearly catch as to species together with other interesting statistical data.

In our last Biennial Report, mention was made of the International Board of Inquiry for the Great Lakes Fisheries. The latest developments were briefly described in an article in "*The Fisherman*," a publication covering the production, distribution, and sale of Great Lakes Fishery products.

The following is from the December, 1943, issue:

INTERNATIONAL BOARD OF INQUIRY REPORTS ON GREAT LAKES FISHERIES

Report Based on Facts Obtained in Twenty-nine Hearings and
in 4,000 Questionnaires

Following two years' intensive investigation, the International Board of Inquiry established February 29, 1940, by the United States and Canada to study conservation of fisheries in the Great Lakes has submitted its report. The report recommends that, based on the results of common studies of these fisheries, regulations for their management be formulated and tested by a joint agency of the two countries.

Establishment of the International Board of Inquiry grew out of a series of interstate and international conferences held during the past few years by the Council of State Governments for the conservation of the Great Lakes fisheries. The problem of conserving the fisheries of the Great Lakes had also long engaged the attention of the Governments of Canada and the United States, the Province of Ontario and the States bordering on the Great Lakes. The production of certain species of Great Lakes fish had reached low levels.

During its two-year investigation, the Board conducted hearings and meetings in 29 cities on the Great Lakes in which more than 1,500 commercial fishermen, public officials and sportsmen participated. Facts brought out at the meetings were supplemented by information from 4,000 questionnaires mailed to commercial fishermen in the area.

The recommendations made by full Board are as follows:

(1) That there be common investigation of the fisheries of the Great Lakes.

(2) That, insofar as investigation shows fisheries to be dependent upon a common stock or to have the same conditions, regulations for management of these fisheries be formulated and tested by a common or joint agency.

(3) That where investigations are not conclusive such common regulations be applied and the results therefrom carefully determined until there is adequate proof of their effectiveness for the purpose.

(4) That the attention of the agencies concerned be drawn to the need (a) for accurate statistics of the take and of the fishing effort, (b) for separate statistics for each species of fish, and (c) for separate statistics for each of such districts as may be defined in common agreement.



COMMERCIAL FISHING OUT OF THE PORT OF ERIE

(5) That thorough tests be made of the effectiveness of planting fish in a lake or lakes in order to determine whether the present planting of fish should or should not be continued or altered.

In a separate supplemental report, the United States members reviewed past efforts of the States and of the Federal Government to develop effective conservation measures for the Great Lakes fisheries, called attention to certain jurisdictional aspects of the problem, and presented extensive data on production in the fisheries investigated. The supplemented report of the United States representatives suggests a form of agreement which would vest control in established agencies in Canada and the United States, with regulation handled through the concurrent action of Federal and State Governments.

The report, together with a supplemental report by the United States representatives, was submitted to the Secretary of State and Prime Minister King. Members of the Board were:

Hubert B. Gallagher, Chairman, Assistant Director, Council of State Government, Chicago, Illinois; A. G. Huntsman, Consulting Director, Fisheries Research Board of Canada, Toronto; John Van Oosten, United States Fish and Wildlife Service, Ann Arbor, Michigan, and D. J. Taylor, Deputy Minister, Game and Fisheries Department, Toronto, Ontario.

The following statistics which include a thirty (30) year statement of the catch by lakes, will prove most interesting to those who are engaged in the industry:

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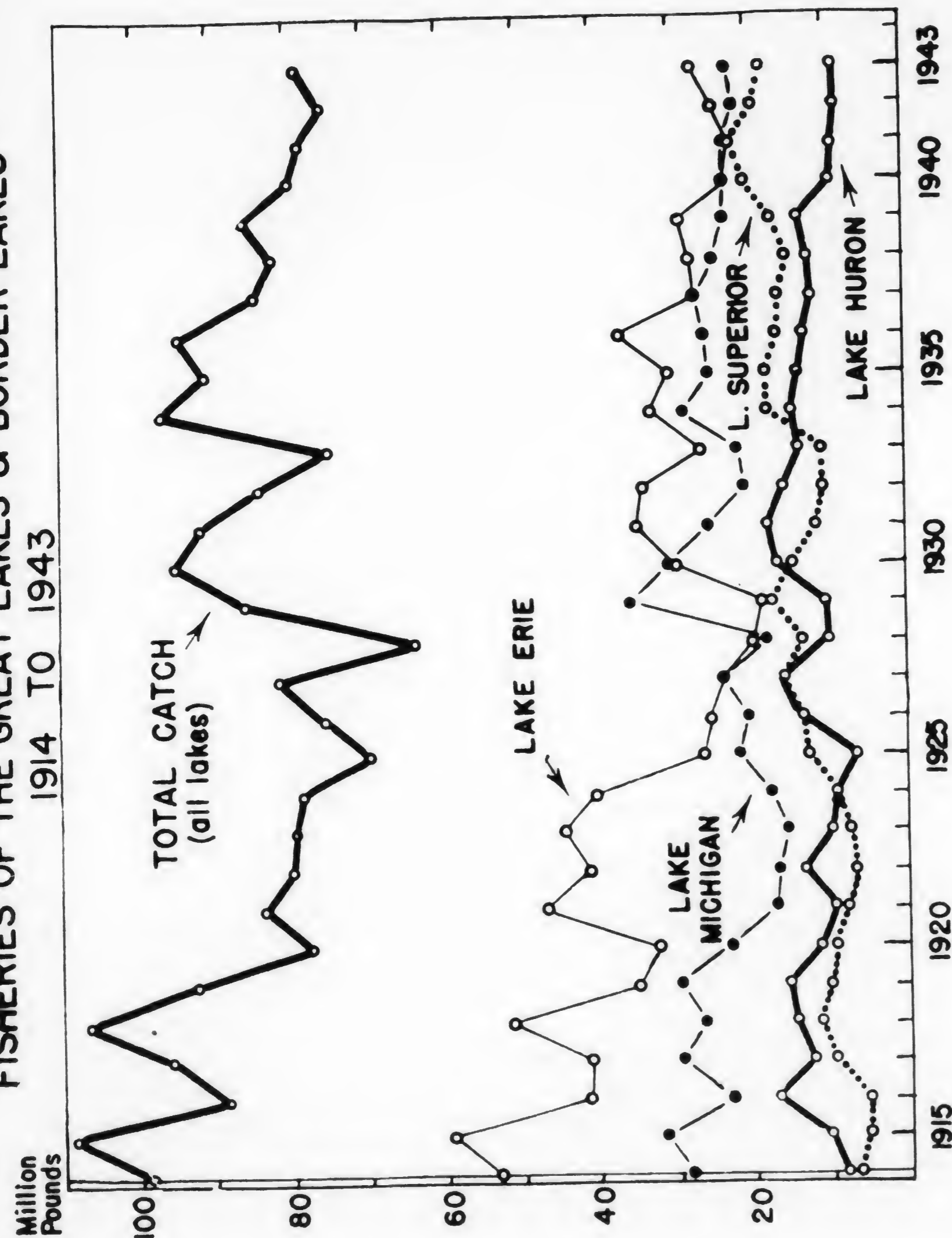
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**FISHERIES OF THE GREAT LAKES & BORDER LAKES
1914 TO 1943**



**CATCH BY POUNDS
YELLOW PERCH, BLUE PIKE, WHITE FISH
LAKE ERIE**

	<i>Yellow Perch</i>	<i>Blue Pike</i>	<i>White Fish</i>
1932	331,278	1,611,675	447,378
1933	277,909	1,747,398	644,293
1934	798,280	2,131,557	462,971
1935	541,737	2,083,977	486,958
1936	123,817	2,836,990	803,732
1937	104,816	2,303,555	429,375
1938	207,630	1,441,874	526,112
1939	80,430	1,257,069	980,043
1940	216,460	312,441	1,564,132
1941	162,822	194,749	1,222,086
1942	88,654	823,769	786,150
1943	31,075	2,363,701	440,307
1944	55,996	2,128,923	351,833
1945	58,069	1,762,077	408,636

SEA LAMPREY

There has been some concern among those interested in preserving the fishing on the Great Lakes over the greatly increased number of "Sea Lamprey" which have put in their appearance in the Great Lakes. A survey of Pennsylvania waters has shown there are very few at this time but we have assured our support of any program which will be increasing the fishing.

The 79th Congress passed a resolution which directed the Fish and Wildlife Service to investigate the sea lamprey on the Great Lakes and attempt to control its rapid increase and spread in Great Lakes waters. The resolution also authorized the Fish and Wildlife Service to cooperate with all Great Lakes conservation agencies, with the commercial fishing industry, and with other governmental and private agencies, organizations or individuals having an interest in the fisheries of the Great Lakes.

A tentative program was drawn up by John Van Oosten, Chairman of the Committee, and correspondence has been had with several States interested in the subject.

While not a great deal has been done up to this time, you no doubt will be interested in the following release covering the sea lamprey which was released after the conference at Ann Arbor.



PRESQUE ISLE BAY

PRESS NEWS RELEASE COVERING SEA LAMPREY CONFERENCE AT ANN ARBOR

ANN ARBOR—Complete agreement on plans for a long-range campaign against the parasitic sea lamprey—enemy of choice Great Lakes food fishes—was reached at the international conference here on November 14 and 15, and delegates from New York, Ohio, Ontario, Wisconsin, Minnesota, and of the United States Fish and Wildlife Service are ready to begin the specific jobs assigned to each of them. Representatives of Pennsylvania, Indiana, and Illinois have also expressed willingness to cooperate in the program.

The fisheries men do not expect to exterminate the sea lamprey. But they do hope to learn enough about it so that, like the boll weevil and the corn borer, its ability to do damage may be limited.

Dr. John Van Oosten, in charge of Great Lakes Fishery Investigations for the United States Fish and Wildlife Service, was elected chairman, and Dr. Albert S. Hazzard, director of the Institute for Fisheries Research of the Michigan Department of Conservation, was named secretary of the Sea Lamprey Committee.

The research program agreed upon, with definite assignments to each participating agency, includes:

(1) Survey of lamprey spawning streams by all Great Lakes States and the Province of Ontario to determine location and size of runs.

(2) Investigation of various phases of lamprey life history to discover vulnerable stages subject to control measures.

(3) Experiments with weirs, traps, and other devices which may be used to destroy lampreys.

(4) Survey of extent of lamprey attacks and their effect on the abundance and marketability of Great Lakes fishes, especially the lake trout.

(5) Study of the possible utilization of lampreys as a source of food and vitamins. If found valuable for either or both purposes, it would create a new source of revenue and would reduce the cost of control. The organization hopes to enlist the aid of sportsmen's clubs, 4-H clubs, Boy Scouts, and others in reporting spawning runs and in securing specimens needed for identification.

NORTHERN BOUNDARY OF PENNA. MIDDLE OF LAKE ERIE

What is the northern boundary of Pennsylvania?

William S. Livengood, Jr., Secretary of Internal Affairs, referring to the recent State appropriation of \$300,000 for the protection of the peninsula of Presque Isle, draws attention to the little known fact that Pennsylvania authority is limited not by the water line but extends to the middle of Lake Erie.

Records of the Department of Internal Affairs have many references to this boundary line.

Frontage of the Commonwealth on Lake Erie during pre-Revolutionary days was a subject of dispute and three conflicting claims between New York, Massachusetts and Connecticut lent confusion to the issue.

PENN'S GRANT OF 1681

Penn's grant of March 4, 1681, was described as three degrees of latitude and five degrees of longitude. After the lines were established it was found that Pennsylvania did not border on Lake Erie. There remained a triangular tract of land beyond the present New York western boundary, Pennsylvania's old line, and Erie.

On March 1, 1781, the State of New York conveyed its claims by deed to the Federal Government. It included the disputed triangle.

On April 19, 1785, the Commonwealth of Massachusetts also conveyed its claim to the Federal Government.

On September 13, 1786, Connecticut conveyed its title to the United States.

On September 1, 1788, after action by various States and the Federal Government an act ending with the following language was passed:

"Resolved, that the United States do hereby relinquish and transfer all their right, title and claim to the government and jurisdiction of the said tract of land, to the State of Pennsylvania forever. And it is hereby declared and made known, that the laws and public Acts of the said State shall extend over every part of the said tract, to all intents and purposes, as if the same had been originally within the charter bounds of the said State: Provided that the inhabitants of said tract shall be maintained in all the rights and privileges which other citizens of the said State of Pennsylvania are now or may hereafter be constitutionally entitled to enjoy."

An Act of October 2, 1788, appropriated 1,200 pounds for the purchase of the Indian title.

On January 9, 1789, Cornplanter and the other Chiefs of the Six Nations signed a deed known as Indian Cession of lands at Presque Isle including the triangle for the consideration of 1,200 pounds.

The formal title was vested by patent deed March 3, 1792, and was signed by George Washington and Thomas Jefferson. The document is recorded in Deed Book D, No. 31, Page 107, in the office of the Recorder of Deeds for the City and County of Philadelphia.

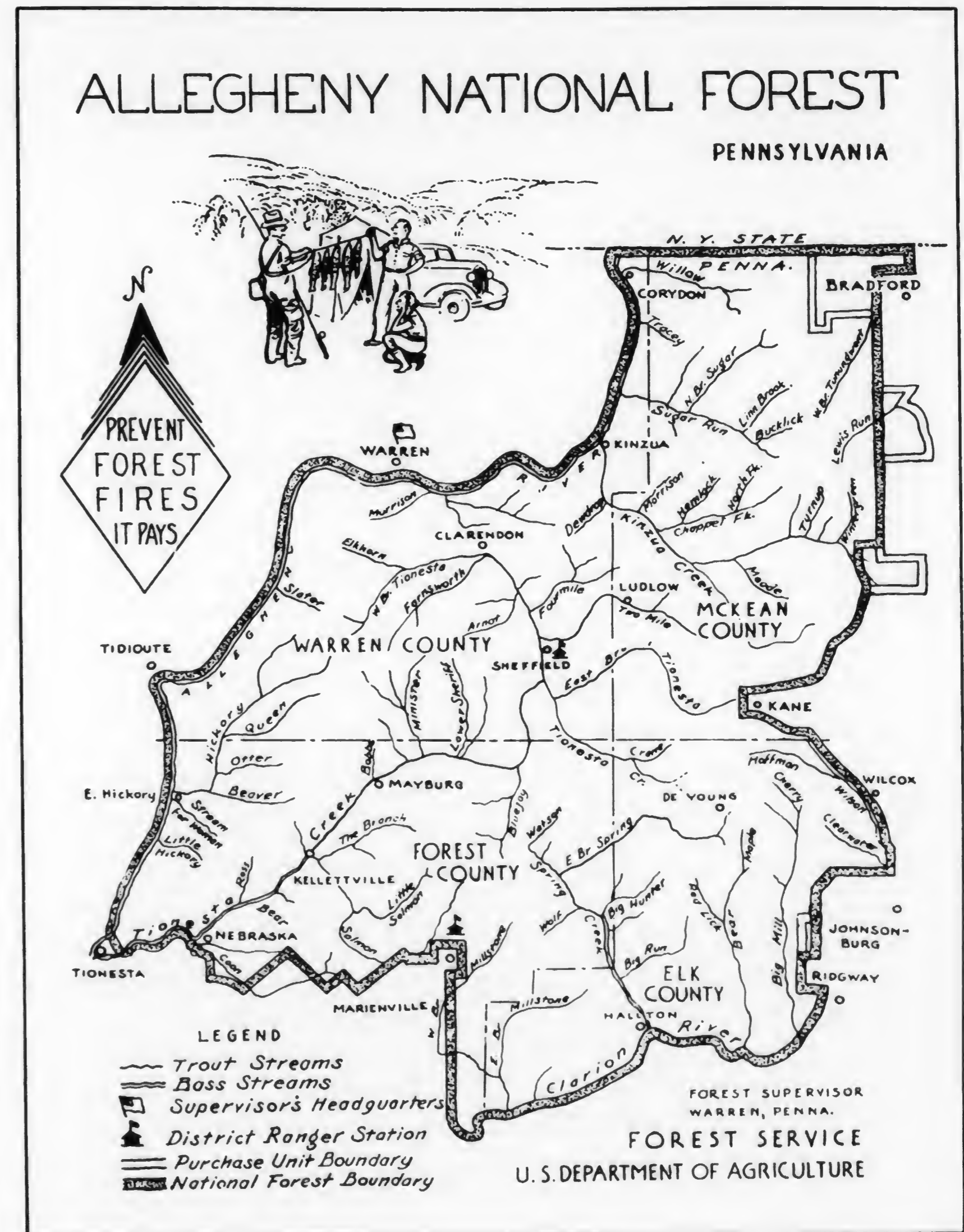
Nothing is mentioned in this deed as to how far the line extended into Lake Erie.

The Declaration of Independence was the basis of the peace treaty with England. In this treaty the Thirteen States are mentioned by name and the Northern Boundary between Canada and the States is described as an International Boundary in the middle of Lake Erie.

CONGRESS RATIFIED COMPACT

An Act of Congress dated August 19, 1890, ratified the boundary compact set forth in the Pennsylvania Act of June 6, 1887, which confirms the report of the Commissioners fixing the boundary line between New York and Pennsylvania and citing its prolongation due north into the waters of Lake Erie until it intersects the northern boundary of the United States. Thus there is on record one Act of Congress confirming the prolongation of the western boundary of Pennsylvania into the middle of Lake Erie and another confirming the extension to the northern or international boundary of the eastern line of the Lake Erie frontage.

Pennsylvania has had full and free jurisdiction as a sovereign over the land and water to the middle of Lake Erie, subject only to the paramount right of the Federal Government to regulate navigation in the lake waters pursuant to the interstate commerce clause of the Constitution.





Circular Trout Rearing Pools of Farnsworth Trout Rearing Station, Allegheny National Forest, Warren County.

ALLEGHENY NATIONAL FOREST

A Publicly-Owned Area Open to the Fishing Public of Pennsylvania

Nestled in the Allegheny Plateau area of Northwestern Pennsylvania and embracing substantial portions of Warren, McKean, Forest and Elk Counties, lies the Allegheny National Forest. This publicly-owned area covering more than 460,000 acres of Pennsylvania forest land is one of 156 National Forests owned by the people of the United States, and administered by the United States Forest Service of the Department of Agriculture. The Allegheny, Pennsylvania's only National Forest, extends a hearty welcome to all sportsmen who are willing to abide by Pennsylvania's laws for protecting game and fish, and use the forests with proper care and respect.

National Forests were originally acquired and established to provide a reserve of publicly-owned forest areas for the production of timber, to maintain covered watersheds and thus help control floods and for the development of related resources that are a natural part of the forest. Timber, water, grazing, recreation, wildlife, and other resources of National Forests are developed and administered by and for the American people. These forests contribute to local employment opportunities through their yearly cut of more than one billion

board feet of timber. They help to hold back flood waters and thus protect cities and rural valleys located along the nation's major watercourses. They insure dependable sources of drinking water for many towns and cities. In some areas, they furnish range for vast numbers of cattle and sheep and afford hunting, fishing, and other recreational opportunities for millions of people.

