ANNOTATED BIBLIOGRAPHY OF THE LAKES, PONDS, AND RESERVOIRS OF NEW YORK STATE THROUGH 1974 (EXCLUSIVE OF LAKES ERIE AND ONTARIO)

U.S. GEOLOGICAL SURVEY

Water–Resources Investigations 76–55

Prepared in cooperation with the

New York State Department of Environmental Conservation

BIBLIOGRAPHIC DATA SHEET	1. Report No.	2.	3. Recipient's Accession No.

4. Title and Subtitle	
ANNOTATED BIBLIOGRAPHY OF THE LAKES, PONDS, AND RESERVOIRS OF NEW YORK STATE THROUGH 1974 (EXCLUSIVE OF LAKES ERIE AND ONTARIO)	5. Report Date July 1976
	6.
7. Author(s) Compiled by Phillip E. Greeson, Gerald K. Schultz, and Patricia A. Vopelak	8. Performing Organization Rept. No. USGS/WRI-76-55
9. Performing Organization Name and Address U.S. Geological Survey, Water Resources Division Room 343 Post Office & Court House P.O. Box 1350 Albany, New York 12201	10. Project/Task/Work Unit No.
	11. Contract/Grant No.
12. Sponsoring Organization Name and Address U.S. Geological Survey, Water Resources Division Room 343 Post Office & Court House P.O. Box 1350 Albany, New York 12201	13. Type of Report & Period Covered Final
	14.

15. Supplementary Notes
Prepared in cooperation with the New York State Dept. of Environmental Conservation

16. Abstracts

More than 1,200 titles and abstracts of limnological studies of ponds, reservoirs, and lakes (excluding Lakes Erie and Ontario) are compiled in one volume. Publications cited date from the late 19th century through 1974. Titles and abstracts are presented alphabetically by author's name; cross indexes of coauthors, locations, and subjects are also provided. Authors' abstracts were used if available; the remainder were written by the compilers of this volume and are so designated. Some of the publications cited could not be obtained for review; they are given complete reference but have no accompanying abstract.

This compilation is an exhaustive index to limnological studies within the State. It is intended for use mainly by those concerned with water-use planning, water management, and lake ecology.

17. Key Words and Document Analysis. 17a. Descriptors

*Bibliographies, *Abstracts, *Lakes, *Limnology, Ponds, Reservoirs, New York, Documentation, Information retrieval.

17b. Identifiers/Open-Ended Terms

New York lakes, New York ponds, New York reservoirs.

17c. COSATI Field/Group

18. Availability Statement	19. Security Class (This Report)	21. No. of Pages
No restriction on distribution	UNCLASSIFIED	367
	20. Security Class (This Page) UNCLASSIFIED	22. Price

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July 1976

UNITED STATES DEPARTMENT OF THE INTERIOR

Thomas S. Kleppe, Secretary

GEOLOGICAL SURVEY

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FACTORS FOR CONVERTING ENGLISH UNITS TO INTERNATIONAL SYSTEM (SI) UNITS AND ABBREVIATIONS OF UNITS

(Brackets indicate abbreviations used by U.S. Geological Survey that differ from those given in authors' abstracts.)

Multiply English units	by	To obtain SI units
	Length	
inches (in.)	25.4	millimetres (mm)
	2.54	centimetres (cm)
feet (ft)	.3048	metres (m)
miles (mi)	1.609	kilometres (km)
nautical miles (nautical mi)	1.85325	kilometres (km)
	Area	
acres (a) [acres]	4.047×10^{-1}	hectares (ha)
	4.047×10^{3}	square metres (m^2)
square inches (in^2)	6.452	square centimetres (cm^2)
	6.452×10^{2}	square millimetres (mm^2)
square feet (ft^2)	9.29×10^{-2}	square metres (m^2)
square miles (mi^2)	2.59	square kilometres (km^2)
	Volume	
gallons (gal)	3.785	litres (l)
	3.785×10^{-3}	cubic metres (m^3)
cubic feet (ft^3)	2.832×10^{-2}	cubic metres (m^3)
cubic inch (in^3)	1.639×10^{-5}	millilitres (ml)
acre-feet (a ft) [acre-ft]	12.327×10^{2}	cubic metres (m^3)
	Mass	
ounces, avoirdupois (oz, avdp.)	28.349	grams (g)
	2.8349×10^{3}	milligrams (mg)
pounds, avoirdupois (lb, avdp.)	453.59	grams (g)
tons, long (tn, l)	1.016	metric ton (t)
	1.016×10^{3}	kilograms (kg)
tons, short (tn, sh)	.9071	metric ton (t)
	9.0718×10^{2}	kilograms (kg)
	Flow	
inches per second (in/s)	2.54	centimetres per second (cm/s)
feet per day (ft/d)	.3048	metres per day (m/d)
feet squared per second (ft^2/s)	.0929	metres squared per second (m^2/s)

FACTORS FOR CONVERTING ENGLISH UNITS TO INTERNATIONAL SYSTEM (SI) UNITS AND ABBREVIATIONS OF UNITS (continued)

Multiply English units	by	To obtain SI units
	Flow (continued)	
cubic feet per day (ft^3/d)	.02832	cubic metres per day (cm^3/d)
cubic feet per year (ft^3/yr)		cubic metres per year (m^3/yr)
gallons per second (gal/s)	3.785	litres per second (l/s)
gallons per minute (gpm) [gal/min]	.06308	
million gallons per day (mil gal/d) [Mgal/d]	3.785×10^6	cubic metres per day (m^3/d)
	Temperature	
degrees Fahrenheit (°F)	(°F-32) 5/9	degrees Celsius (°C)
	Concentration of chemical constituents	
ounces per quart, (U.S. liquid) (oz/qt)	3.286×10^7	micrograms per litre (μg/l)
	3.286×10^4	milligrams per litre (mg/l)
parts per million (ppm)	--	--
parts per billion (ppb)	--	--
	Specific conductance	
--	--	micromhos per centimetre at 25°Celsius (μmhos/cm at 25°C)
	Heat	
--	--	calories per square centimetre (cal/cm^2)
--	--	calories per square metre (cal/m^2)
--	--	calories per gram (cal/g)
British thermal unit (Btu)	252	gram-calories
--	--	gram calories per square centimetre ($g\ cal\ cm^{-2}$) [$(g/cal)/cm^2$]
--	--	microcalories per square centimetre ($\mu cal/cm^2$)

FACTORS FOR CONVERTING ENGLISH UNITS TO INTERNATIONAL SYSTEM (SI) UNITS AND ABBREVIATIONS OF UNITS (continued)

Multiply English units	by	To Obtain SI units
	Loading rate	
pounds per acre (lb/a) [lb/acre]	9.22×10^{2}	grams per hectare (gm/ha) [g/ha]
	9.22×10^{-1}	kilograms per hectare (kg/ha)
pounds per square inch per year [(lb/in^2)/yr]	7.03×10^{1}	grams per square centimetre per year (g cm^{-2} yr^{-1}) [(g/cm^2)/yr]
pounds per square foot (lb/ft^2)	4.882×10^{3}	grams per square metre (gm/m^2) [g/m^2]
pounds per square foot per year [(lb/ft^2)/yr]	4.882×10^{3}	grams per square metre per year (gm/m^2/yr) [(g/m^2)/yr]
pounds per square mile per year [(lb/mi^2)/yr]	1.44×10^{2}	grams per square kilometre per year (gm/km^2/yr) [(g/km^2)/yr]
long tons per lane mile (tn/mi)	6.31×10^{-1}	metric tons per kilometre (t/km)
long tons per square mile (tn/mi^2)	3.92×10^{-1}	metric tons per square kilometre (t/km^2)
--	--	milligrams per kilogram (mg/kg)
	Radioactive disintegration	
disintegration per minute per cubic inch [(d/min)/in^3]	1.639×10^{13}	disintegration per minute per cubic micron (dpm/µ^3) [(d/min)/µ^3]
--	--	disintegration per minute per cubic metre (dpm/m^3) [(d/min)/m^3]
--	--	microcuries per litre (µCi/l)

ANNOTATED BIBLIOGRAPHY OF THE LAKES, PONDS, AND RESERVOIRS OF NEW YORK STATE THROUGH 1974 (EXCLUSIVE OF LAKES ERIE AND ONTARIO)

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Phillip E. Greeson, Gerald K. Schultz, and Patricia A. Vopelak

INTRODUCTION

New York State has more than 4,000 lakes, ponds, and reservoirs that provide for many types of recreation and supply large quantities of water for municipalities, industry, and agriculture. These lakes constitute a significant part of the State's water resources and are of major importance in the hydrology of drainage systems.

A knowledge of the physical, chemical, and biological characteristics of these lakes is essential for water-use planning and water management, and for extending the understanding of New York's vast water resources. A great deal of information about New York lakes, ponds, and reservoirs has been published since the end of the 19th century. The purpose of this bibliography is to present in a single volume an annotated and indexed compilation of these references.

Abstracts that were taken directly from the publication and required little or no editing are followed by the word "author." The rest were either condensed from longer abstracts or were written entirely by the compilers of this volume, and are followed by the compiler's initials--PEG, GKS, or PAV. Where a publication was known of but could not be obtained for review, the title, date, author(s), and publisher are given without an abstract.

Bibliographic entries are arranged alphabetically by author. Where more than one publication by the same author is included, the titles are presented chronologically. Entries that have the same author and the same year of publication are designated a, b, c, etc. Coauthors are indexed in a separate section of this volume, and a subject index and a location index are also provided.

To provide a subject cross reference, each entry has been assigned several key words that describe its content. Key words were selected from "Water Resources Thesaurus," 2d. ed., U.S. Dept. of the Interior, 1971, and are listed alphabetically in the subject index. Lake names in the location index are those used by individual authors and are not necessarily those endorsed by the Geological Survey. Units of measure given are as they appear in original text. Abbreviations retained are generally those in common use.

ACKNOWLEDGMENTS

In order to obtain as many references as possible for this bibliography, assistance was solicited from many individuals, organizations, and institutions. The authors gratefully acknowledge those who responded to their request for information. They were:

American Society of Civil Engineers Library; J. Ballantyne; T. T. Bannister; J. P. Barlow; C. E. Barr; A. W. Bromberg; C. Brunger; C. W. Post College Library; D. Charles; Clarkson College of Technology Library; N. L. Cleseri; D. R. Coates; Colgate University Library; Columbia University Geology Library; D. P. Connola; A. Cook; Cornell University Libraries; R. Costa; R. M. Crowell; T. Cummings; F. Davenport; J. F. Davis; W. E. Dean; W. H. Diment; R. J. Dineen; D. M. Di Toro; S. W. Dublin; S. W. Eaton; H. L. Ehrlich; A. W. Eipper; A. S. Fick; H. S. Forest; J. L. Forney; H. D. Freudenthal; G. W. Fuhs; C. D. Gates; D. T. Gerace; A. Gray; G. K. Gruendling; W. N. Harman; E. B. Henson; J. Hirsch; A. P. Hull; D. M. Hutchison; J. H. Judd; E. A. Karath; C. L. Katz; J. Kingsbury; Lake George Park Commission; C. Lathey; N. H. Lawry; N. Lasaroff; G. E. Likens; S. Ludlam, D. Lundgren; J. J. McLaughlin; C. J. Malanga; J. R. Mayer; C. L. Miller; P. E. Moffa; F. W. Montanari; C. B. Murphy, Jr.; New York Botanical Garden Library; New York State Department of Health Library; New York State Geological Survey; D. Norton; T. T. Odell; R. T. Oglesby; M. E. Pierce; M. Potash; J. M. Potwora; J. Radziejowski; M. C. Rand; E. C. Raney; M. E. Rooney; R. R. Rumer, Jr.; W. R. Schaffner; C. L. Schofield, Jr.; G. J. Schumacher; W. F. Sheperd; L. A. Sirkin; S. Sloan; J. T. Slominski; Mercy College Library; State University College at Potsdam Library; State University of New York at Albany Library; State University of New York at Binghamton Library; State University of New York at Buffalo Library; K. M. Stewart; U. B. Stone; J. Storr, R. Stross; R. A. Sweeney; Syracuse University Library; A. Tedrow; Union College Library; U.S. Army Corps of Engineers, New York and Buffalo Districts; University of Rochester Library; E. L. Vopelak; D. A. Webster; R. G. Werner; Westchester County Department of Planning; Westchester County Water Agency; K. F. Wich; K. Wood; D. L. Woodrow; W. E. Yasso; W. D. Youngs; and D. F. Zeman.

Special appreciation is extended to Dr. Leo Hetling, New York State Department of Environmental Conservation, who supplied many of the publications describing the algae of New York lakes.

This bibliography was prepared in cooperation with the New York State Department of Environmental Conservation, Peter A. A. Berle, Commissioner.

BIBLIOGRAPHY

AARONSON, SHELDON

1971. (and Ardois, G.). Selective inhibition of blue-green algal growth by ethionine and other amino acid analogs: Jour. Phycology, v. 7, no. 1, p. 18-20.

The unusual sensitivity of blue-green algae to ethionine and other amino acid analogs represents an exceptional phyletic character and may be useful in the control of these algae when they become a nuisance. (author)

ACCIARDI, FRANCES

1972. (and others). Limnological measurements in Chautauqua Lake, in Chautauqua Lake studies: Fredonia, N.Y., State Univ. Coll., Lake Erie Environmental Studies Program, p. 190-197.

This report presents data on the temperature, amount of dissolved oxygen, light penetration, and acidity of Chautauqua Lake. (PAV)

ADAMEC, JAN

1973. Control of aquatic vegetation in New York State: Ithaca, N.Y., Cornell Univ. and New York State Coll. Agriculture and Life Sci., mimeo, 71 p.

Nutrients from sewage and agricultural runoff are primarily responsible for the growth of aquatic weeds. Various schemes to divert nutrients, or to remove them from sewage, are in use, but they tend to be either costly or only partially effective. Mechanical harvesting of weeds in lakes gives immediate relief, but if nutrients are present, weeds grow back again. Herbicides can be effective but may have other undesirable effects. Another possible method is to introduce herbivorous fish. Examples are given of all types of weed control, emphasizing both legal restrictions and the generally inadequate state of experience. (author)

ADAMS, C. C.

1916. (and Hankinson, T. L.). Notes on Oneida Lake Fish and Fisheries: Am. Fisheries Soc. Trans., v. 15, no. 3, p. 154-169.

This article is the first comprehensive report on the fish of Oneida Lake. It discusses studies on New York fish up to 1916 and also includes a physical description of Oneida Lake; a report on the lake's angling, fisheries, and eel and frog industries; and an annotated list of 50 known fish species in Oneida Lake. (GKS)

1919. (Hankinson, T. L., and Kendall, W. C.). A preliminary report on a fish-culture policy for the Palisades Interstate Park: Am. Fisheries Soc. Trans., v. 18, no. 4, p. 193-204.

Palisades Interstate Park, on the west shore of the Hudson River, extends northward as a narrow strip along the famous Palisades to south of West Point. It broadens in the Bear Mountain and Harriman Park sections and extends westward about 14 miles to the Ramapo River near Tuxedo. The article summarizes a survey of fish in the Bear Mountain and Harriman Park sections of the park and discusses stocking of food and game fish. Six lakes and two stream systems were studied. Factors investigated were physical conditions and vegetation, kinds and abundance of fish, and the ecology of fish. (GKS)

1928. (and Hankinson, T. L.). The ecology and economics of Oneida Lake fish: Roosevelt Wildlife Bull., v. 1, p. 235-548.

This report on the fish of Oneida Lake was part of a comprehensive study of fish and fisheries and was the result of special field studies and collections made by several persons from 1914 through 1921. The objective was to contribute to a system of fish culture management for the lake. Fifty-nine species of fish are discussed, including their life histories, habits, ecology, and economics. (PEG)

AHEARN, D. G.

1969. (Meyers, S. P., Cook, W. L., and Hansen, G.). Ecology of yeasts in Lake Champlain: J. Microbiol. and Serology, v. 35, p. 19-20.

ALLEGHENY RIVER BASIN REGIONAL WATER RESOURCES PLANNING BOARD

1971. Allegheny River Basin, New York--Alternatives for water resources development and management: New York State Dept. Environmental Conserv., 185 p.

This report represents the results of water resources investigations undertaken in a study area that includes the portion of the Allegheny River basin in New York and the contiguous drainage area of the Lake Erie basin from the Pennsylvania State line to the Cattaraugus Creek drainage basin. Present and projected water-related needs and opportunities have been identified, available resources have been evaluated, and water supply and demand have been correlated to establish the most promising means of satisfying the needs. The needs considered were those related to municipal and industrial water supply, water quality management, irrigation, water-oriented recreation, fish and wildlife enhancement, flood-plain management, and thermal electric power development. (PAV)

ALLEN, G. O.

1954. An annotated key to the Nitellae of North America: Torrey Bot. Club Bull., v. 81, no. 1, p. 35-60.

This article is based on an examination of many algal specimens loaned to the author in 1939 by the Herbarium of the New York Botanical Garden and on manuscript notes by the late James Groves. The author discusses species of *Nitella* and *Tolypella*. (GKS)

ALLEN, T. F.

1882a. Development of the cortex in Chara: Torrey Bot. Club Bull., v. 9, no. 4, p. 37-47.

The author traces the gradual development of the cortex in species of the Order Characeae. (GKS)

1882b. Observations on some American forms of Chara coronata: Am. Naturalist, v. 16, p. 358-399.

Chara coronata Ziz. belongs to the second division of the genus *Chara*, namely, *Haplostephanae* (stipules composed of a simple series of cells). It has one stipular cell at the base of each leaf, it is not corticated, and it is monoecious. The article discusses and illustrates some of the American varieties of the species. (GKS)

1883. Notes on the American species of Tolypella: Torrey Bot. Club Bull., v. 10, nos. 10, 11, p. 109-117.

This article lists several new algal species of the genus *Tolypella*. It describes each species in respect to species already described from North America. (GKS)

1888. The Characeae of America--Part I: New York, T. F. Allen, Publisher, 64 p.

This is an annotated list of the algae in the order Characeae. (GKS)

1893. Notes on new Characeae: Torrey Bot. Club Bull., v. 20, no. 3, p. 119-120.

Described are new species of Characeae that the author received from various places in the United States. Included are descriptions of *Nitella formosa*, *Nitella japonica*, *Chara hydropitys* var. *mexicana*, and *Chara gymnopitys* var. *keukenis*. (GKS)

1894. Note on Chara sejuncta A. Br.: Torrey Bot. Club Bull., v. 21, no. 11, p. 526.

This article discusses the characteristics of the *Chara sejuncta A. Br.* collected from Lake Champlain and Saratoga Lake. (GKS)

ALLER, R. C.

1969. (Clayman, D. B., and Roenke, K.). The general upper sedimentary patterns of Seneca Lake: Corning, N.Y., Coll. Center of the Finger Lakes (unpub.).

ALSOP, R. G.

1962. (and Forney, J. L.). Growth and food of white perch in Oneida Lake: New York Fish and Game Jour., v. 9, no. 2, p. 133-136.

ALSOP, R. G. (continued)
Data for 484 white perch from Oneida Lake indicate that the growth rate was high during the first 2 years of life but that it decreased markedly after 3 years of age. Rapid growth of the 1954 year class suggests that the population density was low. Stomach examinations showed that chironomids, mayflies, and entomostraca, collectively, were the most important food group. (author)

ANDERSON, H. A.
1909. The algae of the Ithaca marshes: Science, v. 53, no. 775, p. 654.

Team investigations on fauna and flora of the marshes of the upper Cayuga Lake basin were conducted by the staff of the Cornell University Biological Field Station. The author studied the algae. More than 70 genera were found, but the species were not defined. The genus Choetophora was especially abundant in the region and was represented by three abundant species, *C. elegans*, *C. incrassata*, and *C. pisiformis*. (GKS)

ANDERSON, J. K.
1971. Lake Champlain fishery investigations: Vermont Fish and Game Dept., ms. rept., 74 p.

An inventory of fish caught in Lake Champlain was given with a creel survey. Surveys of aquatic vegetation, northern pike, walleye, and smallmouth bass populations were carried out. Northern pike spawning areas are gradually being destroyed by development. (author)

ANDERSON, K.
1969. Tritium in New York State waters, 1965: Radiological Health and Data Repts., v. 10, no. 3, p. 93-97.

The state's major rivers, creeks, and lakes were sampled to see what variations in tritium content occurred throughout New York. Since most tritium in the atmosphere from nuclear weapons probably reaches the surface waters through precipitation, one would expect that running water such as in creeks and rivers (which is made up of recent precipitation runoff) may be higher in tritium than large, deep lakes, which contain older water and thus provide greater dilution. (author)

ANDREWS, A. L.
1957. The bryophyte flora of the upper Cayuga Lake basin, New York: Ithaca, N.Y., Cornell Univ. Agr. Expt. Sta., Mem. 352, 87 p.

The author states that "the purpose of the present publication is primarily to bring together the knowledge [about bryophytes] resulting from collections made by many persons through many years and to make the results available to future generations of students who may be able to increase the list or base investigations of various kinds upon it." The article presents a comprehensive description of the liverworts and mosses in the upper Cayuga Lake basin and surrounding areas. Sixteen orders and 51 families are represented. A taxonomic key is provided. (PEG)

APFEL, E. T.
1946. Origin of the New York State Finger Lakes: Geol. Soc. America Bull., v. 57, no. 12, pt. 2, p. 1175-1176.

ARANEO, B.
1969. Detection of DDT in the muds of Seneca Lake: Corning, N.Y., Coll. Center of the Finger Lakes (unpub.).

ARNOLD, D. E.
1965. Population, survival, and growth of largemouth bass in Dryden Lake: Ithaca, N.Y., Cornell Univ., Job Completion Rept. III-2, Proj. F-17-R-9, mimeo, 6 p.

The fish population of Dryden Lake was sampled by electrofishing and trammel nets. Rectified 1/4-wave alternating current was tested using various electrode arrangements. A shore survey was completed and a hydrographic survey was undertaken. Limnological data were collected during February and March. (author)

ARNOLD, D. E. (ed.).
1968. Cornell scientists see thermal pollution of Cayuga Lake by planned nuclear power plant: The Conservationist, v. 23, no. 1, p. 2-5 and 36-37.

A proposed 830,000-kilowatt electric generating plant near Cayuga Lake would have an effect on the ecological structure of the lake. The lake has a mean depth of 179 feet and is thermally stratified during the summer. Cayuga Lake has been considered a relatively infertile lake, but recent studies show that eutrophication is proceeding faster than had previously been thought. The plant will draw cool water from 100 feet below the surface of the lake and return it at an increased temperature to the lake surface. The return rate of 9,000 gallons per second would cause an ecological chain of events that would greatly hasten the natural eutrophication process. Alternate cooling methods are discussed as well as the procedure for acquiring permits to construct power plants. (GKS)

ARNOLD, D. E.
1969. Feeding studies on Daphnia pulex using seven blue-green algae: Ithaca, N.Y., Cornell Univ., Doctoral dissert., 89 p.

One of the dominant themes in applied ecology is concern over the accelerating eutrophication of natural waters. Simultaneously, a dominant theme in basic ecology is the study of trophic relationships in ecosystems. This dissertation is an attempt to combine parts of both these themes into a statement concerning a possible effect of accelerated eutrophication on trophic relationships in aquatic ecosystems. (author)

AULENBACH, D. B.
1972a. Chemical nutrients in Lake George: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 72-19, 69 p.

The study of the nitrogen and phosphorus content of Lake George was continued. There was no significant variation of these nutrients with depth. Nitrates increased during ice cover and dropped off rapidly during the summer. The phosphorus appears to vary by a factor of 10 during a 48-hour cycle. (author)

1972b. (and Cleseri, N. L.). Sources and sinks of nitrogen and phosphorus--Water quality management of Lake George (N.Y.), in Water-1972: Am. Inst. Chem. Eng. Symposium Ser. 129, v. 69, p. 253-262.

Measurements were made of the nitrogen and phosphorus contents of the precipitation, stream runoff, and wastewater discharges tributary to Lake George; of the lake water itself; and of the outlet at Ticonderoga. The major source of nitrogen to the lake is the precipitation that falls directly on the lake. The major source of phosphorus is from wastewater discharges on the watershed. Apparently both the nitrogen and the phosphorus are precipitated and accumulated in the bottom sediments. Concentration of phosphorus in the lake is approaching the critical level of 10 micrograms per litre. Removal of phosphorus from waste-water is recommended. (author)

1973a. (and Cleseri, N. L.). Nutrient inputs to a lake and their effects upon water quality: Troy, N.Y., Rensselaer Polytech. Inst., Internat. Biol. Program, Eastern Deciduous Forest Biome, Memo. Rept. 73-14, 33 p.

Determining the inputs of nutrients to a lake is the first step in understanding biological growth. Fate of the nutrients must also be known in order to maintain a complete balance within any lake system. In order to prevent excessive algal growth, water quality must be superior to that required for human drinking water. Evaluation of nutrients and their effects upon water quality requires sampling at various locations and at different depths for at least 1 year. At least one extended period of sampling should be conducted for a minimum of 60 hours, at 4- or 6-hour intervals, to determine any cycles of nutrients during this period. With sufficient information, a correlation can be established between nutrient content and biological productivity. (PAV)

1973b. Macro-nutrients in the Lake George ecosystem: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 73-19, 14 p.

Samples were secured to assess the nutrient levels in Lake George and to compare these values with the concentrations observed in previous years. There appeared to be a slight increase in

AULENBACH, D. B. (continued)
the orthophosphate levels in 1973 over those of 1972. Concentrations of orthophosphate varied appreciably over 6 hours when sampled over a 72-hour period, but there was no evidence of a 48-hour cycle as had appeared to occur in 1972. Additional data will be secured to evaluate these variations. (author)

1974a. (Galvin, T. P., and Romero Rojas, J. A.). Protracted recharge of treated sewage into sand. Part 1--Quality changes in vertical transport through the sand: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 74-1, 25 p.

Studies were made of the Lake George sewage treatment plant in order to determine the removal efficiency of the sand beds of coliforms, biochemical oxygen demand (BOD), chlorides, and nitrogen and phosphorus compounds. Ten feet of sand were found to remove coliforms by 99 percent and BOD by 96 percent. However, nitrates, phosphates, and chlorides remained in significant concentrations after filtration through 10 feet of sand. Phosphate removal in an infrequently used sand bed was greater than in a continuously used bed. (author)

1974b. (Cleseri, N. L. and Tofflemire, J. J.). Thirty-five years of continuous discharge of secondary treated effluent onto sand beds: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 74-19, 44 p.

The Lake George Village sewage treatment plant was put into operation in 1939. Even at this time, regulations were in effect preventing the discharge of any sewage, raw or treated, into the waters of Lake George or into any streams discharging into this recreational lake. Previous studies showed the capacity of the top 10 feet of the sand beds for reducing coliforms, biochemical oxygen demand, and nitrogen. Phosphate reduction appeared to be a function of the extent of prior usage of a particular bed. Resistivity studies showed the probable path of the effluent through the ground. As a result of these studies, a series of wells was placed in this path. Observations were made of the depth of water in each of the wells and of the physical and chemical quality of the water at each location. The soil system appears to be quite efficient in removing total phosphorus from the treated effluent but it only partially reduces total nitrogen. (author)

AYANABA, A.
1974. (and Alexander, Martin). Transformations of methylamines and formation of a hazardous product, dimethylnitrosamine, in samples of treated sewage and lake water: Jour. Environmental Quality, v. 3, no. 1, p. 83-87.

Added trimethylamine is converted to dimethylamine in samples of raw sewage and lake water, and the secondary amine thus formed or added dimethylamine disappears with time. The rates of formation and disappearance of dimethylamine are governed by the pH and the type and amount of inorganic nitrogen present. Ammonium is generated from both of the amines. Dimethylnitrosamine, a potent carcinogen, is formed in small amounts in samples of sewage and lake water receiving dimethylamine and nitrite. Dimethylnitrosamine also appears in sewage and lake water samples receiving trimethylamine. Microorganisms are involved in some stage of the conversion of the tertiary amine to the secondary amine and dimethylnitrosamine in sewage because these products are not found in sterilized sewage. (author)

BACHE, C. A.

1971. (Gutenmann, W. H., and Lisk, D. J.). Residues of total mercury and methylmercuric salts in lake trout as a function of age: Science, v. 172, no. 3986, p. 951-952.

To relate mercury concentrations to time of exposure of fish, an analysis of the concentration of total mercury and methylmercuric salts in lake trout of precisely known ages from 1 to 12 years has been carried out. Trout from Cayuga Lake, which are tagged and stocked annually as fingerlings, were netted in October 1970 to obtain samples of as many different ages as possible. Mercury can reach the lake from its use in laboratory research, in dental and medical services, in agriculture, in coal burned in powerplants, and from other sources. The concenrations of both total mercury and methylmercury were found to increase with age of the fish but were not related to the fish sex. A data table presents a list of concentrations of total mercury and methylmercury according to fish age and the percentage of total mercury that was present as methylmercury. (author)

1972. (Serum, J. W., Youngs, W. D., and Lisk, D. J.). Polychlorinated biphenyl residues--Accumulation in Cayuga Lake trout with age: Science, v. 177, no. 4055, p. 1191-1197.

The concentration of polychlorinated biphenyls was shown to increase progressively with maturity in a series of lake trout. The presence of these compounds was determined by column chromatographic isolation, specific detector gas chromatography, and mass spectrometry. The relationship between fish age and the concentration of polychlorinated biphenyls was highly significant. (author)

BAIER, R. E.

1970. Surface quality assessment of natural bodies of water: Internat. Assoc. Great Lakes Research, 13th Conf. Great Lakes Research, Proc., Buffalo, N.Y., p. 114-127.

Multiple attenuated internal reflection (MAIR) spectroscopy is sensitive to surface films as thin as monolayers transferred from air-water interfaces. Repetitive surface samples have been obtained from natural bodies of water by a simple dip technique. During the 1969 recreational season on Lake Chautauqua, the method demonstrated such phenomena as weekend "bursts" of hydrocarbon surface pollutants associated with peak recreational activity, rapid natural "cleansing" of the lake surface, recognition of proteinaceous substances as major components of bubbles marking wind streaks in the lake, and of billowing foam accumulated along the windward shore. (author)

1972a. Organic films on natural waters--Their retrieval, identification, and modes of elimination: Jour. Geophys. Research, v. 77, no. 27, p. 5062-5075.