The land management program in effect on the National Forests of the United States is one of multiple use. Timber is sold to competitive bidders but the allowable cut is held to limits which will preserve scenic, watershed and wildlife values and protect the other dependent forest resources. Permits to graze small numbers of cattle and sheep are frequently granted dependent residents living adjacent to the National Forest but here, too, use for forage must be held within limits that will safeguard such other values as timber production and watershed.

Game and fish form an important part of the resources on the Allegheny National Forest and management looks with a friendly and a protective eye upon them. Care is constantly exercised to prevent damage to fishing waters or game habitat through fires, destructive timber cutting, or other forest uses. Through this protection, especially the control over habitat factors, game and fish on the National Forests tend to become another land crop, with an annual surplus available for harvest.



CARETAKER'S RESIDENCE AT FARNSWORTH TROUT REARING STATION, ALLEGHENY NATIONAL FOREST, WARREN COUNTY.



BEAVER MEADOWS LAKE
ALLEGHENY NATIONAL FOREST

A growing army of Pennsylvania nimrods are flocking to the Allegheny National Forest to fish. Annual forest reports place the total fisherman days at 80,000 for the fiscal year ending June 30, 1943, and 90,000 for fiscal year 1944. Use for the current year is expected to break all previous records.

Management of wildlife on the National Forests is a cooperative venture. The forests have insufficient manpower or revenue for carrying on wildlife work as such. Hence they look to State Game Commissions, Fish Commissions, and the United States Fish and Wildlife Service for assistance in stocking and planning. As land managers, National Forest administrators are in an excellent position to coordinate the work of various cooperators and to make available vast amounts of game habitat and fishing waters for recreational use. There is a growing trend on the part of all forest land managers to consider forests as a home for wildlife as well as for producing timber. In the post-war era, there is a strong trend among the foresters and cooperating agencies toward utilizing national forests as demonstration areas to point the way in multiple use forest management. By demonstrating practical techniques for producing good crops of timber, game and fish on forest areas, new frontiers can be opened to Americans who are more wildlife conscious today than ever before.

National Forest administration is primarily a job of land management and the key officer in the Forest Service organization for man-

agement of the Allegheny National Forest is the District Ranger. The several Rangers serve under a Forest Supervisor, but the Ranger is the man on the spot who administers the land. These Rangers, managing areas ranging from 200,000 to 300,000 acres, are directly responsible for administering the various land uses so as to produce the maximum amount of public benefit.

Present day population pressures are such that it is no longer feasible to isolate large areas of land for a single use. For example, the setting aside of vast areas for water production or timber production without thought to the incidental values of these lands would result in marked decrease in the production of game, fish, and other resources for the American people. Only through properly integrated land management can every acre of forest land make the maximum contribution in terms of timber, forage, watershed and game and fish.

War demands on the Allegheny National Forest were heavy. A large wood distillation chemical industry in this area was fed from Allegheny National Forest raw material to provide strategic chemicals for war industry. Much high-grade maple, ash, cherry, and other timber were also supplied for chests, handle stock, and other war needs. Despite these demands, cutting operations were of a type designed to maintain the productive capacity of the forest at a high level. This was particularly true in chemical wood production. Principally defective trees and species of low value were removed, leaving a fine residual stand of higher valued trees to produce future timber crops. This type of cutting maintains the capacity of forest watersheds and will be reflected in improved water conditions in many trout streams.

In the field of natural resource management many conflicts arise, and the land manager needs to be fortified with accurate information concerning the resources under his control if these conflicts are to be adjusted to secure the best uses of the land. Information on the important fish resources has been collected by forest personnel over a long period of years and used in the maintenance of good sport fishing in the clear, clean, swift flowing streams that flow from the Allegheny plateau section of the forest.

Ten years ago a complete stream survey was made on the Allegheny Forest to measure food and cover conditions for fish. This was done in the era when stocking of fingerling fish was relied upon to a large extent to sustain the fish population. The rapid growth of fishing on this area has made it clear that annual stocking of legal size trout will be required if a satisfactory level of sport is to be maintained.

During the early stages of fisheries work on this area, many thousands of fingerlings were planted annually by the Federal Hatcheries.



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BEAR CREEK DAM
No. 33

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Immediately prior to the war, a small trout rearing station was built by the Forest Service on the headwaters of Farnsworth Creek in Warren County, in order to permit rearing fingerling fish to catchable size. This rearing station was constructed under plans and recommendations made by the United States Fish and Wildlife Service and the station was operated by the United States Fish and Wildlife Service for a short time before the outbreak of the war. Shortages of fish food and personnel made it necessary to close this station during the war years, but it is to be reopened in August, 1946, for year-long operation. This plant is expected to augment the annual supply of legal size fish available for release in streams of the National Forest. By pooling the restocking efforts of the State of Pennsylvania, the United States Fish and Wildlife Service and the Allegheny National Forest, it is hoped to develop sport fishing on the forest to a high level.

Prior to the war, a 57-acre lake was developed on the Allegheny Forest in the vicinity of Marienville utilizing labor from emergency conservation camps. This body of water and the surrounding land area are managed under cooperative agreements with the Pennsylvania Board of Fish Commissioners and the Pennsylvania Game Commission. The area has served as a water fowl and small game refuge for a number of years, and the State fish hatchery at Tionesta removes from the lake each year a considerable number of bass and other warm water fishes for stream stocking. Eventually, it is planned that a portion of this lake will be opened for public fishing.

One of the outstanding advantages of multiple use operation on public land is the opportunity for long-range planning to develop and maintain forest streams in a condition conducive to maximum production of fish. Many of the normal forest management functions peculiar to national forests contribute directly to better stream con-



BEAR CREEK
Open Section Being Improved.



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Prior to the war, a 57-acre lake was developed on the Allegheny Forest in the vicinity of Marienville utilizing labor from emergency conservation camps. This body of water and the surrounding land area are managed under cooperative agreements with the Pennsylvania Board of Fish Commissioners and the Pennsylvania Game Commission. The area has served as a water fowl and small game refuge for a number of years, and the State fish hatchery at Tionesta removes from the lake each year a considerable number of bass and other warm water fishes for stream stocking. Eventually, it is planned that a portion of this lake will be opened for public fishing.

One of the outstanding advantages of multiple use operation on public land is the opportunity for long-range planning to develop and maintain forest streams in a condition conducive to maximum production of fish. Many of the normal forest management functions peculiar to national forests contribute directly to better stream con-



BEAR CREEK
Open Section Being Improved.

ditions. The planting of numerous cut-over, burned-over areas is an important factor in controlling erosion and water run-off and this makes for clearer fishing streams. An intensive program of fire prevention and suppression also is important in preserving watershed values which will be reflected in improved habitat for fish. During the depression-born Emergency Conservation program thousands of CCC man-days were expended in planting steep surfaces for control of erosion and timber production, also, many miles of fishing waters were improved by the construction of low-log dams and other stream improvement devices. These operations are costly and their full benefits can be reaped by the public only when access to the areas for a long period of years is guaranteed. National forests, under public ownership, afford assurance of continued availability of any improvement resulting from programs of this nature.

With the war years behind us, the Allegheny National Forest faces a growing pressure of public interest in hunting, fishing, and other recreational opportunities. Organized sportsmen have displayed a strong interest in plans for reopening the Farnsworth Fish Rearing Station and the fishing load on the forest reached an all-time high during the 1946 season. Responsibility for meeting this increased pressure is not viewed lightly. Land managers are keenly aware of the opportunity to develop something here unique in the field of recreational planning for Northwestern Pennsylvania. With the help of the Pennsylvania Board of Fish Commissioners, the United States Fish and Wildlife Service, and the local sportsmen the Allegheny National Forest stands ready to launch a program for improving watershed and stream conditions to meet the growing demand for sport fishing opportunities. Such a program will be an important contribution for the enjoyment of people of Pennsylvania.

NOTES ON PENNSYLVANIA FISHES OBTAINED IN 1943, 1944 AND 1945

By HENRY W. FOWLER

Curator of Fishes, The Academy of Natural Sciences of Philadelphia

The annotated list given below is based on field studies and small lots of specimens, also received or collected, during the several years indicated above. Several are noteworthy as distributional items. I am indebted to the Board of Fish Commissioners for the successive permits to collect or secure Pennsylvania fishes desired for the museum of the Academy of Natural Sciences of Philadelphia. To Mr. C. A. French, Commissioner of Fisheries, acknowledgment is offered for favors in the same connection.

1943

1. Tohickon Creek at Stovers Park, Bucks County, August 6. Water low and fish found only in pools. The specimens from this locality were collected by Henry W. Fowler, Jr., and of the localities following, unless otherwise stated, the materials were also secured largely by him.
2. Tributary of Tohickon Creek south of Applebachville, Bucks County, August 6.
3. Tributary of Pleasant Spring Creek, west of St. Peter's Lutheran Church, Montgomery County, August 6.

1944

4. Bock Creek, tributary of the Delaware River near Yardley, Bucks County, July 1. Clear stream flowing largely through woodland and brush. R. B. Farley and the writer, also 5, 6 and 7.
5. Queen Anne Creek headwaters, tributary to Mill Creek, Bucks County, July 1, east of Hulmeville. Clear broad stream, with gravel and mud bottom, current rather sluggish.
6. Queen Anne Creek in West Branch at Frosty Hollow bridge, July 1. Meadow stream with average width about 10 feet. Found black snake (*Bascanion constrictor*).
7. Queen Anne Creek at junction of East and West Branches, July 1. Found pickerel frogs (*Rana palustris*) and spring frogs (*Rana clamata*).
8. Munchinipattus Creek, near Secane, Delaware County, July 2. R. Fritz and J. Bernard Peterson.

9. Tohickon Creek at Stover's Park, Bucks County, July. A. McKnight and Henry W. Fowler, Jr., also 10 and 11. Salamanders (*Eurycea bislineata*) and toads (*Bufo americanus*).

10. Tinicum Creek mile east of Headquarters, tributary to the Delaware River, Bucks County, July 3, One salamander (*Desmognathus fusca*) seen.

11. North of Glenolden Park, in Munchinipattus Creek, Delaware County, July 16.

12. Tohickon Creek at Stover's Park, Bucks County, October. Two bull frogs (*Rana catesbeiana*).

1945

13. Island Lake, 4 $\frac{1}{4}$ miles east of Starruca, altitude 1800 feet. Wayne County, in July. Dr. Francis Harper. These specimens and the others listed herein from Wayne County were collected for the Reading Museum, to the Director of which I am indebted for the permission of reporting them in this connection.

Dr. Harper's other stations are 14, 15 and 16.

14. Island Lake, 3 $\frac{3}{4}$ miles east of Starruca, August 4 and 7.

15. Pocono Lake, Monroe County, April 27.

16. Pocono Lake at southwest end, May 14.

17. Near Shehawken, Wayne County, August 15, Mr. W. Dix.

The above stations are indicated by being placed in parenthesis, following the locality name, and under the respective species listed below.

THE SALMON (*Salmonidae*)

BROWN TROUT (*Salmo trutta*) (Introduced)

One caught on a dry fly in McMichael's Creek, Monroe County, July 9, 1944, by Mr. J. W. Lippincott. This is a hybrid greatly like the ones I figured in 1942 (Biennial Rep. Pa. Fish Comm., p. 60).

THE BULLHEADS (*Ameiuridae*)

BULLHEAD (*Ameiurus nebulosus nebulosus*)

Six, 15 to 18 mm., Island Lake 4 $\frac{1}{8}$ miles east of Starruca, Wayne County, altitude 1,832 feet, July 15, 1945. Dipped up from a compact school of 400 to 500, attended by adult. Dr. Harper. Tohickon Creek (1).

MARGINED MADTOM (*Schilbeodes marginatus marginatus*)

Stover's Park (12).

THE MINNOWS (*Cyprinidae*)

CARP (*Cyprinus carpio*)

Tohickon Creek (1).

CUT-LIPS (*Exoglossum maxillingua*)

Tohickon Creek (1) adult specimen angled.

ROACH (*Notemigonus crysoleucas crysoleucas*)

Applebachville (2), Pleasant Spring Creek (3), Queen Anne Creek in West Branch (6). Island Lake (13) one 77 mm. July 14, one 109 mm. July 19, two 134 to 137 mm. July 22.

BRIDLED MINNOW (*Notropis bifrenatus*)

Tohickon Creek (1).

SPOT-TAIL SHINER (*Notropis hudsonius amarus*)

Queen Anne Creek in West Branch (6) six, largest 47 mm., and at junction (7).

SILVER-FIN (*Notropis analostanus*)

Tohickon Creek (1), Pleasant Spring Creek (3), Tinicum Creek (10), Stover's Park (12).

RED-FIN (*Notropis cornutus*)

Tohickon Creek (1), Pleasant Spring Creek (3), West Branch Queen Anne Creek (6) adults but without red on fins, Queen Anne Creek junction (7), Secane (8), Tohickon Creek (9) young common, Tinicum Creek (10), near Shehawken (17) called "shiner" three 85 to 105 mm.

IRON-COLORED SHINER (*Notropis chalybaeus*)

Applebachville (2), Pleasant Spring Creek (3).

ATTRACTIVE SHINER (*Notropis amoenus*)

Tohickon Creek (1).

CREEK CHUB (*Semotilus atromaculatus atromaculatus*)

Secane (8) common, Tohickon Creek (9), Tinicum Creek (10), Island Lake (14) August 4 from clear brook in alder bog.

LONG-NOSED DACE (*Rhinichthys cataractae*)

Island Lake (13) two 64 to 73 mm. from clear water in rocky brooklet in woods July 8.

BLACK-NOSED DACE (*Rhinichthys atronasmus atronasmus*)

Tohickon Creek (1), Brock Creek (4) half grown, Queen Anne Creek (5), Secane (8) common, Tinicum Creek (10) common, Island Lake (13) one 44 mm. July 8, near Shehawken (17) five 55 to 68 mm. from small brook. Fritz's Run, tributary of Coles-Fishing Creeks in Susquehanna River basin at Bloomsburg, Columbia County, July 9, 1945, R. Fritz, also 6 from Minnie's Run, otherwise same data.

THE SUCKERS (*Catostomidae*)

CHUB SUCKER (*Erimyzon sucetta*)

Applebachville (2), West Branch of Queen Anne Creek (6) young.

SUCKER (*Catostomus commersonnii commersonnii*)

Queen Anne Creek headwaters (5), West Branch Queen Anne Creek (6), West Branch Queen Anne Creek (6) young, Queen Anne Creek junction (7), Secane (8) young.

THE PIKES (*Esocidae*)

CHAIN PICKEREL (*Esox niger*)

Island Lake (14) two 40 to 46 mm. August 4. In both maxillary not reaching eye.

THE KILLIFISHES (*Cyprinodontidae*)

BARRED KILLIFISH (*Fundulus diaphanus diaphanus*)

Tohickon Creek (1), Pleasant Spring Creek (3), Stover's Park (12), Pocono Lake (16) one 56 mm., from aquatic vegetation on shallow edge of lake.

THE PERCHES (*Percidae*)

YELLOW PERCH (*Perca flavescens*)

Island Lake (13) July 19 one 136 mm.

TESSELLATED DARTER (*Boleosoma nigrum olmstedii*)

Brock Creek (4) one, Queen Anne Creek junction (7), Secane (8) common, Tinicum Creek (10).

THE SUNFISHES (*Centrarchidae*)

BLUE-SPOTTED SUNFISH (*Enneacanthus gloriosus*)

Island Lake (13) July 16 one 49 mm.

RED-BELLIED SUNFISH (*Lepomis auritus*)

Tokickon Creek (1) young and several adults, Pleasant Spring Creek (3) and Stover's Park (12).

SUNFISH (*Lepomis gibbosus*)

West Branch Queen Anne Creek (6) four the largest 125 mm.: Island Lake (13) one 78 mm. July 12, one 83 mm. July 15, one 119 mm. July 15: (14) one 73 mm. August 7; Pocono Lake (16) one 43 mm.

SMALL-MOUTH BASS (*Micropterus dolomieu dolomieu*)

Tohickon Creek (1).

BIBLIOGRAPHY

My paper listed below for 1938 gives a clue to the literature on Pennsylvania fishes. This and my other papers are as follows:

1938. Notes on Pennsylvania Fishes 1928-1935. Pennsylvania Board of Fish Commissioners. Combined Biennial Reports, period ending May 31, 1938, pp. 101 to 108.

1940. A List of the Fishes recorded from Pennsylvania. Bull. No. 7. Pennsylvania Board of Fish Commissioners, April, 1940, pp. 1 to 25.

1942. Notes on Pennsylvania Fishes obtained in 1940, 1941 and 1942 with an account of a new genus of Rosy-sided Dace. Pennsylvania Board of Fish Commissioners Biennial Report for the period ending May 31, 1942, pp. 50 to 55, 1 fig.

—. The Salmon-like Fishes of Pennsylvania. Op. cit., pp. 55 to 63, 2 text figs.

1946. Notes on Fishes obtained in Berks County, Pennsylvania. (In preparation.)

NOTES ON FISHES OBTAINED IN BERKS COUNTY, PENNSYLVANIA

By HENRY W. FOWLER

Curator of Fishes, The Academy of Natural Sciences of Philadelphia

The present account is based primarily on the collections made by Mr. Earl D. Poole, Director of The Reading Museum, where they have all been placed. They were obtained in 1944, and number upwards of 250 specimens representing 33 species, of which eight are reported herein for the first time for Berks County. These are indicated by the prefixed asterisk.

This publication is only a preliminary notice, affording an annotated list of the species obtained, with their respective localities, together with the comparatively few published records. These are mostly contained in several of my papers listed in concluding. I also include a small collection submitted in the Academy by Mr. Warren E. Fox in 1935. Berks County comprises a region of interest in south-eastern Pennsylvania in the distribution of fishes and long neglected in comparison with the activities in the adjacent areas of Lancaster, Lehigh and Montgomery Counties. I am therefore indebted to Mr. Poole for the opportunity to study his collections and report this survey, which he has so ably started.

LAMPREY (*Petromyzon marinus*)

Schuylkill River formerly (1907) where it joins with Sixpenny Creek, near Douglasville. Though I have no definite records, it was reported as occasional in the spring, sometimes attached to suckers and catfish.

*BROWN TROUT (*Salmo fario*) (Introduced species)

One, 185 mm. from Long Swamp, Little Lehigh Creek, September 27. Bright red spots in 3 scattered rows along middle of side and similar darker spots on back. Dorsal with small inconspicuous brown spots. Paired fins and anal pale chrome orange to buff yellow.

BROOK TROUT (*Salvelinus fontinalis fontinalis*)

I reported it in 1917 from Cold Run.

COMMON CAT (*Ameiurus nebulosus nebulosus*)

Two, 145 to 178 mm., in Wyomissing Creek, Museum Park, Reading, October 2. I first reported it from Sixpenny Creek near Douglasville, in 1907; in 1917 at Pennsburg in the Perkiomen Creek.

*EASTERN STONE CAT (*Schilbeodes marginatus marginatus*)

One, 89 mm., from West Branch of Perkiomen Creek at Hereford, September 27.