Air-water interfacial films were sampled and analyzed by infrared spectroscopy. A field program on Lake Chautauqua in western New York correlated the buildup of oily films over the lake surface with peak boating activity and demonstrated the rapid elimination of such pollutant layers by natural mechanisms. Bubble breaking and its concomitant ejection of film fragments into the air was by far the most efficient process, especially when simultaneous irradiation accelerated the formation of polar moieties in the films. (author)

1972b. Persistent seafoam masses--A problem solved: Australian Nat. History, p. 162.

The curious nature of the great masses of foam that often drift in from the sea onto rocks and beaches was researched. It was observed that these latherlike masses persist for relatively long periods, even when blown about by the wind. In Lake Chautauqua, this proteinaceous material was found to give rise to billowing heaps of foam along the windward shore and to have its origin in a large algae bloom. An explanation of the phenomenon of foam formation could be that during storms, large numbers of planktonic organisms are destroyed, and debris from these minute organisms first lowers the surface tension of the water to allow it to foam and then stabilizes the froth once it has formed. (author)

BAKER, F. C.

1899. Notes on the Mollusca of Owasco Lake, N.Y.: The Nautilus, v. 13, no. 5, p. 57-59.

This is an annotated list of mollusks in Owasco Lake. (GKS)

1916a. Description of a new variety of Lampsilis from Oneida Lake with notes on the L. luteola group: The Nautilus, v. 30, no. 7, p. 74-77.

BAKER, F. C. (continued)

Lampsilis radiata oneidensis is described as a new variety of mollusk from Oneida Lake. (PEG)

1916b. The fresh-water Mollusca of Oneida Lake, New York: The Nautilus, v. 30. no. 1, p. 5-9.

This short article presents a geographical description and a list of mollusks found in Oneida Lake. (GKS).

1916c. The relation of mollusks to fish in Oneida Lake: Syracuse, N.Y., New York State Coll. Forestry, Tech. Pub. 4, 366 p.

This publication describes the character and abundance of the molluskan fauna that inhabit Oneida Lake and their relation to fish as food organisms. In other places, notably in Illinois, mollusks are an important item in the food supply of fish such as whitefish, sturgeon, sucker, carp, catfish, sunfish, and other bottom dwellers. (GKS)

1918a. Description of a new variety of freshwater mussel from Oneida Lake, N.Y.: Syracuse, N.Y., New York State Coll. Forestry., Tech. Pub. 9, p. 247-248.

Lampsilis radiata oneidensis, a new species of mollusk, was collected from Oneida Lake. (PEG)

1918b. Further notes on the Mollusca of Oneida Lake, N.Y.; the molluscs of Lower South Bay: The Nautilus, v. 31, no. 3, p. 81-93.

This is an annotated list of mollusks in Lower South Bay, Oneida Lake. (GKS)

1918c. The productivity of invertebrate fish food on the bottom of Oneida Lake, with special reference to mollusks: Syracuse, N.Y., New York State Coll. Forestry, Tech. Pub. 9, 233 p.

This publication describes the food supply of fishes in an important fish-producing lake whose physical character and fishes are well known. Field operations were conducted at Lower South Bay. Studies revealed several new species of algae, a new insect, and five new mollusks. The relative abundance of the different species of benthic organisms as associated with varying physical conditions were described. Special reference is made to mollusks. (GKS)

1918d. The relation of shellfish to fish in Oneida Lake, New York: Syracuse, N.Y., New York State Coll. Forestry., Circ. 21, 34 p.

BAKER, M. B.

1934. (and Johnston, A. W.). Glacial lake stages about the east end of Lake Ontario: Royal Soc. Canada Proc. and Trans., v. 28, p. 75-80.

This article discusses the glacial-lake history at the east end of Lake Ontario. It discusses the geology of the area to explain various stages of glacial lake recession and cites the geologic investigations and conclusions of several previous writers. (GKS)

BARBEHENN, K. R.

1952. Farm fishponds, filamentous algae, and mallard ducks: Ithaca, N.Y., Cornell Univ., M.S. thesis, 63 p.

During the summer of 1950, a pond at Danby, N.Y. had a nuisance growth of filamentous algae. After several domestic ducks were placed on the pond, the algal mat disappeared, and, since the ducks had been observed feeding in the mat, it was assumed that they may have caused its destruction. The ponds were studied from April to October 1951. General observations as well as measurements of pH, temperature, turbidity, and the slopes of the pond sides were made on 25 ponds. This study was concerned primarily with the algae, but also indicated the ability of mallards to survive and reproduce on farm ponds. The stomach contents of several ducks were examined and the results are tabulated. (GKS)

1954. The effects of ducks and the development of filamentous algae in farm fishponds: New York Fish and Game Jour., v. 1, no. 1, p. 110-115.

BARBEHENN, K. R. (continued)

To test the efficacy of ducks as controllers of filamentous green algae on farm fishponds, mallards were stocked on 21 farm ponds in south-central New York and on shallow ponds at the Cornell University Fish Hatchery at Ithaca. Observations were made also on three ponds bearing domestic mallard derivatives and muscovies. Field results indicated that the farm pond ducks had no appreciable effect on the algae. Observations at the hatchery suggested that, under conditions of concentration, ducks may destroy part of the algal mat by agitation or may retard development by increasing turbidity, but they are not capable of preventing undesirable amounts of algal growth. (author)

BARLOW, J. P.

1965. (and Bishop, J. W.). Phosphate regeneration by zooplankton in Cayuga Lake: Limnology and Oceanography, v. 10B, supp. R, 9 p.

Rates of liberation of phosphate by the zooplankton in Cayuga Lake were measured in late summer when the lake was strongly stratified. About 80 percent of the phosphorus was liberated in the epilimnion, principally by cladocerans. The regeneration of phosphorus by the zooplankton in the epilimnion appears to be sufficient to supply the requirements of the phytoplankton populations of that period. (author)

1970. (Schaffner, W. R., and Scarlet, V. B.). Eutrophication of water resources of New York State. Observations on nutrient limitation on summer phytoplankton in Cayuga Lake, 1967 and 1968: Ithaca, N.Y., Cornell Univ. Water Resources and Marine Sci. Center, Tech. Rept. 21, 21 p.

The role of nutrients in regulating phytoplankton populations remains a problem of central importance in aquatic ecology. It is of particular interest during the period of summer stratification. Cayuga Lake was used in this study since it is a favorable environment for investigating nutrient effects on phytoplankton. It is strongly stratified in the summer, and both phosphate and silicate are reduced to low levels, whereas nitrate remains relatively abundant. During 1966, a series of nutrient-enrichment experiments were performed. The effects of major nutrient elements on rates of carbon-14 uptake were tested in short-term experiments. During the summers of 1967 and 1968, similar enrichment experiments were continued and are described here. (author)

1973a. (Schaffner, W. R., deNoyelles, F., and Peterson, B. J.). Continuous-flow nutrient bioassays with natural phytoplankton populations, in Bioassay techniques and environmental chemistry: Ann Arbor, Mich., Ann Arbor Sci. Publishers Inc., p. 299-319.

Experiments are described in which responses of natural phytoplankton populations to nutrients were studied in continuous-flow cultures. Changes in metabolic, chemical, and taxonomic characteristics of these mixed populations observed under these conditions were similar to changes in the unconfined populations presumed to result from variations in nutrients. Because it is possible to investigate such changes, continuous-flow systems have important advantages over the usual static nutrient bioassay procedures. (author)

1973b. (Peterson, B. J., and Savage, A. E.). Continuous-flow studies of phosphorus as a limiting nutrient for Cayuga Lake phytoplankton: Internat. Assoc. for Great Lakes Research, 16th Conf. Great Lakes Research, Proc., Huron, Ohio, p. 7-14.

Experiments are described in which samples of the natural phytoplankton community from Cayuga Lake were maintained in a continuous-flow apparatus. When phosphorus-enriched lake water was supplied, it was rapidly assimilated, and the equilibrium population that resulted, although as much as tenfold larger, was still phosphorus-limited and nearly unchanged in species composition. The experiments suggest that most of the components of the summer phytoplankton community are phosphorus-limited and that relatively large changes in phosphorus would have to be made before other nutrients became limiting. (author)

1974. Basic research in the aquatic environment--Effects of eutrophication on phytoplankton and selected species of aquatic vascular plants--Phase II: Ithaca, N.Y., Cornell Univ. Water Resources and Marine Sci. Center, Completion Rept., 18 p.

An understanding of the effects of specific nutrients on existing plankton populations is necessary for the proper management of water resources quality control. Recently, nutrient bioassay techniques have been widely used in experiments to identify limiting nutrients and

BARLOW, J. P. (continued)
to predict the consequences of changes in them. These experiments suffer from numerous disadvantages, an important one being that they are performed under static conditions. It is recommended that continuous-flow techniques provide more natural, suitable conditions for determining the effects of nutrients on algal populations. Recently, continuous culture has been used to study the selective effect of organic enrichment on natural populations of marine bacteria, and present studies are an extension of this approach. Described are the method used and results found in such experiments made during the winter of 1971-72 in an experimental pond and in Cayuga Lake shortly thereafter. (author)

BARNARD, WALTHER
1972. (Pazdersky, G., Salerno, M., and Schneider, H.). Geochemical data and studies, in Chautauqua Lake studies: Fredonia, N.Y., State Univ. Coll., Lake Erie Environmental Studies Program, p. 97-113.

During the spring and summer of 1972, 11 tributary streams of Chautauqua Lake were routinely sampled and analyzed by atomic absorbtion spectrophotometry for cadmium, calcium, chromium, copper, iron, potassium, magnesium, manganese, sodium, lead, and zinc.

Profiles are presented for all tributaries showing geographic distribution and variation of calcium, magnesium, potassium, and sodium. These indicate point sources of pollution and permit evaluation of their influence on main streams. (PAV)

BARNES, G. H.
1973. Environmental law--Water pollution remedies--Use of public nuisance theory in suit by federal government: Boston Coll. Indus. and Commercial Law Rev., v. 14, no. 4, p. 767-785.

The United States government sought permanent injunctive relief in the Federal District Court for the State of Vermont to prevent defendant corporations from conducting their oil transport unloading and storage businesses without complying with safety procedures that minimize the danger of future oil spills and leakages. The complaint charged that oil was spilled into Lake Champlain. The defendants were a New York corporation (Ira S. Bushey and Sons) and a Vermont corporation (Northern Oil Co.), whose subsidiaries supplied water transportation services and operated an oil dolphin in a Vermont harbor. The defendants moved for a dismissal, but the court rejected the motion because the alleged conduct fell within the purview of public nuisance. (author)

BATH, D. W.
1973a. (and Heffner, R. L.). A preliminary biological survey of P'Tuck-Sepo (Tuxedo Lake), Orange County, New York: New York, New York Univ. Med. Center, Inst. Environmental Medicine, 118 p.

The purpose of this investigation is to characterize the physical and chemical parameters of Tuxedo Lake in order to devise approaches to improve water quality and to achieve an understanding of the fisheries. The recommendations derived from this study will be helpful in obtaining guidelines for Tuxedo Lake that will provide maximum benefit for all concerned. (author)

1973b. A limnological investigation of Sterling Lake, Orange County, New York: New York, New York Univ., M.S. thesis, 148 p.

The objective of this study is to ascertain the characteristics of Sterling Lake in terms of its limnological and biological parameters. In order to understand the limnology, the morphometry and morphology of the lake were investigated along with the geology of its watershed. All of these are factors that affect the physical and chemical characteristics of the lake. The biological investigation consisted of field surveys of the aquatic flora and fauna in the lake. Relationships between the limnological and biological findings are discussed. (author)

1974. (Heffner, R. L., and Hernandez, J. A.). A preliminary biological survey of Tuxedo Lake, Orange County, New York, part 2: New York, New York Univ. Med. Center, Inst. Environmental Medicine, 46 p.

From the preliminary investigation in 1973, Tuxedo Lake was described as approaching a eutrophic condition. The extent of this condition could not be determined from the limited amount

BATH, D. W. (continued)
of physical, chemical, and biological data available from the 1973 study. In an effort to better characterize the lake's condition, an additional year of investigation was performed in 1974.

The 1974 study program was designed to evaluate the chemistry of the tributaries as well as the lake in an effort to determine if any or all the tributaries were fertilizing the lake. The chemical data from 1974, along with the 1973 results, allow for comparison and interpretation of the lake's water quality for potable usage by humans and for the lake's fishery. (author)

BAY, E. C.
1960. The feasibility and advisability of chironomid control with special reference to Chautauqua Lake: Ithaca, N.Y., Cornell Univ., Doctoral dissert., 184 p.

Chironomids of Chautauqua Lake were studied for four summers after nuisance-ridden years 1954 and 1955. Variations in the rate and the peak of emergence were recorded for *Glyptotendipes lobiferus* and *Tanytarsus* (*Endochironomus*) *subtendipes*. *Tendipes plumosus*, which is considered to be the most objectionable species near the lake, emerges through the summer, with greatest emergence in the last half of August. With respect to chironomid control, larvicidal screening showed granular formulations of 2 percent dieldrin, 2 percent aldrin, and 10 percent lindane to be most promising at a dosage of 0.05 to 0.1 pound per acre. Amphipods and other invertebrates are not endangered at this concentration. No adulticide measures were found to give effective relief from intense midge flights. The article includes an up-to-date description of causes and control approaches for aquatic midge problems in different parts of the world. Detailed diagrams and descriptions of rearing, emergence, and collecting devices that are of value in such studies are also included. (GKS)

BAYER, R. A.
1973. A winter evaluation of finished water quality with respect to microscopic organisms and detritus: Syracuse, N.Y., Syracuse Univ., M.S. thesis, 82 p.

During the period February 5 to March 15, 1973, the quality of finished water supplied from Lake Ontario, Otisco Lake, and Skaneateles Lake was investigated. From each of these three sites, samples of finished water were collected for microbiological studies. Microscopic organisms and detritus contained in the finished water samples were observed and are regarded as an indication of the quality of the finished water provided from each of these three sources. Untreated water samples were collected on two occasions to evaluate the effect of water treatment processes utilized at each water source. The findings of this investigation indicate that the Lake Ontario water source provides the best quality finished water with respect to microorganisms. (author)

BEAN, T. H.
1903. Catalog of the fishes of New York: New York State Mus. Bull. 60, 784 p.

New York has extensive and diversified water areas. Its varied drainage basins make it the home of many species of fish. This catalog describes 375 fish species, of which 217 are marine, 141 freshwater, and 17 anadromous. Included are 15 introduced species and 18 other species whose occurrence in New York waters is doubtful. (GKS)

BEATTIE, R.
1967. Distribution of benthic organisms in Seneca Lake: Corning, N.Y., Coll. Center of the Finger Lakes (unpub.).

BEETON, A. M.
1971. Chemical characteristics of the Laurentian Great Lakes, *in* Proceedings of the conference on changes in the chemistry of Lakes Erie and Ontario: Buffalo Soc. Nat. Sci. Bull., v. 25, no. 2, p. 1-17.

The St. Lawrence Great Lakes and their connecting waterways, because of their size and excellent quality waters, constitute one of the most important resources of North America. They have been the most important single factor for the settlement, growth, and development of the mid-continent of North America, primarily because the lakes and the St. Lawrence River provided a transportation route of over 2,000 miles extending inland from the Atlantic Ocean. Today this waterway continues to provide the most economical means of transportation, and it

BEETON, A. M. (continued)
has been further developed through the St. Lawrence Seaway. The multiple use of the lakes has resulted in a number of serious problems for which we have been attempting to find solutions. (author)

BEIL, K. M.
1974. Water over the dam?: The Conservationist, v. 28, no. 6, p. 11-14.

As fuels become scarcer and fuel prices increase, hydroelectric powerplants, though more expensive to construct per kilowatt than other types of energy plants, may eventually become more economical as power needs increase. (PAV)

BELIVEAU, J. G.
1974. (and Mattingly, G. E.). Nonlinear least squares techniques for system identification in water quality: Jour. Environmental Systems, v. 4, no. 1, p. 23-25.

In natural surface waters such as rivers and lakes, the supply of dissolved oxygen (DO) and the biochemical oxygen demand (BOD) are measurable quantities that determine the water quality. Specific water quality modeling systems and records of these measurable quantities can be used to find the important parameters governing the system response. Once these parameters are determined, meaningful sets of controls may be imposed to keep water quality at or above acceptable standards. Models have been proposed to represent the experimental observations. (PAV)

BENNETT, H. C.
1897. (and Jelliffe, S. E.). Local cryptogamic notes: Torrey Bot. Club Bull., v. 24, no. 8, p. 412.

This is a one-page list of diatoms collected from Van Cortland Lake. (GKS)

BENNETT, J. M.
1963. A limnological study of Lake Galway: Albany, N.Y., State Univ. New York, Biol. Seminar Rept., v. 1, p. 22-36.

BENTLEY, W. G.
1950. Initial study of the recovery and relative survival of fingerling and yearling trout in Cayuga Lake: Ithaca, N.Y., Cornell Univ., M.A. thesis, 62 p.

A study of lake trout stocking in Cayuga Lake was made in 1949. Both fingerling and yearling fish from eggs taken from wild trout in Seneca Lake have been raised in State hatcheries to supplement natural production of the lakes. No experimental evidence measuring the value of stocking is available. In a fish-marking program between 1946 and 1950, 110,000 fingerling and 32,638 yearling lake trout were fin clipped and released. The objective of this study was to obtain a sample of juvenile trout and to observe the ratio of unmarked and marked trout originating from fingerling and yearling stockings. Gangs of gill netting of various mesh sizes were employed for the purpose. It was felt that angling did not remove any significant number of fish. The number of yearlings surviving was several times that of the fingerlings. (GKS)

BERG, C. O.
1966. Middle Atlantic States, in Limnology in North America: Madison, Wisc., Univ. Wisconsin Press, p. 191-237.

The Middle Atlantic States (including New York) are divided into 12 regions for a discussion of physiographic features, drainage patterns, and climate. A detailed review of limnological resources and surveys, regional limnology, limnological features of particular lakes, and limnological activities of various institutions are emphasized. (GKS)

BETTEN, CORNELIUS
1934. The caddis flies or Trichoptera of New York State: New York State Mus. Bull. 292, 576 p.

This bulletin describes the life history, ecology, and morphology of all stages of Trichoptera found in New York State. Included are generic descriptions, with keys, of all

BETTEN, CORNELIUS (continued)
North American genera, and specific descriptions of North American species east of the Mississippi River. All other North and Central American species are listed with complete references so that the report may serve as a catalog for this continent. (GKS)

BIRGE, E. A.

1914. (and Juday, C.). A limnological study of the Finger Lakes, New York: U.S. Bur. Fisheries Bull., v. 32, p. 524-609.

The purpose of the investigation was to extend to the Finger Lakes the studies on dissolved gases, plankton, and temperatures that the authors had made on the lakes of Wisconsin. (GKS)

1921. (and Juday, C.). Further limnological observations on the Finger Lakes of New York: U.S. Bur. Fisheries Bull., v. 37, p. 209-252.

In 1914, the authors prepared a report on a study of the Finger Lakes of New York. The methods of the study were similar to those used on the lakes of Wisconsin. The report dealt with the hydrography of the lakes, their temperatures and heat budgets, their content of dissolved gases, and their net plankton. Since that study was made, the Wisconsin survey increased the scope of observation on lakes. In particular, a new instrument, the pyrlimnometer, designed for measuring the transmission of the sun's radiation through a water column, had been devised and tested extensively; numerous determinations of the weight of the individual members of the net plankton had been made; an elaborate study of the nannoplankton, both numerical and quantitative, had been completed; and it is possible to correlate count and weight of both net plankton and nannoplankton. A second study was made on the New York Finger Lakes in July and August of 1918 in order to apply the newer methods. This report is a summary of the observations. (GKS)

BISHOP, J. W.

1962. The respiratory rates of zooplankton and the use of such rates in estimating population metabolism: Ithaca, N.Y., Cornell Univ., M.S. thesis, 21 p.

Random samples of limnetic zooplankton were collected at depths of 5 feet and 120 feet for use in respiratory experiments and determinations of weights. Average dry weight of zooplankton in the samples varied according to date of collection, depth of collection, and mesh size of the net used for collection. Differences in weights are due primarily to interspecific changes in the composition of the samples. The log respiratory rate per individual correlated with log dry weight yields a regression coefficient of +0.70 for surface organisms and +1.18 for deeper organisms. The respiratory rate per unit dry weight correlated with the dry weight yields a regression coefficient of -2.37 for surface organisms and +0.49 for deeper organisms. (GKS)

1966. Zooplankton metabolism; adaptation in a thermally stratified lake: Ithaca, N.Y., Cornell Univ., Doctoral dissert., 45 p.

1968. Respiratory rates of migrating zooplankton in the natural habitat: Limnology and Oceanography, v. 13, no. 1, p. 58-62.

Rates of oxygen consumption by zooplankton in Cayuga Lake were measured when the lake was stratified. The effects of temperature, pressure, and light were examined.
Animals from the epilimnion, mostly cladocerans, and from the hypolimnion, mostly copepods, respired at similar rates in their respective habitats. When the animals were placed in the same habitats, copepods from the hypolimnion had the greater rates of respiration. Copepods, which migrated over an extensive vertical distance daily, were less sensitive to changes in depth than were cladocerans, which remained within a narrow vertical range. The copepods were less affected by changes in pressure and temperature within than outside their range of migration. (author)

BISHOP, S. C.

1933. The lakes of the Raquette River drainage basin, in A biological survey of the Raquette watershed: New York State Conserv. Dept., 23d Ann. Rept. Supp., p. 109-135.

The report supplies information that may be used in solving some of the many fishery problems of 25 larger lakes, ponds, and "flows" of the Raquette system. Fieldwork included three major

BISHOP, S. C. (continued)
activities: (1) biological investigations of the kinds of fish present, their relation one to another, their relative abundance, and their habits and environmental requirements; (2) physical and chemical investigations, and (3) hydrographic studies of the configuration of lake bottoms, their character, and other features influencing stocking policies. Laboratory work emphasized stomach content analysis and study of scales from weighed and measured bass, whitefish, and lake trout for use in growth-rate studies. A tabular summary of all data is presented. (GKS)

1934. Fisheries investigations in the canalized Mohawk and Hudson River, in A biological survey of the Mohawk-Hudson watershed: New York State Conserv. Dept., 24th Ann. Rept. Supp., p. 137-159.

Studies of the basins during the summer of 1934 were limited to the Mohawk River from Rome to the mouth, the 50-mile stretch of the Hudson River from Mechanicville to Hudson, and the lower sections of the streams tributary to these waters. In this study, fish were collected and identified, their distribution was mapped, and their relative abundance was determined. The tributaries were examined to determine the kinds of fish that occupied the lower stretches and the availability of spawning and feeding areas. At critical locations, water samples were analyzed to study the effect of pollution in slowly moving waters and the contributions made by clear tributary streams to the recovery of polluted waters. (GKS)

BISHOP, W. W., III
1964. The bacteriological investigation of a meromictic lake: Syracuse, N.Y., Syracuse Univ., M.S. thesis, 64 p.

Although numbers of heterotrophic bacteria were considerably higher in the mixolimnion than in the monimolimnion, no consistent pattern of the distribution of heterotrophs was apparent in either region. Microscopic examination of smears from bacterial colonies that developed on standard plate-count agar indicated that gram-negative cells far exceeded gram-positive cells at all depths sampled except at the mud-water interface. The majority of cells were rod shaped.

Counts of sulfate-reducing bacteria were made. The highest numbers were obtained from bottom mud; insignificant numbers were obtained from Green Lake water samples. The organism was identified as a member of the genus Clostridium. The purple sulfur bacterium that flourished at approximate depths of 58 to 70 feet was identified as Thiopolycoccus. (author)

BLACK, P. E.
1972. Hydrograph responses to geomorphic model watershed characteristics and precipitation variables: Jour. Hydrology, v. 17, p. 309-329.

The primary objective of the Watershed Model Studies Project, reported herein, was to ascertain the effect of selected watershed characteristics on hydrograph parameters under a rainfall simulator. Since most of the runoff contributing to the peak flow was found to emanate from the lower half of the drainage, a measure of watershed eccentricity utilizing easily measured properties in that area is derived and evaluated as a reliable predictor of peak magnitude. In the process, watershed shape, slope, size, drainage pattern, and soil depth were isolated and, along with rainfall intensity, direction of storm movement and antecedent moisture conditions were evaluated for the models. Studies were made into the similarities between the models and real-world watersheds. (author)

BLACK RIVER BASIN REGIONAL WATER RESOURCES PLANNING BOARD
1973. Summary report on the board plan--Black River basin: New York State Dept. Environmental Conserv., 73 p.

This report by the Black River Basin Board summarizes the Board's findings and presents its comprehensive basin plan. The plan includes recommendations on policy, management, and development measures for the protection, conservation, development, and utilization of the water resources of the Black River Basin. The Board plan also emphasizes measures that are needed for the management and development of water and related land resources during the early action period, 1974-1980. Also, long-range water and related land resource needs and measures to the year 2020 are presented. (author)

BLOOM, A. L.

1972. Filled interglacial valleys at the south end of Cayuga Lake near Ithaca, New York: Ithaca, N.Y., Cornell Univ. Water Resources and Marine Sci. Center, Tech. Rept. 52, 20 p.

Preliminary maps were compiled to show the distribution of alluvial fills in valleys tributary to the southern third of Cayuga Lake. Most of the valleys are bedrock gorges. No new discoveries were made of valleys buried or filled by alluvium or glacial drift. The results of the project, with discoveries made before and after the funding period, were incorporated in a guidebook for a geological field conference held in Ithaca on May 19-21, 1972. (author)

BLOOMFIELD, J. A.

1973. (Park, R. A., Scavia, Donald, and Zahorcak, C. S.). Aquatic modeling in the Eastern Deciduous Forest Biome, U.S. International Biological Program: in Modeling the eutrophication process: Ann Arbor, Mich., Ann Arbor Sci. Publishers, Inc., p. 139-148.

The goals of the U.S. International Biological Program, broadly stated, are: (1) to understand better the dynamics of ecosystems, and (2) to be able to predict the consequences of man-induced perturbations. The principal biome model, known as CLEAN (Comprehensive Lake Ecosystem Analyzer), is intended to serve these objectives by coupling all generalized process models developed in the Biome in a computer code that includes a variety of applications. (PAV)

BLUM, J. L.

1951. Notes on Vaucheriaceae with particular reference to western New York: Torrey Bot. Club Bull., v. 78, no. 6, p. 441-448.

A New York collection of *Vaucheria arechavaletae* Magn. & Wille, a species not otherwise collected since its discovery in 1875, is described. Evidence is presented to show that *V. prolifera* Dangeard, placed by its author in the Globiferae, and *V. Jaoi* Ley, placed by Jao and Ley in the Pseudoanomalae, are closely related species that should be assigned to a common section of the genus. *V. brevicaulis* is described as a new species from western New York. New collection records of several of the rarer species of Vaucheriaceae are given, including the first record from the Western Hemisphere of *Vaucheria pseudo-geminata* Dangeard. (author)

1953. The racemose Vaucheriae with inclined pendent oogonia: Torrey Bot. Club Bull., v. 80, no. 6, p. 478-497.

The Vaucheriae of the Section Corniculatae, Subsection Racemosae, may be divided arbitrarily into (1) those species possessing oogonia that are clearly upright (*Vaucheria geminata* and related forms) and (2) those that have tipped or inclined oogonia, attached to their pedicels in such a way that their long axes are more or less horizontal, or attached at the end of pendent branches of the fruiting stalk. The distinction between groups (1) and (2) is not clear; a few species do not fall definitely into either group, and a decision as to whether or not the oogonia are erect may be difficult to make, owing to the fact that the elongated fruiting branches of these species are seldom observed turned in such a way (laterally) as to permit perfect observation of the tipping. This paper discusses the species of the second group as well as those species that might be assigned as readily to one group as to the other. (author)

1956. Zygnemataceae of western New York: Michigan Acad. Sci. Papers, v. 41, p. 3-11.

More than 700 algal collections were made in western New York between 1947 and 1951. The algal flora proved interesting and varied, but not necessarily distinctive. The larger part of the identified material belonged to species that are common or at least known from other parts of northeastern United States. The article emphasizes *Spirogyra* and includes an annotated list of collected species. (GKS)

BOBKA, R. J.

1973. Orthophosphate concentrations and distributions in Northwest Bay--1971-1972: Plattsburgh, N.Y., State Univ. New York, Lakes and Research Lab. Tech. Rept., p. 51-55.

In 1971 the Village of Weedsport, N.Y., began to operate a secondary sewage treatment plant. Prior to 1971 the village had no central sewage treatment facility, and waste water reached

BOBKA, R. J. (continued)
Northwest Bay, Lake Champlain, by natural routes. The situation at Westport afforded a convenient opportunity to observe phosphate concentration and distribution over a period of years following the beginning of operation of a new sewage treatment plant. (author)

BONAZZI, R.
1968. (and Harkenrider, J.). Variation and distribution of plankton organisms in Seneca Lake--November to March: Corning, N.Y., Coll. Center of the Finger Lakes (unpub.).

BOREMAN, JOHN
1974. Effects of stream improvement on juvenile rainbow trout in Cayuga Inlet, New York: Am. Fisheries Soc. Trans., v. 103, no. 3, p. 637-641.

Standing crops of juvenile rainbow trout in seven bank crib and six pool digger areas were compared with those in natural overhanging banks and pools. There was no difference in biomass, average weight, or number of trout between altered and natural areas. Trout constituted a significantly greater percentage of the total fish biomass in bank crib sections than in pool digger sections. A lower ratio (1.1:1) of the number of age 0+ trout to older juvenile trout indicated a selectivity for older trout in sample sections, since in Cayuga Inlet, the ratio (4.2:1) was generally much higher. (author)

BOULDIN, D. R.
1974. (Johnson, J. L., Burda, C., and Kao, C. W.). Losses of inorganic nitrogen in aquatic systems: Jour. Environmental Quality, v. 3, no. 2, p. 107-113.

Loss of NH_4 (ammonium) and NO_3 (nitrate) from solution was followed over a 2-month period in six ponds with the objective of investigating the mechanisms and magnitude of losses of inorganic nitrogen. Biological immobilization of nitrogen was small in relation to the total amount added. Losses of NH_4 ranged from 2 percent to 38 percent per day. A model based on the concentration of ammonium nitrogen and water pH was consistent with the experimental data, and the results were in agreement with the hypothesis that the major avenue of NH_4 loss was by NH_3 volatilization across the air-water interface. Nitrate losses ranged from 7 percent to 15 percent per day. The results were consistent with the hypothesis that nitrate loss was primarily by denitrification in the bottom sediments. The results suggest that volatilization and denitrification are mechanisms that may account for appreciable losses of nitrogen from many bodies of water. (author)

BOULTON, PATRICIA
1972. (and Hetling, L. J.). A statistical analysis of the mercury content of fresh water fish in New York State: Albany, N.Y., New York State Dept. Environmental Conserv., Tech. Rept. 19, 16 p.

This report describes an extensive program undertaken by New York State to collect basic data on the concentration of mercury in the state's environment. Thirty-two-hundred fish were collected and analyzed. Included is a statistical analysis of the fish data. (author)

BOWERS, L.
1966. (and Bishop, W. W.). Bacterial ecology of a meromictic lake: Internat. Vereinigung für theoretische u. angew. Limnologie Verh., v. 16, p. 1501-1502.

Although numbers of heterotrophic bacteria were considerably higher in the mixolimnion than in the monimolimnion, no consistent pattern of the distribution of heterotrophs was apparent in either region. Microscopic examination of smears from bacterial colonies that developed on standard plate count agar indicated that gram-negative cells far exceeded gram-positive cells at all depths sampled except at the mud-water interface. The majority of cells were rod shaped. (author)

BOYER, W. D.
1954. A land-use study of a small area near Jamesville Reservoir: Syracuse, N.Y., New York State Coll. Forestry, M.S. thesis, 162 p.

This thesis describes the land characteristics and uses of a 40-acre tract near Jamesville Reservoir in the Town of Lafayette, Onondaga County. It includes descriptions of climate, topography, geology, soils, and streams. Vegetation, wildlife, ecology, and past and present land uses are also discussed. (GKS)

BOYLE, S. J.

1974. Report on Conesus Lake--Present trends and future directions: Geneseo, N.Y., State Univ. Coll., Livingston County Internship Program and Dept. Geography, 19 p.

BOYLEN, C. W.

1973a. (and Sheldon, R. B.). Biomass distribution of rooted macrophytes in the littoral zone of Lake George: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 73-21, 11 p.

This study is concerned with the distribution and abundance of rooted macrophytes in the littoral zone of Lake George and their contribution to the overall aquatic ecosystem. The experimental approaches included biomass determinations, productivity estimates by radioactive carbon dioxide fixation (photosynthetic growth rate), and an ecological survey of 50 major littoral zones. General trends are discussed as interpreted by a superficial examination of the data collected from both the ecological survey and the macrophyte biomass. Computer analysis of the data collected from all three experimental approaches should provide correlations necessary for determining the role of the rooted macrophytes in the development of Lake George. Such analyses are currently in progress. (author)

1973b. Primary productivity of rooted macrophytes in the littoral zone of Lake George: Troy, N.Y., Rensselaer Polytech. Inst., Internat. Biol. Program, Eastern Deciduous Forest Biome, Memo. Rept. 73-13, 11 p.

This study was conducted to provide a basis for assessing the role of rooted macrophytes in the total primary productivity of Lake George and for continued research on the role of these plants in the future development of Lake George. The following questions were considered: What is the present annual productivity of these plants, and can this productivity be mathematically written to yield an accurate productivity prediction; what is the relation of the various species that grow in the littoral zone to each other, to bottom type, to water depth, and to water and sediment chemistry of the littoral zone; and what are the nutritional interactions of the epiphytic algae and bacteria on the rooted macrophytes. Preliminary results are given. Two bays were chosen to typify macrophyte growth, one heavily developed and one little affected by human development. Growth patterns of the macrophytes are characterized. (author)

BRADSHAW, A. S.

1964. The crustacean zooplankton pictures--Lake Erie, 1939-49-59; Cayuga Lake, 1910-51-61: Internat. Vereinigung für theoretische u. angew. Limnologie Verh., v. 15, p. 700-708.

BRAINERD, W. F.

1922. Dana glacial lake terrace and the great delta of Onondaga Valley: Syracuse, N.Y., Syracuse Univ., M.S. thesis, 89 p.

BRAY, W. L.

1915. The development of the vegetation of New York State: Syracuse, N.Y., New York State Coll. Forestry Tech. Pub. 3, p. 1-186.

In publishing this bulletin, the New York State College of Forestry at Syracuse University is carrying out a purpose announced in 1912 of presenting in a series of bulletins the results from investigations on the conditions that govern the behavior of plant life in New York State. The article discusses the historical development of the State's vegetation and the particular types of vegetation. (GKS)

BRIAN, MICHAEL

1969. The seasonal fecundity of the Cladocera of McCargo Lake: Brockport, N.Y., State Univ. New York, M.S. thesis, 110 p.

The fecundity of selected Cladocera was investigated from September 1968 to August 1969. Owing to differences in seasonsal productivity, a sampling program was followed for one additional year. Chemical and physical factors were studied to learn how they influenced cladoceran fecundity. Temperature played a very important role in the reproductive activity of Cladocera. This was seen in fecundity-related factors and morphometric relationships. In spring, fecundity varied inversely with temperature. In summer, reproduction decreased when temperatures exceeded the critical temperature of 25°C. (PEG)

BRIGHAM, A. P.
1893. The Finger Lakes of New York: Geol. Soc. Am. Bull., v. 5, p. 203-223.

The Finger Lakes lie on the northern slope of a plateau extending from the Catskill Mountains to the Genesee River, or in the hydrographic basin of Lake Ontario. From Canandaigua Lake through Oneida Lake, they trend concentrically northward. All have their outlets through the Seneca and Oswego Rivers, while Honeoye, Canadice, Hemlock, and Conesus Lakes empty into the Genesee River. The article discusses morphology, glacial history, and surrounding geographical areas and geological features of the lakes. (GKS)

BRIGHAM, E. D.
1932. The life history, ecology, and intestinal histology of the minnow, Notropis atherinoides: Syracuse, N.Y., Syracuse Univ., M.S. thesis, 38 p.

Notropis atherinoides is one of the most abundant minnows in Oneida Lake. Fishermen call it the buckeye shiner. It grows approximately 50 millimeters during the first 5 months, and only 10 millimeters during the next year. N. atherinoides is primarily a plankton feeder; entomostracans form the greater part of its diet during fall, winter, and spring. There is no histological difference between the two regions of the intestine even though there appears to be a true stomach. Every species of game fish in Oneida Lake feeds extensively on this minnow. Economically the minnow is of great value as a food for game fish and as a bait minnow. (PEG)

BROECKER, W. S.
1967. (Thurber, D. L., Takahashi, Taro, and Li, Yuan-Hu). The hydrology of a meromictic lake: Am. Geophys. Union Trans., v. 48, no. 1, p. 240-241.

The chemical processes of lakes with stagnant deep layers cannot be fully understood unless (1) the rates of addition and loss of water from the surface and deep reservoir are known, and (2) the rates of mixing between these layers are established. We have attempted to do this for Green Lake (near Syracuse) by using both chemical (Sr^{90}/Sr, C^{14}/C, C^{13}/C, Rn^{222}/Ra^{226}, ΣCO_2, and pCO_2) and hydrologic (rainfall and evaporation) data. The conclusion is that the replacement time for the stagnant bottom water mass is about 10 years and for the surface water, about 2 years. Downward transfer of surface water into the deep reservoir takes place at about one-tenth the rate of upward transfer of deep water. (author)

BRUMSTED, H. B.
1961. Stocking farm fish ponds: Ithaca, N.Y., Cornell Univ. Agr. Expt. Sta., Ext. Bull. 1046, 4 p.

Increasing numbers of rural landowners who have a pond or who plan to build one consider stocking fish. This bulletin furnishes general information to help determine whether to stock and what to stock. It outlines procedures for accomplishing this. Recommendations are based on a decade of Cornell University research. (GKS)

BRUN, B. S.
1960. Investigation of four nutrient elements in Rich Lake: Syracuse, N.Y., Syracuse Univ., M.S. thesis, 88 p.

This study of Rich Lake, a body of water in the Archer and Anna Huntington Wildlife Forest near Newcomb, N.Y. concerns four nutrients: nitrogen, phosphorus, iron, and calcium. This thesis provides information about the different chemical forms in which dissolved nutrient elements exist; their availability to, or use by, plant species; and their proportion and manner of incorporation into living tissue. Nitrogen can undergo swift and sizeable changes in concentration. Phosphorus concentrations are generally extremely low at all depths in Rich Lake. Dissolved iron concentrations in Rich Lake are highly variable and are higher than the average for lakes previously studied. Dissolved calcium concentrations in Rich Lake are typical for soft-water lakes and relatively nonproductive types of lakes. (PEG)

BRUNETTE, G.
1969. Benthos of the lower half of Seneca Lake: Corning, N.Y., Coll. Center of the Finger Lakes (unpub.).

BRUNSKILL, G. J.

1967. (and Ludlam, S. D.). A summary of some studies on the calcareous sediments of Fayetteville Green Lake, New York, in Some aspects of meromixis: Syracuse, N.Y., Syracuse Univ. Press, p. 217-243.

Reeflike, calcareous littoral structures (bioherms) are found in Green and Round Lakes. The different formations indicate past erosion. Sedimentary material is scattered on the lake bottom and much of it is covered with a calcareous crust that contains evidence of fossils. The article disusses the chemical composition of this material and the carbonate chemistry of the water column. Maps, graphs, and charts are included. (GKS)

1968. Fayetteville Green Lake, New York. I. Physical and chemical limnology. II. Precipitation and sedimentation of calcite in a meromictic lake with laminated sediments: Ithaca, N.Y., Cornell Univ., Doctoral dissert., 171 p.

1969a. (Ludlam, S. D., and Diment, W. H.). A comparative study of meromixis: Internat. Vereinigung für theoretische u. angew. Limnologie Verh., v. 17, p. 137-139.

This article compares limnology, chemistry, and autotrophic bacteria of four meromictic lakes in north-central New York. It discusses differences between the sediments and possible reasons for meromixis. (PEG)

1969b. (and Ludlam, S. D.). Fayetteville Green Lake, New York. I. Physical and chemical limnology: Limnology and Oceanography, v. 14, no. 6, p. 817-829.

A new bathymetric map of Fayetteville Green Lake has been made. From morphometric parameters and an approximation of the density differential between the mixolimnion and monimolimnion ($\Delta\rho = 0.6 \times 10^{-3}$ g cm^{-3}), a meromictic stability of 1,700 g-cm cm^{-2} was estimated. From semimonthly measurements of temperature over a 2-yr period, the work of the wind in distributing summer mixolimnetic heat income (16,800 g cal cm^{-2}) was 760 g-cm cm^{-2}. Surface runoff from the 4.33 km^2 drainage area of Green and Round Lakes supplied less than 50 percent of the observed outflow of Green Lake (3.3×10^6 m^3/yr) in 1967. A theoretical replenishment time of the total Green Lake water mass was estimated as 2 to 3 years, or 1.0 to 1.7 years if the monimolimnion was considered static. Concentrations of major elements are given for the Green Lake water column and for ground water of the area. (author)

1969c. Fayetteville Green Lake, New York. II. Precipitation and sedimentation of calcite in a meromictic lake with laminated sediments: Limnology and Oceanography, v. 14, no. 6, p. 830-847.

The activities of calcium and carbonate in Fayetteville Green Lake were estimated from detailed seasonal measurements of pH, calcium, and titration alkalinity. By comparison of observed ion activity products (IAP) for Ca^{2+} [calcium] and CO_3^{2-} [carbonate] with the calcite equilibrium activity product (K_{eq}), the water column was found to be supersaturated throughout the year. In the surface waters of the mixolimnion, the ratio IAP:K_{eq} increased from 2 to 4 in winter to 6 to 8 during late May through October.

Precipitation of calcite was confirmed by collection of crystals in the water column by filtration, by identification by X-ray diffraction, and by quantitative measurement by a gas-chromatographic technique. Maximal crystal loads of 35 g $CaCO_3$ m^{-2} [calcium carbonate] in the water column occurred in June and July (1965-67), while calcite loads in fall, winter, and early spring were reduced by an order of magnitude. From isopleths of suspended calcite, settling rates of 2-4 m day^{-1} were estimated for spring, which were close to values predicted from Stokes' Law. (author)

1969d. (and Harriss, R. C.). Fayetteville Green lake, New York. IV. Interstitial water chemistry of the sediments: Limnology and Oceanography, v. 14, no. 6, p. 858-861.

Studies on interstitial waters from monimolimnetic sediments of Fayetteville Green Lake have demonstrated the presence of water that increases in salinity with depth and is chemically different from overlying water of the monimolimnion. Interstitial water from sediments above the plane of the chemocline does not differ greatly from overlying water of the mixolimnion. (author)

BRUSAERT, W. H.
1974. Evaporative water loss from large land areas in the Finger Lakes: Ithaca, N.Y., Cornell Univ. Water Resources and Marine Sci. Center, Tech. Rept. 86, 5 p.

A method has been developed to calculate evapotranspiration on the basis of published raw data. The theory is based on the application of the geostrophic drag concept to derive an analogous "mass transfer" formula. The method was applied to the Finger Lakes region; the results were found to be highly correlated with pan evaporation data at Ithaca. (author)

BRYSON, JOHN
1894. Lake Ronkonkoma and other glacial features of Long Island: Am. Geologist, v. 13, p. 390-392.

Lake Ronkonkoma lies in a valley between two moraines. The lake was formed by the action of subglacial streams that met at this point; it is an enlarged kettlehole. The article describes the area's geology and relates this to the glacial history of the lake. (GKS)

BULLER, WILLIAM
1972. Natural background concentration of mercury in surface water of the Adirondack region, New York: U.S. Geol. Survey Prof. Paper 800C, p. C233-C238.

The danger of mercury contamination in water supplies is well known, but natural background concentrations of mercury in water supplies are not well known. Establishment of these natural background concentrations requires the study of areas that are relatively free of man's influence on the environment. The Adirondack region of New York State is such an area. Determinations of mercury concentration of samples collected from streams and lakes of the Adirondack region in fall, winter, and spring 1970-71 indicate that the natural background concentration of water is less than 0.5 μg/l [microgram per litre], which is less than one-tenth the 5-μ/l limit recommended for drinking water in New York. (author)

BURDICK, G. E.
1939. Studies on the invertebrate fish food in certain lakes, bays, streams, and ponds of the Lake Ontario watershed, in A biological survey of the Lake Ontario watershed: New York State Conserv. Dept., 29th Ann. Rept. Supp., p. 147-166.

Studies of the fish food of the Lake Ontario watershed considered the areas that sustain the greatest intensity of fishing. One hundred eighty-seven collections by Ekman dredge, square-foot sampler, and aquatic net serve as a basis for calculation of the quantitative data and ecological notes on the Mollusca.

Sodus Bay and Little Sodus Bay received intensive study. Braddock Bay, Irondequoit Bay, North and South Ponds, Coan and some of the smaller ponds, Redfield Flow, and Glenwood and Carlton lakes also were studied. In connection with the three latter areas, stomach analyses of fish were undertaken.

Included are graphs showing quantity of food, type of bottom, and depth for each dredge line in several areas and outline maps showing the location of each line. (author)

1946. (and Lipschuetz, M.). A report on the investigation of Oneida Lake. Chemical investigations of the lake waters and waters tributary thereto: New York State Conserv. Dept., Bur. Fish and Wildlife, mimeo., 24 p.

Oneida Lake is rich in nutrient materials required for prolific plant growth. With all streams of major consequence carrying an abundant supply of phosphorous and nitrogen, the contribution from sanitary sewage in the area does not appear to be of great significance. No positive correlation can be found between lake level fluctuation and chemical concentrations. Increasing calcium content since 1927 is a factor in the production of abundant algal growth, as is reduction of weedbed areas in the lake. Algal growth reaching nuisance proportions may be expected in years when the growing season is abnormally warm; reduced growth may be expected in years when colder weather prevails. With the establishment of weedbeds, which may develop if a succession of cold years retards algal growth, some decrease in the amount of algal growth may be expected. (GKS)

1964. (Harris, E. J., Dean, H. J., Walker, T. M., Skea, J., and Calley, D.). The accumulation of DDT in lake trout and the effect on reproduction: Am. Fisheries Soc. Trans., v. 93, no. 2, p. 127-136.

BURDICK, G. E. (continued)

Hatchery losses of lake trout fry from areas of high DDT use led to a 4-year study of accumulation of the chemical in fish flesh and eggs from a number of waters in New York. Graphs are presented to indicate the range in DDT content of ether-extracted oils from spawning female lake trout and to give a comparison of amount in the oil of the adult with that in eggs. No constant relationship was found. A procedure is described that relates the mass of the fry at time of development of the syndrome associated with mortality to DDT in ether-extracted oil of eggs. Graphical plotting of the DDT concentration in the mass of fry shows a close relationship between amount of DDT and mortality. (author)

BURKHOLDER, P. R.

1929. Studies in the phytoplankton of the Cayuga Lake basin: Ithaca, N.Y., Cornell Univ., Doctoral dissert., 198 p.

The purpose of these studies was to determine species and quantitative distribution of phytoplankton and to investigate the influence on phytoplankton of certain environmental factors in the lakes and ponds of the Cayuga Lake basin. From April 1927 to May 1929, qualitative and quantitative plankton studies and certain physical and chemical determinations of the waters were made. The studies indicate a variety of plankton habitats ranging from acid peat bogs to alkaline marl ponds. The dissertation discusses species and varieties identified, their vertical distribution in the lakes, and observations on seasonal distribution. (GKS)

1931a. (and Tressler, W. L.). Plankton studies in some northern New York waters, in A biological survey of the Oswegatchie and the Black River systems: New York State Conserv. Dept., 21st Ann. Rept. Supp., p. 222-251.

As part of the biological survey conducted in the summer of 1931, plankton studies were made on several bays of eastern Lake Ontario, in the St. Lawrence River, and in certain lakes whose waters flow into the St. Lawrence river. In each of the lakes and bays, from 1 to 10 stations were selected for monthly observations in June, July, and August 1931. At each of the plankton stations the following determinations were made: (1) temperature, (2) transparency, and (3) qualitative and quantitative data on the various kinds of plankton organisms found. Plankton organisms were divided into two groups: trap plankton, including those forms that can be strained from the water by means of a very fine net made of silk bolting cloth, and centrifuged plankton, those organisms that pass through such a net. The article also discusses zooplankton and phytoplankton distributions. Tables, charts, and graphs summarize the investigation. (GKS)

1931b. Studies in the phytoplankton of the Cayuga Lake basin, N.Y.: Buffalo Soc. Nat. Sci. Bull., v. 15, no. 2, 181 p.

The purpose of this investigation was to determine the species of phytoplankton and their quantitative seasonal and geographical distribution in lakes and ponds of the Cayuga Lake basin. Vertical distribution of the organisms also was studied in Cayuga Lake. As a background for understanding the occurrence of phytoplankton, consideration was given to certain physical and chemical environmental factors in various bodies of water. The observations extend from April 1927 to May 1929. Quantitative plankton and chemical work was restricted to certain definite stations. (GKS)

1932. (and Bere, R.). Plankton studies in some lakes of the Upper Hudson Watershed, in A biological survey of the Upper Hudson Watershed: New York State Conserv. Dept., 22d Ann. Rept. Supp., p. 239-263.

During the summer of 1932, plankton investigations of selected lakes in the Upper Hudson watershed were made to determine kinds, abundance, and distribution of phytoplankton and zooplankton. A special effort was made to determine the extent of use of plankton by various kinds of fish. Along with the plankton program, observations of temperature, transparency, and certain chemical analyses of the water were made in order to characterize the productivity potential of lakes studied. Some tables show the results. (GKS)

BUSSON, G.

1972. (Ludlam, S. D., and Noel, D.). Importance of diatoms in the present varve deposition (alternation of annual layers) of Green Lake (near Fayetteville, N.Y.), model of confined sedimentation: Acad. Sci. [Paris] 1972, Comtes rendus, ser. D, Sci. Nat., v. 247, no. 23, p. 3044-3047.

BUSSON, G. (continued)

The Green Lake varves, a model of present layered sedimentation, can hardly be considered as a case of exclusively chemical sedimentation; thus, these varves are closer to conventional laminae involving the combination of organic matter with mineral matter. In these laminites the plankton organisms have a constitutive role that is equally significant within layers with "organic matter" as in the mineral layers. In the mineral layers, fragments of calcareous nannoplankton or frustules of diatoms or others are involved. (author)

CAHN, A. R.
1912. The freezing of Cayuga Lake and its relation to bird life: Auk, v. 29, p. 437-444.

CAIRD, J. M.
1904. Copper sulfate treatment for algae at Elmira, N.Y.: Eng. News, v. 52, no. 2, p. 34.

1905. The copper sulfate treatment for algae at Middletown, N.Y.: Eng. News, v. 52, no. 2, p. 33-34.

The City of Middletown obtains its water supply from three impounded reservoirs--Monhagen, Highland, and Shawangunk--which are located some distance from the city. Water is filtered before being delivered to consumers. In recent years, during warm weather, considerable trouble has been caused by algal growths, not only by their odor, but also by their rapid "clogging" of the filters. The article discusses effects of copper sulfate treatment at each of the reservoirs. (GKS)

CAMPBELL, G. R.
1967. Studies on the chemistry of orthophosphate and polyphosphate removal with ferric chloride: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 67-1, 24 p.

The chemistry of inorganic phosphorus precipitation with ferric chloride has been investigated. The effects of several variables, such as pH, coagulant dosage, and initial phosphorus concentration on phosphorus removal with ferric chloride have been determined.
Orthophosphate and the inorganic polyphosphates, pyrophosphate and tripolyphosphate, are removed in proportion to the amount of ferric chloride added. The removal of phosphates with iron (Fe^{+3}) is highly pH dependent. The point of minimum solubility, hence maximum phosphorus removal, occurs in the region of pH 5.3, although it has been shown that addition of calcium to the system extends the useful pH range for phosphorus removal into the mildly alkaline region. Calcium also enhances the removal of phosphorus with iron (Fe^{+3}) by aiding in the formation of a more settleable floc. (PAV)

CAPENER, H. R.
1971. (and Finley, J. R.). A study of water resource public decision making: Ithaca, N.Y., Cornell Univ. Water Resources and Marine Sci. Center, Tech. Rept. 37, 38 p.

Phase I--Participation in Water Resource Planning: The objective was to identify and examine the factors affecting participation in water resource planning, and especially the participation of voluntary and professional groups. A typology was presented for identifying the predisposition and relative strengths of different groups to provide a basis for assessment and action in strengthening appropriate group inputs. The groups themselves were examined with regard to strategies employed and variables related to participation. Phase II--A Study of Behavioral Components of Water Pollution Control in the Fall Creek and Canadarago Lake Watersheds: The objective was to determine relevant factors bearing upon water pollution control planning in a flowing-stream watershed (Fall Creek) and in a lake basin (Canadarago). (author)

CARLOZZI, C. A.
1960. Farm pond weed control: The Conservationist, v. 14, no. 5, p. 30-33.

Dense growths of aquatic plants can interfere with fishing, boating, bathing, and irrigation and other types of water-supply systems. Different types of plant control are being sought. Mechanical methods include dragging, raking, pulling, or cutting. Chemicals may be applied directly to the plants, as in direct spraying of emergent vegetation. They also may be dissolved in the pond water, where they will diffuse into the plant tissues. The article discusses when to use chemical control, what chemicals to use, application of chemicals, precautions, and chemical and mechanical control combinations. (GKS)

CARLSON, C. A.
1972a. (Eipper, A. W., and Forney, J. L.). Effect of water quality on first-year mortality of largemouth bass: Ithaca, N.Y., Cornell Univ. Water Resources and Marine Sci. Center, Tech. Rept. 45, 8 p.

Much additional information on causes of early mortality of game fish is necessary for effective fish management and establishment of water quality standards for protection of important fish species. Research on this project has been directed primarily toward determining mechanisms responsible for first-year mortality of largemouth bass (*Micropterus salmoides*) and

CARLSON, C. A. (continued)
developing technology needed to quantify their significance. Specific studies have included: (1) research on methods of marking and sampling small fish to permit identification of individuals and estimates of population size and survival; (2) controlled laboratory studies on the effects of incubation temperature on the survival of largemouth bass embryos; (3) investigations of the food, feeding habits, and bioenergetics of bass larvae; (4) studies of the interacting effects of dissolved oxygen concentration and fanning on the survival of largemouth bass embryos; (5) evaluation of predation as a source of mortality of embryos and larval bass, and (6) research on development of a natural or artificial food source for larval bass in laboratory experiments. (author)

1972b. (and Shealy, M. H., Jr.). Techniques for marking larval largemouth bass with ^{85}Sr (radiostrontium) for evaluation of predator-prey relationships: Ithaca, N.Y., Cornell Univ. Water Resources and Marine Sci. Center, Tech. Rept. 49, 21 p.

Largemouth bass (Micropterus salmoides) embryos collected by pipette from nests in ponds were incubated in disposable aquaria in the laboratory. Newly hatched prolarval bass were exposed to 6.4, 11.3, and 16.8 μCi [microcuries] ^{85}Sr (radiostrontium)/liter pond water for 7 days. Radioactivity of 10-fish samples showed that radiostrontium accumulation continued throughout the first week of post-embryonic life but was more rapid after the fourth day of exposure. Prolarvae marked by 72-hour immersion in water containing ^{85}Sr retained 66 percent of their marks 96 hours after transfer to nonradioactive water. Techniques and results are discussed in relation to the feasibility of using bass larvae marked with ^{85}Sr to quantify predation by aquatic invertebrates. (author)

1972c. (and Shealy, M. H., Jr.). Marking larval largemouth bass with radiostrontium: Fisheries Research Board of Canada Jour., v. 29, no. 4, p. 455-458.

CARLSON, D. M.
1972. Response of planktonic cladocerans (Crustacea) to heated waters: Ithaca, N.Y., Cornell Univ., M.S. thesis, 69 p.

The objectives of this study were to describe the crustacean community structure of freshwater plankton cultures reared at ambient temperatures and at four elevated temperatures and to estimate the upper thermal tolerance limit of one zooplankton species. (PAV)

CARNEVALE, M. A.
1969. The effect of phytoplanktonic organisms on the zooplankton of Seneca Lake: Corning, N.Y., Coll. Center of the Finger Lakes (unpub.).

CARPENTER, K. E.
1929. Fish life in relation to polluting influences in the Lake Champlain watershed, in A biological survey of the Champlain watershed: New York State Conserv. Dept., 19th Ann. Rept. Supp., p. 186-209.

Influences of pollution on fish may be classified into two groups, chemical and mechanical. Chemical influences include organic materials whose petrification depletes dissolved oxygen and renders it untenable by fish that depend on dissolved oxygen for breathing, and substances, usually inorganic, that have a direct toxic action on fish. Mechanical influences are introduced, nonputrescible, finely divided materials that settle on the bottom and hinder growth of green plants or development of invertebrate fauna that may serve as food for fish, and that may also act directly on fish by clogging gills or smothering spawn. The article discusses pulp pollution, fish population studies, experimental work with pollution effects on fish, pollution on the Bouquet River, and sulfite pollution. Stomachs of many fish were examined for food content during the study. Results are tabulated. (GKS)

CARPENTER, M. M.
1953. Wood duck production and life history on the Montezuma National Wildlife Refuge: Ithaca, N.Y., Cornell Univ., M.S. thesis, 63 p.

The Montezuma National Wildlife Refuge contains several hundred acres of ideal nesting habitat for wood ducks. The study, conducted from early February until late August 1953, was made to determine nesting habits of wood ducks on the Montezuma Refuge. Twenty-four nesting boxes made from nail kegs were provided to learn what use would be made of them. Nesting started in early April, and the last brood of young was observed on July 25. The population of wood ducks,

CARPENTER, M. M. (continued)
as well as of other species, increases in the storage pool area late in July and reaches a peak in August when the ducks are in molt prior to the migration period. Several management measures that might improve the storage pool area for the waterfowl breeding population are discussed. (GKS)

CARPENTER, R.
1967. Chemical analysis of the south end of Seneca Lake: Corning, N.Y., Coll. Center of the Finger Lakes (unpub.).

CARTER, L. J.
1968. Thermal pollution--A threat to Cayuga's waters?: Science, v. 162, no. 3854, p. 649-650.

This article discusses proposed plans to build a nuclear-fueled, steam electric generating plant 16 miles north of Ithaca on Cayuga Lake. Investigations have revealed that the proposed plans pose a problem of thermal pollution to the lake. (GKS)

CAYUGA LAKE BASIN BOARD
1973. Summary report on the recommended plan of the Cayuga Lake Basin Regional Water Resources Planning Board--Interboard plan for the greater Finger Lakes-Oswego River basin: Ithaca, N.Y., Cayuga Lake Basin Board, October 1973, 47 p.

This report has been prepared by the Cayuga Lake Basin Regional Water Resources Planning Board, the first of the four boards formed in the Finger Lakes Region. The report outlines the Cayuga Board's findings and presents a comprehensive plan to protect water and related resources of the Board's area of representation, and to satisfy future needs for utilization, management, and development of these resources. The plan of the Cayuga Lake Basin Board emphasizes protection of existing environmental quality and conservation of the region's resources and results from careful consideration of needs and a wide range of alternatives to meet those needs. (author)

CENTRAL NEW YORK REGIONAL PLANNING AND DEVELOPMENT BOARD
1972. Existing open space inventory: Syracuse, N.Y., Central New York Regional Plan. and Devel. Board, 39 p.

This report presents an inventory of existing open-space acreage including outdoor recreation facilities, farmland, forest land, lakes and ponds, wildlife management areas, wetlands, and areas of public fishing access in the central New York region. (PAV)

CHADWICK, G. H.
1923. Glacial lake problems: Geol. Soc. Am. Bull., v. 34, no. 3, p. 499-506.

This article discusses new aspects of glacial lake succession by presenting new interpretations of geologic characteristics of New York. The histories of several glacial lakes are outlined. (GKS)

CHASE, J. S.
1972. (and Hunt, A. S.). Sub-bottom profiling in central Lake Champlain-- A reconnaissance study: Internat. Assoc. Great Lakes Research, 15th Conf. Great Lakes Research, Proc., Madison, Wisc., p. 317-329.

A high-resolution sub-bottom profiling study was conducted in central Lake Champlain over a course of 350 nautical miles (684 km) during 1970-71. Locations were selected to allow piston core penetration of reflecting horizons. Seventeen cores were taken and studied selectively for color, gross texture, clay mineralogy, moisture, grain size, organic content, interstitial water, and fossil content. Three distinct units have been identified: recent sediments, Champlain Sea sediments, and pre-Champlain Sea sediments. The recent sediments exposed on the lake basin floor vary in thickness from zero to a maximum of 80 feet (0-24 m). Champlain Sea sediments typically exhibit a rather uniform thickness of 20-40 feet (6-12 m) over much of the area. The upper and lower boundaries are acoustical reflecting horizons. Sedimentation rates for pre-Champlain Sea sediments have been found to vary from zero near shore and on some mid-lake highs to approximately 8 feet (2.5 m) per thousand years in the deeper basins. (author)

CHAWLA, V. K.