CARP (*Cyprinus carpio*) (Introduced species)

Reported from the Schuylkill River near Douglasville in 1907.

*BLUNT-NOSED MINNOW (*Hyborhynchus notatus*)

Two, 58 to 80 mm., West Branch of Perkiomen Creek at Hereford, September 7; two, 58 to 65 mm., Little Swatara Creek near Rehreitsburg, October 2; five, 54 to 78 mm., Big Northkill Creek near J. O'Leary farm, October 17; one, 71 mm., Little Northkill Creek near Bernville, October 2. Specimens collected October 17 with muzzle, top of head and fins with pink tints.

CUT-LIPS (*Exoglossum maxillingua*)

Recorded in 1917 from near Lime Kiln, and from the Conestoga Creek at Joanna; in 1919 from the Little Swatara Creek near Schubert.

Two, 128 to 134 mm., Wyomissing Creek, Museum Park, Reading, April 3, 1937; one, 61 mm., same locality as preceding, September 6, 1944; two, 88 to 121 mm., Muddy Creek near Bowmansville, Conestoga Creek basin (Lancaster County), September 7; one, 51 mm., Allegheny Creek, September 7; three, 71 to 86 mm., Conestoga Creek near Morgantown, September 11; two, 56 to 85 mm., Little Northkill Creek near Bernville, October 17; one, 68 mm., Big Northkill Creek near J. O'Leary farm, October 17.

ROACH (*Notemigonus crysoleucas crysoleucas*)

One, 113 mm., Wyomissing Creek, Museum Park, Reading, October 2.

Recorded from the Perkiomen Creek at Pennsburg in 1917; near Lime Kiln in 1917; Meckville in 1917, common and mostly young; Conestoga Creek at Joanna in 1917.

SWALLOW SHINER (*Notropis procne procne*)

Two, 54 to 55 mm., Little Swatara Creek near Rehreitsburg, October 2.

Recorded from near Lime Kiln in 1917; Meckville in 1917, abundant.

BRIDLED SHINER (*Notropis bifrenatus*)

Recorded from near Lime Kiln in 1917.

*EASTERN SPOT-TAIL SHINER (*Notropis hudsonius amarus*)

One adult recorded from Meckville in 1917.

One, 84 mm., Little Swatara Creek near Rehreitsburg, October 2. A pale and largely silvery specimen with biserial pharyngeal teeth, marked with gray streak along caudal peduncle, but without dark basal caudal spot. Two, 92 to 98 mm., Conestoga Creek near Morgantown, October 16.

SILVER-FIN (*Notropis whipplii analostanus*)

Recorded from near Lime Kiln and Manatawney Creek in 1917; Meckville in 1917, three adults; Little Swatara Creek near Schubert in 1919.

Two, 75 to 89 mm., Allegheny Creek, September 7, both with white borders on dorsal and caudal; one, 59 mm., Big Northkill Creek near J. O'Leary farm, October 17.

RED-FIN (*Notropis cornutus cornutus*)

Recorded from near Lime Kiln Run and Manatawney Creek in 1917; Meckville in 1917, common; in 1919 from Northkill Creek headwaters and Schubert; one, January 5 and three May 9-13, 1935, without definite locality, W. E. Fox.

Two, 66 to 108 mm., Hay Creek, Birdsboro, August 11; five, 72 to 108 mm., Muddy Creek near Bowmansville (Lancaster County), September 7; three, 45 to 120 mm., Allegheny Creek, September 7; two, 52 to 71 mm., in Conestoga Creek near Morgantown, September 11; two, 75 to 95 mm., French Creek near Hopewell, September 11; four, 83 to 110 mm., West Branch of Perkiomen Creek at Hereford, September 11, fins red bordered; two, 85 to 98 mm., Little Lehigh Creek, Long Swamp, September 27, with red bordered fins; two, 71 to 95 mm., Little Northkill Creek near Bernville, October 2; four, 53 to 91 mm., Little Swatara Creek near Rehretsburg, October 2; two, 100 to 103 mm., Conestoga Creek near Morgantown, October 16. Last with several gray black short vertical streaks on the large narrowly imbricated scales of the medial lateral series on the trunk, not as large black blotches like in the related *Notropis cerasinus* (Cope) from the Roanoke River, Virginia. Borders of fins only with pale tints. Four, 55 to 95 mm., Big Northkill Creek near J. O'Leary farm, October 17, fins red bordered.

CREEK CHUB (*Semotilus atromaculatus atromaculatus*)

Reported in Sixpenny Creek near Douglasville in 1907; in 1917 in Manatawney Creek; Meckville in 1917 very common; in 1917 from Hay and Beaver Creeks near White Bear with tributary above; in 1917 from Conestoga Creek at Joanna and tributary of Conestoga Creek near Joanna Heights; in 1919 from the headwaters of Northkill Creek near Strassberg; one taken January 6, 1935, by W. E. Fox, without definite locality.

Four, 54 to 108 mm., Hay Creek, Birdsboro, August 11, 1944; three, 60 to 64 mm., Angelica Creek, September 7; five, 69 to 150 mm., Muddy Creek near Bowmansville in Conestoga Creek basin (Lancaster County), September 7; four, 61 to 103 mm., Allegheny Creek, September 7; nine, 58 to 122 mm., Conestoga Creek near Morgantown, September 11; seven, 57 to 78 mm., West Branch of Perkiomen Creek at Hereford, September 27, all densely marked with black

parasitic cysts; seven, 51 to 66 mm., Little Lehigh Creek, Long Swamp, September 27; two, 83 to 95 mm., Little Northkill Creek near Bernville, October 2; two, 50 to 59 mm., Little Swatara Creek near Rehretsburg, October 2, greatly parasitized; three, 78 to 92 mm., Conestoga Creek near Morgantown, October 16; two, 72 to 101 mm., Big Northkill Creek near J. O'Leary farm, October 17; six, 39 to 133 mm., Big Northkill Creek, in mountain near Sandspring Trail, October 17.

*LONG-NOSED DACE (*Rhinichthys cataractae cataractae*)

In 1917 I found a single adult at Hereford, in tributary of Perkiomen Creek; one, 88 mm., Wyomissing Creek, Wyomissing, May 1, 1943 (S. Wishmieski); three, 67 to 92 mm., Hay Creek, Birdsboro, August 11, 1944; two, 69 to 75 mm., Wyomissing Creek, Museum Park, September 6; one, 78 mm., Conestoga Creek near Morgantown, September 11; two, 80 to 82 mm., Little Swatara Creek near Rehretsburg, October 2; two, 98 to 104 mm., Conestoga Creek near Morgantown, October 16, fins largely yellowish, dorsal and caudal pinkish terminally; two, 61 to 78 mm., Big Northkill Creek near J. O'Leary farm, October 17, fins all more or less pink.

BLACK-NOSED DACE (*Rhinichthys atronasmus atronasmus*)

Reported from small brook tributary to Sixpenny Creek, near Douglasville, in September, 1907; in 1917 in the Perkiomen Creek tributary at Hereford, near Lime Kiln Run, Meckville very common; in 1919, Strassberg, Northkill Creek headwaters, Schubert and Tulpehocken; in 1917 from White Bear and brooks above, Geigertown, Cold Run, Joanna Heights and Joanna; one, May 12, 1935, without definite locality, by W. E. Fox.

Four, 44 to 66 mm., Wyomissing Creek, June 15, 1937; three, 61 to 75 mm., in Hay Creek, Birdsboro, August 1, 1944; two, 43 to 83 mm., Wyomissing Creek, Museum Park, September 6; four, 74 to 90 mm., Angelica, September 7; three, 43 to 63 mm., Muddy Creek near Bowmansville in Conestoga Creek basin (Lancaster County), September 7; one, 76 mm., Allegheny Creek, September 7; two, 69 to 70 mm., Conestoga Creek near Morgantown, September 11; one, 68 mm., West Branch of Perkiomen Creek at Hereford, September 27; three, 57 to 72 mm., Little Lehigh Creek, Long Swamp, September 27; four, 58 to 69 mm., Little Northkill Creek near Bernville, October 2; one, 43 mm., Little Swatara Creek near Rehretsburg, October 2; four, 63 to 69 mm., Conestoga Creek near Morgantown, October 16, all with red lower fins; one, 66 mm., Big Northkill Creek near J. O'Leary farm, October 17, lower fins vermilion; four, 62 to 78 mm., Big Northkill Creek near Sandspring Trail, October 17.

CRESTED CHUB (*Nocomis micropogon*)

Recorded in 1917 from the Little Swatara Creek near Schubert. Two, 79 to 126 mm., Little Swatara Creek near Rehretsburg, August 2, both thickly studded with small black parasitic cysts.

CHUB SUCKER (*Erimyzon sucetta*)

Reported in 1907 from Sixpenny Creek near Douglasville, and called "May Sucker."

BLACK SUCKER (*Hypentelium nigricans*)

Recorded in 1917 from Meckville, very common; in 1919 from the Little Swatara near Schubert.

One, 128 mm., Muddy Creek near Bowmansville (Lancaster County) in basin of Conestoga Creek, September 7.

COMMON SUCKER (*Catostomus commersonnii commersonnii*)

Reported in Sixpenny Creek during the spring of 1907 ascending to spawn; recorded by me in 1917 from Hereford and Pennsburg, near Lime Kiln and in Manatawney Creek, few at Meckville; in 1919 from the Little Swatara Creek near Schubert.

One, 75 mm., Wyomissing Creek, June 15, 1937; five, 51 to 94 mm., Wyomissing Creek, Museum Park, September 6, 1944; one, 104 mm., Angelica Creek, September 7; one, 119 mm., Muddy Creek near Bowmansville in Conestoga Creek basin (Lancaster County), September 7; one, 65 mm., Allegheny Creek, September 7; four, 59 to 96 mm., Conestoga Creek near Morgantown, September 11; three, 59 to 67 mm., West Branch Perkiomen Creek at Hereford, September 27; one, 69 mm., Little Northkill Creek near Bernville, October 2; three, 64 to 160 mm., Little Swatara Creek near Rehretsburg, October 2; two, 87 to 178 mm., Conestoga Creek near Morgantown, October 16. Larger with flanks and lower sides of body, of both abdomen and tail, rich orange yellow. All lower fins including caudal below, tinged with light orange red. Both rays and anal fin and lower caudal rays studded with feeble or somewhat obsolete tubercles. Three, 55 to 205 mm., Big Northkill Creek near J. O'Leary farm, October 17, in largest specimens anal rays feebly tuberculated.

EEL (*Muraena bostoniensis*)

Reported in the Schuylkill River at Douglasville in 1907, but not found by me, but recorded in 1917 from the Perkiomen Creek at Pennsburg.

BANDED PICKEREL (*Esox americanus*)

Recorded from the Perkiomen Creek at Pennsburg in 1917; in 1919 from the headwaters of Northkill Creek west of Straussberg.

One, 194 mm., Wyomissing Creek, Reading Museum, December 29, 1928; two, 79 to 104 mm., French Creek near Hopewell, September 11, 1944.

BARRED KILLIFISH (*Fundulus diaphanus diaphanus*)

Recorded from a tributary of Perkiomen Creek at Hereford in 1917; near Lime Kiln and in Manatawney Creek in 1917; headwaters of Northkill Creek west of Straussberg in 1919.

TESSELLATED DARTER (*Boleosoma nigrum olmstedii*)

Recorded in 1917 from the Perkiomen Creek near Hereford; near Lime Kiln and in Manatawney Creek, Meckville, very common, Hay Creek and Beaver Creek at White Bear; in 1919 from Northkill Creek headwaters near Schubert and Tulpehocken Creek headwaters. Three without definite locality from W. E. Fox obtained May 10, 1935.

One, 64 mm., Hay Creek, Birdsboro, August 11, 1944; two, 60 to 68 mm., Wyomissing Creek, Museum Park, September 6; one, 43 mm., Angelica Creek, September 7; one, 63 mm., Muddy Creek near Bowmansville, Conestoga Creek basin (Lancaster County), September 7; four, 47 to 71 mm., Allegheny Creek, September 7; four, 50 to 60 mm., Conestoga Creek near Morgantown, September 11; one, 56 mm., French Creek near Hopewell, September 11; one, 61 mm., West Branch of Perkiomen Creek at Hereford, September 27, well studded with many black parasites; one, 40 mm., Little Lehigh Creek, Long Swamp, September 27; one, 79 mm., Wyomissing Creek, Museum Park, Reading, October 2; one, 59 mm., Little Northkill Creek near Bernville, October 2; two, 52 to 53 mm., Little Swatara Creek near Rehretsburg, October 2; two, 51 to 66 mm., Conestoga Creek near Morgantown, October 16; four, 50 to 61 mm., Big Northkill Creek near J. O'Leary's farm, October 17, all quite yellow; one 64 mm., Big Northkill Creek in mountains near Sandspring Trail, October 17.

*WHITE CRAPPIE (*Pomoxis annularis*) (Introduced species)

One, 166 mm., Joanna ice dam, June 20, 1937. Depth of body $2\frac{3}{4}$. Pale in color and with usual darker markings also pale.

*RED-EYED BASS (*Ambloplites rupestris rupestris*) (Introduced species)

One, 58 mm., Conestoga Creek near Morgantown, September 11; one, 110 mm., same locality, October 16.

RED-BREASTED SUNFISH (*Lepomis auritus*)

Recorded in 1917 from near Lime Kiln and in Manatawney Creek. Two, 51 to 115 mm., Allegheny Creek, September 7, 1944; one, 87 mm., Conestoga Creek near Morgantown, September 11; one, 49 mm., West Branch of Perkiomen Creek at Hereford, September 27; three, 72 to 123 mm., Little Swatara Creek near Rehretsburg, October 2; one, 90 mm., branch of Northkill Creek near J. O'Leary farm, October 17.

*BLUE SUNFISH (*Lepomis macrochirus*) (Introduced species)

One, 105 mm., Allegheny Creek, September 7, 1944.

SUNFISH (*Lepomis gibbosus*)

Reported common in the Schuylkill River at Douglasville in 1907; recorded in 1917 from the Perkiomen Creek near Pennsburg and the Conestoga Creek at Joanna.

One, 100 mm., Conestoga Creek near Morgantown, October 16.

SMALL-MOUTHED BLACK BASS (*Micropterus dolomieu dolomieu*)

Recorded in 1917 from near Lime Kiln.

*SCULPIN (*Cottus bairdii bairdii*)

Two, 57 to 62 mm., Wyomissing Creek, June 15, 1944.

BIBLIOGRAPHY

1917. Notes on Fishes from New Jersey, Pennsylvania and Maryland. Proc. Acad. Nat. Sci., Philadelphia, 1917 (April 24), Pennsylvania Fishes, pp. 115 to 122. My Hereford records were from specimens collected with Mr. E. S. Mattern on August 7, in a tributary of the Perkiomen Creek. At this locality it is a rapid brook, with riffles and pools and the bottom of red shale. The Pennsburg materials with same data were from the Perkiomen Creek: where we examined, it is a broad stream, mostly shallow and flowing over red shale rocks and stones.
1918. Fishes from the Middle Atlantic States and Virginia. Occas. Papers, Univ. Michigan, No. 56, May 6, Pennsylvania Fishes, pp. 8 to 14. These records are from Lime Kiln in Oley Township and Manatawney Creek "near Stony town," September 24, 1917; and Branch of Cross Kill Creek near Meckville, September 27, 1917.
1920. Notes on New Jersey, Pennsylvania and Virginia Fishes. Proc. Acad. Nat. Sci., Philadelphia, 1919 (March 11, 1920). Pennsylvania Fishes, pp. 298 to 300. The specimens were obtained with Mr. E. S. Mattern, April 28, 1919:
1. Headwaters of Northkill Creek near Straussberg, in East Branch, basin of the Schuylkill River: rapid rocky stream, with a few still reaches along a hemlock bluff.
 2. Headwaters of Northkill Creek west of Straussberg.
 3. Little Swatara Creek near Schubert, basin of Susquehanna River.
 4. Headwaters of the Tulpehocken Creek south of Strausstown.

EDUCATION AND PUBLICITY

Education became one of the major functions of the Board during the war years. The main thought was to provide programs for those who were working long hours in the various war industries.

Many meetings were held in all sections of the Commonwealth. This branch of the service was headed by the Commissioner of Fisheries and a staff of capable speakers, who of necessity were continuously on the road throughout the winter months. During the fishing season, special programs were set up with opportunity for instruction in fly and bait casting. Much credit should be given to those members of the Pennsylvania Federation of Sportsmen's Clubs who gave so generously of their time in promoting these projects.

Of particular interest were the many meetings in schools throughout the Commonwealth. A tremendous interest was shown in conservation work. It is hoped to enlarge this program during the next few years as it means much to the future of conservation in Pennsylvania.

This program is to be extended and additional personnel will no doubt be added so that a well-rounded program can be put into effect.

Some excellent films in color are now available and can be secured by contacting the Board of Fish Commissioners, Harrisburg, Pennsylvania.

The following titles are available:

- "Trout at the Pennsylvania Fish Farms"
(16 mm., black and white, two reels, silent)
- "Small Mouth Black Bass at the Pennsylvania Fish Farms"
(16 mm., technicolor, two reels, silent)
- "Harvesting Fish Eggs at Pymatuning Sanctuary"
(16 mm., technicolor, silent, two reels)
- "Courtship and Spawning of Brook Trout"
(16 mm., technicolor, silent, one reel)
- "Oddities No. 1"
(16 mm., technicolor, one reel, silent)
- "Oddities No. 2"
(16 mm., technicolor, two reels, silent)
- "Nesting of the Ruby Throated Humming Bird"
(16 mm., technicolor, one reel, silent)
- "Fresh Water Fishing"
(16 mm., black and white, one reel, silent)

The Pennsylvania Angler is really a textbook for those interested in fish and fishing—many fine articles by authorities throughout the country appear monthly and instructions are made available for those interested in all types of fishing. We recommend it. The subscription price is fifty cents a year.

ACKNOWLEDGMENTS

The Board is indeed grateful to the press for the many excellent articles of interest appearing in the papers throughout the Commonwealth, thereby bringing to the attention of the fisherman and those interested in conservation news items and articles on conservation.

Exceptional cooperation was also received by the press during the emergency by publishing many new regulations set up by the Board or the various agencies responsible.

We also desire to express our thanks for the fine cooperation given the Board by the Federation of Sportsmen's Clubs and the various individual groups throughout the Commonwealth. They did a particularly good job with the teenagers who were in great need of programs such as those sponsored by these groups. Many letters of commendation have been received by the Board supporting and lending help towards carrying out programs of this character.

To those employees of the Board who remained on their jobs in the central offices, hatcheries, and protection service, much credit must be given for their loyalty and devotion to the work—it required many long hours to keep the standard of the various hatcheries on a high level and they really did their part toward winning the war by giving a most excellent service, thereby helping to keep up the food supply.

No written words can do credit to those employees who were in the service—many have returned after doing their part to keep us a free people, which is a debt we can't repay. Our thanks to all of you.

FINANCIAL STATEMENTS CHARTS AND STATISTICS

COMBINED BIENNIAL REPORTS

PERIOD

ENDING MAY 31, 1946

(Financial Statement and Pie Charts Complete 1946)

THE FISH COMMISSION BUDGET AND THE POST-WAR PROGRAM

Prior to the war, it was possible to estimate with some degree of accuracy the amount of revenue necessary to operate the various functions for a biennium.

The Fish Commission is operated similar to any other industry dealing with livestock and had to meet not only labor problems resulting from a great many men entering the service, but also was faced with unprecedented expenditures in order to keep up with the greatly increased distribution which was so necessary owing to the fact that recreation is its main function—many leaders of industry publicly stated recreation was most important to those in their employ who were working long hours in various industries.

In previous years, the Board carried on a construction and maintenance program to increase production and modernize the hatcheries. This work came to a complete standstill shortly after we entered the war and at the time of writing this report, it is not possible to purchase in the open market those things which are required to inaugurate a program of this character.

Under ordinary conditions and with normal revenue a considerable balance should have been accumulated over the war years. However, an examination of the financial statement will show the expenditures for the various functions equaled those in pre-war years and in some instances were increased by several hundred per cent. As an example, food for the hatcheries which a few years ago was purchased for 4½ cents a pound is now from 9 cents to 13 cents a pound, and the expenditures for this one item alone for 1945 amounted to \$128,949.97.

Much has been said about a post-war program which would include a stream purchasing program. In order to inaugurate a successful plan of this character in a State such as Pennsylvania, ample revenue should be available each year to continue not only with the acquisition of additional waters but also assure that the program would not suffer from insufficient funds.

In order to inaugurate such a program additional revenue must be acquired either through an increase in the fishermen's license or by direct appropriation—appropriations should only be considered if the areas to be created are of a general nature covering all recreation.

Any program such as this is directly up to the fishermen of the Commonwealth. The Fish Commission would be guided by their recommendations in the matter.

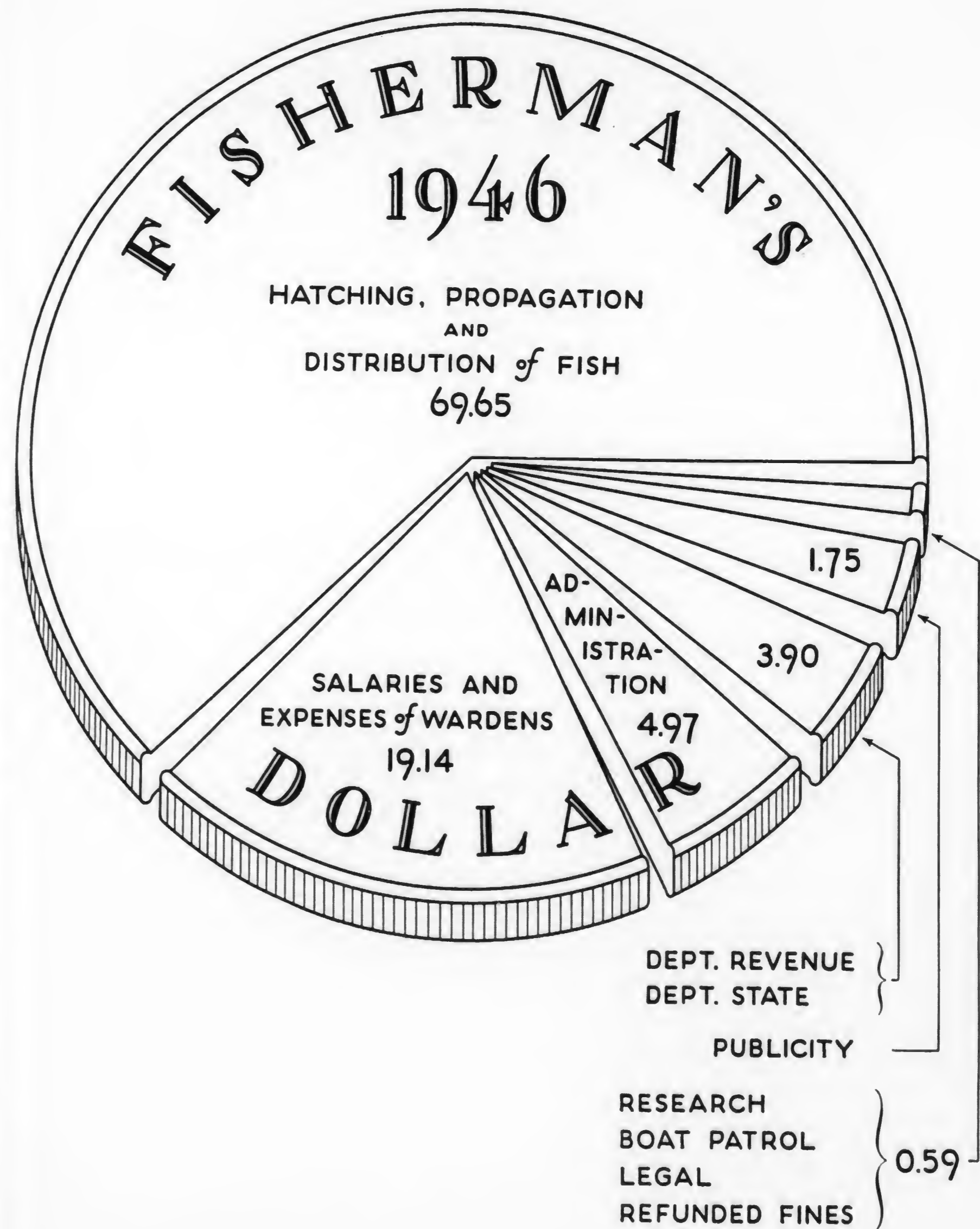
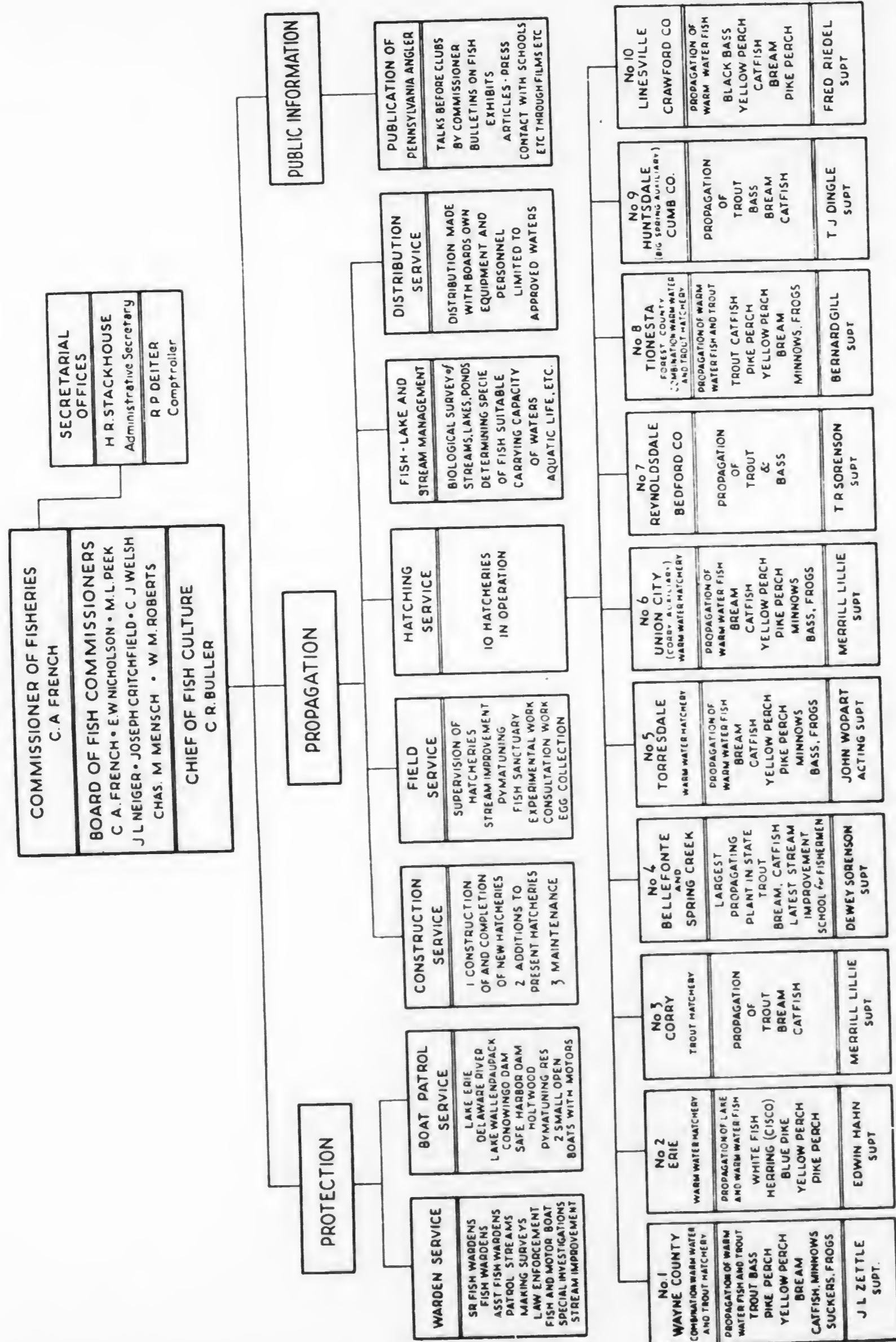
It is estimated that the Rehabilitation and Construction Program as at present formulated would require \$759,334. Plans and specifications are already available for the greater part of this work, which will cover construction of ponds, building of bulkheads, extension of electrical systems, hatching houses, garages, and the completion of work already started at the Pymatuning Sanctuary, which will be the largest fresh water fish hatchery in the country.

The following statement shows the approximate amounts to be expended at each hatchery together with items for construction and hatchery equipment. If sufficient funds are not available to carry on the work which has been planned, including capital expenditures, the Board will confine its operations to the various projects which will contribute to increased production of fish. One of the "musts" and first on the list is to provide the necessary rolling stock for the distribution program. At present we have but thirteen trucks out of the forty-five which were in the fleet.

BELLEFONTE	\$191,775
PLEASANT MOUNT	101,812
HUNTSDALE	91,167
REYNOLDSDALE	23,000
ERIE	12,000
CORRY	42,000
UNION CITY	21,000
TIONESTA	8,500
TORRESDALE	None
PYMATUNING SANCTUARY	62,960
CONSTRUCTION EQUIPMENT	27,510
HATCHERY EQUIPMENT	177,610
TOTAL	\$759,334

We invite your further inspection of the various financial statements on the following pages:

COMMONWEALTH of PENNSYLVANIA
BOARD OF FISH COMMISSIONERS
 MAY 1, 1946



**FINANCIAL STATEMENT
BOARD OF FISH COMMISSIONERS
CALENDAR YEAR 1943**

BALANCE—January 1, 1943		\$686,324.71
RECEIPTS—Calendar Year 1943:		
Fish Law Fines	\$9,445.00	
Commercial Hatchery Licenses	815.00	
Motor Boat Fines	120.00	
Lake Erie Licenses	1,638.00	
Non-Resident Fishing Licenses	16,366.80	
Tourists' Fishing Licenses	4,744.75	
Interest	4,570.02	
Resident Fishing Licenses	488,030.30	
Motor Boat Licenses	6,188.75	
Contributions for Restocking Streams	10,400.00	
Sale of Publications	3,698.75	
Eel Chute Licenses	53.00	
Sale of Unserviceable Property	13,304.80	
Miscellaneous	7.99	
	559,383.16	
Total Funds Available		\$1,245,707.87

EXPENDITURES—Calendar Year 1943:

ADMINISTRATION	\$27,792.00
Salaries	2,353.61
Wages	2,754.73
Printing, Binding and Stationery	229.46
Materials and Supplies	1,818.88
Traveling Expenses	409.12
Motor Vehicle Supplies and Repairs	23.54
Freight, Express and Cartage	1,064.50
Postage	1,698.85
Telephone and Telegraph	45.45
Contracted Repairs	27.90
Rent of Real Estate	193.37
Insurance, Surety and Fidelity Bonds	1,525.00
Motor Vehicles	101.83
Equipment and Machinery	
Total	\$40,038.24

WARDEN SERVICE	\$64,461.50
Salaries	7,319.31
Wages	16.08
Printing, Binding and Stationery	397.25
Materials and Supplies	43,702.18
Traveling Expenses	2,006.83
Telephone and Telegraph	55.00
Rent of Real Estate	406.58
Insurance, Surety and Fidelity Bonds	
Total	\$118,364.73

HATCHING SERVICE	\$125,486.40
Salaries	74,897.63
Wages50
Fees	122.39
Printing, Binding and Stationery	110,379.87
Food and Forage	

**FINANCIAL STATEMENT
BOARD OF FISH COMMISSIONERS
CALENDAR YEAR 1943—Continued**

Materials and Supplies	\$14,868.65
Traveling Expenses	5,779.11
Motor Vehicle Supplies and Repairs	14,516.91
Freight, Express and Cartage	146.60
Postage	682.70
Telephone and Telegraph	1,787.08
Light, Heat, Power, Water and Fuel	21,045.27
Contracted Repairs	538.51
Rent of Real Estate	638.00
Rent of Equipment	83.40
Insurance, Surety and Fidelity Bonds	1,556.98
Equipment and Machinery	352.98
Total	\$372,882.98

FIELD SERVICE

Salaries	\$13,255.92
Wages	5,817.26
Fees	200.50
Printing, Binding and Stationery	71.38
Materials and Supplies	283.65
Traveling Expenses	1,469.94
Motor Vehicle Supplies and Repairs	106.74
Freight, Express and Cartage	1.07
Telephone and Telegraph	1,045.48
Contracted Repairs	80.50
Rent of Real Estate	15.00
Rent of Equipment	52.00
Insurance, Surety and Fidelity Bonds	66.79
Equipment and Machinery	8.25
Total	\$22,474.48

CONSTRUCTION WORK

Wages	\$1,425.30
Materials and Supplies	1,275.13
Motor Vehicle Supplies and Repairs	706.72
Total	\$3,407.15

EDUCATION AND PUBLICITY

Wages	\$4,372.87
Fees	1,650.00
Printing, Binding and Stationery	5,966.10
Materials and Supplies	203.82
Traveling Expenses	973.63
Postage	650.00
Contracted Repairs	3.00
Rent of Real Estate	165.00
Insurance, Surety and Fidelity Bonds	19.51
Other Maintenance Services and Expenses	7.50
Total	\$14,011.46

**FINANCIAL STATEMENT
BOARD OF FISH COMMISSIONERS
CALENDAR YEAR 1943—Continued**

RESEARCH		
Printing, Binding and Stationery	\$38.74	
Materials and Supplies	92.45	
Equipment and Machinery	56.95	
Total	<u>\$188.14</u>	
STORES ACCOUNT		
Materials and Supplies—(Credit)	\$1,663.22	
Motor Vehicle Supplies	60.48	
Total—(Credit)	<u>\$1,602.74</u>	
BOAT PATROL SERVICE		
Materials and Supplies	\$83.30	
Total	<u>\$83.30</u>	
LEGAL EXPENSES	\$1,301.93	
DEPENDENTS' BENEFITS	167.20	
BY REVENUE DEPARTMENT (Bureau Miscellaneous Li-		
censes)	5,270.68	
BY STATE DEPARTMENT (State Employees' Retirement		
Board)	4,025.00	
REFUNDS AND REPAYMENTS OF RECEIPTS	125.00	
PURCHASE OF LAND AND WATER		
Reining Pond	\$7,500.00	
Huntsdale	400.00	
	<u>7,900.00</u>	
		\$588,637.55
BALANCE—January 1, 1944		\$657,070.32
RECAPITULATION:		
Balance—January 1, 1943	\$686,324.71	
Receipts—Calendar Year 1943	559,383.16	
	<u>\$1,245,707.87</u>	
EXPENDITURES		
Board of Fish Commissioners	\$579,341.87	
Revenue Department	5,270.68	
State Department	4,025.00	
	<u>588,637.55</u>	
BALANCE—January 1, 1944		\$657,070.32

**FINANCIAL STATEMENT
BOARD OF FISH COMMISSIONERS
CALENDAR YEAR 1944**

BALANCE—January 1, 1944		\$657,070.32
RECEIPTS—Calendar Year 1944:		
Fish Law Fines	\$8,079.35	
Commercial Hatchery Licenses	810.00	
Motor Boat Fines	215.00	
Lake Erie Licenses	1,736.00	
Non-Resident Fishing Licenses	23,828.90	
Tourists' Fishing Licenses	6,623.50	
Interest	5,506.98	
Resident Fishing Licenses	567,268.20	
Motor Boat Licenses	11,517.50	
Sale of Publications	4,062.79	
Sale of Unserviceable Property	29.88	
Contributions	9,997.60	
Eel Chute Licenses	235.50	
Miscellaneous	99.53	
		<u>640,010.73</u>
Total Funds Available		\$1,297,081.05
EXPENDITURES—Calendar Year 1944:		
ADMINISTRATION		
Salaries	\$28,548.00	
Wages	2,436.41	
Printing, Binding and Stationery	2,015.10	
Materials and Supplies	261.92	
Traveling Expenses	2,558.93	
Motor Vehicle Supplies and Repairs	456.09	
Freight, Express and Cartage	37.82	
Postage	1,138.50	
Telephone and Telegraph	1,413.30	
Contracted Repairs	151.86	
Rent of Real Estate	28.82	
Insurance, Surety and Fidelity Bonds	292.88	
Other Maintenance Services and Expenses	3.00	
Equipment and Machinery	43.25	
Total	<u>\$39,385.88</u>	
WARDEN SERVICE		
Salaries	\$61,101.06	
Wages	14,567.61	
Printing, Binding and Stationery	8.89	
Materials and Supplies	883.12	
Traveling Expenses	47,537.09	
Telephone and Telegraph	2,077.39	
Contracted Repairs	19.14	
Rent of Real Estate	50.00	
Insurance, Surety and Fidelity Bonds	675.59	
Equipment and Machinery	76.50	
Total	<u>\$126,996.39</u>	
FIELD SERVICE		
Salaries	\$10,977.92	
Wages	5,888.21	
Fees	60.00	
Printing, Binding and Stationery	334.22	
Materials and Supplies	175.27	
Traveling Expenses	1,788.35	
Motor Vehicle Supplies and Repairs	245.13	