1971. Changes in the water chemistry of Lakes Ontario and Erie, in Changes in chemistry of Lakes Erie and Ontario conf: Buffalo, N.Y., Buffalo Soc. Nat. Sci. Bull., v. 27, p. 31-63.

Though chemical compositions of Lakes Erie and Ontario have been scatteringly recorded since 1850, the dynamic changes have been noticed only in the last 70 years. Since then these waters have been constantly under the increasing influence of industrial and human factors. Such factors are interrelated and have exerted cumulative effects on the chemistry of these fresh waters which have further resulted in very prominent changes in the last decade. (author)

CHEVALIER, J. R.

1973. Cannibalism as a factor in first year survival of walleye in Oneida Lake: Am. Fisheries Soc. Trans., v. 102, no. 4, p. 739-744.

The role of cannibalism in determining year class strength of walleyes in Oneida Lake was evaluated. From mid-July 1969 to May 1970, the abundance of young walleyes was monitored by trawling, and the stomach contents of adult walleyes collected in trawls and gill nets were examined. The number of young walleyes consumed was estimated from occurrence in adult walleye stomachs, from digestion rates, and from estimated number of adults. Cannibalism declined proportionally with abundance of young walleyes. Over-winter mortality rates in 1969-70 were highest for small young-of-the-year walleyes because adult walleyes were size-selective in preying upon young. (author)

CHILD, DAVID

1970. (and Oglesby, R. T.). Annotated bibliography of limnological and related literature dealing with the Finger Lakes region: Ithaca, N.Y., Cornell Univ. Water Resources and Marine Sci. Center, Pub. 29, 28 p.

The annotated bibliography contains about 90 articles arranged alphabetically, chronologically, and in eight subject categories. (PEG)

1971. (Oglesby, R. T., and Raymond, L. S., Jr.). Land use data for the Finger Lakes region of New York State: Ithaca, N.Y., Cornell Univ. Water Resources and Marine Sci. Center, Pub. 33, 29 p.

This land use data report contains: (1) an explanation of the methods and rationale for obtaining land use information on the drainage basins of the 11 Finger Lakes of central New York State; (2) tables presenting that information; and (3) figures illustrating the interrelationships of the major use categories. (author)

CHISNELL, T. C.

1951. Recognitition and interpretation of proglacial strand lines in the Cayuga basin: Ithaca, N.Y., Cornell Univ., Doctoral dissert., 64 p.

Cayuga trough, one of the largest of the trough valleys of the Finger Lakes region of central New York, lies in the glaciated part of the Appalachian Plateau. A geologic feature of the trough is the complex of hanging deltas associated with tributary streams that flow down walls of the overdeepened valley. Previously, strand lines marking exact water levels have not been recognized in Cayuga basin. At conception of this study, the author thought that deltas from various sites could be correlated by tracing strand lines from one series of deltas to another. This thesis records the various field and laboratory methods used to recognize and correlate strand lines measured at three different sites. The degree of postglacial warping is calculated from the data. (GKS)

CITY OF NEW YORK, BOARD OF WATER SUPPLY

1950. Origin and achievements of the Board of Water Supply, City of New York: New York, Board of Water Supply, 115 p.

The Board of Water Supply of the City of New York, established in 1905, has been charged with the planning and the construction of all works for major additions to the City's water supply. Among the activities of the Board has been the development of the Catskill and Delaware water-supply systems. This publication provides a comprehensive description of the sources, storage reservoirs, and transportation of water to New York City from the Catskill, Delaware, and interconnected water-supply systems. (PEG)

CITY OF NEW YORK, DEPARTMENT OF WATER RESOURCES
1947. The water supply of the City of New York: New York, Comet Press, 59 p.

This book presents a comprehensive description of the water-supply system of New York City. Engineering and construction data of the storage reservoirs are illustrated, and extensive data are provided about the entire distribution network. (PEG)

CLAASEN, P. W.
1927a. Biological studies of polluted areas in the Genesee River system, in A biological survey of the Genesee River system: New York State Conserv. Dept., 16th Ann. Rept. Supp., v. 1, p. 38-46.

In connection with the stream survey of the Genesee river and its tributaries, considerable attention was given to the study of stream pollution. The object of the investigation was to: (1) determine the types of pollution that enter the waters of the Genesee River and its tributaries, (2) locate each pollution source, (3) study the effect of pollution substances on fish and on all other freshwater animals and plants commonly found associated with fish life, (4) collect and identify the plants and animals that occur in polluted waters in order to establish a record of the particular organisms that occur in waters polluted by different kinds of wastes --that is, to establish biological indicators that would be of use in determining the condition of the water and its suitability for fish life, and (5) suggest remedial measures. (GKS)

1927b. (and Cutler, N. L.). Biological studies of polluted waters in the Oswego Watershed, in A biological survey of the Oswego River system: New York State Conserv. Dept., 17th Ann. Rept. Supp., p. 133-139.

The object of this investigation was to determine types of pollution in the Oswego watershed, the exact location or source of each case of pollution, the extent of pollution, and the effect of different types of wastes on fish and other freshwater organisms that normally inhabit clean water. Types of pollution in the Oswego watershed may be grouped as: domestic sewage, paper-mill wastes, woolen-mill wastes, milk wastes, cannery wastes, oil, sulfur, and various industrial wastes. A total of 108 miles of stream were found to be polluted. Of this total, 60 miles could be suitable for fishing. Outlets of the five Finger Lakes--Canandaigua, Keuka, Owasco, Skaneateles, and Otisco--are all seriously polluted. They represent about 45 miles of polluted streams. (GKS)

CLAASEN, R. T.
1939. Aquatic vegetation of the Lake Ontario watershed, in A biological survey of the Lake Ontario watershed: New York State Conserv. Dept., 29th Ann. Rept. Supp., p. 167-187.

A survey was made of the larger aquatic vegetation in 58 bodies of water in the Lake Ontario watershed. Most of the natural ponds examined were bog ponds. Although there was great variation in abundance and in number of species present, the general association in most of these was similar. Artificial ponds displayed a general similarity, but there was less variety in the species represented. Many of the stream mouths supported a varied aquatic flora. The lower Salmon River, with 40 species, many of them abundant, was particularly rich in plants. The survey recorded 119 species of vascular plants, 5 species of bryophytes, and 7 species of Characeae. In addition, several other species, not seen in the field in the 1939 season, were noted from the watershed as a result of the study of herbarium specimens. (author)

CLARK, A. H.
1959. The freshwater mussels of central New York with an illustrated key to the species of northeastern North America: Ithaca, N.Y., Cornell Univ. Agr. Expt. Sta., Mem. 367, 79 p.

The report provides descriptions, illustrations, and a simplified key for the identification of freshwater mussels of central New York and northeastern North America. Other purposes of the report are to present information on distribution, biology, and ecology of mussels; to partially evaluate the taxonomy of the species; and to relate the present distribution of the unionids of central New York to the limnology and drainage history of the region. (GKS)

CLARK, J. V.
1849. Onondaga; or reminiscences of earlier and later times: Syracuse, N.Y., Stoddard and Babcock, 393 p.

CLARK, J. V. (continued)
This book outlines the settling of the Onondaga-Oswego-Syracuse area of New York State. It describes the development of the culture, waterways, industry, mining, and smaller villages of the area and also the lives of certain people. The book places emphasis on the Onondaga salt springs, the Erie Canal, and on Syracuse, Oswego, and several smaller towns. (GKS)

CLARKE, J. M.
1919. The scientific reservations under control of the museum: New York State Mus. Bull. 219, p. 16-20.

The number of nature reserves that have been set apart by private citizens and placed in control of the New York State Museum has been increased by addition of Squaw Island, Canandaigua Lake. The island is of special geological interest, for the pebbles that compose it are deposits of lime-carbonate produced by chemical precipitation and by action of algal growth in the lime-bearing water. The process by which the algal deposits of "water biscuits" were formed was set forth by the author in New York State Museum Bulletin 39. The article also discusses the geology of other nature preserves. (GKS)

CLAYTON, K. M.
1962. Glacial erosion in the Finger Lakes region: Am. Geog. Assoc. Annals, v. 52, p. 324.

1965. Glacial erosion in the Finger Lakes region: Jour. Geomorphology, v. 9, p. 50-62.

CLESERI, L. S.
1971. Activity estimation of aquatic fungal and bacterial decomposers: Troy, N.Y., Rensselaer Polytech. Inst., Internat. Biol. Program, Eastern Deciduous Forest Biome, Memo. Rept. 71-119, 23 p.

In order to study the dynamics of microbial activities in the aquatic ecosystem, suitable methods had to be tested, or developed and tested. The project year was spent critically evaluating the uptake of radioisotopically labeled amino acids as a method for the determination of microbial growth rates. From these rates and microbial yields, the associated turnover of elements in the process of decomposition can be estimated. In addition to evaluating the isotope method, a new method based on the kinetics of steady-state cultivation was developed for growth rate determination. (author)

1972a. Role of the heterotrophic microflora in the cycling of materials: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 72-20, 30 p.

Growth rates of aquatic heterotrophic microflora have been estimated for the field at a variety of sampling stations, depths, and times. Potential growth rates by isotope incorporation, in situ growth rates by chemostat, and microbial cell concentrations have been measured. A very sensitive means for determining potential growth rates via concentration on membrane filters prior to isotope incubation has been described. An interpretation of these growth rate data is made with respect to ecosystem dynamics in terms of microbial productivity and decomposition. (author)

1972b. Synthesis process report--Decomposition: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 73-10, 2 p.

Organic decomposition by heterotrophic microflora is being estimated indirectly at Lake George and Lake Wingra by means of measuring methane production and by measurements of growth rates via radioisotope incorporation (heterotrophic potential) and the chemostat (in situ growth rate). (author)

1973a. (and Garber, B. J.). A concentration technique for measurement of substrate incorporation by microflora in lake water: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 73-12, 5 p.

This report describes a concentration method used to measure the short-term incorporation of organic substrates by dilute suspensions of microflora found in a predominantly oligotrophic lake, Lake George. This technique permits one to quickly estimate a microbial growth rate potential for the heterotrophic microflora by measuring the incorporation rate of isotopically labeled substrates under nonlimiting nutrient conditions. (PAV)

CLESERI, L. S. (continued)

1973b. (and Dazé, Michel). Growth of heterotrophic microorganisms in natural and perturbed sediment systems: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 73-22, 22 p.

A sister study explored growth rates of heterotrophic microorganisms residing in the water column at various depths, locations, and times of year in Lake George. The study reported herein focuses on the growth rate of such organisms in the lake sediments. These growth studies were made by measuring the rate of assimilation of radioactive glucose under unlimiting nutrient conditions. Growth rate measurements were also made under perturbed condition, that is, in the presence of various levels of algal secretory products, nitrogen salts, phosphorus salts, and motor oil. In addition, studies were made at various temperatures. (author)

1973c. Synthesis process report: Aquatic decomposition and mineral cycling: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 73-28, 3 p.

The results of International Biological Program--Eastern Deciduous Forest Biome research in aquatic decomposition and mineral cycling at Lake George and Lake Wingra are reported for the interval September 1972 to August 1973. Some preliminary syntheses between the processes are given. The status of the pertinent models is discussed. (author)

1974. (and Dazé, Michel). Relations between microbial heterotrophic activity, organics, and deoxyribonucleic acid in oligotrophic lake sediments: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 74-14, 14 p.

Samples of lake sediments were collected from several depths of two bays in Lake George from May through September 1974. Regular biweekly measurements of microbial activity, deoxyribonucleic acid [DNA] content, and volatile solids were made along with temperature and pH. Data obtained from 1-, 3-, 5-, 7-, and 9-m depths in both bays show significant changes during the sampling period and a functionality between microbial activity and DNA content of the sediment that shows different dependencies in the two bays. (author)

CLESERI, N. L.

1968. Physical and chemical removal of nutrients, in Algae, man and the environment: Syracuse, N.Y., Syracuse Univ. Press, p. 413-428.

In many cases, a major contributor of algal nutrients to receiving waters is the discharge of raw or treated wastewaters. Any program of controlling or retarding eutrophication must consider the removal of these nutrients prior to discharge. The term "nutrients" in present-day usage refers to forms of nitrogen and phosphorus. As comprehension of the complex nutritional requirements of algae in nature increases, the term will be expanded to include items that the algologist deems necessary and noteworthy. This paper is a compilation of the more pertinent literature regarding physical and chemical means of removing nitrogen and phosphorus from wastewaters. This information will provide the phycologist with a synoptic view of the present technology in and experiences with problems of nitrogen and phosphorus stripping from the liquid wastes of our society. (author)

1972a. (and Williams, S. L., eds.). Diatom population changes in Lake George, N.Y.: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 72-1, 212 p.

The diatom populations in the plankton and periphyton at depths of 3, 9, and 15 meters in the north and south basins of Lake George have been characterized and measured over a 3-year period. Measurements of environmental factors, including solar radiation, temperature, and algal nutrients concentrations, were also made at the same depths and locations. Relationships were established between environmental factors and numbers of diatoms through regression analysis. Diatom assemblages in recent surficial sediments and in consolidated sediment cores were characterized and present and past sedimentation rates determined. The measurements and analyses performed support the conclusion that pronounced changes in the planktonic diatom populations have been taking place in the last 20 to 50 years. These changes are indicative of a rapid cultural eutrophication within the south basin of Lake George. (author)

1972b. Lake George site overview: Progress report for field year 1970-1971: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 71-16, 19 p.

CLESERI, N. L. (continued)
1973. Organic nutrient factors affecting algal growth: U.S. Environmental Protection Agency, Office of Research and Devel., 302 p.

Effects of wastewater organic fractions on the growth rate of Selenastrum capricornutum and Anabaena flos-aquae were investigated. Effluent from a conventional activated sludge facility was membrane filtered, freeze-dried, and gel fractionated. Absorbancies and regression analyses within algal exponential growth phases demonstrated that the control growth rate for Selenastrum was 0.43 and for Anabaena was 0.34. Selenastrum growth rates were monitored using Lake George water as the dilutent for the media employed. In concentrating organics from natural water (from Lake George and Saratoga Lake), raw sewage, and sewage effluent, thin film evaporation was preferred when using natural waters whereas freeze-drying was advantageous when working with sewage samples. Also, the soluble organic component in municipal wastewater was characterized and the effect of chemical-physical treatment on it has been shown. (author)

1974. Increased application of research within the Adirondack Park: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 74-17, 12 p.

CLOVIS, J. F.
1955. A new record for Cladophora balls: Am. Midland Naturalist, v. 54, no. 2, p. 508-509.

In September 1953, on a field trip to Cayuta Lake, the author discovered many peculiar velvet balls at one point in the lake bottom. Investigation proved them to be spherical balls of the alga, Cladophora holsatica Keutz. (PEG)

COATES, D. R.
1968. Finger Lakes, in Encyclopedia of Geomorphology: New York, Reinhold Publishing Corp., p. 351-357.

This article provides a description of geography, geology, geomorphology, glaciation, and limnology of the Finger Lakes region. (PEG)

COHN, B. P.
1973. Accretion and erosion of a Lake Ontario beach, Selkirk Shores, N.Y.: Internat. Assoc. Great Lakes Research, 16th Conf. Great Lakes Research, Proc., Huron, Ohio, p. 390-396.

Changes in partial beach morphology were studied from October 1971 to October 1972 for a 2-kilometer stretch of Lake Ontario shoreline near Pulaski. Estimates of net sand transport were calculated from weekly beach profiles measured from the base of the dune into water depths of 1.25 meters. Profile changes were examined in terms of wind conditions and fluctuations in lake level.

Loss of sediment occurred during spring and summer months when high lake levels coincident with winds from the northwest induced strong wave attack on the upper beach. Lowered water levels and offshore winds during the late summer and early fall initiated deposition upon the beachface and in the extreme nearshore zone. Accretion was not sufficient to compensate for spring and summer losses. As a consequence, the shoreline retreated 4.5 m during this 12-month period. The observed erosion entailed the removal of 8.4×10^3 m^3 [cubic meters] of sand (somewhat more than 10^5 tons). Sixty-five percent of this loss occurred from the subaerial portion of the beach, the remainder having been removed from the extreme nearshore zone. (author)

COLE, M. S.
1973. An ecological investigation of the periphyton ("Aufwuchs") of Skaneateles Lake and Woodland Reservoir: Syracuse, N.Y., Syracuse Univ., M.S. thesis.

A qualitative and quantitative investigation of the periphyton community was conducted at eight locations along the shoreline of Skaneateles Lake and at one location along the periphery of Woodland Reservoir, Syracuse. The duration of the lake study was from July to September 1972 whereas the reservoir investigation was undertaken from July to October 1972. Data were collected from weekly cell counts and ash-free dry-weight analyses of the periphyton from a 1- to 12-week accumulation on glass slides suspended within the first meter of water. (author)

COLON, E. M.
1971. (and Cleseri, N. L.). Partial discharges from selected streams--I: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 71-1, 5 p.

COLON, E. M. (continued)
As part of the International Biological Program effort at Lake George, the hydrologic studies group is providing needed stream discharge data for the terrestrial studies of the watershed. A major requirement for the study of nutrient balance of certain streams within the Lake George basin is that partial instantaneous stream discharge be known at the time of sampling. (PAV)

1972. (Lytle, Robert, and Cleseri, N. L.). A synopsis of hydrology activities at the Lake George IBP (International Biological Program) Site: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 72-9, 6 p.

This report describes the development of a hydrologic and climalogic data collection system for the Lake George basin. It also explains the concomitant development of a mathematical model of the hydrologic cycle for data analysis. (PAV)

COMPTON, BILL
1966. (Lazaroff, N., Nair, J., Zweig, G., and O'Neill, R.). Onondaga Lake survey, 1964-1965: Syracuse, N.Y., Syracuse Univ. Research Corp., Contract 153, v. 1, 93 p.

CONNOLA, D. P.
1962. Report on the treatment of Hampton Manor Lake for aquatic weed and mosquito control: New York State Mus. and Sci. Service, mimeo., 5 p.

Hampton Manor Lake, a 16-acre lake owned by the Town of North Greenbush, is used for recreation. Diminished water inflow resulted in abundant algal and weed growth in its waters. To rid the lake of weeds, a commercial preparation of disodium endothal was sprayed on the lake in the summer of 1962. One week later the weeds had disappeared. Neither fish nor swimmers were harmed by the treatment. The article explains in detail how the spraying was done. (GKS)

COOK, A. H.
1952. A study of the life history and management of the muskrat in New York State: Ithaca, N.Y., Cornell Univ., Doctoral dissert., 128 p.

1958. (and Powers, C. F.). Early biochemical changes in the soils and waters of artificially created marshes in New York: New York Fish and Game Jour., v. 5, no. 1, p. 9-65.

Shallow-water environments were studied over a 2-year period in six artificially created marshes. Special attention was given to site selection and chemistry of the soils of the drainage areas and of the marsh basins. In addition, changes in marsh soil chemistry following flooding or drainage were evaluated in conjunction with data for thermal and chemical stratification of the water.
Soil analysis, except for certain of the trace elements, indicated that soils of marsh basins were more fertile, per se, than those of the contiguous drainage areas. Excessive concentrations of soluble iron and manganese were noted. (author)

COOK, D. O.
1973. (and Felix, D. W.). Freshwater ferromanganese deposition in the Saranac Lake system: Internat. Assoc. Great Lakes Research, 16th Conf. Great Lakes Research, Proc., Huron, Ohio, p. 146.

Ferromanganese deposits in the Saranac Lake system have been examined using SCUBA equipment and have been analyzed for chemical composition. The study area, 110 miles north of Albany, contains several interconnected lakes. Bedrock in the region consists of anorthosite that is partially covered by glacial till. The ferromanganese deposits occur in two forms: as rims around cobbles and as coating on rock surfaces. Both types of ferromanganese deposits are frequently associated with algae pennate diatoms and chironomid larvae. The degree of ferromanganese deposition varies considerably both within and among individual lakes. The ferromanganese deposits were analyzed for various metallic ions, and it was found that chemistry varies considerably. (PAV)

COON, R. F.
1960. Surficial geology of the Syracuse East, and Manlius, New York 7 1/2 minute quadrangles: Syracuse, N.Y., Syracuse Univ., M.S. thesis, 258 p.

COON, R. F. (continued)
Syracuse East and Manlius quandrangles in central New York include the northern edge of the Allegheny Plateau, the southern edge of the Central Lowlands, and an intervening east-west trending limestone escarpment. The area was glaciated during the Pleistocene. This paper is a detailed study of the topography and the glacial deposits of the area. Glacial till is discussed in detail, and a possible sequence of formation of several hanging east-west "cross channels" found between several deep north-south valleys is suggested. (author)

COOPER, A. W.
1955. The ecology of the mosses of the bogs and swamps of southern Madison County, New York: Hamilton, N.Y., Colgate Univ., M.S. thesis, 129 p.

Little work has been done on the distribution and the ecology of mosses of New York State. Bogs and swamps offer situations in which it is possible to observe the dynamics of vegetational succession. The formational, environmental, and macrovegetational differences between bogs and swamps suggest possible differences in the microvegetation of which mosses are an important part. In order to consider the origin of these habitat types, a preliminary discussion of geological and vegetational processes is indicated. Fifteen families, 44 genera, and 109 species with 5 varieties are represented in the mosses of the bogs and swamps of southern Madison County. Approximately 50 percent of the mosses collected belong to the family Hypnaceae. Water supply and light intensity are influencing factors in moss development. (GKS)

COOPER, I. C.
1941. Collecting algae on Staten Island: Staten Island Inst. Arts and Sci. Proc., v. 9, p. 87-90.

The article discusses the author's visit to different places on Staten Island for the collection of algae. An annotated list of specimens is included. (GKS)

CORNELL AERONAUTICAL LABORATORY, INC.
1971. Research on the physical aspects of thermal pollution: U.S. Environmental Protection Agency, Water Pollution Control Research Ser., 188 p.

The mechanisms of formation and maintenance of the characteristic thermal structure of deep, temperate lakes are investigated along with the effects on that thermal structure of heat discharges from electric generating plants. Thermoclines develop because of nonlinear interaction between surface turbulence and buoyancy gradients from surface heating. A theoretical model including the interaction of those factors predicts the observed features of stratification accurately. Thermal discharges increase the temperature to a different degree at different levels of the entire lake. Discharges also increase the depth of the thermocline and lengthen the stratification period. An exploratory experimental study is described on the nature of the interfacial mixing between a flowing layer of warm water and an underlying cooler pool of water. The downward transfer of both momentum and heat are severely inhibited at the interface by the stable buoyancy gradients; the momentum is inhibited to a lesser degree. (author)

CORNELL UNIVERSITY
1974. The role of public involvement in water resources planning and development: Ithaca, N.Y., Cornell Univ. Water Resources and Marine Sci. Center, Tech. Rept. 79, 160 p.

Considered is the use of educational techniques to encourage wider and more informed participation in the public aspects of water resources. This report grows out of experimental educational work at the Cornell University Water Resources and Marine Sciences Center between July 1969 and June 1971, disclosing objectives, procedures, and details of this research, and consolidating some experience and analysis in the use of such techniques for improving planning and development processes in the water resources field. The Cornell Project stressed the exploration of methods, principles, roles, and opportunities for the participation of universities in providing educational inputs into public involvement in water resources planning and development. Alternative techniques were evaluated and a variety of activities were undertaken in a variety of settings; in every case, comprehensive basin planning was actively being pursued under either State or Federal leadership. (author)

CORNELL UNIVERSITY, MEMBERS OF THE SCIENTIFIC STAFF
1926. A preliminary biological survey of the Lloyd-Cornell Reservation: Ithaca, N.Y., Lloyd Library, Bull. 27, 247 p.

CORNELL UNIVERSITY, MEMBERS OF THE SCIENTIFIC STAFF (continued)

The wildlife preserve known as the Lloyd-Cornell Reservation lies 15 miles northeast of Ithaca and 1 mile east of the village of McLean in the upper Fall Creek valley. It is an uncultivated area of bogs and ridges forming the greater part of the Mud Pond basin. Within the basin are several cold upland bogs that are of great biological interest. A survey of the Reservation was begun in the spring of 1916. This report covers a few features of the environment--soil, water, and topography of the original basin--and a list of the plants and animals found, together with brief ecological notes on habitats and associations. (GKS)

COUTANT, C. C.

1970. (and Brook, A. J.). Biological aspects of thermal pollution, I--Entrainment and discharge canal effects: Critical Rev. Environmental Control, v. 1, no. 3, p. 341-381.

This review attempts to critically evaluate some thermal effects seen at operating thermal power plants, to group these into several "problems" associated with (1) entrainment and (2) discharge canals, and to indicate pertinent field and laboratory experiments that can assist in developing information of predictive utility. Most power plant surveys lack detail of observation and definition of goals sufficient to provide more than circumstantial evidence for ecological processes. On the other hand, laboratory experiments are often unrealistic simulations of complex phenomena. True predictability will require judicious application of data from both sources. Until complete information is available, certain laboratory tests provide conservative approximations that can guide power plant siting and design so that safe environments can be maintained for aquatic life. (author)

COWAN, J. H., Jr.

1969. A study of the chemistry of streams entering the southern tip of Seneca Lake: Corning, N.Y., Coll. Center of the Finger Lakes (unpub.).

COWELL, B. C.

1963. A comparison of the effects of two aquatic herbicides (sodium arsenite and silvex) on the plankton populations in central New York farm ponds: Ithaca, N.Y., Cornell Univ., M.S. thesis, 119 p.

The relatively shallow farm ponds in central New York usually contain representatives of one or more of the following groups of aquatic plants: filamentous algae; submerged plants; rooted plants with floating leaves; marginal or emergent plants; and floating plants. This thesis describes a method for constructing polyethylene barriers that effectively divide a pond into two similar areas. In several ponds treated with either sodium arsenite or silvex, good control of certain vegetation was obtained for one season. The thesis discusses the results of using either or both of the herbicides. (GKS)

CRAIG, THOMAS

1894. A new Dictyosphaerium: Staten Island Nat. Sci. Assoc. Proc., v. 4, p. 10.

The article describes a new species of Dictyosphaerium found tangled with other algae in the roots of watercress in a pond back of the Moravian cemetery. (GKS)

1898. Rare specimens of pond life: Staten Island Nat. Sci. Assoc. Proc., v. 6, p. 57.

The author discusses the discovery of Ophrydium versatile and Choetophora endivaefolia. (GKS)

CRAIN, L. J.

1967. Hydrology of glaciated valleys in the Jamestown area of southwestern New York: U.S. Geol. Survey Prof. Paper 575-B, p. B192-B198.

The glaciated valleys of southwestern New York contain relatively thin deposits of Pleistocene outwash sand and gravel interbedded in a thick sequence of lacustrine silt and clay. These sand and gravel layers are the principal source of ground water and are recharged through deltas built along the sides of the main valleys by tributary streams. The maximum dependable yield of the major aquifer at the Jamestown well field is about 10 million gallons per day. The results of the study in the Jamestown area may be applicable to other glaciated valleys in the southwestern and south-central parts of New York, and possibly to other glaciated areas. (author)

CRAIN, L. J. (continued)
1970. Hydrology of delta deposits in glaciated valleys in New York, in Hydrology of deltas: Internat. Assoc. Sci. Hydrology, Bucharest Symposium Proc., Bucharest, Hungary, 1969, p. 29-37.

Glaciated valleys in southwestern New York State contain thin layers of glaciofluvial sand and gravel interbedded in thick sequences of lacustrine material. These sand and gravel layers are important aquifers. The valleys also contain buried deltaic deposits adjacent to the valley walls. Streams that drained the uplands formed deltas in the pro- and post-glacial lakes in the valleys. Most of the delta deposits are in hydraulic contact with the glacial aquifers at depth. The deltas provide areas for recharge and reservoirs for storage of water. Wells that tap the glacial aquifers drain the stored water during summer and the water is replenished by precipitation and stream infiltration during winter and spring. Because of the relation of the delta deposits to the glacial aquifers, the deltas have great potential for increasing groundwater yields through the manipulation of their water levels by pumping the glacial aquifers and by acting as temporary reservoirs to store excess streamflow during floods. Results of these studies apply to other regions in the western part of the state as they may to many other glaciated areas. (author)

1974. Ground-water resources of the Western Oswego basin: New York State Dept. Environmental Conserv. Basin Plan. Rept., 137 p.

Groundwater occurrence, aquifer yield, and geology are described for the 2,600-square mile area of the Western Oswego River basin in central New York, which includes the drainage basins of the four largest Finger Lakes: Cayuga, Seneca, Keuka, and Canandaigua. Aquifer data are summarized in geologic sections, diagrams, and maximum yield maps. Groundwater is generally available throughout the basin in quantities sufficient for domestic and farm supplies and, in many places, in quantities sufficient for municipal and industrial supplies. The principal aquifers are unconsolidated glacial sand and gravel deposits in the large valleys of the southern half of the basin, where well yields of 1,000 gpm [gal/min] or more are possible. In the northern part of the basin, the most important sources of groundwater are deposits adjacent to and in hydraulic contact with the barge canal. (author)

CREWS, J. E.
1973. Establishing priorities in mine drainage reduction--A cost-effectiveness approach: Water Resources Bull., v. 9, no. 3, p. 567-576.

Twenty-seven watersheds in Susquehanna River Basin territory are severely degraded by acid mine drainage pollution. Approximately 620 miles of significant tributaries as well as 230 miles of principal rivers are either sterile or intermittently degraded by acid slugs. As a result of acid discharges, many uses of the streams, such as water supply and recreation, are rendered ineffectual. In past attempts at acid mine drainage abatement, programs did not look beyond the immediate problem area; no considerations were given to the blending effect of natural alkalinity in other streams. Since abatement of acid mine drainage pollution is extremely costly, a method of minimizing these costs has been devised. The systematic, cost-effectiveness approach is discussed. (author)

CROCKER, D. W.
1957. The crayfishes of New York State: New York State Mus. Bull. 355, 97 p.

This bulletin gives the geographic distribution and the systematics of crayfish, presents a key to adult crayfish known from New York, and discusses life histories of several New York species. (GKS)

CROWLEY, D. J.
1972. (Metzger, W., Clute, P., Flis, J. and Mittlefehldt, D.). Geological studies of Chautauqua Lake, in Chautauqua Lake Studies: Fredonia, N.Y., State Univ. Coll., Lake Erie Environmental Studies Program, p. 198-210.

This paper represents the first comprehensive study of the sediments in Chautauqua Lake. The following parameters are described: (1) mineralogy, size distribution, and organic content of the lake-bottom sediments; (2) nature and extent of the subaqueous portions of the deltas building out into the lake at the mouths of seven selected streams; and (3) rates of sedimentation in the lake. (PAV)

CRUMB, D. L.
1968. A statistical count of diatom populations in the lacustrine sediments of White Lead Lake, Herkimer County, New York: Hamilton, N.Y., Colgate Univ., M.A. Spec. Rept., 35 p.

No significant correlations between occurrence of diatoms in the sediments of White Lead Lake and factors such as lake depth, core depth, density of sediments, and purity of diatomite were determined. Turbulence may complicate settling rates of diatoms as indicated by two sampled species that settled at different rates. Turbulence can be caused by subsurface springs, waves, or annual turnover in the lake. The study does not include a discussion of the mechanics of sedimentation or of diatom growth, because the occurrence of the two sampled species showed no relationship to the distribution of the species in the sediments. (GKS)

CULVER, D. A.
1969. (and Brunskill, G. J.). Fayetteville Green Lake, New York. V. Studies of primary production and zooplankton in a meromictic marl lake: Limnology and Oceanography, v. 14, no. 6, p. 862-873.

Annual primary production in meromictic Fayetteville Green Lake was estimated to be 290 g C/m^2 [grams carbon per square metre], based on seven measurements by the ^{14}C [Carbon-14] method. About 83 percent of the annual production was due to photosynthetic sulfide-oxidizing bacteria in the chemocline at 18-20 m [metres] depth. Zooplankton densities were higher near the bacterial zone. Bacterial photosynthetic production and concentration of mixolimnetic seston at the chemocline provided adequate food for a relatively large zooplankton population. Evidence for diel migration was observed among the zooplankton. (author)

CUMMINGS, T. R.
1969. Seneca Lake meteorological and surface water data: Fort Trumbull, New London, Conn., U.S. Navy Underwater Sound Lab., Rept. 980, 17 p.

The meteorological data represent 33,899 data points collected from 1934 to 1968, and the surface-water data represent 1,222 data points collected from 1967 to 1968. (author)

CURRAN, T. P.
1974. (and King, T. W., Jr.). NEPA and a state's role in water resources management: Water Resources Bull., v. 10, no. 1, p. 127-136.

The National Environmental Policy Act of 1969 has been called a revolutionary piece of legislation. It has changed, and is still changing the traditional ways of governmental decision making. NEPA has strongly influenced the field of water resources management. An environmental statement can now be seen not as a document to support or justify a plan, but an objective assessment of what environmental costs and benefits are involved. New York State has seized upon NEPA as an important feature of its environmental statements under NEPA to increase its influences upon Federal decision making. The Department of Environmental Conservation coordinates and synthesizes all comments and provides one unified State Response on a statement. At the State level, lacking a comprehensive "little NEPA," an extensive environmental analysis program has been built by utilizing a wide spectrum of Federal and State Law and administrative regulations. (author)

CUTLER, N. L.
1929. A study of bottom forms in polluted areas, in A biological survey of the Champlain watershed: New York State Conserv. Dept., 19th Ann. Rept. Supp., p. 210-219.

The biological study of bottom forms in polluted regions was undertaken in 16 different areas of contamination. Over half the effort was spent on four localities that had pulp and papermill pollution. Other types of pollution studied were sewage, milk, graphite, and sawmill and excelsior-mill waste. Pulp that enters the streams is of very low destructibility and thus extremely undesirable. It forms a blanketlike covering over fish spawning beds and, in addition, destroys most fish-food organisms. Fungi seem to benefit by its presence. Organisms and indicators that may be present on stream bottoms subject to pulp and papermill pollution such as that found in the study of the Champlain watershed are: (1) wood-fibre deposits, (2) luxuriant growths of aquatic fungi, (3) snails, (4) sludge worms, and (5) rich growths of diatoms (*Cymbella* and *Synedra*). Some of the data are tabulated. (GKS)

DAVIS, W. M.
1882. On the classification of lake basins: Boston Soc. Nat. History, gen. mtg. proc., Boston, Mass., Feb. 1, 1882, p. 315-381.

The author discusses the different classes of lake basins and how they were formed. Examples are taken from all over the world, including some from the Finger Lakes, to illustrate each basin type. The three main classifications of lake basins are construction basins, erosion basins, and barrier basins. The Finger Lakes are barrier basins. (GKS)

DAY, D. F.
1882. The plants of Buffalo and vicinity: Buffalo Soc. Nat. Sci. Bull., v. 4, p. 65-290.

This article discusses the plantlife in the Buffalo vicinity and some historical aspects of attempts to identify the plants. Several pages are devoted to an annotated list of the plants. (GKS)

DEAN, H. J.
1972. (and Skea, J. C.). Lake Champlain aquatic vegetation study: Raybrook, N.Y., Region V, New York State Dept. Environmental Conserv., 28 p.

DEAN, W. E.
1970. Fe-Mn (ferromanganese) oxidate crusts in Oneida Lake, New York: Internat. Assoc. Great Lakes Research, 13th Conf. Great Lakes Research Proc., Buffalo, N.Y., p. 217-226.

Saucer-shaped iron-manganese crusts occur adjacent to gravel shoal areas in Oneida Lake. The crusts usually have a crude concentric banding owing to an alternation of orange, iron-rich layers and black, iron-poor layers. Materials from both types of layers are X-ray amorphous. The Oneida Lake crusts, like most other freshwater "manganese nodules," contain about the same Mn concentration as marine manganese nodules, but are usually higher in Fe and lower in trace metals than their marine equivalents.

Although Fe and Mn may be precipitating directly from the lake water, it is more likely that the oxidate crusts are the result of precipitation of Fe and Mn when reduced sediment pore water comes in contact with well-oxygenated bottom waters. Organisms, particularly bacteria, may play a role in the formation of the crusts, but to date no evidence for this has been found. (author)

1973. (Ghosh, S. K., Krishnaswami, S., and Moore, W. S.). Geochemistry and accretion rates of freshwater ferromanganese nodules, in Papers on the origin and distribution of manganese nodules in the Pacific and prospects for exploration: Hawaii Inst. Geophysics, Internat. Symposium, Honolulu, 1973, p. 13-20.

Ferromanganese nodules in Oneida Lake, central New York State, and several lakes in the Adirondack Mountains are very similar in size, shape, and composition to marine nodules and crusts, particularly those from shallow-water, nearshore areas. The basic processes operating in the formation of ferromanganese nodules must be the same in both environments: the main differences are due to the rates and degrees to which these processes operate. The Oneida Lake nodules are of particular interest because they are relatively large, abundant, and very accessible. Preliminary studies indicate that at least 10^6 metric tons of nodules occur within an area of about 20 km^2 in the center of Oneida Lake in less than 10 m of water. (author)

DEEVEY, E. S.
1941. Limnological studies in Connecticut--The quantity and composition of the bottom fauna of thirty-six Connecticut and New York lakes: Ecol. Mon., v. 11, p. 413-455.

During 1938 and 1939, quantitative and qualitative determinations of bottom fauna of 36 Connecticut and New York lakes were made. Seasonal changes of the bottom fauna are discussed on the basis of 12 series of observations made over a period of 14 months on Linsley Pond, Connecticut. Three principal types of vertical distribution of bottom fauna are recognized. Typological classifications, suggested by other authors, based on the composition of the bottom fauna are discussed. (GKS)

1963. Fractionation of sulfur and carbon isotopes in a meromictic lake: Science, v. 139, no. 3553, p. 407-408.

DEEVEY, E. S. (continued)

In the permanently stagnant depths of Green Lake (near Syracuse), sulfide released by bacteria is depleted in heavy sulphur (S^{34}), and sulfate is enriched. The fractionation factor, 1.0575, is the greatest yet observed. Isotopic resemblence to salt-dome sulfur deposits is evident, and, like salt-dome calcite, the lake's carbon dioxide is depleted in heavy carbon (C^{13}). (author)

DEL PRETE, ANTHONY

1973. (and Park, R. A.). Postglacial diatom changes in Lake George, New York: Internat. Assoc. Great Lakes Research, 16th Conf. Great Lakes Research, abstracts, Huron, Ohio, p. 117.

Diatom depth assemblages are sensitive indicators of postglacial deposition environments in Lake George. Both the succession of biotopes and trends of synthetic environmental indices show that Lake George has progressed from an oligotrophic condition to a mesotrophic condition with fluctuations that correspond to postglacial changes observed in other temperate lakes. In general, Lake George is probably in a late oligotrophic or early mesotrophic stage at the present time based on the Araphidiniae/Centrales ratio. However, comparison of core and surface-sediment diatom data indicate that nowhere in the lake is the water as clear and nutrient-poor as it was in precolonial times. The distribution of biotopes can be used in a manner similar to pollen zones, as certain types of diatoms seem to be characteristic of various lake stages. Natural and cultural changes on land can be seen not only in pollen records, but also in the diatom record. (PAV)

DELTA LABORATORIES, INC.

1972. Canandaigua Lake study, part 1--Coliform, phosphate, nitrate: Rochester, N.Y., Delta Lab., Inc., Bull. 2, 7 p.

1973a. Canandaigua Lake study, part 2--Temperature, pH, dissolved oxygen, dissolved solids: Rochester, N.Y., Delta Lab., Inc., Bull. 5, 7 p.

1973b. Canandaigua Lake study, part 3--metals: Rochester, N.Y., Delta Lab., Inc., Bull. 7, 7 p.

1975. Canandaigua Lake study, part 4--cores: Rochester, N.Y., Delta Lab., Inc., Bull. 11, 8 p.

DENCE, W. A.

1952. Establishment of white perch, Morone americana, in central New York: Copeia, v. 1952, no. 3, p. 200-201.

White perch have been established in Cross Lake and are definitely extending the known range. Normally a saltwater species, the white perch was successfully introduced in freshwater lakes and ponds of New England prior to their introduction into Cross Lake. The author believes that the rapid rate of reproduction and subsequent development eventually should result in vast changes in associated fish fauna and overall ecology and economy of the environments that the white perch are appropriating. The article includes a checklist of fishes in Cross Lake. (PEG)

1956. Concretions of the alewife, Pomolobus pseudoharengus (Wilson), at Onondaga Lake, New York: Copeia, v. 1956, no. 3, p. 155-158.

Determination of the historical migrations of the alewife in the Great Lakes area is based on discovered concretions. Formation of the concretions is discussed in relation to the alewife's habits, environmental adaptability, and ecological relationships. (PEG)

1959. (and Jackson, D. F.). Changing chemical and biological conditions in Oneida Lake, New York: Bluffton, Ohio, School Sci. and Mathematics, v. 59, p. 317-324.

Early investigations established important facts in relation to many scientific observations about Oneida Lake. There is a need for repetition of old fieldwork in order to determine what changes have occurred and to what extent the original findings are valid. This study is an attempt to define the changes that have occurred. Total alkalinity content showed an increase,

DENCE, W. A. (continued)
which in turn affects other chemical changes. Average organic weight of seston in 1927 was 2.25 milligrams per litre, whereas in 1954 it was 12.7 milligrams per litre, an increase of 564 percent. (GKS)

DERSCH, ECKHART

1973. The formulation of an outdoor recreation supply function: Ithaca, N.Y., Cornell Univ. Water Resources and Marine Sci. Center and Dept. Nat. Resources, Tech. Rept. 65, 189 p.

This study is one of a series conducted to add to the growing number of estimates of the impact of water-based recreation. The design from the beginning was to explore the considerations that face the public managers of water-based recreation areas in more depth than they normally can. Particular emphasis was put on use and the effects of use, the benefits, both direct and indirect. (author)

DeSHONG, ROBERT

1973. (and Wood, K. G.). Chautauqua Lake phytoplankton, in Chautauqua Lake studies: Fredonia, N.Y., State Univ. Coll., Lake Erie Environmental Studies Program, p. 232-254.

The planktonic algae of Chautauqua Lake form one of the most important plant communities of the lake. The presence, diversity, abundance, and distribution of phytoplankton in a lake may reflect either normal or abnormal conditions that in general parallel the trophic state of the lake. Since Chautauqua is a eutrophic lake, one expects significant algal populations to dominate the lake dependent upon seasonal, nutrient, temperature, and other factors. The objective of this report is to begin to establish quantitative information describing the lake's algal communities. (author)

DIMENT, W. H.

1965. (Werre, R. W., Baldwin, A. L., and Saunders, E. D.). Heat flux through the bottom of a meromictic lake (abs.): Am. Geophys. Union Trans., v. 46, p. 97.

1967. The thermal regime of meromictic Green and Round Lakes, Fayetteville, N.Y. [abs.]: Am. Geophys. Union Trans., v. 48, p. 240.

Periodic temperature observations in Green and Round Lakes during the past two years revealed usual stratification of a meromictic lake. Precision of temperature measurements (better than 0.01°C) permitted the following unusual observations: (1) the monimolimnion is not stagnant, (2) the region near the thermocline warms during the spring, summer, and fall when the mixolimnion is cooling, (3) the temperatures on the bottom exhibit an annual temperature variation of a few tenths of a degree, but the amplitude and phase of the variation depend on depth to the bottom. (author)

1969. A limnological reconnaissance of Devil's Bathtub, a meromictic lake in western New York--Part I. Physics and geology [abs.]: Am. Geophys. Union Trans., v. 50, p. 194.

Devil's Bathtub is a tiny seepage lake located in a closed kettle in Mendon Ponds Park, Monroe County. The mixolimnion is fresh (50 micromhos per centimeter), fairly opaque (mean Secchi disk$\sim$1.5 meters), and possesses a remarkably shallow thermocline (3 m at the end of September), a factor that favors meromixis. The waters of the monimolimnion (>8 m) vary little in response to the seasons and between 9 and 13 m exhibit rather uniform increases in temperature and conductivity with depth. Near the bottom the gradients are smaller. The heat flux from the bottom is anomalously high ($\sim$5 microcalories per square centimeter per second), primarily because of heat focusing. The monimolimnion of Devil's Bathtub does not exhibit zones of isothermal-isohaline convection as do those of Green and Round Lakes near Fayetteville. These differences may be attributed to differences in density structure and rates of extraction of heat during fall and winter. (author)

DI TORO, D. M.

1974. Vertical interactions in phytoplankton populations--An asymptotic eigenvalue analysis: Internat. Assoc. Great Lakes Research, 17th Conf. Great Lakes Research, Proc., Hamilton, Ontario, p. 17-27.

An analysis of the one-dimensional vertical phytoplankton biomass equation indicates that if the population biomass is increasing, then asymptotically the log growth rate of the population

DI TORO, D. M. (continued)
will approach a value independent of depth. An examination of data from four bodies of water support this theoretical prediction.

For constant spatial variations of the parameters with the exception of an exponentially decreasing growth rate, the asymptotic growth rate of the population is related to the important dimensionless parameter groups. In particular, settling velocity effects are examined, together with their interactions with vertical dispersion, and euphotic zone depth. The results are presented in a series of dimensionless plots. (author)

DOUGLAS, E. M.
1926. Gazetteer of the lakes, ponds and reservoirs of the State of New York: Washington, D.C., Map Inf. Office, Board of Survey and Maps, 57 p.

The gazetteer alphabetically lists 2,300 lakes, ponds, and reservoirs with a surface area larger than 0.01 square mile. Information listed for each entry includes: (1) county, (2) quadrangle, (3) coordinates of location, (4) surface area, and (5) elevation. The author concludes that there are 375 lakes in the State with a surface area of approximately 0.01 square mile and 78 with a surface area of 1 square mile or more. (PEG)

DOWNER, R. N.
1971. Extreme mean daily annual water levels of Lake Champlain: Middlebury, Vt., Water Resources Research Rept. 3, 18 p.

Extreme high and low mean daily annual water levels of Lake Champlain since 1871 are tabulated for two locations at Rouses Point, New York and Burlington, Vermont. The data have been ranked and are plotted on Gumbel paper according to their respective recurrence intervals. Probabilities that a certain level will not be reached during a given length of time are also tabulated. The most likely dates of extremes are given. Mean, ordinary low, and ordinary high lake levels were computed and tabulated along with a discussion of court decisions and legislation concerning these levels. (author)

DRAHOS, NICHOLAS
1959. What's going on at Oneida Lake?: The Conservationist, v. 13, p. 6-7.

The author discusses the operations of Cornell University's Shackleton Point property, home of the University's Biological Field Station on Oneida Lake. (GKS)

DROUET, FRANCIS
1939. Francis Wolle's filamentous Myxophyceae: Field Mus. Nat. History, Bot. Ser. 460, p. 17-64.

Francis Wolle (1817-93) was a minister and educator and was interested in natural history from an early age. His first serious work was on local bryophytes. In 1872, he turned his attention to freshwater algae, especially to the desmids. He made large collections in Pennsylvania, New York, and New Jersey and reported his findings in a series of short papers. By 1892, he had built a considerable working herbarium of both European and American algae. This article devotes several pages to an annotated list of filamentous blue-green algae. (GKS)

DRYER, C. R.
1904. Finger Lakes region of western New York: Geol. Soc. Am. Bull., v. 15, p. 448-460.

The region discussed is the northern slope of the Allegheny Plateau in western New York between the Canandaigua Valley on the east and the valley of the Genesee River and its tributary, Canaseraga Creek, on the west. The article describes the geology of the area and gives some interpretations of the various geologic features. (GKS)

DUDLEY, W. R.
1886. The Cayuga flora: Cornell Univ. Bull., v. 2, 132 p.

This catalog lists the flowering plants growing without cultivation in the territory drained by Cayuga Lake. The article generally describes the area and the natural history of the plants. A lengthy annotated list is included. (GKS)

DURHAM, F.
  1949. Physiographic history of Finger Lakes of central New York: Compass, v. 26, p. 138-142.

DUTTWEILER, M. W.
  1974. Use of questionnaire surveys in forming fishery management policy: Ithaca, N.Y., Cornell Univ., M.S. thesis, 81 p.

A random sample of 1092 Owasco Lake basin residents was used to evaluate their preference for fishing and fishery management policies. This study's goal was to obtain a reliable estimate of fishermen's preferences that should be considered in fishery management decisions. Study objectives included the determination of the percentage of local residents who fish at Owasco Lake; preferred fish species; preferred management measures; and fishermen's attitudes toward Owasco Lake fish, fishing, and Owasco Lake itself. (PAV)

EASTERN OSWEGO BASIN BOARD

1973. Summary Report on the recommended plan of the Eastern Oswego Basin Regional Water Resources Planning Board--Interboard plan for the Greater Finger Lakes-Oswego River Basin: Ithaca, N.Y., Eastern Oswego Basin Board, October 1973, 65 p.

This report has been prepared by the Eastern Oswego Basin Regional Water Resources Planning Board, the third of the four boards formed in the Finger Lakes region. The report outlines the Board's findings and presents a comprehensive plan to protect water and related resources in the Board's area of representation and to satisfy future needs for utilization, management and development of these resources. The Eastern Oswego Basin Board's findings and comprehensive plan are fully compatible with those of the three other regional water resources planning boards in the Oswego River basin. Collectively, the findings and plans of the four boards form a comprehensive basin plan formally published in the document, "Interboard Plan for the Greater Finger Lakes-Oswego River Basin." (PAV)

EATON, E. H.

1927. The Finger Lakes fish problem, in A biological survey of the Oswego River system: New York State Conserv. Dept., 16th Ann. Rept. Supp., p. 40-66.

A main problem of the Finger Lakes is finding a means of conserving and increasing the fish supply. The purposes of investigation were to determine the distribution of fish that now inhabit the lakes; the food that they utilize, as revealed by examination of stomach contents, the amount of available food, including plankton, bottom fauna and forage fishes; and temperature, oxygen content, and other chemical characteristics of the water. The article discusses how the fish were caught, the distribution of fishes, the food of different species, including tables that show conditions affecting abundance of Finger Lakes fishes; and general suggestions and recommendations for improving the fish situation. (GKS)

EATON, S. W.

1971. (and Moffett, L. J.). A Preliminary Study of Canandaigua Lake in 1970: St. Bonaventure, N.Y., St. Bonaventure Univ., Science Studies, v. 27, p. 69-85.

Bottom and plankton samples were taken at 6 stations in Canandaigua Lake during June, July and August 1970. Temperatures and oxygen were taken and compared with earlier ones. The epilimnion was 1° to 1 1/2°C warmer than in the second decade of the century. Large plankters were reduced in number and the small Bosmina greatly increased. Bottom samples were comparable. It is suggested that the alewife Alosa Pseudoharengus (common since 1953) may be changing the zooplankton populations. A history of changes in fish populations is included. (author)

1972. The fishes of Canadaigua Lake, 1971: St. Bonaventure, N.Y., St. Bonaventure Univ., Science Studies, v. 28, p. 23-44.

From April to December 1971 we made collections of fishes by gill net, seine and fyke net in Canandaigua Lake to compare its status today with studies done in 1927 and 1945. In 1927 the Cisco (Coregonus artedi) was the dominant forage fish of Lake trout, and by the 1940's the Rainbow smelt (Osmerus mordax) had replaced the cisco. In 1971 we found that the Alewife (Alosa pseudoharengus) had replaced the smelt as principal forage for the Lake trout (97 percent by volume), Chain pickerel (Esox niger), Smallmouth bass (Micropterus dolomieui) and Walleye (Stizostedion vitreum vitreum). Notes on 34 species of fishes are presented describing their abundance, food habits and growth. Four species have been added to the known fauna--Ictalurus natalis, Noturus gyrinus, Lepomis macrochirus and Pomoxis nigro-maculatus. The tapeworm genus Eubothrium was found in over 90 percent of the Lake trout. (author)

1973. (and Kardos, L. P.). Mysis and some other large invertebrates of Canandaigua Lake, 1972: St. Bonaventure, N.Y., St. Bonaventure Univ., Science Studies, v. 29, p. 3-15.

We took 28 horizontal trawls using a 0.5-meter diameter tow net at several depths at varying light intensities and caught approximately 19,000 Mysis which we measured and placed in small, medium, large male and large female categories. Two series of trawls in August and one series in October averaged 1.95/m^3 [cubic metres], 3.18/m^3, and 3.86/m^3. Mysis was found at considerable distances off bottom during daylight and their breeding season extended from August to May. Gravid females averaged 18 mm in length and carried an average of 12 eggs or larvae in the marsupium. Notes on other larger planktonic invertebrates are included. (author)

ECHELBERGER, H. E.
1973. (and Moeller, G. H.). Toward a better understanding of recreational boating in the Adirondack lake region: Water Resources Bull., v. 9, no. 6, p. 1266-1273.

Results of a study to determine the relationship between physical characteristics of Adirondack lakes and variations in peak boat-use intensity indicated that 69 percent of the variation in peak use can be accounted for by the number of public and commercial boat-launching facilities per mile of lake shoreline. Other lake characteristics related to peak boat use were: the number of commercial overnight accommodations available, number of boat slips, lake size, and miles of lake shoreline. Lake characteristics not related to peak use were: accessibility, configuration, tent spaces available, surrounding landscape quality, volume of traffic and availability of other lakes. This information should provide recreation managers and planners with a better understanding of factors related to variation in peak boating-use periods. (author)

ECKERT, T. H.
1968. (Hofmann, P., and Seifert, M. F.). Some aspects of the food habits of the alewife (Alosa pseudoharengus) and the American smelt (Osmerus mordox) in Cayuga Lake: Ithaca, N.Y., Cornell Univ., mimeo., 32 p.

EDMONDSON, W. T.
1969. Eutrophication in North America, in Eutrophication--Causes, consequences, correctives: Natl. Acad. Sci., p. 124-129.

Scientific investigation and practical control measures of the problem of eutrophication in North America has been approached in a variety of ways. One outstanding feature of the North American study of artificially enriched lakes has been measurement of the rate of influx of various substances from different sources, outgo, and storage. Public awareness has increased to an extent that will allow more studies to be made and better and less expensive techniques of prevention and control to be developed. Eutrophication of several New York lakes is discussed in detail. (GKS)

EGELSTON, J. R.
1962. A limnological investigation of the thermal aspects of Thompson's Lake: Albany, N.Y., State Univ. New York, Biol. Seminar Rept., v. 22, p. 32-88.

1972. A comparison of algal reefs, Bermuda and Green Lake, Fayetteville, New York: Syracuse N.Y., Syracuse Univ., M.S. thesis.

A comparative study of the cup reefs of Bermuda and bioherms of Green Lake, Fayetteville indicates similarities in morphology and growth pattern. In both cases, algae are major contributors to growth. The same processes of sediment production, trapping, and cementation are at work in both environments but to differing cavities by precipitation of calcium carbonate. (author)

EGGLETON, F. E.
1931. A limnological study of the profundal bottom fauna of certain fresh-water lakes: Ecol. Mon., v. 1, no. 3, p. 231-331.

In freshwater lakes, few animals have adapted to living in the anaerobic profundal zone of the lake bottom. This article's objective is to present the results from a study of the microscopic profundal bottom fauna. Emphasis was on the ecological relationships of the animals rather than on qualitative and quantitative descriptions. The fieldwork was done intermittently between February 1923 and February 1929. The major part of the work was done on two Michigan lakes, but several other Michigan and New York lakes were included, of which Green Lake in New York was one. The article discusses methods of data collection. Results are tabulated. (GKS)

1956. Limnology of a meromictic, interglacial, plunge-basin lake: Am. Micros. Soc. Trans., v. 75, no. 3, p. 334-378.

Fayetteville Green Lake lies in the Chittenango quadrangle of Onondaga County. The lake exhibits many interesting physicochemical and biological features, partly because of the precipitous basin slope and because it is well protected from wind in all but one direction.

EGGLETON, F. E. (continued)
Prior to 1956, it was one of only five meromictic lakes in North America on which data were published and was the first to be so demonstrated. Some results of the study are: (1) massive bioherms of marl have been deposited in many places around the shoreline, which drops precipitously into deep water, and (2) several species of algae are associated in the deposition of these marl reefs. The alga most consistently and intimately associated with the "growing" surfaces is Schizothrix fasiculata (Nageli) Gormont. The most striking physicochemical features of the lake are sharpness, persistence, and uniformity of thermal and chemical stratification. The article summarizes other results of the study. (GKS)

EHLKE, T. A.
1974. Comparison of bacterial and phytoplankton populations under natural and laboratory conditions: U.S. Geol. Survey, Jour. Research, v. 2, no. 5, p. 533-539.

Bacteria and blue-green algae were isolated from Oneida Lake and other sources. The blue-green algae Anabaena flos-aquae, Anabaena spiroides, Gloeotrichia echinulata, and Microcystis aeruginosa were grown under laboratory conditions and were separated into unialgal cultures. The bacterial population living in association with the unialgal blue-green algae differed significantly from the bacterial flora of Oneida Lake. Bacillus, Pseudomonas, Aeromonas, and Zoogloea were the most frequently occurring genera of bacteria from the lake, whereas Flavobacterium, Achromobacter, and Pseudomonas were the most common bacteria isolated from laboratory blue-green cultures. Nutritional and physiological characteristics of bacteria isolated in the laboratory were more uniform than those isolated from the lake. (author)

EIPPER, A. W.
1953. Fisheries research in New York farm ponds: The Conservationist, v. 7, p. 3.

Research in 1952 on New York farm ponds indicates that they are rapidly becoming a primary means of fishing recreation. Ponds are individually stocked with trout, warm-water fish species (largemouth bass and bluegill sunfish), and bait minnows. Fish are seined out of the ponds, weighed, measured for length, marked, and released. A second seining gives interesting data of the fish population changes. Trout begin to die at age 2. They reach 7 or more inches by the spring after stocking and 13 to 15 inches by the third year. (GKS)

1957a. (and Brumsted, H. B.). How to control weeds and algae in farm ponds: Ithaca, N.Y., Cornell Univ. Agr. Expt. Sta., Ext. Bull. 1014, 32 p.

The authors discuss the types of plants that commonly invade ponds, the problems they may cause, and preventive or control measures. (GKS)

1957b. Oneida Lake fisheries research: The Conservationist, v. 11, no. 6, p. 8-9.

Because of its tremendous fertility, Oneida Lake produces tons of fish annually comprising approximately 60 different species. In April 1956, an intensive fishery study of the lake was started. Major cooperators in the study were Cornell University, New York State Conservation Department, and the U.S. Fish and Wildlife Service. The study had two specific objectives: (1) to develop a program for maximum harvest of the present crop of desirable fish in Oneida Lake without endangering future crops, and (2) to determine the steps that can and should be taken to increase the rate of game and panfish production in the lake. The article describes the process of tagging, fin clipping, sampling, and recording data. (GKS)

1959a. Effects of five herbicides on farm pond plants and fish: New York Fish and Game Jour., v. 6, no. 1, p. 46-56.

This paper summarizes data obtained from applications of five different herbicides in central New York farm ponds over a 3-year period. Delrad, Fermate, Phygon-XL, copper sulfate, and sodium arsenite were employed. Available information deals with effects of these herbicides on algae, submersed aquatics, and various sizes and species of fish in 30 farm ponds which received a total of 70 herbicide applications. Ranges in physical-chemical determinations in 16 of these ponds were: pH, 7.6-8.8; total alkalinity, 60-170 mg/l; surface water temperature, 17°-28°C; and bottom temperature, 16°-26°C. When applied as surface sprays to produce a pond-water concentration of 0.5 mg/l active ingredient by weight, Delrad, Fermate, and copper sulfate were all equally effective in controlling unbranched filamentous green algae. With respect to treatment cost and safety of small fish, copper sulfate had definite advantages over Delrad or Fermate. (author)

EIPPER, A. W. (continued)
1959b. Trout for farm ponds: The Conservationist, v. 13, p. 20-22.

There are about 15,000 farm ponds in New York State, and new ones are being constructed at the rate of 1,000 a year. Most owners desire fish in their ponds, and the New York State Conservation Department and Cornell University have done intensive research aimed at developing fish production techniques applicable to New York farm ponds. This article summarizes the findings on trout ponds in central New York and discusses management recommendations that have resulted from this information. (GKS)

1960. Managing farm ponds for trout production: Ithaca, N.Y., Cornell Univ. Agr. Expt. Sta., Ext. Bull. 1036, 32 p.

This publication discusses: (1) factors to consider in deciding whether to stock trout, (2) design and construction features particularly valuable in trout ponds, (3) results that can be expected from a trout pond, (4) where and how to obtain trout for a farm pond, and (5) management practices for obtaining the most trout fishing from the pond. (GKS)

1961. Vital statistics of trout populations in New York farm ponds: Canadian Fish Culture, v. 29, p. 13-14.

1964. Growth, mortality rates, and standing crops of trout in New York farm ponds: Ithaca, N.Y., Cornell Univ. Agr. Expt. Sta., Mem. 388, 67 p.