**FINANCIAL STATEMENT
BOARD OF FISH COMMISSIONERS
CALENDAR YEAR 1944—Continued**

Telephone and Telegraph	\$834.57	
Contracted Repairs	3.50	
Rent of Real Estate	27.00	
Rent of Equipment	153.75	
Insurance, Surety and Fidelity Bonds	149.10	
Total	\$20,637.02	
HATCHING SERVICE		
Salaries	\$110,350.59	
Wages	77,393.62	
Printing, Binding and Stationery	67.11	
Food and Forage	184,222.95	
Materials and Supplies	25,764.49	
Traveling Expenses	6,652.21	
Motor Vehicle Supplies and Repairs	16,389.19	
Freight, Express and Cartage	150.97	
Postage	689.05	
Telephone and Telegraph	1,660.87	
Light, Heat, Power, Water and Fuel	23,552.39	
Contracted Repairs	1,135.97	
Rent of Real Estate	748.00	
Rent of Equipment	235.46	
Insurance, Surety and Fidelity Bonds	1,863.66	
Equipment and Machinery	11.25	
Total	\$450,887.78	
EDUCATION AND PUBLICITY		
Wages	\$3,959.68	
Fees	1,701.50	
Printing, Binding and Stationery	6,737.23	
Materials and Supplies	65.50	
Traveling Expenses	1,064.99	
Postage	600.00	
Rent of Real Estate	180.00	
Insurance, Surety and Fidelity Bonds	29.74	
Other Maintenance Services and Expenses	4.50	
Total	\$14,343.14	
RESEARCH		
Printing, Binding and Stationery	\$341.97	
Materials and Supplies	1,480.33	
Equipment and Machinery	31.71	
Total	\$1,854.01	
BOAT PATROL SERVICE		
Materials and Supplies	\$32.91	
Total	\$32.91	
STORES		
Materials and Supplies	(Credit) \$458.71	
Total	(Credit) \$458.71	
LEGAL EXPENSES		
BY REVENUE DEPARTMENT (Bureau of Miscellaneous Li- censes)	19,312.45	
BY STATE DEPARTMENT (State Employees' Retirement Board)	3,850.00	
		\$677,223.37
BALANCE—January 1, 1945	\$619,857.68	
U. S. Treasury Certificates of Indebtedness	100,000.00	
BALANCE—(Cash) January 1, 1945	519,857.68	

**FINANCIAL STATEMENT
BOARD OF FISH COMMISSIONERS
CALENDAR YEAR 1945**

BALANCE—January 1, 1945	\$519,857.68
RECEIPTS—Calendar Year 1945:	
Resident Fishing Licenses	\$606,572.50
Non-Resident Fishing Licenses	30,856.40
Tourists' Fishing Licenses	7,599.40
Motor Boat Licenses	12,895.25
Lake Erie Licenses	1,658.00
Commercial Hatchery Licenses	875.00
Eel Chute Licenses	45.00
Fish Law Fines	9,960.00
Motor Boat Fines	240.00
Contributions for Restocking Streams	9,050.00
Sale of Publications	5,066.45
Sale of Unserviceable Property	29.32
Interest	5,642.19
Miscellaneous	170.90
	690,660.41
Total Funds Available	\$1,210,518.09
EXPENDITURES—Calendar Year 1945:	
ADMINISTRATION	
Salaries	\$26,630.80
Wages	2,099.89
Fees	20.00
Printing, Binding and Stationery	4,462.16
Materials and Supplies	362.61
Traveling Expenses	2,317.33
Motor Vehicle Supplies and Repairs	539.39
Freight, Express and Cartage	34.88
Postage	1,398.50
Telephone and Telegraph	1,484.13
Repairs	48.58
Rent of Real Estate	21.64
Insurance, Surety and Fidelity Bonds	195.82
Other Maintenance Services and Expenses	9.00
Equipment and Machinery	16.58
Total	\$39,641.31
WARDEN SERVICE	
Salaries	\$71,766.50
Wages	13,901.91
Printing, Binding and Stationery	44.89
Materials and Supplies	264.65
Traveling Expenses	49,443.14
Telephone and Telegraph	2,337.43
Repairs	7.50
Insurance, Surety and Fidelity Bonds	475.86
Total	\$138,241.79
FIELD SERVICE	
Salaries	\$8,749.92
Wages	6,878.16
Printing, Binding and Stationery	203.19
Materials and Supplies	895.21
Traveling Expenses	1,659.82
Motor Vehicle Supplies and Repairs	222.53

**FINANCIAL STATEMENT
BOARD OF FISH COMMISSIONERS
CALENDAR YEAR 1945—Continued**

Telephone and Telegraph	\$828.49	
Rent of Real Estate	45.00	
Rent of Equipment	217.80	
Insurance, Surety and Fidelity Bonds	94.62	
Equipment and Machinery	25.65	
Total	\$19,820.39	
HATCHING SERVICE		
Salaries	\$117,690.99	
Wages	82,270.10	
Printing, Binding and Stationery	144.37	
Food and Forage	128,949.97	
Materials and Supplies	17,919.10	
Traveling Expenses	7,303.41	
Motor Vehicle Supplies and Repairs	16,458.85	
Freight, Express and Cartage	137.74	
Postage	727.20	
Telephone and Telegraph	1,706.82	
Newspaper Advertising	10.76	
Light, Heat, Power, Water and Fuel	16,771.96	
Repairs	1,788.72	
Rent of Real Estate	548.00	
Rent of Equipment	371.50	
Insurance, Surety and Fidelity Bonds	1,222.21	
Equipment and Machinery	340.69	
Total	\$394,362.39	
EDUCATION AND PUBLICITY		
Salaries	\$297.50	
Wages	3,118.48	
Fees	520.00	
Printing, Binding and Stationery	7,891.82	
Materials and Supplies	18.17	
Traveling Expenses	1,050.85	
Postage	200.00	
Repairs	1.23	
Rent of Real Estate	165.00	
Insurance, Surety and Fidelity Bonds	18.79	
Total	\$13,281.84	
RESEARCH		
Printing, Binding and Stationery	\$36.73	
Materials and Supplies	631.86	
Repairs	29.00	
Equipment and Machinery	61.23	
Total	\$758.82	
BOAT PATROL SERVICE		
Materials and Supplies	\$92.72	
Total	\$92.72	
LEGAL EXPENSES		
BY REVENUE DEPARTMENT (Bureau of Miscellaneous Li- censes)	\$32,562.93	
BY STATE DEPARTMENT (State Employees' Retirement Board)	6,075.00	
ACCRUED INTEREST ON INVESTMENTS PURCHASED	40.80	
REFUNDS AND REPAYMENTS OF RECEIPTS	176.00	
INVESTMENTS PURCHASED (U. S. Treas. Certfs.)	100,000.00	
		\$745,177.24
BALANCE—January 1, 1946		\$465,340.85

**FINANCIAL STATEMENT
BOARD OF FISH COMMISSIONERS
CALENDAR YEAR 1946**

BALANCE—January 1, 1946:		
Cash	\$465,340.85	
U. S. Treasury Certificates	200,000.00	
		\$665,340.85
RECEIPTS—1946:		
Resident Fishing Licenses	\$838,504.25	
Non-Resident Fishing Licenses	41,721.20	
Tourists' Fishing Licenses	9,247.00	
Motor Boat Licenses	18,972.00	
Lake Erie Licenses	2,148.00	
Commercial Hatchery Licenses	1,075.00	
Eel Chute Licenses	57.00	
Fish Law Fines	13,673.00	
Motor Boat Fines	845.00	
Contributions for Restocking Streams	12,300.00	
Sale of Publications	6,023.15	
Sale of Unserviceable Property	669.74	
Interest	5,128.10	
Miscellaneous	19.49	
		950,382.93
Total Funds Available		\$1,615,723.78
EXPENDITURES—1946:		
ADMINISTRATION		
Salaries	\$23,540.00	
Wages	5,774.28	
Fees	69.00	
Printing, Binding and Stationery	4,437.63	
Materials and Supplies	282.78	
Traveling Expenses	3,400.39	
Motor Vehicle Supplies and Repairs	560.58	
Freight, Express and Cartage	58.39	
Postage	1,519.00	
Telephone and Telegraph	1,853.46	
Contracted Repairs	101.20	
Rent of Real Estate	23.83	
Insurance, Surety and Fidelity Bonds	299.27	
Other Maintenance Services and Expenses	9.00	
Motor Vehicles	1,142.15	
Equipment and Machinery	513.51	
Total	\$43,584.47	
WARDEN SERVICE		
Salaries	\$85,889.00	
Wages	13,490.41	
Printing, Binding and Stationery	57.88	
Materials and Supplies	496.81	
Traveling Expenses	63,592.82	
Telephone and Telegraph	2,841.12	
Rent of Real Estate	10.00	
Insurance, Surety and Fidelity Bonds	876.43	
Equipment and Machinery	700.42	
Total	\$167,954.89	

**FINANCIAL STATEMENT
BOARD OF FISH COMMISSIONERS
CALENDAR YEAR 1946—Continued**

FIELD SERVICE	
Salaries	\$11,121.62
Wages	12,819.80
Printing, binding and Stationery	241.65
Materials and Supplies	1,138.24
Traveling Expenses	4,021.29
Motor Vehicle Supplies and Repairs	474.83
Freight, Express and Cartage	213.11
Telephone and Telegraph	1,112.42
Contracted Repairs	93.00
Rent of Equipment	40.00
Insurance, Surety and Fidelity Bonds	190.82
Equipment and Machinery	11,408.63
Total	\$42,875.41
HATCHING SERVICE	
Salaries	\$145,822.45
Wages	112,770.21
Printing, Binding and Stationery	86.73
Food and Forage	219,202.19
Materials and Supplies	20,778.61
Traveling Expenses	8,923.85
Motor Vehicle Supplies and Repairs	21,359.62
Freight, Express, and Cartage	44.29
Postage	661.30
Telephone and Telegraph	1,676.26
Light, Heat, Power, Water and Fuel	28,085.51
Contracted Repairs	1,952.38
Rent of Real Estate	1,230.00
Rent of Equipment	440.50
Insurance, Surety and Fidelity Bonds	2,220.96
Motor Vehicles	2,932.14
Equipment and Machinery	1,445.01
	\$569,632.01
Less—Stores Account (Credit)	1,329.27
Total	\$568,302.74
EDUCATION AND PUBLICITY	
Salaries	\$1,498.00
Wages	1,478.38
Fees	1,102.00
Printing, Binding and Stationery	8,759.85
Materials and Supplies	577.91
Traveling Expenses	732.65
Postage	450.00
Contracted Repairs	294.89
Rent of Real Estate	195.00
Rent of Equipment	12.00
Insurance, Surety and Fidelity Bonds	25.34
Other Maintenance Services and Expenses	263.77
Total	\$15,389.79
RESEARCH	
Salaries	\$1,193.50
Printing, Binding and Stationery	115.72
Materials and Supplies	1,318.64
Contracted Repairs	34.12
Insurance, Surety and Fidelity Bonds	3.33
Equipment and Machinery	915.12
Subsidies, Grants, etc.	250.00
Total	\$3,830.43

**FINANCIAL STATEMENT
BOARD OF FISH COMMISSIONERS
CALENDAR YEAR 1946—Continued**

BOAT PATROL SERVICE	
Materials and Supplies	\$47.39
Contracted Repairs	16.60
Total	\$63.99
BY PENNSYLVANIA DEPARTMENT OF REVENUE (Bureau of Miscellaneous Licenses)	
	\$26,725.49
BY DEPARTMENT OF STATE (State Employees' Retirement Board)	
	7,500.00
LEGAL EXPENSES	1,200.00
REFUNDS AND REPAYMENTS OF RECEIPTS	79.50
	\$877,506.71
BALANCE—December 31, 1946	*\$738,217.07

* \$610,217.07 Cash.

128,000.00 U. S. Treasury Certificates of Deposit.

\$738,217.07

During the calendar year 1946 \$72,000.00 in U. S. Treasury Certificates of Deposit were redeemed.

FISH FUND—June 1, 1942 to May 31, 1943

BALANCE—June 1, 1942 \$827,647.81

RECEIPTS:

Resident Fishing Licenses	\$558,899.65
Non-Resident Fishing Licenses	17,126.90
Tourists' Fishing Licenses	6,031.40
Commercial Hatchery Licenses	1,030.00
Lake Erie Licenses	2,538.00
Motor Boat Licenses	10,357.00
Eel Chute Licenses	75.00
Fish Law Fines	9,298.17
Motor Boat Fines	320.00
Sale of Publications	3,587.50
Sale of Unserviceable Property	13,108.52
Contributions	11,400.00
Interest	4,570.01
Miscellaneous	15.86
	<hr/>
	638,358.01

Total Funds Available \$1,466,005.82

EXPENDITURES:

Administrative Salaries	\$24,993.03
Executive Office Expenses	7,678.52
Commissioners' Expenses (Board Members)	2,954.67
Legal Expenses	1,010.75
Printing, etc.	3,484.32
Salaries and Expenses of Wardens	116,986.81
Hatching and Propagating	375,531.12
Boat Patrol	10,533.13
By State Department (Retirement Board)	2,500.00
Field Work	26,858.60
Publicity	16,392.69
By Revenue Department (Bureau Mis. Licenses)	20,842.57
Research	1,364.58
Purchase of Land	8,150.00
Buildings and Ponds	40,942.00
Dependent's Benefits	1,011.63
	<hr/>
	\$661,234.42

Less—Credit Stores Account 1,725.60

Balance—June 1, 1943 \$806,497.00

FISH FUND—June 1, 1943 to May 31, 1944

BALANCE—June 1, 1943 \$806,497.00

RECEIPTS:

Resident Fishing Licenses	\$488,986.65
Non-Resident Fishing Licenses	18,977.10
Tourists' Fishing Licenses	4,878.25
Commercial Hatchery Licenses	775.00
Lake Erie Licenses	1,956.00
Motor Boat Licenses	7,309.50
Eel Chute Licenses	92.00
Fish Law Fines	7,226.00
Motor Boat Fines	100.00
Sale of Publications	3,878.20
Sale of Unserviceable Property	373.22
Contributions	9,750.00
Interest	4,650.70
Miscellaneous	16.75
	<hr/>
	548,969.37

Total Funds Available \$1,355,466.37

EXPENDITURES:

Administrative Salaries	\$27,792.00
Executive Office Expenses	5,478.18
Commissioners' Expenses (Board Members)	4,586.97
Legal Expenses	1,206.05
Printing, etc.	1,114.65
Salaries and Expenses of Wardens	118,492.51
Hatching and Propagating	397,732.22
Boat Patrol	66.92
By State Department (Retirement Board)	3,850.00
Field Work	21,513.26
Publicity	14,443.47
By Revenue Department (Bureau Mis. Licenses)	18,355.09
Refunded Fines, etc.	125.00
Research	1,449.20
	<hr/>
	\$616,205.52

Less—Credit Stores Account 839.91

Balance—June 1, 1944 \$740,100.76

FISH FUND—June 1, 1944 to May 31, 1945

BALANCE—June 1, 1944 \$740,100.76

RECEIPTS:

Resident Fishing Licenses	\$607,733.65
Non-Resident Fishing Licenses	28,030.80
Tourists' Fishing Licenses	6,686.10
Commercial Hatchery Licenses	840.00
Lake Erie Licenses	1,496.00
Motor Boat Licenses	11,670.25
Eel Chute Licenses	235.50
Fish Law Fines	10,035.35
Motor Boat Fines	265.00
Sale of Publications	4,379.74
Sale of Unserviceable Property	27.92
Contributions	9,547.60
Interest	5,872.10
Refunds not credited to Allocation	78.95
Miscellaneous	14.34
	<hr/>
	686,913.30

Total Funds Available \$1,427,014.06

EXPENDITURES:

Administrative Salaries	\$28,504.50
Executive Office Expenses	6,183.87
Commissioners' Expenses (Board Member)	3,127.62
Legal Expenses	298.25
Printing, etc.	2,935.43
Salaries and Expenses of Wardens	131,708.36
Hatching and Propagating	426,121.85
Boat Patrol	67.84
By State Department (Retirement Board)	3,850.00
Field Work	19,010.60
Publicity	12,822.60
By Revenue Department (Bureau Mis. Lies.)	20,085.11
Refunded Fines, etc.	36.00
Research	1,180.37
U. S. Treasury Certificates of Indebtedness	200,000.00
	<hr/>
	\$855,932.40

Less—Credit Stores Account 1,569.07

854,363.33

Balance—June 1, 1945 \$572,650.73*

* \$572,650.73 Cash.
200,000.00 U. S. Treas. Certfs. of Indebtedness.

\$772,650.73

FISH FUND—June 1, 1945 to May 31, 1946

BALANCE—June 1, 1945 \$572,650.73

RECEIPTS:

Resident Fishing Licenses	\$758,364.60
Non-Resident Fishing Licenses	37,380.30
Tourists' Fishing Licenses	7,810.30
Motor Boat Licenses	15,888.25
Sale of Publications	6,173.15
Sale of Unserviceable Property	5.72
Fish Law Fines	11,025.00
Motor Boat Fines	275.00
Lake Erie Licenses	1,764.00
Commercial Hatchery Licenses	1,000.00
Interest	5,544.73
Eel Chute Licenses	45.00
Contributions	10,150.00
Recovery on Insurance and Surety Bonds	65.75
Refunds not credited to Allocation	92.00
Miscellaneous	16.78
	<hr/>
	855,600.53

Total Funds Available \$1,428,251.31

EXPENDITURES:

Administrative Salaries	\$24,396.80
Executive Office Expenses	7,680.99
Commissioners' Expenses (Board Members)	3,521.51
Legal Expenses	1,175.00
Printing, etc.	5,652.70
Salaries and Expenses of Wardens	149,458.87
Hatching and Propagating	472,972.59
Boat Patrol	82.14
By State Department (Retirement Board)	7,500.00
Field Work	32,962.00
Publicity	14,753.96
By Revenue Department (Bureau Mis. Lies.)	23,387.90
Refunded Fines, etc.	144.50
Research	599.43
Accrued Int. on U. S. Treas. Certfs.	40.80
	<hr/>
	\$744,329.19

Less—Credit Stores Account 465.09

\$743,864.10

Balance—June 1, 1946 \$684,387.21*

* \$684,387.21 Cash.
200,000.00 U. S. Treas. Certfs. of Indebtedness.

\$884,387.21

**DATA IN RE: NUMBER OF RESIDENT,
NON-RESIDENT AND TOURIST FISHING
LICENSES ISSUED SINCE THE LAWS
BECAME EFFECTIVE**

<i>Year</i>	<i>Number</i>	<i>Cost</i>
Resident (Effective January 1, 1922)		
1922	203,061	\$1.00 each
1923	214,392	1.00 each
1924	247,281	1.00 each
1925	250,873	1.00 each
1926	261,109	1.00 each
1927	293,397	1.00 each
1928	255,275	1.50 each
1929	263,633	1.50 each
1930	264,589	1.50 each
1931	250,940	1.50 each
1932	242,863	1.50 each
1933	216,424	1.50 each
1934	258,166	1.50 each
1935	254,961	1.50 each
1936	261,939	1.50 each
1937	359,528	1.50 each
1938	395,714	1.50 each
1939	397,388	1.50 each
1940	384,231	1.50 each
1941	395,571	1.50 each
1942	378,426	1.50 each
1943	324,862	1.50 each
1944	375,933	1.50 each
1945	404,782	1.50 each
Non-resident (Effective July 8, 1919)		
1919	50	5.00 each
1920	1,836	5.00 each
1921	2,031	5.00 each
1922	2,768	5.00 each
1923	2,931	5.00 each
1924	2,964	5.00 each
1925	3,182	5.00 each
1926	3,776	Reciprocal*
1927	5,200	Reciprocal
1928	6,236	Reciprocal
1929	6,473	Reciprocal
1930	4,739	Reciprocal
1931	4,122	Reciprocal
1932	3,357	Reciprocal
1933	2,799	Reciprocal

**DATA IN RE: NUMBER OF RESIDENT,
NON-RESIDENT AND TOURIST FISHING
LICENSES ISSUED SINCE THE LAWS
BECAME EFFECTIVE—Continued**

<i>Year</i>	<i>Number</i>	<i>Cost</i>
1934	3,063	Reciprocal
1935	2,936	Reciprocal
1936	2,081	Reciprocal
1937	3,464	Reciprocal
1938	3,251	Reciprocal
1939	3,149	Reciprocal
1940	3,487	Reciprocal
1941	4,084	Reciprocal
1942	4,098	Reciprocal
1943	3,528	Reciprocal
1944	5,269	Reciprocal
1945	6,659	Reciprocal
Tourist (Effective September 1, 1935)		
1935	38	\$1.50 each
1936	1,908	1.50 each
1937	2,778	1.50 each
1938	3,035	1.50 each
1939	3,052	1.50 each
1940	3,073	1.50 each
1941	3,488	1.50 each
1942	3,854	1.50 each
1943	2,946	1.50 each
1944	4,446	1.50 each
1945	4,867	1.50 each

* But not less than \$2.50.