Studies from 1952 through 1958 were made to determine reproduction, growth, natural mortality, fishing potential, and standing crops of trout in 70 central New York farm ponds with a surface area ranging from 0.1 to 1.8 acres and maximum depths of 5 to 14 feet. Ponds were seined once or twice yearly for a Petersen population count. Accuracy of the counts was within 10 percent. There were 195 ponds inventoried during the 7-year study. Brook trout was the dominant species in 141 ponds, rainbow trout was dominant in 40 ponds, and brook/brown trout hybrids were dominant in 8 ponds. (GKS)

1965. (and Forney, J. L.). Evaluation of partial fin clips for marking largemouth bass, walleyes and rainbow trout: New York Fish and Game Jour., v. 12, no. 2, p. 233-240.

Removing the distal half to two-thirds of the pectoral or ventral fins of 12-inch and larger walleyes, and the pectoral fins of 6- to 7-inch largemouth bass, produced a mark that was permanently and uniformly recognizable in the regenerated fin by a thickening and bending of rays along the excision line. Partial clips did not produce an easily recognizable mark on the ventral fins of these bass or on the pectoral, ventral, dorsal, or anal fins of 5-inch rainbow trout. It seems likely that the conspicuousness of the mark produced by partial clipping varies with the relative size of the fish when marked. As an adjunct to complete fin removal, partial clipping increases the number of groups of fish that can be distinctively marked at one time. Adverse effects of fin mutilation on survival and behavior are probably minimized because initial injury is less severe and partially clipped fins usually regenerate rapidly. Partial clipping is a fast marking procedure that requires almost no training and no special equipment other than a pair of diagonal wire-cutting pliers. (author)

1968a. (and Regier, H. A.). Fish management in New York farm ponds: Ithaca, N.Y., Cornell Univ. Agr. Expt. Sta., Ext. Bull. 1089, 39 p.

There are over 35,000 farm ponds in New York State and new ones are being constructed at the rate of about 1,000 a year. This publication discusses: (1) factors to consider in deciding which fish species to stock; (2) design and construction features important in fishponds; (3) where and how to obtain fish for a farm pond; (4) growth, survival, reproduction, and yield expectations from a farm fishpond in New York; and (5) management practices for obtaining satisfactory fishing from the pond. This information is based on 12 years of work on more than 150 ponds. The discussion is valid for ponds having surface areas up to 2 acres. (GKS)

1968b. (and others). Thermal pollution of Cayuga Lake by a proposed power plant: Ithaca, N.Y., Citizens Comm. to Save Cayuga, 11 p.

1970. Pollution problems, resource policy, and the scientist: Science, v. 169, no. 3940, p. 11-15.

EIPPER, A. W. (continued)

The roles of citizens, ecologists, industry, and government in developing solutions to increasingly complex pollution problems are discussed to include nine basic principles of resource management to prevent pollution. A case history of a controversy over thermal and radionuclide pollution from a proposed power plant on Cayuga Lake shows how communities can become concerned. (PEG)

EIRIKSDOTTER, GUDNY

1974. Feeding and assimilation by the white sucker Catostomus commersoni: Ithaca, N.Y., Cornell Univ., M.S. thesis, 40 p.

This work discusses the assimilation efficiences of the white sucker that were determined in the laboratory for different natural dietary components. Little research has been done on the white sucker since it is not a desirable food or game fish; however, the success of the sucker has not been overlooked. It is a large and abundant species in most lakes and requires consideration in community-level management programs when it dominates the biomass. (PAV)

EMBODY, G. C.

1927a. Stocking policy for the Genessee River system, in A biological survey of the Genesee River system: New York State Conserv. Dept., 16th Ann. Rept. Supp., p. 12-28.

In the formulation of a stocking policy, answers to two questions have been sought: (1) what kinds of fishes are likely to best adapt to conditions suitable for reproduction, normal growth, and escape from enemies, and (2) how many fish should be stocked in order to use the water to its fullest extent? To answer the first question, knowledge of what constitutes suitable conditions for the different species ordinarily stocked is needed. Some of the important factors pertaining to both questions are water temperature, oxygen content, carbon dioxide content, purity of water, character of stream bottom in relation to natural spawning, barriers to fish migration, size of stream or lake, current, and shelter. The author offers suggestions for stocking particular streams and lakes. (GKS)

1927b. Stocking policy for the streams, smaller lakes and ponds of the Oswego watershed, in A biological survey of the Oswego River system: New York State Conserv. Dept., 17th Ann. Rept. Supp., p. 17-39.

The Oswego biological survey included 7,000 miles of streams. Streams given limited investigation were those that were dry, badly polluted, and unsuitable for bass and trout. Oneida and Tompkins Counties streams were studied to determine only the number of fish to be stocked. The problem during the summer of 1927 was to determine what streams and ponds are suitable for stocking; what species of food fishes should be stocked in them; and for trout streams, approximately how many fish should be stocked per unit length. Stocking policies are influenced by water temperature, dissolved gasses, surface area, primary food organisms, pool conditions, fishing effects of streams, species competition, and available stream mileage. The article discusses some of the better lakes, ponds, and streams for fishing. (GKS)

1928. Stocking policy for the streams, lakes and ponds of the Erie-Niagara watershed, exclusive of Lake Erie, in A biological survey of the Erie-Niagara system: New York State Conserv. Dept., 18th Ann. Rept. Supp., p. 19-38.

For streams in the watershed, several sampling stations were established in the headwaters, the middle and lower sections, and especially at every road crossing. Dissolved oxygen, carbon dioxide content, and alkalinity were determined. During the summers of 1920 and 1921, recommendations were made for stocking. These were examined and compared with information obtained during the summer of 1927. The stocking policy recommended includes the species of fish for which the water seems best suited, the length of stream or the area of pond over which suitability was established, and the calculated number of 3-inch fingerling trout per mile that would seem necessary to fulfill annual stocking requirements. The article discusses successful trout streams and ponds, bass waters, important bass ponds and lakes, temperature in relation to distribution of trout, and a quantitative study of fish populations in streams. (GKS)

EVANS, W. M.

1936. Report of investigations of cattle poisoning around Payne Lake, Jefferson County, N.Y.: Cornell Veterinarian, v. 26, p. 337-341.

EVANS, W. M. (continued)
This article tells of several head of livestock found dead during midsummer 1936 near Payne Lake. After detailed investigation and experimentation with guinea pigs, no direct cause from the lake and surrounding area could be found. It was concluded, however, that large amounts of algae were being blown to the shore by prevailing winds. These algae might produce toxic products at certain stages of growth and decomposition. No tests were conducted to prove or disprove this. (GKS)

EVERMANN, B. W.
1901. (and Goldsborough, E. L.). Notes on the fishes and mollusks of Lake Chautauqua, New York: Albany, N.Y., New York State Forest, Fish, and Game Comm., 6th Rept., p. 357-366.

Lake Chautauqua lies in the central part of Chautauqua County in the extreme western part of New York. In September 1901, the senior author spent 4 days at the lake, where he obtained specimens of fishes and molluscs that inhabit the lake and prepared notes and descriptions on some of the more important species. The article includes a lengthy list of collected specimens. Some additional data obtained at other times are included. (GKS)

1902. (and Goldsborough, E. L.). Notes on the fishes and mollusks of Lake Chautauqua, New York: U.S. Fisheries Comm., Rept. for 1901, p. 169-175.

FAIGENBAUM, H. M.

1929. Chemical investigation of the Champlain watershed, in A biological survey of the Champlain watershed: New York State Conserv. Dept., 19th Ann. Rept. Supp., p. 220-240.

Determinations in this report include carbon dioxide, oxygen, alkalinity, hydrogen ion concentration, and, in certain water samples, chlorine (as chloride). Samples for these determinations were collected with standard equipment from surface and bottom depths. Pollution of the Champlain watershed generally consists of pulp and paper wastes, sewage, and wastes from creameries and sawmills. Results of the chemical survey were divided into five series: (1) Lake Champlain, (2) waters affected by pulp and paper waste and municipal sewage, (3) sewage and water studies at State institutions, (4) lakes, ponds, and springs studied in conjunction with the stream survey unit, and (5) miscellaneous. Each of the series is discussed, and data are tabulated. (GKS)

1930. Chemical investigation of the St. Lawrence watershed, in A biological survey of the St. Lawrence watershed: New York State Conserv. Dept., 20th Ann. Rept. Supp., p. 167-191.

Part of the 1930 biological survey included a chemical investigation of: (1) temperature, (2) carbon dioxide, (3) alkalinity, (4) dissolved oxygen, and (5) hydrogen ion concentration (pH). The article discusses sampling from the St. Lawrence River, Grass River, St. Regis River, Salmon River, Chateaugay River, and scattered miscellaneous stations. Several pages of tables are included. (GKS)

1931. Chemical investigation of the Oswegatchie and Black River watersheds, in A biological survey of the Oswegatchie and Black River systems: New York State Conserv. Dept., 21st Ann. Rept. Supp., p. 150-188.

Chemical data include those for three major rivers, three minor rivers, a series of miscellaneous stations, and 140 lakes and ponds. Data obtained on collected samples include: (1) temperature, (2) carbon dioxide, (3) alkalinity, (4) dissolved oxygen, and (5) hydrogen ion concentration. The article discusses each of these items for different geographical areas in the watershed. Several pages of tables summarize the results. (GKS)

1932. Chemical investigation of the Upper Hudson watershed, in A biological survey of the Upper Hudson watershed: New York State Conserv. Dept., 22d Ann. Rept. Supp., p. 157-207.

Chemical data include those for four major rivers, three minor rivers, and 156 lakes and ponds. Data recorded for samples include: (1) temperature, (2) carbon dioxide, (3) alkalinity, (4) dissolved oxygen, (5) hydrogen ion concentration, (6) chlorine (as chloride), and (7) free chlorine. Several pages of tables list the results of the chemical investigation. (GKS)

1933. Chemical investigation of the Raquette River watershed, in A biological survey of the Raquette watershed: New York State Conserv. Dept., 23d Ann. Rept. Supp., p. 164-208.

Chemical data include those for the Raquette River, 132 lakes and ponds, and a series of miscellaneous stations. Data recorded for samples include: (1) temperature, (2) carbon dioxide, (3) alkalinity, (4) dissolved oxygen, (5) hydrogen ion concentration, (6) chlorine (as chloride), and (7) hydrogen sulfide (free and combined). All data are summarized in tables. (GKS)

1934. Chemical investigation of the Mohawk-Hudson watershed, in A biological survey of the Mohawk-Hudson watershed: New York State Conserv. Dept., 24th Ann. Rept. Supp., p. 160-213.

Chemical data include those for the Mohawk River (both river proper and canal), part of the Hudson River (from Mechanicville to Hudson), larger tributaries of both systems, 107 lakes and ponds, and a series of miscellaneous stations. This study covered 6,000 square miles. Data on the samples include: (1) temperature, (2) carbon dioxide, (3) alkalinity, (4) dissolved oxygen, (5) hydrogen ion concentration, and (6) hydrogen sulfide (free and combined). Several pages of tables summarize the results. (GKS)

1935. Chemical investigation of the Susquehanna and Delaware watersheds, in A biological survey of the Delaware-Susquehanna watershed: New York State Conserv. Dept., 25th Ann. Rept. Supp., p. 140-194.

FAIGENBAUM, H. M. (continued)

Pollution studies, including determinations of free carbon dioxide, dissolved oxygen, alkalinity, and hydrogen ion concentration as well as measurements of temperature and depth, were made on the Susquehanna River, 17 of its tributaries, the Delaware River (including East and West Branches), and 9 of its tributaries. Eighty-six lakes and ponds and all State hatchery and field station waters in the watersheds were included. Effects of the major types of pollution are discussed, including those from sewage, milk, milk products, hardwood distillation, tanning, and slaughter wastes. (author)

1936. Chemical investigation of the lower Hudson area, in A biological survey of the Lower Hudson watershed: New York State Conserv. Dept., 26th Ann. Rept. Supp., p. 146-216.

Pollution studies, including determination of free carbon dioxide, dissolved oxygen, alkalinity, and hydrogen ion concentration, as well as measurements of temperature and depth, were made on the Hudson River, 7 major tributaries, 17 minor tributaries, the Bronx River, and 3 New Jersey streams. Analyses were also made of 110 lakes and ponds and hatchery field station waters in the watershed. Effects of the principal types of pollution are discussed, including those resulting from sewage, milk, milk products, laundry wastes, bleaching, finishing and dyeing wastes, paper and associated wastes, and miscellaneous wastes. Data for the Hudson River, its principal tributaries, and certain other waters are discussed as well as those for New Croton Reservoir. (author)

1937. Chemical investigation of the Allegheny and Chemung watersheds, in A biological survey of the Allegheny and Chemung watersheds: New York State Conserv. Dept., 27th Ann. Rept. Supp., p. 113-161.

Pollution studies, including determinations of free carbon dioxide, dissolved oxygen, alkalinity, chlorides, and hydrogen ion concentration, as well as measurements of temperature and depth, were made on the Allegheny River and 18 of its tributaries; the Chemung River and 9 of its tributaries; and all important lakes, ponds and hatchery waters. Methods of analysis and their significance are discussed. The location and types of pollution, including sewage, milk, milk products, oil, tanning, gravel washer, and miscellaneous wastes are tabulated; the effects of oil and gravel-washer wastes are discussed. Data for the principal rivers and tributaries are evaluated, including those for Chautauqua Lake. (author)

1938. Chemical investigation of the fresh waters of Long Island, in A biological survey of the fresh waters of Long Island: New York State Conserv. Dept., 28th Ann. Rept. Supp., p. 64-87.

Pollution studies, including determinations of free carbon dioxide, dissolved oxygen, alkalinity, hydrogen ion concentration, and salinity, as well as measurements of temperature and depth were made on the principal freshwater streams, hatchery waters, and all important lakes and ponds of Long Island. Location and types of pollution are tabulated; the effects of sewage and duck farm pollution are discussed. The method of obtaining salinity is described and data for the principal waters are evaluated, including those for Lake Ronkonkoma. (author)

1939. Chemical investigation of the Lake Ontario watershed, in A biological survey of the Lake Ontario watershed: New York State Conserv. Dept., 29th Ann. Rept. Supp., p. 117-146.

Pollution studies, including determinations of free carbon dioxide, dissolved oxygen, alkalinity, and hydrogen ion concentration, as well as measurements of temperature and depth, were made on the principal streams, reservoirs, lakes, ponds, and bay areas of the watershed. Several adjacent waters not in the watershed were also studied. Principal types of pollution were found to be those from sewage, cannery wastes, milk, milk products, and miscellaneous wastes. Effects of these pollutants are evaluated from the chemical data obtained. (author)

FAIRCHILD, H. L.

1895a. Glacial lakes in western New York: Am. Naturalist, v. 29, p. 160-161.

This lengthy abstract discusses the glacial lacustrine history of western New York, including the glacial history of each recession stage of the great glacier, individual valley formation, drainage outlets, and the origin of present lakes. (GKS)

FAIRCHILD, H. L. (continued)

1895b. Glacial lakes in western New York: Geol. Soc. Am. Bull., v. 6, p. 353-374.

1896. Glacial Genesee lakes: Geol. Soc. Am. Bull., v. 7, p. 423-452.

Study of the glacial lacustrine history of the Genesee valley was undertaken in continuation of work on the glacial lakes in western New York, with no expectation of making it the subject of a separate paper. Work in the region was done in late autumn 1894 and summer 1895. The article discusses the results of the work. Items covered are the present and ancient Genesee valley, the sequence of events in the valley's geological history, a description of the glacial lakes and local glacial and morainal lakes. (GKS)

1899a. Glacial Lakes Newberry, Warren, and Dana in central New York: Am. Jour. Sci., v. 157, no. 40, p. 249-263.

This article describes development and extinction of Lakes Newberry, Warren, and Dana in central New York and the geologic and geographic boundaries of each. (GKS)

1899b. Glacial waters in the Finger Lakes Region of New York: Geol. Soc. Am. Bull., v. 10, p. 27-68.

The geologic history of the Finger Lakes area is discussed. A detailed historical geologic description is given for particular lakes and river valleys in the region. (GKS)

1900. Glacial lakes of western New York: Rochester Acad. Sci. Proc., v. 3, p. 180-181.

1909. Glacial waters in central New York: New York State Mus. Bull. 127, 66 p.

This article describes the ice border drainage in central New York and the relation of streamflow to standing waters of the region. Glacial lake history in central New York is somewhat more complicated than had been earlier described, and drainage phenomena are among the features poorly understood. Several maps and photographs accompany the article. (GKS)

1925. The Susquehanna River in New York and evolution of western New York drainage: New York State Mus. Bull. 256, 99 p.

The Susquehanna River has experienced many changes. The dramatic history covers tens of millions of years and involves complex geologic factors. The entire area was lifted from the sea during the late Devonian and early Mississippian age. Early rivers formed north of the Adirondack area and flowed southeast and west, cutting through soft rock until they had carved large valleys. The article also discusses the influences of glaciers in the area. (GKS)

1926. Geologic romance of the Finger Lakes: Sci. Monthly, v. 23, p. 161-176.

The article describes the formation of the Finger Lakes basins. The basins are in horizontal strata that were lifted from the sea without serious deformation. After uplift, the area became a vast, southward-declining plain. The first rivers flowed south from Canada across New York into Pennsylvania. The Ontario and Mohawk valleys were formed by east and west tributaries cutting into soft rock. Eventually a huge trunk river flowed through the Ontario valley toward the Mississippi River. The parallel valleys of New York were carved in preglacial time by north-flowing rivers that flowed into the trunk river and subsequently through the Ontario valley. Glaciers smoothed the north-south trending valleys, formed a large fill at the southernmost advance, and filled the north ends at a later recession stage. (GKS)

1934a. Cayuga valley lake history: Geol. Soc. Am. Bull., v. 45, no. 2, p. 233-280.

1934b. Seneca valley physiographic and glacial history: Geol. Soc. Am. Bull., v. 45, no. 6, p. 1073-1110.

FANELLI, S. A.

1970. A study of the seasonal cycles of iron and copper in a small dimictic lake, Calder Lake, New York, 1968-1969: New York, Fordham Univ., Doctoral dissert., 348 p.

FANELLI, S. A. (continued)

Physical and chemical parameters were measured in Calder Lake for the period extending from September 1968 to November 1969. Measurements were conducted twice each week in the warmer months and weekly in the colder months. Physical parameters were measured on site while chemical analysis was conducted in the laboratory. Both iron and copper in all forms measured show a cyclic seasonal spatial and temporal distribution. (PAV)

FARRELL, M. A.

1930. Studies of the bottom fauna in polluted areas, in A biological survey of the St. Lawrence watershed: New York State Conserv. Dept., 20th Ann. Rept. Supp., p. 192-196.

In a study of stream pollution, a determination of the bottom fauna commonly gives a more exact index of the extent of pollution than does a chemical analysis that may have been taken during a period of either high or low flow. The study demonstrated that the bottom fauna was a more reliable index of pollution because all the streams were thoroughly aerated by ripples, falls, and overflow of dams. Objectives of the study were to investigate kinds of pollution, area of stream affected, and kinds of animals able to thrive in polluted waters. The article discusses pollution types in various river systems. (GKS)

1931. Pollution studies, in A biological survey of the Oswegatchie and Black River systems: New York State Conserv. Dept., 21st Ann. Rept. Supp., p. 189-198.

The primary object of this study was to determine the stream milage affected by different kinds of pollutants. Special attention was given to the effect of dairy wastes on streams. In addition, an attempt was made to correlate the bottom fauna in polluted areas with the food taken by fish caught in such areas. The article discusses the importance of dilution (ratio of the volume of waste substances to the volume of water into which they are emptied), polluted stream mileage, plants and animals found in polluted waters, Black River Bay and its pollution, streams receiving milk pollution, and observations on food eaten by fish in Black River Bay. (GKS)

FAST, A. W.

1973. Restoration of eutrophic Lakes by artificial hypolimnetic oxygenation: Human-Accelerated Eutrophication of Freshwater Lakes Conf., Proc., Ossining, N.Y., Dec. 1973, p. 21-34.

In unproductive lakes, oxygen concentrations in the hypolimnion are usually greater than 5 ppm, and these lakes support cold-water fishes. Hypolimnetic oxygen concentrations in productive, eutrophic lakes, on the other hand, are zero. Associated with hypolimnetic oxygen depletion, is resolution of nutrients (such as phosphorus from the bottom sediments). Several procedures have been used to alleviate eutrophication: reducing nutrient inflow, dredging and removal of sediments, chemical treatment, weed removal, and artificial oxygenation. (author)

FEDERAL WATER POLLUTION CONTROL ADMINISTRATION

1969. Pollution of the interstate waters of Lake Champlain and its tributary basin, New York-Vermont: U.S. Dept. Interior, Federal Water Pollution Control Adm., Conf. Proc., Burlington, Vt., Boston, Mass., 416 p.

Conclusions and recommendations of the meeting are: (1) Lake Champlain and the part of its tributary basin that affects the lake receive the discharge of treated and untreated wastes from industries, municipalities, a Federal installation, individual septic tanks and cesspools, recreational and commercial boating, and agricultural and land drainage; (2) as a result of these discharges, some of the interstate waters of Lake Champlain and its tributaries are degraded below the standards set by the States and approved by the Secretary of the Interior for acceptable amounts of bacteria, solids, oxygen-demanding materials, and nutrients; (3) because of untreated industrial waste discharges, several areas of Lake Champlain contain extensive sludge deposits; (4) both New York and Vermont have adopted water-quality standards for Lake Champlain and contiguous waters that have been approved by the Secretary of the Interior; (5) all wastes discharged to the waters of the Lake Champlain basin shall receive treatment adequate to comply with the established water-quality standards; (6) adequate disinfection shall be provided as necessary to comply with State, Interstate, and Federal water-quality standards and programs; (7) dissolved oxygen shall not be less than 5.0 milligrams per litre at the State line at any time, and (8) Federal and State groups shall periodically test to ensure that water-quality standards are maintained. (GKS)

FELT, E. P.
1904. Mosquitos or Culicidae of New York: New York State Mus. Bull. 79, 164 p.

This report describes the more important species of mosquitos, the number of forms that occur in the State, and the advisability of studying them closely in order to devise improved methods of control. Keys and illustrations for identification are included. (GKS)

FERRIS, J. J. (ed.)
1971. The progress of the Lake George Water Research Center (LGWRC): Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 71-4, 95 p.

FERRIS, J. J.
1972. Initial survey for viruses in Lake George: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 72-15, 7 p.

This report describes a preliminary investigation into the presence of viruses in Lake George. Some indication was given regarding the presence of certain viruses within the lake although little evidence of the full spectrum of virus type or concentration was given. This reconnaissance study attempted to confirm previous suspicions that viruses were present in Lake George and hoped to offer preliminary identification of any suspect particles. (PAV)

1974a. (Cleseri, N. L., and Auerbach, S. I.). Freshwater ecosystem research in water quality management: Environmental Sci. and Technology, v. 8, no. 8, p. 706-710.

1974b. (and Cleseri, N. L.). A description of the trophic status and nutrient loading for Lake George, New York: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 74-9, 119 p.

A description of Lake George is given. Data are presented which define and characterize the geographic, morphometric and hydrologic, limnologic and nutrient status of this water body. Outlines and descriptions of numerous parameters are shown from 1969 through 1973. Of the various topical areas noted, some of the more pertinent data include time-series information regarding the various physical, chemical and biological systems of Lake George. The objective of this study has been to unify the Lake George data into a single report for comparative and review purposes. These data originate from the efforts of numerous investigators and might offer a means for a common classification scheme for the lakes in North America. (author)

FERRIS, J. J. (ed.)
1974c. Abstracts of the Eastern Deciduous Forest Biome, U.S. International Biological Program, Lake George Synthesis Meeting: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 74-10, 14 p.

The Eastern Deciduous Forest Biome, U.S. International Biological Program, Lake George site, held a meeting on February 7-8, 1974 in order to initiate the coordination of research in the Lake George aquatic program and to establish a framework within which the investigators could easily communicate their input to synthesis activities. This report is a compilation of abstracts from the investigators who participated in this conference. (PAV)

FERRIS, J. J.
1974d. (Kobayashi, Shigeru, and Cleseri, N. L.). Growth of Selenastrum capricornutum in natural waters augmented with detergent products in wastewaters: Water Research, v. 8, p. 1013-1020.

A determination of whether the removal of phosphate builders from detergents would modify the ability of domestic secondary treated sewage effluent to stimulate the growth of a test alga (Selenastrum capricornutum-Printz) in receiving waters alone and augmented with detergent products was made. The lakes used as sources of test waters were located in northeastern New York State and possessed total phosphorus concentrations ranging from ca. 0.01 to 0.05 mg $Pl^{-1}l$ [phosphorus].

The alga experienced stimulation in all three test lake waters from secondary sewage containing detergent with phosphate or detergent without phosphate. A concentration of 60 µg Pl^{-1} was sufficient to effect significant algal growth in two of the test waters; however, concentrations ranging up to 110 µg Pl^{-1} did not generate such a response in the third test water. This latter result and others suggested that neither phosphorus nor other nutrients from these wastewater additions were the factors fully accountable for the observed response(s). (author)

FERRIS, J. J. (continued)
1974e. (and Cleseri, N. L.). Lake George site research overview for the Eastern Deciduous Forest Biome, U.S. International Biological Program. September 1973-August 1974: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 74-23, 6 p.

Research at Lake George continued to promote the integration of data from relevant disciplines and has resulted in significant advances in ecosystem science. The ability to synthesize in the last year of the IBP [International Biological Program] had been greatly enhanced by the 1972-73 efforts. The main contributions of the Lake George site to the EDFB [Eastern Deciduous Forest Biome] lie in aquatic ecosystem research and modeling, but some investigators also have functioned as process coordinators, and as national and international synthesizers. (author)

FETTER, C. W., Jr.
1974. Water quality and pollution--South Fork of Long Island, New York: Water Resources Bull., v. 10, no. 4, p. 779-788.

The South Fork of Long Island, N.Y. is an area which relies entirely on ground water for water supply. Most of the water which is pumped is artifically recharged, without treatment, via cesspools. The natural quality of the ground water is very high. Some areas show increasing nitrate in the ground water. This comes from both cesspools and agricultural fertilizer. Saline water intrusion is a potential problem in coastal areas. High ammonia in surface ponds may result in eutrophication. (author)

FIDELMAN, C. L.
1969. The effect of temperature on the currents in Seneca Lake: Corning, N.Y., Coll. Center of the Finger Lakes (unpub.).

FIELD, T. C.
1974. Vertical migration of Diaptomus sicilis Forbes in Fayetteville Green Lake: Syracuse, N.Y., State Univ. Coll. of Environmental Sci. and Forestry, Doctoral dissert., 103 p.

FIELDHOUSE, R. D.
1971. Results of stocking largemouth bass in Nassau Lake: New York Fish and Game Jour., v. 18, no. 1, p. 68-69.

Nassau Lake, a 153-acre warmwater impoundment with a maximum depth of 11 feet, was formed by a 9-foot dam across the Valatie Kill in Rensselaer County. The lake is inhabited by largemouth bass, chain pickerel, and numerous panfish species of which white and yellow perch are the most abundant. Because of the history of few angler returns for bass stocked in Nassau Lake even though the native bass population is good, an annual stocking program is of questionable value. However, largemouth bass stocked as fall yearlings could make a significant contribution to the bass population if the stocking coincided with the presence of a weak corresponding year class of native bass. (PAV)

FINCK, J. A., Jr.
1971. (and Lee, W. A.). Reasonably full hydrologic development of reservoir sites: Water Resources Bull., v. 7, no. 2, p. 285-293.

The size of multipurpose reservoir development is usually determined by an economic analysis of reservoir capabilities and the present and projected water resources needs which can be satisfied. This analysis is referred to as project formulation, wherein optimum conditions are sought. In responding to multiple objectives, i.e., national economic development, regional development and environmental quality, which are being considered in river basin planning in recent years, reservoirs should provide for reasonably full hydrologic development. Additional storage will be needed to provide opportunities for economic development, as well as meet unexpected development. Also, it provides more flow regulation capability for quality of environment considerations. An analysis has been made on twelve reservoir sites in the New York State portion of the Susquehanna River basin to determine the so-called "reasonably full hydrologic development of reservoir sites." Hydrologic, economic, environmental and physical characteristics of the sites are taken into consideration. (author)

FINGER, T.

1973. (and Werner, R. G.). Impact of Dylox on aquatic vertebrates, in Environmental impact and efficacy of Dylox used for gypsy moth suppression in New York State: Applied Forestry Research Inst., Tech. Pub., p. 53-65.

FINK, W. B., Jr.

1974. (and Aulenbach, D. B.). Protracted recharge of treated sewage into sand. Part 2--Tracing the flow of contaminated ground water with a resistivity survey: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 74-4, 12 p.

To aid in determining the direction of ground-water flow after the effluent from the Lake George Village sewage treatment plant is discharged onto natural delta sand beds, resistivity studies were made in the soil (sand) in the vicinity of the recharge beds. Ground water having high dissolved solids content is identified as producing lower resistivity readings. The sewage effluent has a higher dissolved solids content than the existing ground water in the area. The path of the recharged sewage effluent, as identified by lower resistivity readings, appears to flow in a northerly direction from the sewage treatment plant along Gage Road toward West Brook. Due to interferences, the resistivity studies could not show whether the high conductivity ground water flows into or under West Brook. (author)

FISHER, ANN

1972. (Fisher, Warren, and Starler, Norman). Economic growth and environmental decay in the Chautauqua Lake watershed, in Chautauqua Lake studies: Fredonia, N.Y., State Univ. Coll., Lake Erie Environmental Studies Program, p. 41-77.

This report is a summary of the first stage of a larger study designed to assess the value of Chautauqua Lake as a resource and to provide a generalized cost-benefit framework that can be used for economic development planning and for decisionmaking concerning conflicts of users' interests. (PAV)

FISHER, K. D.

1966. Nematode fauna of Lake Champlain: Burlington, Vt., Univ. Vermont, Completion Rept., Proj. A-004-VT, 6 p.

1969. (and Gregory, H.). Distribution of Dolichodorus heterocephalus (Nematoda) in the littoral zone of Lake Champlain: Limnology and Oceanography, v. 14, no. 4, p. 617-620.