**RESIDENT CITIZENS' FISHING LICENSES
ISSUED—CALENDAR YEARS 1941-1945**

	1941	1942	1943	1944	1945
TOTALS	395,571	378,426	324,862	375,933	404,782
Adams	1,055	1,413	1,127	1,355	1,761
Allegheny	42,662	33,395	23,205	31,506	33,791
Armstrong	5,019	4,930	3,836	4,342	4,507
Beaver	7,315	6,992	5,349	5,383	6,170
Bedford	2,410	1,741	2,382	2,585	2,724
Berks	9,388	8,370	7,109	10,465	10,368
Blair	8,433	8,154	6,133	7,276	8,051
Bradford	4,740	4,980	5,051	5,552	5,681
Bucks	3,436	4,371	4,499	4,105	4,576
Butler	5,385	4,616	3,946	4,714	5,602
Cambria	11,916	10,957	7,642	9,480	10,491
Cameron	865	976	1,027	999	1,020
Carbon	3,401	3,311	2,874	3,144	3,421
Centre	4,950	4,791	4,352	4,565	4,916
Chester	5,432	5,857	5,351	5,536	6,059
Clarion	2,886	2,490	2,279	2,584	2,687
Clearfield	4,846	5,183	4,472	4,939	5,007
Clinton	3,315	4,194	4,086	4,190	4,361
Columbia	2,689	3,841	4,574	4,454	4,709
Crawford	7,555	8,408	7,039	7,824	8,486
Cumberland	4,383	4,796	4,618	4,242	5,574
Dauphin*	12,258	12,857	9,753	8,495	8,043
Delaware	3,882	4,262	4,012	4,340	4,727
Elk	3,082	2,971	2,575	2,728	2,700
Erie	14,611	13,648	11,925	13,774	15,710
Fayette	5,458	5,086	4,545	4,941	6,152
Forest	660	657	689	576	663
Franklin	3,180	3,715	3,615	3,829	4,014
Fulton	516	499	468	556	612
Greene	1,630	1,961	1,415	1,551	1,944
Huntingdon	2,627	2,337	2,162	2,327	2,517
Indiana	3,503	3,213	2,420	3,105	3,555
Jefferson	3,275	3,298	2,451	3,131	3,501
Juniata	707	695	698	766	736
Lackawanna	14,594	12,245	9,553	13,730	15,486
Lancaster	10,001	10,853	9,870	10,846	11,256
Lawrence	6,481	6,158	4,972	5,681	6,025
Lebanon	3,837	4,308	3,512	3,830	4,610
Lehigh	7,698	7,208	6,728	7,260	7,433
Luzerne	22,516	19,056	16,265	20,703	22,034
Lycoming	10,652	8,490	7,914	8,767	9,328
McKean	4,953	4,234	4,131	4,738	4,884
Mercer	8,301	8,560	7,320	7,774	8,484

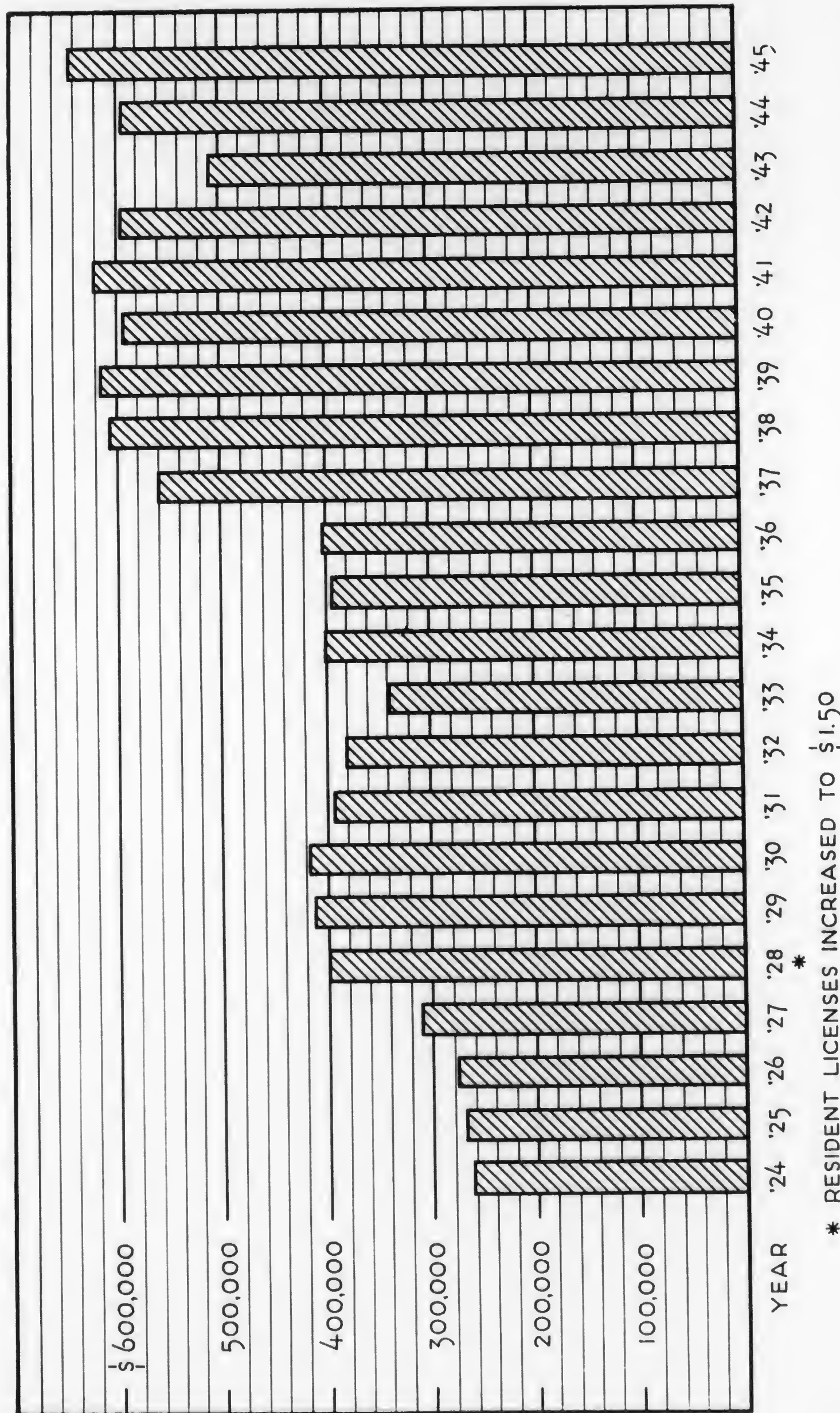
**RESIDENT CITIZENS' FISHING LICENSES
ISSUED—CALENDAR YEARS 1941-1945—Continued**

	1941	1942	1943	1944	1945
Mifflin	3,035	3,307	2,828	3,292	2,879
Monroe	2,711	2,913	2,560	3,220	3,554
Montgomery	9,081	9,475	8,335	9,174	9,535
Montour	666	607	588	744	821
Northampton	8,979	9,036	8,276	8,952	9,475
Northumberland	4,316	6,492	6,075	6,659	7,539
Perry	925	1,106	1,104	1,110	1,132
Philadelphia	9,543	9,280	7,776	9,058	9,477
Pike	1,284	1,168	1,160	1,025	1,276
Potter	1,769	1,998	2,103	2,262	2,390
Schuylkill	8,176	6,274	6,599	7,701	8,140
Snyder	855	879	798	982	913
Somerset	4,734	4,451	4,025	4,585	5,066
Sullivan	494	511	572	655	687
Susquehanna	3,245	3,457	3,658	4,241	4,870
Tioga	3,427	3,327	3,135	3,477	3,587
Union	1,309	1,344	1,277	1,386	1,702
Venango	4,893	4,784	4,554	4,871	4,977
Warren	3,495	3,470	3,030	3,526	3,583
Washington	10,613	8,756	6,396	8,347	9,513
Wayne	3,447	3,360	3,078	3,759	4,306
Westmoreland	12,139	11,650	8,552	10,990	11,693
Wyoming	1,281	1,255	1,566	1,618	1,763
York	8,651	9,449	8,873	10,215	10,054

* The Department of Revenue issued 1,396 Resident Licenses during 1944 and 1,473 licenses during 1945.

** The following free fishing licenses were issued to persons in the Service: 1943—1,061; 1944—5,408; 1945—10,515.

RECEIPTS FROM RESIDENT AND NON-RESIDENT
FISHING LICENSES



STATEMENT OF PROSECUTIONS FOR
VIOLATIONS OF THE FISH LAWS—
CALENDAR YEARS 1943-1945

Charge	Number of Arrests		
	1943	1944	1945
Fishing without license	91	51	62
Lending license	11	6	2
Using borrowed or stolen license	2	2	4
Using unsigned license	—	—	—
Not displaying button	—	—	2
Non-resident fishing on resident license	3	2	—
Giving false information when obtaining fishing license	—	3	2
Fishing on State fish hatchery property	2	4	12
Fishing in posted waters	2	1	—
Fishing on Sunday without land owner's consent	3	—	3
Fishing in nursery waters	2	—	8
Illegal devices	40	44	29
Fish under legal size	72	58	69
Fish out of season	50	39	36
Exceeding creel limit	73	67	42
Illegal sale of fish	4	2	2
Aliens fishing	2	1	2
Interfering with officer	1	3	1
Rods not under control	10	3	2
Fishing with illegal nets	3	5	4
Operating eel chute without permits	2	—	—
Violation of motor boat law	16	38	23
Violation of the frog law	21	8	8
Violating rules and regulations of Board	16	13	24
Using explosives	—	4	—
Totals	417	354	337
Fines remitted by magistrates	\$9,565.00	\$8,294.35	\$10,200.00

While the Board has prosecutions for polluting waters, all cases must be handled through the Sanitary Water Board, Department of Health.

**REPORT OF COMMERCIAL FISH HATCHERIES
FOR CALENDAR YEAR 1943**

Species	Number	Pounds	Eggs	Value
Brook Trout—Market	—	34,427	—	\$28,941.25
Brook Trout—Live Mature..	86,389	—	—	18,804.35
Brook Trout—Adv. Fry	24,000	—	—	154.00
Brook Trout—Green Eggs ..	—	—	6,499,000	7,311.50
Brook Trout—Eyed Eggs ...	—	—	2,700,000	3,400.00
Brown Trout—Market	—	12,282	—	10,597.96
Brown Trout—Live Mature..	38,401	—	—	12,719.02
Brown Trout—Adv. Fry	1,000	—	—	5.00
Rainbow Trout—Market	—	3,855	—	3,184.55
Rainbow Trout—Live Mature	44,779	—	—	9,111.13
Bass	6,550	—	—	510.00
Bait-Fish	399,964	—	—	9,110.19
Goldfish	403,087	—	—	10,419.55
Catfish	2,500	—	—	95.00
Sunfish	5,100	—	—	1,050.00
Fish-Bait	18,147	—	—	527.31
Brown Trout—Eyed Eggs ..	—	—	174,000	221.25
Miscellaneous	8,890	—	—	4,293.60
Total	1,038,807	50,564	9,373,000	\$120,455.66

**REPORT OF COMMERCIAL FISH HATCHERIES
FOR CALENDAR YEAR 1944**

Species	Number	Pounds	Eggs	Value
Brook Trout—Market	65,717	22,208	—	\$20,813.63
Brook Trout—Live Mature..	68,025	—	—	17,409.86
Brook Trout—Adv. Fry	45,450	—	—	380.00
Brook Trout—Green Eggs ..	—	—	5,100,000	6,587.50
Brook Trout—Eyed Eggs ...	—	—	4,945,000	5,780.00
Brown Trout—Market	63,364	19,295	—	17,855.00
Brown Trout—Live Mature..	48,812	—	—	19,431.03
Brown Trout—Eyed Eggs ...	—	—	134,000	268.00
Rainbow Trout—Market	18,997	5,824 ³ / ₄	—	5,523.39
Rainbow Trout—Live Mature	43,498	—	—	11,146.80
Bass	10,250	—	—	700.00
Bass—Fingerlings	707	—	—	212.00
Baitfish	522,532	—	—	10,896.68
Goldfish	451,958	—	—	12,220.15
Catfish	2,540	—	—	145.50
Sunfish	1,500	—	—	200.00
Frogs	—	—	—	—
Fish-Bait	64,686	—	—	1,802.15
Miscellaneous	60,600	—	—	5,842.50
Total	1,468,636	47,327	10,179,000	\$137,214.19

**REPORT OF COMMERCIAL FISH HATCHERIES
FOR CALENDAR YEAR 1945**

Species	Number	Pounds	Eggs	Value
Brook Trout—Market	30,783	11,339 ¹ / ₂	—	\$11,515.15
Brook Trout—Live Mature..	127,781	—	—	31,903.83
Brook Trout—Adv. Fry	43,000	—	—	780.00
Brook Trout—Green Eggs ..	—	—	3,400,000	4,162.50
Brook Trout—Eyed Eggs ...	—	—	12,542,000	15,206.55
Brown Trout—Market	41,590	11,165	—	11,338.28
Brown Trout—Live Mature..	74,285	—	—	23,082.58
Brown Trout—Adv. Fry	—	—	—	—
Brown Trout—Eyed Eggs ...	—	—	315,000	366.25
Rainbow Trout—Market	32,164	8,028-6 oz.	—	7,716.28
Rainbow Trout—Live Mature	41,569	—	—	12,613.93
Rainbow Trout—Adv. Fry ...	600	—	—	15.00
Bass	15,375	—	—	825.00
Baitfish	524,991	—	—	12,794.12
Goldfish	478,580	—	—	15,687.75
Catfish	1,800	—	—	263.00
Sunfish	3,080	—	—	239.00
Frogs	150	—	—	25.00
Fish-Bait	44,672	—	—	1,669.49
Miscellaneous	9,850	—	—	5,225.55
Total	1,470,270	30,532-14 oz.	16,257,000	\$155,429.26

**FISH STOCKED IN THE WATERS OF
PENNSYLVANIA—1943**

Species	Size	Number	Total
Brook, Brown and Rainbow Trout	7" to 20"	1,340,420	
Black Bass	1" to 14"	604,026	
Catfish	5" to 13"	267,956	
Bream	3" to 8"	258,900	
Frogs (Embryo)		360,300	
Carp	10" to 20"	90,119	
Yellow Perch	Adult	84,527	
Suckers	3" to 5"	39,689	
Minnows	1 ¹ / ₂ " to 6"	38,348	
Pickrel	7" to 18"	1,570	
Calico Bass	7" to 11"	1,375	
Pike Perch	Adult	290	
Goldfish		97	
			3,087,617
Trout Fingerlings		2,394,850	
Yellow Perch	Fry	68,875,000	
Pike Perch	Fry	27,308,000	
White Fish	Fry	18,928,000	
			117,505,850
GRAND TOTAL			120,593,467

**FISH STOCKED IN THE WATERS OF
PENNSYLVANIA—1944**

Species	Size	Number	Total
Brook, Brown and Rainbow Trout	7" to 20"	1,459,613	
Black Bass	1" to 14"	491,174	
Catfish	5" to 13"	373,217	
Bream	3" to 8"	262,550	
Frogs (Embryo)		637,800	
Carp		80,664	
Yellow Perch	Adult	115,846	
Suckers	3" to 5"	60,738	
Minnnows	1½" to 6"	170,520	
Pickrel	7" to 18"	2,005	
Calico Bass	7" to 11"	1,076	
Pike Perch	Adult	680	
Goldfish		117	
			3,656,000
			1454
Trout Fingerlings		2,477,250	
Yellow Perch	Fry	71,150,000	
Pike Perch	Fry	22,863,000	
Whitefish	Fry	5,200,000	
Blue Pike	Fry	1,075,000	
			102,765,250
GRAND TOTAL			106,421,250

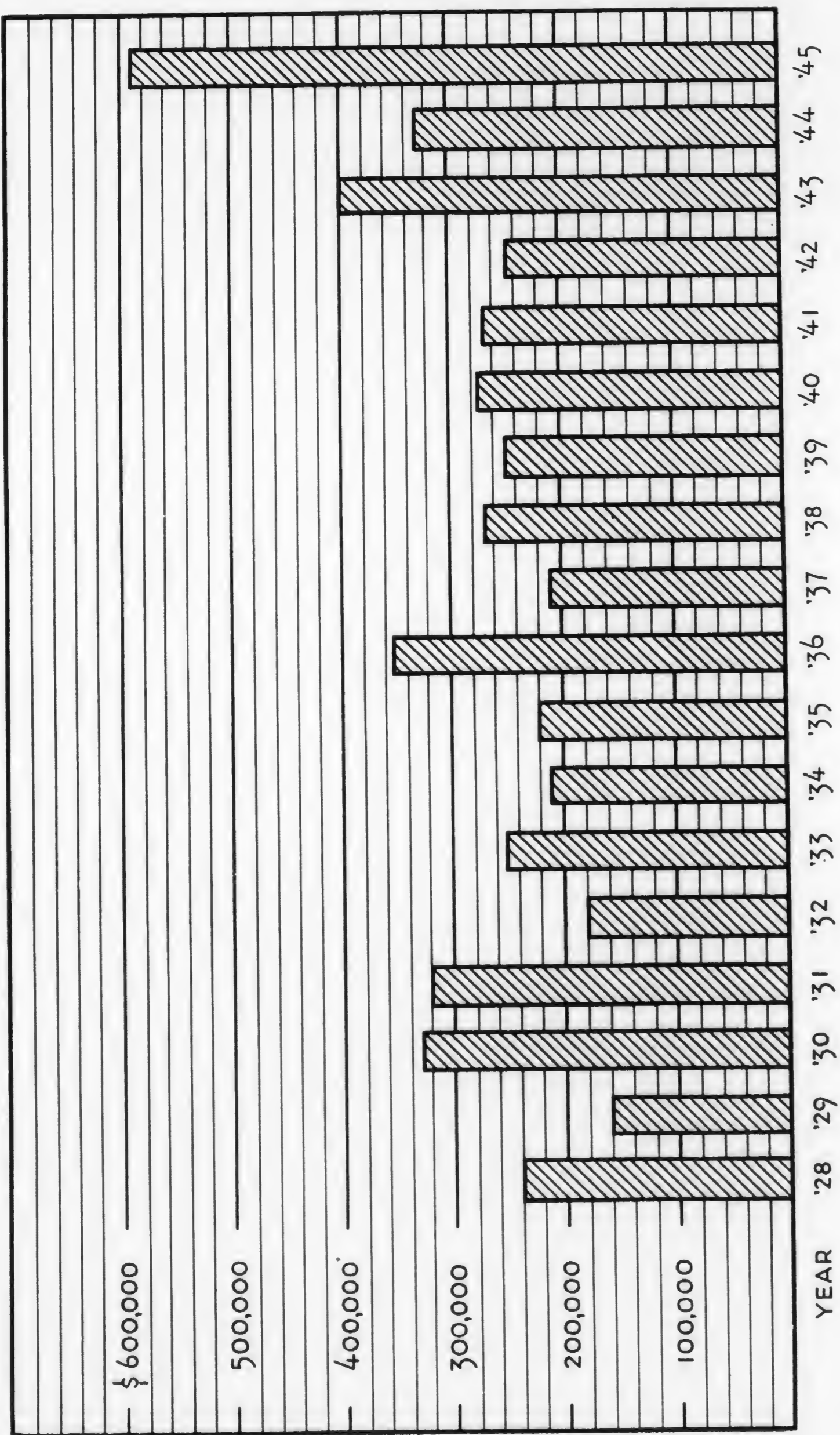
**FISH STOCKED IN THE WATERS OF
PENNSYLVANIA—1945**