Members of the genus Dolichodorus typically inhabit wet, sandy soils throughout the tropic and temperate zones. Different past studies in Lake Champlain were conducted to obtain a count. In 1966 and 1967, earlier studies were extended to three other embayments on the eastern shore of the lake, where 41 sampling stations were established in the littoral zone. Root and soil samples were collected every 10 to 14 days from mid-June to October. Dolichodorus heterocephalus was identified in collections from 18 of the 23 sampling stations that contained Eleocharis spp., which has not been found at any sampling stations in the lake other than littoral sites 0-1 metre in depth. Observations indicate that littoral distribution of D. heterocephalus is closely associated with the distribution of the host plant, Eleocharis. (GKS)

FITZE, FRED

1972. A winter study of Canadaigua Lake: Seneca Falls, N.Y., Eisenhower Coll., (unpub.).

FLICK, W. A.

1971. New trout for old waters: The Conservationist, v. 25, no. 6, p. 18-21.

Strengthening hatchery strains of brook trout by hybridizing with wild strains such as Canadian may provide anglers with large trout. (PAV)

FLIEGEL, M. H.

1973. Temperature measurements and internal waves in Seneca Lake, New York: Natl. Tech. Inf. Service, Tech. Rept. 9, 146 p.

Temperatures were measured near the center of Seneca Lake with thermistors and bathythermographs during four different years. Seneca Lake is a long, narrow, deep lake in the Finger Lakes region of western central New York State, with a temperature structure similar to that of

FLIEGEL, M. H. (continued)
many oceans. The bathythermograph records, which were used to reconstruct the annual temperature cycle of the lake, indicate that it is freely circulating throughout much of the winter although its temperature is below 4°C. The annual heat budget was estimated to range between 40,000 and 47,000 cal/cm^2 for most years. Amplitude and directional data are given for internal waves. (author)

FLORY, R. D.
1956. Report on a study of the flora at the Cornell Biological Field Station (Shackleton Point Estate): Ithaca, N.Y., Cornell Univ., 115 p. (unpub.).

The Cornell Biological Field Station, located at Shackleton Point, Madison County, N.Y., was established in 1955 and is being developed as a wildlife refuge and summer station for research and study. In order to facilitate the work with wildlife, it was important to develop knowledge of the local flora, with particular emphasis on the aquatic higher plants. This report gives a list of plants found on the estate. It also: (1) shows that species of flowering plants are present both in the water and along the shore of Oneida Lake; (2) indicates the relative abundance of these plants; (3) shows the geographical position of these plants along the shore and, in part, their relation to one another; (4) provides the plant information that would make several types of ecological studies along the shore possible, that is, plants associated with certain pH, fish, snails, algae, rocks, and so forth; and (5) provides information that investigators would find useful in their own particular field of study. Results of a 1-day field trip to Cicero's Swamp are included. (GKS)

FOOTE, C. W.
1877. Notes upon the geological history of Cayuga and Seneca Lakes, together with a few general remarks upon the glacial period: Ithaca, N.Y., Cornell Univ., Doctoral dissert., 14 p.

The Finger Lakes basins were originally cut in early Quaternary time as uplift of the northern part of the continent forced water of a vast inland sea to drain southward. Increased altitude resulted in decreased temperatures and, hence, continental glaciation. Seneca and Cayuga basins were deepened by lobes of the ice sheet. The Erie basin was excavated by a glacial readvance. Eventually the land subsided and temperatures increased. For a time the Finger Lakes and Great Lakes basins were united by a large lake extending between the melting glaciers and the terminal moraines. (PEG)

FORBES, J. E.
1970. Environmental deterioration and declining species: The Conservationist, v. 25, no. 1, p. 21-26.

This article reviews the ways in which species decline due to changes in environment. Factors which are considered include habitat destruction, thermal pollution, chlorinated hydrocarbon pesticides, chemical pollution of water, eutrophication of lakes, dams without fish ladders, air pollution, and solid waste disposal. Particular mention is made of contamination of Lake Erie and other bodies of water by DDT. (author)

FOREST, H. S.
1971a. (and Mills, E. L.). Studies on the plants of Genesee County (western New York State). VI--The aquatic flora of Conesus Lake: Rochester Acad. Sci. Proc., v. 12, no. 2, p. 110-138.

Included in the ecological consideration of the lake are: a study of the sewage increase and its relationship to coliform counts and the pollution of the environment and an analysis of the pattern of phosphorus content and distribution in the lake. Preliminary distribution data and quantitative community analysis of the flora, including 26 genera and 43 species of angiosperms, are presented and discussed. (author)

1971b. (Grow, W. C., and Maxwell, T. F.) Some sources of input to Canandaigua Lake and their contribution to the quality of the environment: Geneseo, N.Y., State Univ. Coll., Environmental Resource Center, ms. (unpub.).

This study followed the 1970 investigation of the water quality of West River and Naples Creek, which are the major sources of surface water for Canandaigua Lake. Conclusions drawn from examining the open waters of the lake, and even from the limited chemical data obtained at

FOREST, H. S. (continued)
the mouths of streams, emphasized fairly uniform conditions, and that the plant growth reflects the general condition of the lake bottom. The general community is one of low fertility, characterized by a balanced variety of species, both pond weeds and algae. (author)

FORNEY, J. L.
1957a. Bait fish production in New York ponds: New York Fish and Game Jour., v. 4, no. 2, p. 150-194.

Bait fish were stocked in 95 farm ponds in central New York State during the years 1953-55. Six species were tested individually in one or more ponds. The golden shiner, white sucker, and fathead minnow were found to be suitable for propagation in New York ponds. (author)

1957b. Chemical characteristics of New York farm ponds: New York Fish and Game Jour., v. 4, no. 2, p. 203-212.

Data on temperature, oxygen, pH, alkalinity, total dissolved solids, phosphrous, and nitrogen content were obtained in 48 central New York farm ponds. These ponds exhibited considerable chemical diversity, with total alkalinity concentrations varying from 5 to 226 ppm. Solute concentrations of individual ponds fluctuated within broad limits in response to the inflow of runoff and biological activity within the pond. (author)

1961a. Growth, movements and survival of smallmouth bass (Micropterus dolomieui) in Oneida Lake, New York: New York Fish and Game Jour., v. 8, no. 2, p. 88-105.

Smallmouth bass were tagged and released prior to the fishing season from 1954 to 1958. Most recoveries of tagged bass were made near the tagging site, indicating localized populations. When bass were moved from the netting site to distant release points, the majority of the displaced bass returned to their home area.

Growth of bass in Oneida Lake compared favorably with that of bass in other northern lakes. Bass in the Constantia population average 9.8 inches at age III, 12.3 at age IV, 13.5 at age V and 14.7 at age VI. Small but consistent differences in growth rate were observed among three Oneida Lake bass populations that were studied.

Geometric mean survival for age 5 to 10 bass, based on catch curve, was 0.55. Annual survival rates estimated from tag returns in successive years were 0.48 in 1955, 0.42 in 1956, and 0.82 in 1957. For these three years minimum rates of exploitation were 0.18, 0.21, and 0.05, respectively. (author)

1961b. (and Eipper, A. W.). Oneida Lake walleyes: The Conservationist, v. 15, no. 4, p. 18-20.

Fifteen to 26 man-hours per acre were spent fishing on Oneida Lake during 1957 through 1959. It was calculated that in 1959 about 65,000 pounds of walleye were caught. Fishing success was related to food supply and population size. Survival was estimated by recovery of clipped-fin fish. Natural mortality of adults was very low but the angling catch was high. (PEG)

1961c. Year-class distribution of walleyes collected by five types of gear: Am. Fisheries Soc. Trans., v. 90, no. 3, p. 308-311.

Year-class distribution of the fin-clipped walleyes (Stizostedion v. vitreum) recovered in trap nets during the 1959 spawning run in Oneida Lake was nearly identical to the year-class distribution of marked walleyes released during the preceding 2 years. This indicates that trap nets fished during the spawning run took various age groups in proportion to their abundance in the spawning population. Age distributions of mature walleyes taken in the summer and fall of 1958 and 1959 by shocking, trawling, gill-netting, angling, and trapnetting were compared to the age distribution of the 1959 spawning run. Samples taken by shocking, trawling, gill-netting, and summer angling showed about the same age structure as the spawning population. Trap nets fished in the fall and winter ice-fishing appeared to select the older age groups in the population. (author)

1962. Study of conditions influencing year class strength of walleyes in Oneida Lake: Ithaca, N.Y., Cornell Univ., Job Completion Rept. 2, Proj. F-17-R-6, mimeo., 22 p.

1963a. (and Taylor, C. B.). Age and growth of white bass in Oneida Lake, New York: New York Fish and Game Jour., v. 10, no. 2, p. 194-200.

FORNEY, J. L. (continued)

Age and growth determinations were made from scales of 628 white bass collected from 1956 through 1961. During these years the 1954 year class comprised 85 percent of the catch in experimental gill nets. Mean calculated total lengths of white bass were 5.3, 10.3, 12.3, 13.3, and 14.0 inches for ages 1 through 5. Fish and aquatic insects were the food items most frequently found in the stomachs of white bass during summer. (author)

1963b. Distribution and movement of marked walleyes in Oneida Lake, New York: Am. Fisheries Soc. Trans., v. 92, no. 1, p. 47-52.

Movements of three spawning populations of walleyes (Stizostedion vitreum vitreum) are described from 1,174 tag recoveries reported by anglers and from additional recoveries in experimental fishing gear. Most walleyes returned to the same spawning area in successive years. The Scriba Creek spawning population showed a gradual dispersal from the spawning area in May and June, and the population attained its widest distribution in late summer. Although the three spawning populations intermingled during summer, differences in the summer distributions of the populations were evident. Marking during the fall suggested that most walleyes remained in a limited area except during the spawning period. The Oneida Lake data demonstrate that widely distributed recoveries of walleyes tagged at one spawning site in a lake do not constitute satisfactory evidence of population homogeneity. (author)

1963c. (and Eipper, A. W.). Study of conditions influencing year class strength of walleyes in Oneida Lake: Ithaca, N.Y., Cornell Univ., Job Completion Rept. 2, Proj. F-17-R-7, mimeo., 10 p.

1964a. Evaluation of pulsed direct current for collecting fish in Oneida Lake: Ithaca, N.Y., Cornell Univ., Job Completion Report 1-c, Proj. F-17-R-8, mimeo., 2 p.

Tests planned to evaluate the effect on fish of different pulse frequency duration and shape could not be completed due to repeated failure of electronic equipment. Results of limited field tests in 1962 and 1963 are summarized. (author)

1964b. Marking of walleyes and smallmouth bass; routine sampling of Oneida Lake fish populations: Ithaca, N.Y., Cornell Univ., Job Completion Rept. 1-a, Proj. F-17-R-8, mimeo., 9 p.

Standing crops of age 3 and older walleyes in April ranges from 16.5 to 27.3 pounds per acre between 1957 and 1962. There was no evidence that fluctuations in growth rate during these years were directly determined by the size of the standing crop.

Comparison of the total population of age 4 and older walleyes in Oneida Lake during the summers of 1957-62 with the catch in experimental gill nets demonstrated that gill net catch was a reliable index of population density. Tests in 1963 indicated that walleye catch in gill nets dyed black was significantly lower than the catch in white nets. (author)

1964c. Population, survival, and growth of largemouth bass in Dryden Lake: Ithaca, N.Y., Cornell Univ., Job Completion Rept. 3-a, Proj. F-17-R-8, mimeo., 3 p.

A three-day fishery survey of Dryden Lake was conducted in early May. About 1,000 fish collected by netting and shocking were processed. Age and growth of pumpkinseed sunfish, yellow perch, chain pickerel, largemouth bass, and black crappie were determined from scale samples. (author)

1964d. (and Houde, E. D.). Study of conditions influencing year class strength of walleyes in Oneida Lake: Ithaca, N.Y., Cornell Univ., Job Completion Rept. 1-b, Proj. F-17-R-8, mimeo., 28 p.

Meter nets were used to study the distribution and to estimate the relative abundance of walleye fry. The catch of sac fry in meter nets approximated a Poisson distribution indicating the distribution was probably random and may have resulted from passive transport of fry by lake currents. After absorption of the yolk sac, fry were concentrated in protected bays. Few walleyes were found in open water at this time.

The catch of young walleyes in tow nets and haul seines has been used as an annual index of abundance. Accuracy of an index of abundance in Oneida Lake is limited by the problem of sampling many local populations of young walleyes. Precision of an index of abundance is primarily a function of the number of sites sampled.

FORNEY, J. L. (continued)

First year mortality of walleyes and yellow perch was estimated from regression lines fitted to the logarithms of trawl catches from July through October. Mortality from mid-July through October was estimated to be 67-75 percent for walleyes and 93-99 percent for yellow perch during three years. Accuracy of mortality rates based on catch-per-unit-effort data has not been verified but the use of trawl data is a promising approach to the study of first year survival. (author)

1964e. Utility of a small spawning impoundment for increasing northern pike production: Ithaca, N.Y., Cornell Univ., Job Completion Rept. 11-a, Proj. F-17-R-8, mimeo. 1 p.

The author reports that construction of a earthen dam to impound a shallow 5-acre marsh was completed. (PEG)

1965a. Factors affecting growth and maturity in a walleye population: New York Fish and Game Jour., v. 12, no. 2, p. 217-232.

The age distribution of a spawning population of walleyes in Oneida Lake was determined from samples collected between 1946 and 1963. Examination of walleyes in late fall indicated a trend toward earlier maturity which was associated with more rapid growth of the 1959 and 1960 year classes.

Lengths at each annulus were calculated for samples collected from the spawning run and during the growing season using a straight-line relationship with an intercept of 2.28 inches. Annual changes in growth increment were more closely correlated with yearly fluctuations in abundance of young yellow perch than with annual temperature indices or the biomass of walleyes from 1957 to 1962.

Rates of exploitation derived from angler tag returns were correlated with annual growth increments and suggested that vulnerability of walleyes to angling was high in years when food was scarce. (author)

1965b. Marking of walleyes and smallmouth bass; routine sampling of Oneida Lake fish populations: Ithaca, N.Y., Cornell Univ., Job Completion Rept. 1-a, Proj. F-17-R-9, mimeo., 23 p.

Annual survival rates for walleye in Oneida Lake were estimated by three methods. Survival was determined from walleyes marked during the spawning run and recaptured in subsequent spawning runs, from walleyes marked in the spawning run but recaptured in summer and fall, and from population estimates of the same year classes in two years. Analysis of recapture data indicated that the probability of walleyes marked during the spawning run being recaptured in subsequent spawning runs is different for each group marked. Estimates of survival from recaptures of marked walleyes during summer and fall are not affected by the same source of bias and these esimates are considered most reliable.

First-year growth of walleyes was estimated from measurements on fish taken by seining and trawling in the years 1956 through 1964. Total length attained by July 1 was closely correlated with May-June air temperatures. Growth increments in late summer were highest in years when young walleye fed exclusively on fish and lower in years when entomostraca and insect larvae were common in the diet. (author)

1965c. (and Houde, E. D.). Study of conditions influencing year class strength of walleyes in Oneida Lake: Ithaca, N.Y., Cornell Univ., Job Completion Rept. 1b, Proj. F17R9, mimeo., 13 p.

The distribution of walleye fry collected in Oneida Lake during May suggested a major part of the fry population was of hatchery origin. Eggs deposited on trays placed in Oneida Lake were either destroyed or carried into deep water by wave action suggesting there is a high mortality of eggs spawned in the Lake.

Copepods were the principal food of fry during the first 6 weeks after hatching. Little correlation was found between abundance of zooplankton during a year and numbers of food organisms in fry stomach. Copepods were eight times more abundant in 1962 than in 1961 but the average number found in stomachs was about the same in both years. Occurrence of Epischura, a large copepod, as well as cladocera and yellow perch fry in the stomachs tended to increase as the size of the walleye fry increased. (author)

1965d. Utility of a small spawning impoundment for increasing northern pike production: Ithaca, N.Y., Cornell Univ., Job Completion Rept. 11-a, Proj. F-17-R-9, mimeo., 7 p.

FORNEY, J. L. (continued)

Adult northern pike immigrating to spawning areas were netted and stocked in a shallow 7.3-acre impoundment constructed on a tributary to Oneida Lake. Spawning occurred during late March and early April and newly hatched fry were collected in the marsh on April 17. Young emigrating from the marsh to the lake were trapped at the outlet and counted. Emigration began on April 29 and by June 16, 45,099 young had left the marsh. Survival from egg to downstream emigrant was 4.03 percent based on estimated fecundity and counts of young. (author)

1966a. Factors affecting first-year growth of walleyes in Oneida Lake, New York: New York Fish and Game Jour., v. 13, no. 2, p. 146-167.

First-year growth of walleyes was determined from samples taken at about weekly intervals in the summers of 1956 through 1964. Rate of growth in length gradually increased until walleyes reached a length of about 20 millimeters during the first or second week in June. In most years, weekly growth increments from mid-June to mid-August were relatively constant, and growth rate decreased rapidly in September. Although population mean lengths increased between late fall and the following spring, the increase was probably caused by selective mortality of smaller walleyes in a year class rather than growth during winter.

Length attained by July 1 was closely correlated with May-June air temperatures. Growth rate in late summer tended to be rapid in years when walleyes fed on fish and lower when invertebrates were common in the diet. Although yellow perch were the principal forage fish found in walleye stomach, growth in summer was not correlated with density of young perch. (author)

1966b. Marking of walleyes and largemouth bass; routine sampling of Oneida Lake fish populations: Ithaca, N.Y., Cornell Univ., Job Completion Rept. 1-a, Proj. F-17-R-10, mimeo., 33 p.

Growth rate of smallmouth bass was estimated from scales and measurements of fish collected near Constantia and Shackelton Point from 1954 to 1965. Mortality rates were determined from recaptures of fish tagged during the same period. Concurrent annual changes in minimum rates of exploitation and total mortality were analyzed to separate fishing and natural mortality. Relative yields were computed for minimum size limits of 8, 10, and 12 inches and several combinations of fishing and natural mortality rates. It was found that a 12-inch size limit gave higher relative yields than lower limits with natural mortality rates of 0.10 to 0.20 and fishing rates of 0.20 to 0.40. (author)

1966c. Study of conditions influencing year class strength of walleyes in Oneida Lake: Ithaca, N.Y., Cornell Univ., Job Completion Rept. 1-b, Proj. F-17-R-10, mimeo., 22 p.

Trawl and seine catches of young perch were high in 1960, 1962 and 1964 and subsequent catches of age 1+ perch confirmed that dominant year classes were produced in these years. Mortality rates estimated from the decline in trawl catches between August and October were lower in 1962 and 1964 than in 1961 and 1963. Since mortality rates were lowest in years of high perch density, differences in relative year class abundance tended to increase between the first and second year of life.

Pelagic walleye and yellow perch fry were collected with meter nets and Miller high-speed samplers. A comparison of catches in the two years indicated that relative efficiency of the high-speed sampler increased as perch increased in size. (author)

1966d. Utility of a small spawning impoundment for increasing northern pike production: Ithaca, N.Y., Cornell Univ., Job Completion Rept. 11-a, Proj. F-17-R-10, mimeo., 5 p.

Adult northern pike immigrating to spawning areas were netted at the spillway of a 7.3 acre impoundment constructed on a tributary to Oneida Lake. The catch of 58 males and 22 females included 22 males and 2 fin-clipped females which were produced in the marsh in 1964 and were maturing at age 1. Adults stocked in the marsh spawned in mid-April 1965, and downstream emigration of young began May 7. By July 6 a total of 40,543 young had moved downstream through the outlet trap. (author)

1967a. Estimates of biomass and mortality rates in a walleye population: New York Fish and Game Jour., v. 14, no. 2, p. 176-192.

The population of walleyes in Oneida Lake was estimated from fish marked on the spawning grounds and recaptured during the summer and fall following their dispersal. Numbers of age 4 and older walleyes in April ranged from 265,700 to 1,035,000, and the estimated standing crop

FORNEY, J. L. (continued)
of age 3 and older fish varied from 16.5 to 27.3 pounds per acre between 1957 and 1963. Annual survival was determined from recoveries of fish marked in successive years on the spawning grounds; estimates of the sport-fishing catch during three seasons provided data needed to separate fishing and natural mortality. The highest annual mortality rate occurred in 1959 when anglers harvested about half of the spring population. In other years rates of total mortality were 0.11 to 0.40. Loss of adult fish from natural causes was about 5 percent per year. (author)

1967b. Study of conditions influencing year class strength of walleyes in Oneida Lake: Ithaca, N.Y., Cornell Univ., Job Completion Rept. 1-b, Proj. F-17-R-11, mimeo., 25 p.

1968a. Effect of different fertilizers on yield of golden shiners in New York ponds: New York Fish and Game Jour., v. 15, no. 1, p. 112-116.

Six ponds were stocked with adult golden shiners in 1953, and different fertilizers were applied. Heavy applications of inorganic fertilizers produced earlier and more pronounced plankton blooms than did lower applications in combination with manure, but standing crops in all ponds were similar at the end of one growing season. During the second year, plankton blooms were consistently low in all ponds, whether fertilized with phosphorous and nitrogen or with phosphorous alone. However, the standing crop in all fertilized ponds increased from about 200 to 500 pounds per acre between the first and second growing seasons. At the end of 2 years, standing crops in the fertilized ponds were about three times that in an unfertilized control pond. (author)

1968b. Production of young northern pike in a regulated marsh: New York Fish and Game Jour., v. 15, no. 2, p. 143-154.

From 1964 to 1967 the production and survival of young northern pike were studied in an experimental marsh at Shackleton Point on Oneida Lake. The number of adults entering the marsh was controlled and their fecundity estimated to determine potential egg deposition. The number of eggs hatching was approximated by determining the density of fry per square foot using screen enclosures, and young emigrating from the marsh were trapped and enumerated. Mortality between spawning and hatching was 81 and 84 percent in 1965 and 1966, respectively; the loss of young between hatching and emigration was 83 percent in both years. Migrants over 65 millimeters long were fin clipped. Recoveries during subsequent spawning runs suggested that few pike survived that were less than 65 millimeters long when they left the marsh. Maintenance of northern pike populations in many lakes may depend primarily on producing large juvenile fish in the nursery areas. (author)

1968c. Raising bait fish and crayfish in New York ponds: Ithaca, N.Y., Cornell Univ., Agr. Expt. Sta., Ext. Bull. 986, 32 p.

This article discusses plans, tests, and results of raising bait fish in New York farm ponds. Items considered are the farm bait pond; bait hatchery; raising golden shiners, white suckers, fathead minnows, and crayfish; harvesting bait fish; eliminating undesirable fish; regulations; and costs. (GKS)

1971. Development of dominant year classes in a yellow perch (Perca flavescens) populations: Am. Fisheries Soc. Trans., v. 10, no. 4, p. 739-749.

Abundance of young-of-the-year yellow perch in Oneida Lake was estimated 1959 through 1968 by shore seining in July and trawling in late summer. Seine and trawl catches were high in 1960, 1962, 1964, and 1968, and catches of age 1+ perch in subsequent years confirmed that these were dominant year classes. Variation in numerical size of year classes was less in the first year than in the second, which indicate a divergence in year class abundance. Estimates of mortality based on the catch in trawls from August to October confirmed that weak year classes generally experienced higher mortality than strong year classes, thus mortality was depensatory. Changes in year class biomass and estimates of perch consumed by the walleye population were consistent with the assumption that depensatory mortality was caused by predation. (author)

1972. Biology and management of smallmouth bass in Oneida Lake, New York: New York Fish and Game Jour., v. 19, no. 2, p. 132-153.

FORNEY, J. L. (continued)

Age composition and growth rate of smallmouth bass in Oneida Lake were determined from scales and measurements collected from 1952 to 1970. Dominant year classes were produced in years when mean June air temperatures were above normal. The catch of young bass in seine hauls indicated that year class size was established by August, but the causal relation between June air temperature and year class survival was not established. The long-term average growth rate of bass was stable between 1949 and 1966, but annual growth increments varied markedly. Much of this variation was attributable to differences in mean summer air temperatures and the abundance of young yellow perch, which were an important forage species. Annual survival and minimum rates of exploitation were determined from tag returns reported by anglers. (author)

1974. Interactions between yellow perch abundance, walleye predation, and survival of alternate prey in Oneida Lake, New York: Am. Fisheries Soc. Trans., v. 103, no. 1, p. 15-24.

Species of forage fish in stomachs of walleye and their abundance in trawl catches were compared in 1968-71. Young yellow perch were the predominant species in trawls and were consistently selected by walleyes. Consumption of young white perch and walleyes by older walleyes increased during periods of low yellow perch abundance which suggested that young yellow perch might act as a buffer controlling intensity of predation. This possibility was assessed by comparison of relative survival of white perch and walleye cohorts between the first and second year of life with indices of yellow perch density between 1959 and 1970. Close correlations between these variables support the conclusion that abundance of young perch governs intensity of predation on other forage size fish and indirectly controls the size of the walleye population by regulating cannibalism. (author)

FOX, W. I.

1932. Geology of part of the Finger Lakes region, New York: Am. Assoc. Petroleum Geologists Bull., v. 16, p. 675-690.

The formations cropping out in the Keuka Lake and Seneca Lake area are fully described in detail, and their areal distribution is defined. Errors previously made in correlating the Devonian formations are corrected and changes in sedimentation described. The Barrington-Milo structure drawn on the Keuka flagstone and a stratigraphic section of the Devonian formations are presented. (author)

FREDERICKSON, H. G.

1968. (and Magnas, H.). Comparing attitudes toward water pollution in Syracuse: Water Resources Research, v. 4, p. 877-889.

A random sample survey of the attitudes of residents of Onondaga County, Syracuse, toward water pollution and other local problems indicated the following: Water pollution is regarded as a middle-level public priority, coming after education and law enforcement in the view of suburban residents and after education, law enforcement, housing, and employment in the view of city residents. Traffic, road maintenance, parks and recreation, and welfare were regarded by both city and suburban residents as lower-order public priorities. The respondents felt directly affected by water pollution and associated it with various types of recreation. They regarded industry as a greater contributor to pollution than public jurisdictions and held local governments responsible for improving water quality. Respondents varied widely in their willingness to be taxed to abate pollution. Those with higher socioeconomic status were more willing to pay for pollution abatement than those with lower socioeconomic status. (author)

FRENETTE, ROGER

1971. A water quality management strategy for the Great Lakes: Ithaca, N.Y., Cornell Univ. Water Resources and Marine Sci. Center, Tech. Rept. 34, 221 p.

The purpose of this paper is to develop a strategy, defined as a plan of action, for managing the water quality of the Great Lakes. Included is an assessment of existing water quality in each of the Great Lakes. Total coliform counts for Lake Erie are given for each basin. (author)

FREY, D. G. (ed.)

1966. Limnology in North America: Madison, Wisc., Univ. Wisconsin Press, 734 p.

FREY, D. G. (ed.) (continued)

Prominent limnologists have contributed information on various aspects of limnology for each of several subdivisions of the North American continent. Coverage for each region includes material on limnological resources, a brief history of limnological endeavor, the major fields of limnological research and accomplishment, major limnological problems and potential, and a representative listing of published papers. Additional chapters cutting across these boundaries are devoted to the impact of reservoirs, farm ponds, paleolimnology, sanitational limnology, and the history of the American Society of Limnology and Oceanography. (GKS)

FREY, D. G.

1967. Biological characteristics of meromictic lakes, in Some aspects of meromixis: Syracuse, N.Y., Syracuse Univ. Press, p. 65-95.

This article gives a detailed general discussion about meromictic lakes. It includes discussions about holomictic lakes; partial circulation; thermal stratification; a lake that is meromictic, turns over, and becomes meromictic again; and lengths of time that lakes can be meromictic. Three biological contrasts discussed are that: (1) meromictic lakes can seem to be eutrophic where other regional lakes are oligotrophic or, at best, mesotrophic; (2) meromictic lakes appear to be very unproductive in a region where most other lakes are highly productive; and (3) two different types of organisms each develop and live in two separate layers of water (fresh overlying saline). Some characteristics of the monimolimnion of a meromictic lake are considered. There is a lengthy discussion of sulfur relationships in meromictic lakes. The benthos of meromictic lakes is considered. (GKS)

FRIMPTER, M. H.

1973. Chemical quality of streams. Allegheny River basin and part of the Lake Erie basin, New York: New York State Dept. Environmental Conserv., Basin Plan. Rept. ARB-3, 79 p.

Data are presented from a 1967 investigation of chemical quality of streams in the Allegheny River basin and part of the Lake Erie basin. The study area includes about 2,200 square miles in the southwest corner of New York State and lies almost entirely in the Allegheny Plateau physiographic province. The area can be divided into four regions on the basis of chemical quality of streamflow. Streams in Region I drain a nonglaciated area, in Region II, a glaciated area, streams in Region III are on the Lake Erie plain, and Region IV encompasses the drainage areas of oilfields. (PAV)

FUHS, G. W.

1970. (and Canelli, E.). Phosphorus-33 autoradiography used to measure phosphate uptake by individual algae: Limnology and Oceanography, v. 15, no. 6, p. 962-966.

Diatoms from pure cultures and samples of lake phytoplankton were labeled with ^{33}P [phosphorus], and autoradiographs were prepared after concentration by centrifuge and membrane filter techniques. Conditions for labeling at a suitable intensity (1-3 dpm/1,000 μ^3-cell volume) were determined. The method is suitable for the detection of nonspecific binding of phosphorus by organic materials and of differential phosphorus uptake by members of a mixed population. It also was used to determine continuity of phosphorus uptake in a cultured diatom. (author)

1972a. The chemistry of streams tributary to Lake George: New York State Dept. Health, Environmental Health Rept. 1, 100 p.

In the Lake George watershed, 18 tributary streams located in 14 tributary basins were sampled over a 12-month period. Samples were analyzed for major chemical constituents and various algae nutrients. The chemical characteristics of the streams are determined by the geochemistry of the area, by the effects of population, and by streamflow. Phosphorus appears to be the limiting nutrient in Lake George, and the tributaries at present contribute little phosphorus to the lake; therefore, tributary chemistry alone does not explain the apparent deterioration in lake water quality due to eutrophication. A steady increase of blue-green (nuisance) algae in summer indicates a contribution of phosphorus from one or more major ungaged sources directly into the lake. A probable source is the discharge of phosphorus-rich wastes from the large summer populations in the unsewered lakeshore areas. (PAV)

1972b. Canadarago Lake eutrophication study, lake and tributary surveys 1968-1970, methodology and data: New York State Dept. Environmental Conserv., Tech. Paper 8, 287 p.