Species	Size	Number	Total
Brook, Brown and Rainbow Trout	7" to 20"	1,575,905	
Black Bass	1" to 14"	414,685	
Catfish	5" to 13"	261,145	
Bream	3" to 8"	199,836	
Frogs (Embryo)		323,500	
Carp	10" to 20"	86,970	
Yellow Perch	Adult	47,495	
Suckers	3" to 5"	5,850	
Minnnows	1½" to 6"	97,136	
Pickrel	7" to 18"	2,212	
Calico Bass	7" to 11"	9,270	
Pike Perch	Adult	1,028	
Goldfish		130	
			3,025,162
<i>Fry and Fingerlings</i>			
Trout	Fingerling	1,982,988	
Yellow Perch	Fry	56,250,000	
Blue Pike	Fry	870,000	
Pike Perch	Fry	525,000	
Cisco	Fry	2,520,000	
			62,147,988
GRAND TOTAL			65,173,150

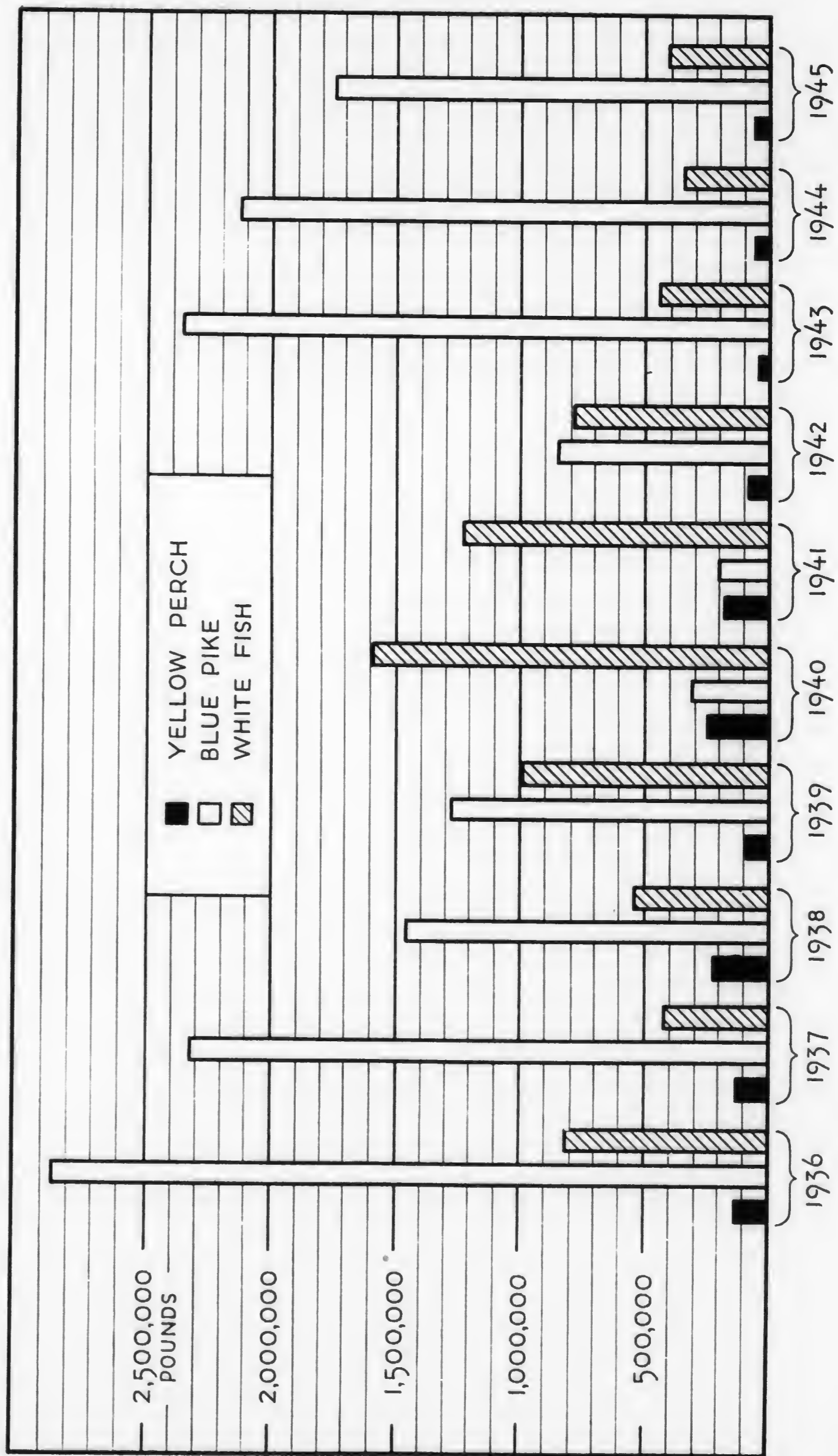
**DISTRIBUTION OF FISH IN PENNSYLVANIA
BY SPECIES—CALENDAR YEARS
1940-1945, INCLUSIVE**

Kind of Fish	1940	1941	1942	1943	1944	1945
Trout (All Species)	1,393,330	1,634,101	1,791,614	1,340,420	1,459,613	1,575,905
Bass (All Species)	548,988	570,682	589,312	604,026	491,174	414,685
Pike Perch	25,711,140	12,172,690	45,820,000	27,308,290	22,863,680	526,028
Yellow Perch	309,483,495	65,165,091	35,187,221	68,959,527	71,265,846	56,297,495
Sunfish (Bream)	326,770	250,037	309,495	258,900	262,550	199,836
Catfish	498,793	584,631	448,251	267,956	373,217	261,145
Minnnows	81,320	98,370	84,120	38,348	170,520	97,136
Whitefish	—	—	31,185,000	18,928,000	5,200,000	—
Cisco	12,000,000	16,650,000	4,545,000	—	—	2,520,000
Frogs and Tadpoles	149,506	166,050	337,400	360,300	637,800	323,500
Blue Pike	—	—	—	—	1,075,000	870,000
Suckers	39,935	180,595	79,200	39,689	60,738	5,850
Pickrel	2,982	3,317	3,133	1,570	2,005	2,212
Miscellaneous	102,162	153,874	4,548	1,472	1,193	9,400
Fingerling Trout	2,569,000	1,432,265	1,878,725	2,394,850	2,477,250	1,982,988
Lake Trout	—	—	—	—	—	—
Carp	—	—	138,515	90,119	80,664	86,970
TOTALS	352,898,421	99,061,703	122,401,534	120,593,467	106,421,250	65,173,150

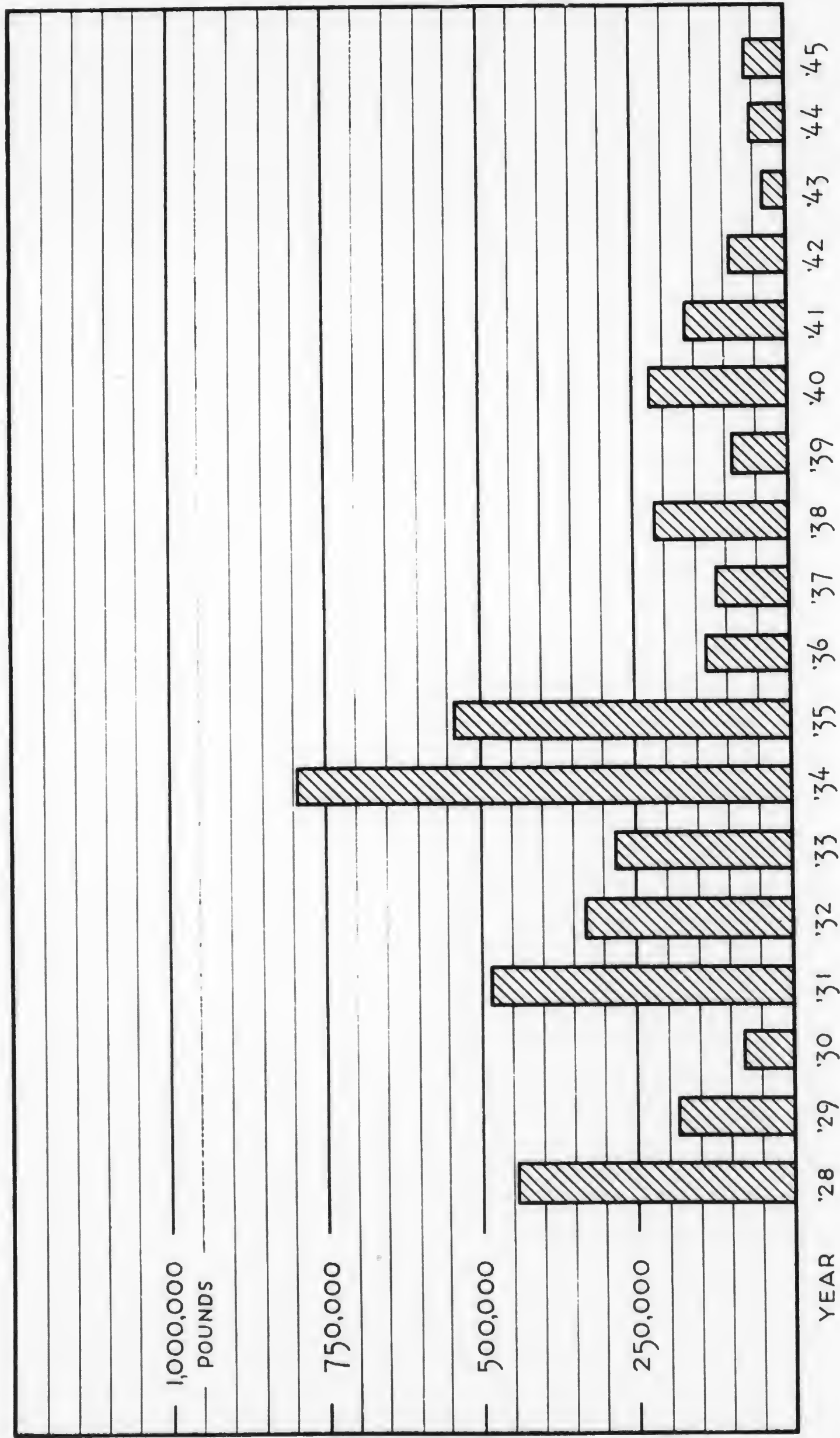
ESTIMATED VALUE CATCH OF FISH LAKE ERIE - PENNSYLVANIA WATERS



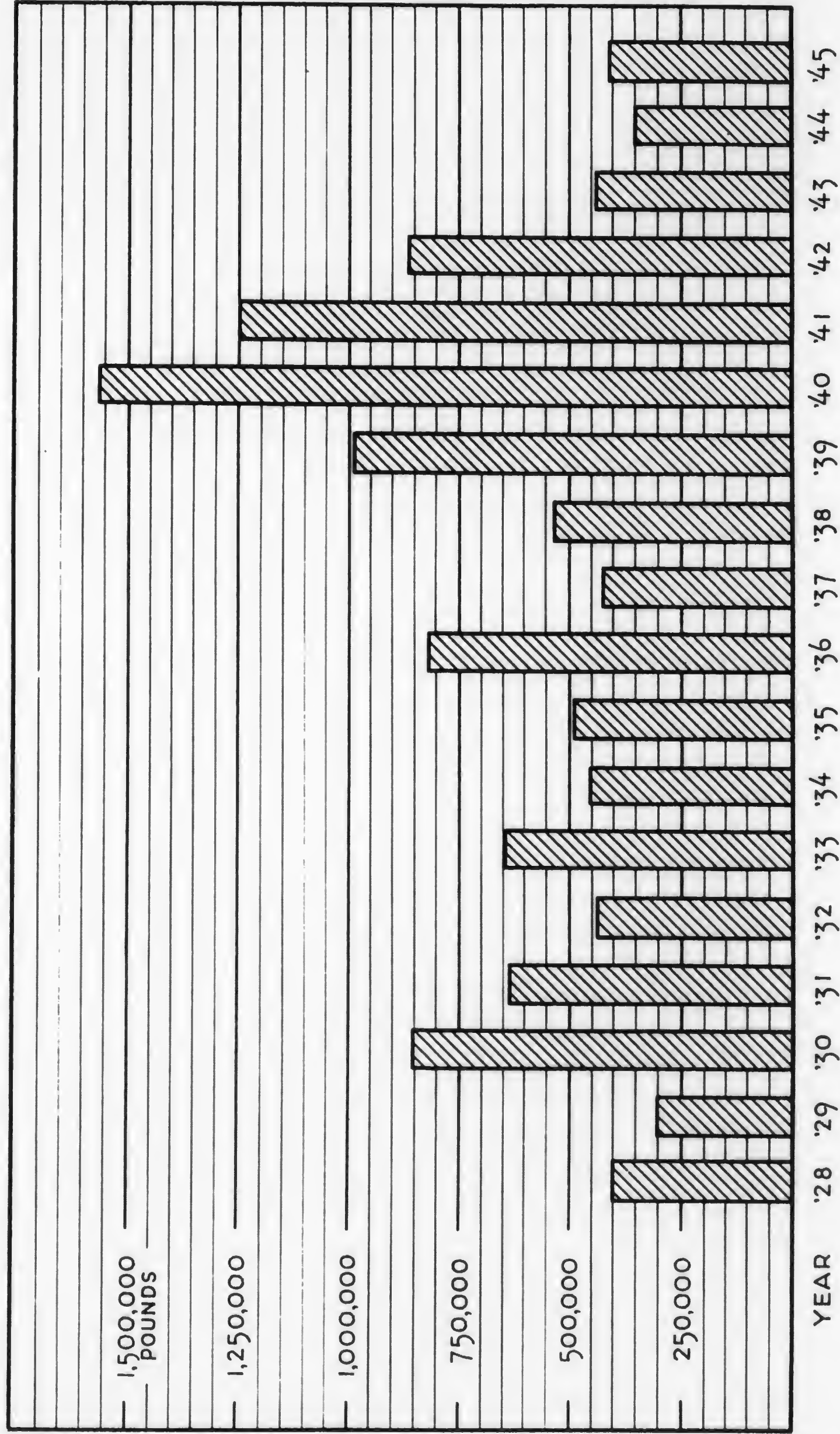
CATCH BY POUNDS YELLOW PERCH, BLUE PIKE, WHITE FISH - LAKE ERIE



CATCH BY POUNDS YELLOW PERCH - LAKE ERIE



CATCH BY POUNDS WHITE FISH - LAKE ERIE



THE FOLLOWING STATISTICS SHOWING LAKE FISHERIES OF THE UNITED STATES AND CANADA ARE TAKEN FROM THE STATISTICAL DIGEST AS PREPARED BY THE FISH AND WILDLIFE SERVICE, UNITED STATES DEPARTMENT OF THE INTERIOR AND COVER THE YEAR 1942. NO STATISTICS ARE AVAILABLE SINCE THAT TIME, EXCEPT THOSE OF PENNSYLVANIA, WHICH WILL BE FOUND IN THIS REPORT.

STATISTICAL DIGEST 11, FISH AND WILDLIFE SERVICE

Lake Fisheries of the United States and Canada, 1942

CATCH: BY LAKES

Species	Lake Ontario			Lake Erie		
	United States	Canada	Total	United States	Canada	Total
	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
Blue Pike	39,600	27,700	67,300	6,221,700	4,405,000	10,626,700
Bowfin	—	—	—	3,000	*	3,000
Burbot	—	—	—	374,100	*	374,100
Carp	51,700	219,600	271,300	2,447,700	235,400	2,683,100
Catfish and Bullheads	40,400	60,600	101,000	958,400	61,200	1,029,600
Cisco	74,100	1,086,900	1,161,000	25,200	61,800	87,000
Eels, Common	18,200	15,700	33,900	—	300	300
Gizzard Shad	—	—	—	23,000	*	23,000
Goldfish	—	—	—	82,800	*	82,800
Lake Trout	1,400	89,800	91,200	1,800	100	1,900
Mooneye	—	—	—	13,100	*	13,100
Pike or Pickerel (Jacks)	6,400	53,200	59,600	—	30,800	30,800
Rock Bass	8,900	*	8,900	2,800	*	2,800
Sauger	—	—	—	1,345,700	*	1,345,700
Sheepshead	—	—	—	4,547,600	*	4,547,600
Sturgeon	2,000	5,900	7,900	5,300	14,900	20,200
Sucker or "Mullet"	19,000	*	19,000	698,400	*	698,400
Sunfish	17,600	*	17,600	—	—	—
White Bass	—	—	—	516,400	*	516,400
Whitefish, Common	21,000	442,000	463,000	1,923,900	2,524,000	4,447,900
Yellow Perch	22,700	211,000	233,700	1,958,500	965,000	2,923,500
Yellow Pike	2,300	11,200	13,500	2,971,600	421,300	3,392,900
Miscellaneous	—	264,000	264,000	—	1,317,400	1,317,400
Total	325,300	2,487,600	2,812,900	24,131,000	10,037,200	34,168,200

Species	Lake Huron			Lake Michigan	Lake Superior		
	United States	Canada	Total	United States	United States	Canada	Total
	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
Blue Pike	—	1,300	1,300	—	—	—	—
Bowfin	1,100	*	1,100	100	—	—	—
Burbot	300	*	300	45,200	1,400	*	1,400
Carp	753,400	41,000	794,400	1,745,200	—	—	—
Catfish and Bullheads	441,700	24,800	466,500	168,000	—	—	—
Chubs	80,200	306,900	387,100	1,755,400	501,600	10,900	512,500
Lake Herring	2,408,200	425,700	2,833,900	1,425,900	14,844,200	1,392,500	16,236,700
Lake Trout	727,800	2,197,800	2,925,600	6,484,400	2,959,000	1,361,000	4,320,000
Pike or Pickerel (Jacks)	—	90,200	90,200	16,300	600	17,700	18,300
Rock Bass	15,500	*	15,500	2,900	—	—	—
Sauger	4,100	*	4,100	700	—	—	—
Sheepshead	900	*	900	82,300	—	—	—
Smelt	—	—	—	3,344,100	900	*	900
Sturgeon	—	9,600	9,600	—	—	2,200	2,200
Sucker or "Mullet"	1,196,200	*	1,196,200	2,250,800	148,200	*	148,200
White Bass	300	*	300	—	—	—	—
Whitefish:							
Common	95,100	782,700	877,800	1,340,600	751,000	319,700	1,070,700
Menominee	61,400	*	61,400	60,800	11,400	*	11,400
Yellow Perch	574,600	339,100	913,700	2,647,600	6,400	800	7,200
Crawfish	2,103,900	256,400	2,360,300	31,000	3,000	91,900	94,900
Miscellaneous	—	302,700	302,700	2,500	—	—	—
Total	8,464,700	4,778,200	13,242,900	21,403,800	19,227,700	3,362,600	22,590,300

* Where there was a Canadian catch of these species it is included under "Miscellaneous."

STATISTICAL DIGEST 11, FISH AND WILDLIFE SERVICE

Lake Fisheries of the United States—Continued

CATCH: BY GEAR, 1942—Continued

Species	Pennsylvania— Con't		Ohio					
	Total		Haul Seines		Gill Nets		Bar Nets	
	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
Blue Pike	823,700	\$68,823	200	\$27	115,600	\$15,490	1,600	\$214
Burbot	26,900	408	100	2	300	5	—	—
Carp	6,000	119	1,417,000	64,615	1,000	46	27,900	1,272
Catfish and Bull- heads	1,800	137	351,800	37,774	800	85	100	11
Cisco	14,700	2,752	—	—	3,500	655	—	—
Gizzard Shad	23,000	139	—	—	—	—	—	—
Goldfish	—	—	74,500	3,725	—	—	—	—
Mooneye	—	—	7,800	390	—	—	—	—
Sauger	—	—	13,500	1,712	429,800	54,499	—	—
Sheepshead	55,500	1,143	750,000	36,975	2,600	128	9,600	473
Sturgeon	200	66	—	—	1,000	538	—	—
Sucker or "Mullet"	12,500	261	21,000	1,149	6,100	334	400	22
White Bass	34,500	2,231	76,500	8,155	11,000	1,173	300	32
Whitefish, Common	786,100	151,421	—	—	340,800	94,027	—	—
Yellow Perch	88,700	9,166	6,700	1,031	333,800	51,372	600	92
Yellow Pike	27,500	4,247	26,600	4,892	49,900	9,177	800	147
Total	1,901,100	\$240,913	2,745,700	\$160,447	1,296,200	\$227,529	41,300	\$2,263

* Less than 50 pounds or 50 cents.
† Includes value of roe.

FISHERY STATISTICS OF THE UNITED STATES: 1942

Lake Fisheries of the United States—Continued

CATCH: BY GEAR, 1942—Continued

Species	Ohio—Continued						Michigan	
	Trap Nets		Fyke Nets		Total		Haul Seines	
	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
Blue Pike	5,172,600	\$693,128	5,900	\$791	5,295,900	\$709,650	—	—
Burbot	345,500	5,252	—	—	345,900	5,259	—	—
Carp	182,500	8,322	49,600	2,262	1,678,000	76,517	999,000	\$24,950
Catfish and Bull- heads	473,300	52,651	51,200	5,453	877,200	95,974	96,300	9,207
Cisco	6,100	1,142	—	—	9,600	1,797	—	—
Goldfish	4,700	235	3,200	160	82,400	4,120	—	—
Lake Herring	—	—	—	—	—	—	69,000	3,351
Mooneye	4,300	215	1,000	50	13,100	655	—	—
Rock Bass	—	—	—	—	—	—	1,300	65
Sauger	846,300	107,311	9,900	1,255	1,299,500	164,777	100	12
Sheepshead	3,447,400	169,957	113,500	5,596	4,323,100	213,129	10,800	172
Sturgeon	2,500	1,345	—	—	3,500	1,883	—	—
Sucker or "Mullet"	590,000	32,273	20,100	1,099	637,600	34,877	129,000	4,990
White Bass	302,600	32,257	48,700	5,191	439,100	46,808	1,400	131
Whitefish, Common	376,000	103,738	200	55	717,000	197,820	—	—
Yellow Perch	1,434,100	220,708	14,700	2,262	1,789,900	275,465	13,500	1,678
Yellow Pike	2,682,100	493,238	66,700	12,266	2,826,100	519,720	124,800	24,927
Total	15,870,000	\$1,921,772	384,700	\$36,440	20,337,900	\$2,348,451	1,445,200	\$69,433

Michigan—Continued

Species	Gill Nets		Lines					
			Troll		Trot		Pound Nets	
	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
Burbot	3,900	\$282	—	—	400	\$29	300	\$22
Carp	46,900	1,171	—	—	500	12	72,800	1,818
Catfish and Bull- heads	1,300	124	—	—	47,100	4,503	4,400	421
Chubs	476,200	99,480	—	—	—	—	—	—
Lake Herring	6,137,300	298,073	—	—	—	—	458,500	22,268
Lake Trout	4,811,600	1,139,517	24,400	\$5,779	493,600	116,898	47,200	11,178
Rock Bass	—	2	—	—	—	—	100	5
Sauger	1,900	221	—	—	—	—	100	12
Sheepshead	—	—	—	—	1,400	22	20,800	330
Smelt	164,100	6,564	—	—	—	—	2,031,500	81,260
Sucker or "Mullet"	182,600	7,064	—	—	—	—	43,300	1,675
Whitefish:								
Common	872,800	252,320	—	—	—	3	668,800	193,346
Menominee	102,400	11,118	—	—	—	2	3,500	380
Yellow Perch	477,600	59,349	100	12	200	25	14,900	1,852
Yellow Pike	157,700	31,499	—	—	—	—	10,400	2,077
Total	13,436,300	\$1,906,784	24,500	\$5,791	543,200	\$121,494	3,376,600	\$316,644

**FISHERY STATISTICS OF THE
UNITED STATES: 1942**
Lake Fisheries of the United States—Continued

CATCH: BY GEAR, 1942—Continued

Species	Minnesota—Continued							
	Trot Lines		Pound Nets		Fyke Nets		Total	
	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
Burbot	—	—	26,000	\$267	42,600	\$426	114,800	\$905
Carp	—	—	1,800	32	400	10	2,200	42
Catfish and Bullheads	—	—	300	28	28,700	2,711	29,200	2,759
Chubs	—	—	—	—	—	—	145,200	24,567
Lake Herring	—	—	—	—	—	—	4,696,800	157,723
Lake Trout	40,400	\$6,411	100	13	*	2	277,400	47,216
Pike or Pickerel (Jacks)	—	—	31,600	1,594	19,500	833	112,200	5,128
Sauger	—	—	12,500	807	6,500	439	60,300	3,905
Sucker or "Mullet"	—	—	30,300	666	27,000	334	184,500	2,778
Tullibee	—	—	118,400	10,839	93,800	6,063	658,300	49,396
Whitefish:								
Common	—	—	8,700	1,240	300	31	61,700	9,014
Menominee	—	—	—	—	—	—	1,400	60
Yellow Perch	—	—	1,000	87	2,500	242	12,800	1,180
Yellow Pike	—	—	93,600	13,010	31,100	4,619	477,000	63,023
Total	40,400	\$6,411	324,300	\$28,583	252,400	\$15,710	6,833,800	\$367,696

* Less than 50 pounds or 50 cents.

CATCH: BY LAKES, 1942

Species	Lake Ontario		Lake Erie			
	New York		New York		Pennsylvania	
	Pounds	Value	Pounds	Value	Pounds	Value
Blue Pike	39,600	\$4,890	98,400	\$7,585	823,700	\$68,823
Burbot	—	—	900	17	26,900	408
Carp	51,700	1,706	100	5	6,000	119
Catfish and Bullheads	40,400	6,184	300	25	1,800	137
Cisco	74,100	13,806	900	190	14,700	2,752
Eels, Common	18,200	1,157	—	—	—	—
Gizzard Shad	—	—	—	—	23,000	139
Lake Trout	1,400	338	1,800	253	—	—
Pike or Pickerel (Jacks)	6,400	690	—	—	—	—
Rock Bass	8,900	349	300	13	—	—
Sheepshead	—	—	300	18	55,500	1,143
Sturgeon	2,000	*1,163	1,600	*861	200	66
Sucker or "Mullet"	19,000	987	2,900	133	12,500	261
Sunfish	17,600	792	—	—	—	—
White Bass	—	—	900	56	34,500	2,231
Whitefish, Common	21,000	4,872	417,100	80,628	786,100	151,421
Yellow Perch	22,700	1,926	43,900	3,329	88,700	9,166
Yellow Pike	2,300	441	2,100	308	27,500	4,247
Total	325,300	\$39,271	571,500	\$93,421	1,901,100	\$240,913

**FISHERY STATISTICS OF THE
UNITED STATES: 1942**
Lake Fisheries of the United States—Continued

CATCH: BY GEAR, 1942—Continued

Species	Lake Erie					
	Ohio		Michigan		Total	
	Pounds	Value	Pounds	Value	Pounds	Value
Blue Pike	5,295,900	\$709,650	3,700	\$369	6,221,700	\$788,427
Bowfin	—	—	3,000	300	3,000	300
Burbot	345,900	5,259	400	20	374,100	5,704
Carp	1,678,000	76,517	763,600	13,898	2,447,700	90,539
Catfish and Bullheads	877,200	95,974	89,100	9,358	968,400	105,494
Cisco	9,600	1,797	—	—	25,200	4,789
Gizzard Shad	—	—	—	—	23,000	139
Goldfish	32,400	4,120	400	20	82,800	4,140
Lake Trout	—	—	—	—	1,800	253
Mooneye	13,100	655	—	—	13,100	655
Rock Bass	—	—	2,500	125	2,800	138
Sauger	1,299,500	164,777	46,200	5,650	1,345,700	170,427
Sheepshead	4,323,100	213,129	168,700	2,581	4,547,600	216,871
Sturgeon	2,500	1,883	—	—	5,300	2,810
Sucker or "Mullet"	637,600	34,877	45,400	1,022	698,400	36,298
White Bass	439,100	46,808	41,900	3,939	516,400	53,034
Whitefish, Common	717,000	197,820	3,700	882	1,923,900	430,751
Yellow Perch	1,789,900	275,465	36,000	5,854	1,958,500	293,814
Yellow Pike	2,826,100	519,720	115,900	13,769	2,971,600	538,044
Total	20,337,900	\$2,348,451	1,320,500	\$57,787	24,131,000	\$2,740,572

* Includes value of roe.

STATISTICAL DIGEST 11, FISH AND WILDLIFE SERVICE

Lake Fisheries of the United States—Continued

CATCH: BY LAKES, 1942—Continued

Species	Lake Huron		Lake Michigan			
	Michigan		Michigan		Indiana	
	Pounds	Value	Pounds	Value	Pounds	Value
Bowfin	1,100	\$22	100	\$2	—	—
Burbot	300	15	4,100	328	3,600	\$398
Carp	753,400	22,602	92,200	3,688	15,500	930
Catfish and Bullheads	441,700	41,570	7,000	490	—	—
Chubs	80,200	17,644	363,100	76,251	8,400	1,440
Lake Herring	2,408,200	165,925	666,500	39,990	12,300	936
Lake Trout	727,800	178,384	2,640,800	667,594	38,100	6,983
Rock Bass	15,500	767	2,900	145	—	—
Sauger	4,100	246	700	42	—	—
Sheepshead	900	18	23,100	462	—	—
Smelt	—	—	2,220,200	88,810	—	—
Sucker or "Mullet"	1,196,200	46,879	1,106,000	43,531	3,300	248
Whitefish:	300	24	—	—	—	—
Common	95,100	25,240	1,061,000	324,878	200	44
Menominee	61,400	7,786	44,500	3,827	—	—
Yellow Perch	574,600	73,032	465,700	54,953	57,400	3,962
Yellow Pike	2,103,900	431,300	31,000	4,650	—	—
Total	8,464,700	\$1,011,454	8,728,900	\$1,309,641	138,800	\$14,941

Species	Lake Michigan—Continued					
	Illinois		Wisconsin		Total	
	Pounds	Value	Pounds	Value	Pounds	Value
Bowfin	—	—	—	—	100	\$2
Burbot	—	—	37,500	\$1,126	45,200	1,852
Carp	—	—	1,637,500	81,876	1,745,200	86,494
Catfish and Bullheads	—	—	161,000	33,421	168,000	33,911
Chubs	353,700	\$74,131	1,030,200	206,041	1,755,400	357,863
Lake Herring	53,500	3,496	693,600	27,744	1,425,900	72,166
Lake Trout	1,111,000	255,083	2,694,500	673,625	6,484,400	1,603,285
Pike or Pickerel (Jacks)	—	—	16,300	1,629	16,300	1,629
Rock Bass	—	—	—	—	2,900	145
Sauger	—	—	—	—	700	42
Sheepshead	—	—	59,200	4,147	82,300	4,609
Smelt	—	—	1,123,900	56,195	3,344,100	145,005
Sucker or "Mullet"	—	—	1,141,500	79,904	2,250,800	123,683
Whitefish:	—	—	—	—	—	—
Common	—	—	279,400	81,008	1,340,600	405,980
Menominee	—	—	16,300	2,119	60,800	5,946
Yellow Perch	258,900	36,173	1,865,600	261,191	2,647,600	356,279
Yellow Pike	—	—	—	—	31,000	4,650
Crawfish	—	—	2,500	279	2,500	279
Total	1,777,100	\$368,883	10,759,000	\$1,510,305	21,403,800	\$3,203,770

STATISTICAL DIGEST 11, FISH AND WILDLIFE SERVICE

Lake Fisheries of the United States—Continued

CATCH: BY LAKES, 1942—Continued

Species	Lake Superior					
	Michigan		Wisconsin		Minnesota	
	Pounds	Value	Pounds	Value	Pounds	Value
Burbot	* 700	* \$35	700	\$21	—	—
Carp	—	—	—	—	—	—
Catfish and Bullheads	—	—	—	—	—	—
Chubs	33,100	5,627	323,300	64,650	145,200	\$24,567
Lake Herring	5,112,700	191,726	5,034,700	201,388	4,696,800	157,723
Lake Trout	2,023,000	430,899	658,700	164,675	277,300	47,201
Pike or Peckerel (Jacks)	—	—	—	—	600	35
Sauger	—	—	—	—	—	—
Sheepshead	—	—	—	—	—	—
Smelt	100	2	800	40	—	—
Sucker or "Mullet"	79,700	2,471	59,000	4,130	9,500	420
Whitefish:	—	—	—	—	—	—
Common	489,400	125,776	252,600	73,051	9,000	1,635
Menominee	6,100	549	3,900	502	1,400	60
Yellow Perch	6,400	704	—	—	—	—
Yellow Pike	3,000	450	—	—	—	—
Total	7,754,200	\$758,240	6,333,700	\$508,457	5,139,800	\$231,641

* Less than 50 pounds or 50 cents.

**FISHERY STATISTICS OF THE
UNITED STATES: 1942
Lake Fisheries of the United States—Concluded**

CATCH: BY LAKES, 1942—Concluded

Species	Lake Superior— Continued		Lake of the Woods, Rainy Lake and Namakan Lake		Total, All Lakes	
	Total		Minnesota		Pounds	Value
	Pounds	Value	Pounds	Value		
Blue Pike	—	—	—	—	6,261,300	\$791,317
Bowfin	—	—	—	—	4,200	324
Burbot	1,400	\$56	114,800	\$905	535,800	8,532
Carp	—	—	2,200	42	5,000,200	201,383
Catfish and Bullheads	*	1	29,200	2,759	1,647,700	189,919
Chubs	501,600	94,844	—	—	2,337,200	470,351
Cisco	—	—	—	—	99,300	18,545
Eels, Common	—	—	—	—	18,200	1,157
Gizzard Shad	—	—	—	—	23,000	139
Goldfish	—	—	—	—	82,800	4,140
Lake Herring	14,844,200	550,837	—	—	18,678,300	788,928
Lake Trout	2,959,000	642,775	100	15	10,174,500	2,425,050
Mooneye	—	—	—	—	13,100	655
Pike or Pickerel (Jacks)	600	35	111,600	5,093	134,900	7,417
Rock Bass	—	—	—	—	30,100	1,399
Sauger	—	—	60,300	3,905	1,410,800	174,620
Sheepshead	—	—	—	—	4,630,800	221,498
Smelt	900	42	—	—	3,345,000	145,047
Sturgeon	—	—	—	—	7,300	3,973
Sucker or "Mullet"	148,200	7,021	175,000	2,358	4,487,600	217,221
Sunfish	—	—	—	—	17,600	792
Tullibee	—	—	658,300	49,396	658,300	49,396
White Bass	—	—	—	—	516,700	53,058
Whitefish:						
Common	751,000	200,462	52,700	7,379	4,184,300	1,074,684
Menominee	11,400	1,111	—	—	133,600	14,843
Yellow Perch	6,400	704	12,800	1,180	5,222,600	726,935
Yellow Pike	3,000	450	477,000	63,023	5,588,800	1,037,908
Crawfish	—	—	—	—	2,500	279
Total	19,227,700	\$1,498,338	1,694,000	\$136,055	75,246,500	\$8,629,460

* Less than 50 pounds or 50 cents.

NOTE:—These statistics do not include data on the catch of smelt by dip nets or the production of mussel shells in the streams tributary to the Great Lakes since complete data on the yield of these items were not collected. The production of smelt by dip nets in the Michigan waters was estimated by officials of the Michigan Department of Conservation at 5,618,000 pounds, valued at \$112,572 to the producer. Similar data for Wisconsin waters are not available.

A SPORTSMAN'S PRAYER

Our Heavenly Father, we pause in the midst of our worldly cares to worship Thee and to recognize the fact that Thou art the God of Nature and that instead of being far removed from us Thou are as near to us as hands and feet. Because we love Thee, may we be ever mindful that Thou are present in all Nature around us. Help us to know Thee in the babbling brook, the thrill of a sunset, the gorgeous coloring of an October day, the promise of the rainbow, the inspiration of the sunset, the air fragrant after a quick rain, or rich with the smell of pine needles on a warm day.—Anonymous.

**End of
Title**



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