FUHS, G. W. (continued)

The Canadarago Lake Eutrophication Study was begun in 1968 by the New York State Department of Health with the intent of developing and demonstrating capabilities for the establishment of nutrient budgets of lakes and for the management of nutrient inputs into lakes that are subject to accelerated eutrophication. Lake Canadarago in Otsego County, east-central New York, was selected because it is a stratified lake of moderate size. From its morphometry, this lake can be expected to be moderately eutrophic with blue-green algal blooms. This condition is possibly caused by the input of additional nutrients from agriculture and, in particular, in the form of sewage from a year-round population of 1,200 in the Village of Richfield Springs and from summer camps. (PAV)

1972c. (Demmerle, S. D., Canelli, E., and Chen, M.). Characterization of phosphorous-limited plankton algae, in Nutrients and eutrophication, special symposia, Am. Soc. Limnology and Oceanography, v. 1, p. 113-132.

The growth rate of microorganisms as a function of phosphorus concentration is discussed. Two diatoms and three bacteria from New York lakes were sampled and their minimum phosphorus content, growth rate with phosphorus nonlimiting, Michaelis constant and maximum uptake rate were determined. (author)

1973. Improved device for the collection of sedimenting matter: Limnology and Oceanography, v. 18, no. 6, p. 989-993.

A novel device for the collection of sedimenting matter in lakes consists of a Van Dorn water sampler divided in half by a horizontal septum. During exposure, one compartment, directed upward, serves as the sampling compartment; the other, directed downward, serves as a reference compartment containing only hypolimnetic water and attached growth. The device is reliable and easy to handle. Its application in Canadarago Lake during the 1969 growth season shows that incoming phosphorus in this lake is recycled about 10 times during the growing season. (author)

1974. Nutrients and aquatic vegetation effects: Am. Soc. Civil Engineers, Environmental Eng. Div. Jour., v. 100, no. EE2, p. 269-278.

After eutrophication from natural and civilizational causes is explained, the term oligotrophication is defined as the (partial) reversal of the eutrophication process under the influence of decreased nutrient inputs. Potentially limiting nutrients such as phosphorus, nitrogen, carbon, silicon, and trace metals are listed and evaluated with respect to: (1) mechanisms of nutrient limitation of primary biological productivity; (2) sources and relative abundance; and (3) regeneration and re-use in lake ecosystems. High concentrations of manganese in epilimnic waters are correlated with low abundance of blue-green algae, but manganese-resistant Cyanophyta were also found. An increase in areal loading of phosphorus of 0.1 $g/m^2/yr$ [grams per square metre per year], equivalent to waste from one person per 1.2 ha (3 acres) of lake surface (0.6 ha or 1.5 acre if phosphate detergents are banned), is considered "environmental impact." (author)

FULTON, J. K.

1971. Inland lakes and shorelands management in the Great Lakes States and New England: Ann Arbor, Mich., Huron River Watershed Council, Inland Lakes and Shoreline Rept., 72 p.

The status of inland lakes and shorelands management in the Great Lakes States and New England is summarized. Resource management categories analyzed include: aquatic nuisance control, land and water use planning, public access, zoning of land and water, fish management and lake management research. The report is based on available printed information and personal interviews with selected state officials. It is one phase of a larger research project related to the management of inland lakes and shorelands. (author)

GAGE, S. H.
1889. The red-blood corpuscles of the adult and larval lamprey eels of Cayuga Lake: Am. Soc. Microscopists, Proc., v. 10, p. 77-84.

This article discusses the shape, makeup, and general biological characteristics of the red-blood corpuscles of the lamprey during its adult and larval stages. (GKS)

1893. The lake and brook lampreys of New York, especially those of Cayuga and Seneca Lakes, in The Wilder quarter century book: Ithaca, N.Y., Comstock Publishing Co., p. 421-493.

This article discusses the lampreys that inhabit the Finger Lakes region. A summary of the article states that: (1) lake and brook lamprey are the two species that inhabit the lakes of western New York, (2) both species have a larval stage and a metamorphosis after 2 to 4 years, (3) in both species, there are striking atrophies and hypertrophies at the spawning season, (4) both species construct similar nests for deposit and protection of the ova, (5) the lamprey is helpful to man in its larval stage by serving as bait for food fishes, but it is harmful in its adult stage. (GKS)

1927a. The lampreys of New York State--Economics of lampreys, in A biological survey of the Oswego River system: New York State Conserv. Dept., 17th Ann. Rept. Supp., p. 181-191.

In general, lampreys are both beneficial and injurious. The brook lamprey does no harm to human food supplies, and its larvae furnish excellent bait for fishing. The large sea lamprey is injurious to sea-food fish; inland it is not injurious and is considered edible. Each lake lamprey lives from 1 1/3 to 3 1/3 years as a parasite on fish in the lake, and probably requires for growth to full maturity at least 3 pounds of fish blood. If lampreys are trapped and killed during their migration to spawning, no new generations will result. Care must be exercised that the trapping and killing of lamprey correspond with its habits of spawning and migrating. (GKS)

1927b. The lampreys of New York State--Life history, in A biological survey of the Oswego River system: New York State Conserv. Dept., 17th Ann. Rept. Supp., p. 158-180.

Lampreys are found in temperate regions of both hemispheres but more abundantly in the northern hemisphere with its greater land and freshwater stream area. In the surface water of New York State there are three, possibly four, kinds of lamprey: lake lamprey, brook lamprey, silver lamprey, and large sea lamprey, all of which are discussed in detail. The article discusses distinction of sexes and coloration, nest building and egg laying, spawning, dying, and development of young lamprey from egg to adult. (GKS)

GALAT, D. L.
1972. Preparing teleost embryos for study: Progressive Fish-Culturist, v. 34, no. 1, p. 43-48.

The purpose of this paper is to organize techniques found useful in preparing muskellunge embryos (Esox masquinongy) for developmental studies by the New York Cooperative Fishery Unit at Cornell University. A summary of techniques discussed by other authors is also given. (PAV)

1973. Normal embryonic development of the muskellunge (Esox masquinongy): Am. Fisheries Soc. Trans., v. 102, no. 2, p. 384-391.

This paper documents the gross normal embryonic development of the muskellunge, Esox masquinongy, from fertilization until hatching. Eggs were incubated at 13°C; samples were taken every hour during the first 20 hours of incubation and every 6 hours thereafter until hatching on the 13th day. Line drawings illustrate development. (PAV)

GALLIGAN, J. P.
1951. The distribution of lake trout and associated species in Cayuga Lake: Ithaca, N.Y., Cornell Univ., M.S. thesis, 112 p.

This thesis continues a study made by Bently (1950), who presented the results of the initial recovery of marked lake trout using quantitative units of gear in the summer of 1949. This thesis also discusses an intensive study of the distribution of lake trout and associated species in Cayuga lake. Horizontal distribution varies with the seasons. Hatchery-reared lake

GALLIGAN, J. P. (continued)
trout planted in one location are widely scattered after 2 years. Vertical distribution increased at lower depths when surface temperatures increased and the isotherms became depressed. The alewife seemed to have the greatest degree of interrelationship with the lake trout. Smelt and cisco were abundant at various places in the lake. (GKS)

1960. Winter food habits of pikeperch in Oneida Lake: New York Fish and Game Jour., v. 7, no. 2, p. 156-157.

During the winters of 1951-52 and 1952-53, an ice-fishing check was made on Oneida Lake and 143 pikeperch stomachs were examined. Of these, 112 were empty, 20 contained fish, and 11 contained insect larvae. The percent (78.3) for specimens containing no food was almost double that recorded by other workers who had examined pikeperch from Oneida Lake during the summer and fall period. The absence of food in the stomachs of pike perch during the winter may simply indicate the unavailability of food. Presumably very few food organisms occur in the habitat frequented by pikeperch during the winter period. (PEG)

1962. Depth distribution of lake trout and associated species in Cayuga Lake, New York: New York Fish and Game Jour., v. 9, no. 1, p. 44-68.

The depth distribution of lake trout in Cayuga Lake was studied during the summer, fall, and winter of 1950-51. Sampling gear consisted of 500-foot standard gangs of gill net. During the summer, the greatest population density of lake trout was found at the 80- to 100-foot depth interval, but they were fairly abundant at depths of 40 to 140 feet. The greatest numbers seemed to prefer the zone between the 45° and 55° (F) isotherms. Depth distribution was somewhat variable in the fall period. There was a decided inshore movement with the progression of the spawning season and the dropping of surface temperatures to 50°F. Fewer trout were caught in the winter months; their mean depth distribution then was 60 feet. No difference in depth preference by size classes could be detected. (author)

GATES, C. D.
1968. (and Riordan, C.). A preliminary study of nutrient inputs into Cayuga and Seneca Lakes: Cornell Plantations, v. 23, no. 4, p. 59-62.

The study represents an attempt to identify the sources and to develop and apply a method for estimating the amounts of nitrogen and phosphorus entering Cayuga and Seneca Lakes. The study proceeded from two assumptions--first, that introduction of nitrogen and phosphorus is a major influence on the algal populations in Cayuga and Seneca Lakes, and second, that the limitation of nutrient inputs into these lakes through waste management and environmental control is an important possible solution to prolific algal growth. Eight nutrient source classes studied were: (1) public and institutional waste disposal systems, (2) private (individual) waste disposal systems, (3) private (individual) lakeside cottage waste disposal systems, (4) industrial wastes, (5) runoff from cultivated land, (6) runoff from forested land, (7) wastes from boat traffic, and (8) precipitation. (GKS)

GENESEE/FINGER LAKES REGIONAL PLANNING BOARD
1969. Drainage study--Inventory and analysis: Rochester, N.Y., Genesee/Finger Lakes Regional Plan. Board, Tech. Studies Ser. 2, 130 p.

This report presents an analysis of the four drainage basins within the Genesee/Finger Lakes Region. It provides basic information that will be utilized in future plans and recommendations for the region. A brief description of the area, topography, climate, population and economy introduces the inventory of the Lake Ontario, Genesee, Oswego and Erie-Niagara drainage basins. The heart of this drainage study is devoted to a detailed description of the major lakes, rivers, and streams in the four drainage basins. (author)

GEORGE, C. J.
1973. (and Gordon, J.). Number assignment list for the fishes of Lake George as related to the Champlain Watershed: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 74-2, 9 p.

The list presented here was compiled from the lists of Needham (1922) and Greeley (1930) with nomenclatural alterations following publication No. 6 of the American Fisheries Society (1970). Consideration of the evidence provided by Mr. Ernest Lantienge and Mr. Gene Lane of the Warrensburg Office of the Department of Environmental Conservation of the State of New York have added

GEORGE, C. J. (continued)
several additional species to the list. The number assignments are to be used in the computer processing of related data and cover all fishes thought to be present in the watershed. Eight numbers have been left open within several taxa in order to accommodate species yet to be reported. Species marked with an asterisk are not yet reported in the literature for Lake George. (author)

1974. (Briddel, P. W., and Gordon, J.). Notes on the Centrarchids of Lake George, New York: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 73-24, 16 p.

The most common fishes of the shoal waters (i.e., surface to 3 m) of Lake George were inventoried by underwater observers during the summer of 1973. Using a lake perimeter approximation of 210 km and the weight of collected fishes the adult and sub-adult populations and biomass were estimated. Figures for the Redbreast sunfish, Rock bass and Pumpkinseed sunfish are considered reasonable approximations for the entire lake. Because of movements into the deeper portions of the lake, figures for the smallmouth bass are useful for the approximation of incidence in shallow waters only. If lake perimeter is revalued, population estimates must be changed accordingly. Observations and literature review suggest that the species composition of the centrarchid populations of the lake have changed greatly in the past 100 years. (author)

GERACE, D. T.
1967. Survey of some thermal characteristics of Seneca Lake: Corning, N.Y., Coll. Center of the Finger Lakes (unpub.).

GIBSON, J. N.
1925. A study of Fayetteville-Kirkville, New York Green Lakes area with special reference to its recreational uses as a state park: Syracuse, N.Y., Syracuse Univ., M.S. thesis.

GIEBNER, B. M.
1951. The plankton algae of the southeast end of Chautauqua Lake: Rochester Acad. Sci. Proc., v. 9, p. 409-420.

Chautauqua Lake lies in a valley 8 miles southeast of the shore of Lake Erie in western New York State. It has a length of 21 miles extending in a northwest-southeast direction. There is a marked correlation between transparency of the water and the amount of organic matter present. The water is of medium hardness. Samples of plankton algae were collected from the eastern lower part of the lake. This article is a survey of algal genera and species and seasonal variation of some plankton algae. It considers the Myxophyceae, Heterophyceae, Chrysophyceae, and the unicellular and colonial Chlorophyceae, but omits filamentous Chlorophyceae, Sygnemataceae, and Oedogonaceae, which can be identified only in the fruiting condition. Only the most numerous forms of the Bacillarieae are recorded. Tables summarize the findings. (GKS)

GILBERT, B. K.
1971. (and Kammerer, J. C.). Hydrology of the Genesee River basin, New York and Pennsylvania: U.S. Geol. Survey Hydrol. Inv. Atlas HA-368.

This flow-sheet hydrologic atlas describes the hydrology of the Genesee River basin in New York and Pennsylvania. In 1966, groundwater use in the Genesee River basin averaged about 12 mgd [M gal/d]. Stratified sand and gravel deposits occur in the valleys of the Genesee River and many of its larger tributaries. Some of the sand and gravel aquifers are close to the land surface under water-table conditions; others are confined beneath fine-grained deposits of clay and silt and contain water under artesian conditions. Wells drilled in these aquifers may yield as much at 500 gpm [gal/min]. The average annual sediment discharge of streams in the basin ranges from 75 to 1,100 tons per square mile of drainage area. (author)

GILLETTE, N. J.
1961. Oneida Lake pancakes: The Conservationist, v. 15, no. 4, p. 18-20.

For many years, flat, disk-shaped concretions composed mainly of manganese and iron compounds have been obtained from the bottom of Oneida Lake by fishermen. The author discusses the theoretical formation of the concretions. (PEG)

GLENNIE, J. S.

1973. Precambrian geology of the Piseco Lake area, south-central Adirondack Mountains, New York: Syracuse, N.Y., Syracuse Univ., Doctoral dissert., 145 p.

Detailed mapping of the Piseco Lake area demonstrates that a 1,000-meter-thick sequence of heterogeneous, supracrustal rocks overlies, perhaps unconformably, a 1,700-meter-thick sequence of relatively homogeneous felsic gneisses. Mineral assemblages indicate that these rocks were metamorphosed under the physical conditions of the hornblende-granulite facies. Strong deformation accompanied metamorphism, producing complex, disharmonic folds. The rocks of the Piseco area are interpreted to be older than the regional unconformity that separates the supracrustal rocks of the central Adirondack group from the underlying basement complex of gneisses, metanovite, and other rocks of the anorthosite-charnockite magmatic suite. (PAV)

GOODRICH, C.

1939. Pleuroceridae of the St. Lawrence River basin: Ann Arbor, Mich., Univ. Mich., Occasional Papers Mus. Zool., p. 1-4.

GOODWIN, D. A.

1939. A study of the invertebrate fauna of Central Park Lake, Schenectady, N.Y.: Albany, N.Y., State Univ. New York, Biol. Seminar Rept., v. 1, p. 18-45.

GOODWIN, R. H.

1943. The flora of the Mendon Ponds park: Rochester Acad. Sci. Proc., v. 8, p. 233-298.

The Mendon Ponds are situated in the southeastern part of Monroe County. For at least 70 years, they have been a mecca for botanists. During this period many rare and interesting species of plants have been collected in their vicinity. Since its dedication in 1930, the park has become one of the most widely used recreation centers within the county. The purpose of the present paper is to describe as accurately as possible certain interesting botanical features of the area as they appear today. The paper is divided into two sections: (1) a description of the physical and ecological features of the area; and (2) an annotated list of the species and varieties of vascular plants that have been found in the area. (GKS)

GOTHAM, I. J.

1974. Effects of Hurricane Agnes on some physical, chemical, and phytoplankton characteristics of Canandaigua Lake, New York: St. Bonaventure, N.Y., St. Bonaventure Univ., Sci. Studies, v. 30, p. 41-63.

Effects of Hurricane Agnes on the epilimnion of Canandaigua Lake were determined by analysing certain chemical, physical and phytoplanktonic characteristics from June 27 through July and Aug. 1972. An early acidic phase from June 27 to July 2 seemed to control the availability of O_2 [oxygen], $N\text{-}NO_3$ [nitrates] and orthophosphates resulting in an unusual flora. After July 2 the lake returned to more normal pH and more normal phytoplankton populations, which then appeared primary in controlling levels of O_2, pH, $N\text{-}NO_3$, and orthophosphates. (author)

GRANER, W. F.

1969. (VanDeWater, D., and Martin, T.). Chemical and bacteriological water quality of Lake Ronkonkoma: Suffolk Co. Dept. Health, Water Quality and Surveillance Rept. 1, 85 p.

The report describes the hydrology, general water quality, and chemical and bacteriological water quality of Lake Ronkonkoma. The lake water was chemically similar to nearby ground water but had high coliform values, which the investigators correlated with the large number of swimmers during summer months. No deterioration of the chemical water quality was evident during the study. (PEG)

GREAT LAKES BASIN COMMISSION

1972. Genesee River basin study: U.S. Environmental Protection Agency, Draft Environmental Impact Statement, 22 p.

A broad, long-range plan is presented to assure the best use of the basin's resources in meeting projected water and related land needs through the year 2020. The principal projected needs and demands for development are additional outdoor recreation, enhancement of fish and wildlife, supplemental irrigation, municipal and industrial water supply, and water quality management. The impact on the environmental resources of the region resulting from the proposed programs and projects are more beneficial than adverse. The project will reduce sediment and improve water quality, which will improve productivity of the stream fishery. Adverse effects include the loss of about 7,500 acres of bottomland and the loss of about 65 miles of free flowing stream. Several alternative structural plans were investigated as well as the alternative of no project. (author)

GREELEY, J. R.

1927a. Fishes of the Genesee region with annotated list, in A biological survey of the Genesee River system: New York State Conserv. Dept., 16th Ann. Rept. Supp., p. 47-66.

This article discusses fish types in the Genesee River region. Types include food and game fishes, fishes as food for game fishes, bait fishes, and miscellaneous fishes. Pictures and an annotated list of fishes are included. (GKS)

1927b. Fishes of the Oswego watershed, in A biological survey of the Oswego River system: New York State Conserv. Dept., 17th Ann. Rept. Supp., p. 84-107.

During the summer of 1927 the Conservation Department investigated fish of the entire Oswego watershed. Extensive collecting was done in creeks, rivers, and ponds. These collections included more than 1,500 specimen lots. The article discusses the general nature of the region, distribution of fish in the watershed, classification of the fish caught, and general characteristics and habits of the fish of the region. Some special problems considered are the spawning behavior of carp in relation to other fish, fishways, and some factors contributing to the decline of fishes. The article includes colored pictures of some fish, an annotated list of fish of the region, and a table showing fish distribution. (GKS)

1928. Fishes of the Erie-Niagara watershed, in A biological survey of the Erie-Niagara system: New York State Conserv. Dept., 18th Ann. Rept. Supp., p. 159-179.

This study of the fish life of the region included gathering data on the distribution and the habits of the various species of fishes, the conditions of environment under which they are found, their relative abundance, and their relative economic importance. More than 2,000 specimen lots were collected in Lake Erie, the Niagara River, and in all tributary stream systems, as well as in ponds and small lakes of the region. Colored pictures, tables, and an annotated list of fish summarize the results of the study. (GKS)

1929. Fishes of the Lake Champlain watershed, in A biological survey of the Champlain watershed: New York State Conserv. Dept., 19th Ann. Rept. Supp., p. 44-87.

The purposes of this investigation were to determine the distribution of the fish species, to gather data on the relative numbers and the economic importance of each, and to learn as much as possible of their life histories. Wherever possible, effects of environmental conditions on the different species, as well as competition among the species, were studied. A total of 1,650 specimen lots were collected during the summer; each lot consisted of from 1 to 50 individuals. Other items studied were the stomach contents of many species, parasites on live specimens, and pollution reaction. An annotated list is included, which describes 78 species of fish for the survey area. Food and game fish species of the region are grouped according to commercial and recreational importance as: (1) most important, (2) important, or (3) unimportant. (GKS)

1930. (and Greene, C. W.). Fishes of the area, in A biological survey of the St. Lawrence watershed: New York State Conserv. Dept., 20th Ann. Rept. Supp., p. 44-94.

Some purposes of the fish survey were to (1) explore the different bodies of water in order to identify the fish in each one; (2) determine if a species occurred naturally in a certain body of water or whether it was artificially introduced; and (3) study the conditions under which the fish live and reproduce and where and when they spawn. Problems selected for detailed study were: natural reproduction of black bass in the St. Lawrence River and the effect of introduced perch, bass, and northern pike on trout streams of the Adirondacks. The fish were caught by several methods. The article discusses fish of particular areas of the region and includes color photos and an annotated list of fish. (GKS)

1931. (and Bishop, S. C.). Fishes of the area, in A biological survey of the Oswegatchie and Black River Systems: New York State Conserv. Dept., 21st Ann. Rept. Supp., p. 54-93.

GREELEY, J. R. (continued)

This report is divided into two parts: (1) a general inventory of the fish life, and (2) studies of particular fish problems. To obtain a general inventory of the fish life, the region was checked as thoroughly as possible. Each of 2,889 specimen lots of fish was labeled with the exact locality, manner of collection, and notes on ecological features. This information was used to work out the geographical distribution of each species. Adirondack surface waters were studied for particular fish problems, for example, the effects of introduced perch and bass on trout waters; racial problems involving the brook trout and other trout species; the relationship between beaver and trout; the effect of fish life on impounded waters; and spawning period of black bass in relation to the legal protection period in the St. Lawrence River and Lake Ontario. (GKS)

1932. (and Bishop, S. C.). Fishes of the Upper Hudson watershed, with annotated list, in A biological survey of the Upper Hudson watershed: New York State Conserv. Dept., 22d Ann. Rept. Supp., p. 64-101.

This inventory of fish species within the Upper Hudson region lists their distribution, their life histories, and their relation to man as direct or indirect sources of food. Commercial fishing is not important in the Upper Hudson region. The sale of minnows for bait is a major source of revenue to many persons. This article discusses the distribution of species in several areas of the region, the maintenance of fish resources, the food supply for game fish, the spawning season of black bass, the growth rate of small-mouth bass, and the census of trout streams. Some special problems are the imbalance of pike and pickerel in the Sacandaga Reservoir area and the introduction of bait fishes into trout waters. Several pictures and an annotated list of the fish species are included. (GKS)

1933. Fishes of the Raquette watershed, with annotated list, in A biological survey of the Raquette watershed: New York State Conserv. Dept., 23d Ann. Rept. Supp., p. 53-108.

This report on the fishes of the Raquette watershed summarizes information on the distribution of fish species, their relative economic importance, and certain factors in the production of angling. The spawning season and the growth rate of the small-mouthed bass, common whitefish, landlocked salmon, brook trout, and lake trout were studied. Fish populations of several trout streams were studied quantitatively by determining the number of fish in a screened sample section. Fieldwork included experimental improvement of one trout stream, Pine Brook, by constructing pools suitable for trout of legal size. (GKS)

1934. Fishes of the area with annotated list, in A biological survey of the Mohawk-Hudson watershed: New York State Conserv. Dept., 24th Ann. Rept. Supp., p. 63-101.

This article discusses the principal fish resources of the Mohawk-Hudson watershed, distribution of native and introduced species, results of an investigation of the growth rate of the more important game fish from different streams, and a quantitative study of a trout stream, including suggestions for management and improvement of environmental conditions by use of Civilian Conservation Corps labor. An annotated list of species collected or reported to have been found within the limits of the survey area is included. (GKS)

1935. Fishes of the area with annotated list, in A biological survey of the Delaware-Susquehanna watershed, New York State Conserv. Dept., 25th Ann. Rept. Supp., p. 45-88.

The history and current maintenance of fish resources in the Delaware-Susquehanna watershed are discussed. Natural conditions of the two drainage areas are compared, together with a discussion of environmental changes affecting the fish populations.

Results of an investigation of the growth rate of smallmouth bass, brook trout, brown trout, yellow perch and whitefish are presented. Principles governing the growth of wild fish were considered in this investigation. Growth-rate and population studies indicate that favorably balanced population conditions are essential to a satisfactory yield. (GKS)

1936. Fishes of the area with annotated list, in A biological survey of the Lower Hudson watershed: New York State Conserv. Dept., 26th Ann. Rept. Supp., p. 45-103.

Fish resources of the Lower Hudson region are described from studies of sampling collections taken during the survey. An annotated list comprising 96 species summarizes abundance, economic importance, and present and former distribution records. (GKS)

GREELEY, J. R. (continued)

1937. Fishes of the area with annotated list, in A biological survey of the Allegheny and Chemung watersheds: New York State Conserv. Dept., 27th Ann. Rept. Supp., p. 48-73.

Fish resources of the Allegheny and Chemung watersheds are described from a study of sample collections. An annotated list indicates the 101 species recorded in the region, includes percentages for frequency of occurrence, together with notes on economic importance and distribution within each watershed. Discussions emphasize ichthyological differences between the watersheds and summarize principal food, game, forage, and bait species. A number of hybrid combinations noted in material studied are listed. (author)

1938. The freshwater fishes of Long Island and Staten Island with annotated list, in A biological survey of the fresh waters of Long Island: New York State Conserv. Dept., 28th Ann. Rept. Supp., p. 29-44.

The fresh water of Long Island and Staten Island was found to have 42 fish species. In the annotated list 41 species are recorded from Long Island, including 26 typical fresh-water species, 6 anadromous forms, one catadromous species (eel), and several forms of typical brackish habitat but entering fresh water (killifishes, sticklebacks, silversides). Shelter Island does not appear to have had any native species of typical freshwater habit. Carp, goldfish, white perch, and barred killifish were found there. Staten Island collections comprised 10 typical fresh-water species, at lease one anadromous form (white perch), the eel, and members of killifish, stickleback, and silversides groups. Staten Island was found to have one species, the common sucker, not taken on Long Island. (author)

1939. Fishes of the watershed with annotated list, in A biological survey of the Lake Ontario watershed: New York State Conserv. Dept., 29th Ann. Rept. Supp., p. 42-81.

Distribution and relative abundance of the fishes of the region are discussed from an analysis of 522 survey collections. The annotated list of species includes 100 forms taken in field collections with 10 additional ones recorded on the basis of literature or previous collections. Data bearing upon growth rate of 12 species are presented. Various aspects of the problem of managing the fish resources on a sustained yield basis are discussed. Natural reproduction, involving various population units, is considered more important in maintenance of resources than stocking, and attention is directed toward the need for maintaining and improving environments, controlling undesirable fish and improving regulations. (author)

1955. Survivals of planted Atlantic salmon in Lake George: New York Fish and Game Jour., v. 2, no. 1, p. 1-12.

As part of a study of methods for increasing salmon in New York lakes, experimental plantings of Atlantic salmon were made. Yearlings, planted in streams tributary to Lake George, included 3,000 marked individuals in 1948 and 6,000 in 1950. Survival was evaluated on the basis of 131 individuals netted during the spawning season of 1952. Analysis of recoveries of marked salmon according to planting stream indicated some recoveries from each of the six streams. Although Lake George was known to have had a small population of landlocked salmon prior to the planting experiments, analysis of ratios of marked to unmarked salmon recovered indicated that planted Atlantic salmon accounted for virtually the entire population. (author)

GREEN, D. M., Jr.

1962. Stamina and behavior in relation to survival of domestic and wild brook trout (Salvelinus fontinalis) in current: Ithaca, N.Y., Cornell Univ., M.S. thesis, 101 p.

A domesticated hatchery stock of brook trout, a wild stock from a stream, and a wild stock from a lake were investigated to determine how stamina and behavior might affect survival in streams. A series of stamina trials were conducted in which groups of trout from each stock were placed in a slow and a fast water current in a trough for 2 minutes, and the number of fish of each stock still swimming after 2 minutes was noted. The number still swimming increased with age and length of each stock. Behavior observations were made in the hatchery troughs, in a simulated stream, and in a natural environment. The wild stocks sought cover in greater numbers than the domestic stock. A short-term survival experiment in a small Adirondack stream evaluated the effect of current on survival. (GKS)

1964. A comparison of stamina of brook trout from wild and domestic parents: Am. Fisheries Soc. Trans., v. 93, no. 1, p. 96-99.

GREEN, D. M. Jr. (continued)
This article discusses the differences in the abilities of wild and hatchery trout to maintain themselves in a natural environment. The author set up an experiment to test both groups' stamina in swimming against fast and slow currents. The experiment showed that wild trout have more stamina. (GKS)

1969. (and Reckahn, J. A.). Lactic acid levels in adult lake trout in Cayuga Lake, New York: New York Fish and Game Jour., v. 16, no. 2, p. 255-257.

The possibility of delayed mortality in fatigued lake trout following gill netting and tagging was investigated by determining blood lactic acid levels and by holding fish in ponds. Gill netting plus tagging raised lactic acid concentrations four-fold over the resting level but was not associated with increased mortality. (author)

1972. Characteristics of a small-lake fishery as determined by a creel census: New York Fish and Game Jour., v. 19, no. 2, p. 155-167.

A creel census was conducted on a shallow 117.5-acre warm-water lake in central New York from June 1965 to March 1968. Species recorded in the anglers' catch were: largemouth bass, chain pickerel, brown bullhead, yellow perch, pumpkinseed, and black crappie. Catch and effort were estimated for shore, boat, and ice fishermen. Monthly and daily distribution of effort was determined. Bullheads, pumpkinseeds and perch were the fish most frequently caught by shore fishermen, while pumpkinseeds, pickerel and perch sustained the boat fishermen. Perch were numerically the most important fish in the catch and comprised the bulk of the ice fishermen's catch. Fish caught and released may be important in evaluating the quality of such a fishery. (author)

GREEN, R. H.
1971. Lipid and caloric contents of the relict amphipod Pontoporeia affinis in Cayuga Lake: Fisheries Research Board Canada Jour., v. 28, no. 5, p. 776-777.

Pontoporeia affinis at 100 m depth in Cayuga Lake had a lipid content of 331 percent of dry weight, which is unusually high for a benthic crustacean. This high lipid content resulted in the unusually high caloric content of 5,240 cal/g [calories per gram] dry weight, and a mean annual standing crop of 270 cal/m^2 [calories per square metre]. Annual production was estimated to be 1,565 cal/m^2/yr [calories per square metre per year]. (author)

GREENE, C. W.
1929. The smelts of Lake Champlain, with supplementary material from the Finger Lakes, the Saranac Chain, and the Cold Spring Harbor Hatchery, Long Island, N.Y., in A biological survey of the Champlain watershed: New York State Conserv. Dept., 19th Ann. Rept. Supp., p. 105-129.

The investigation of the Lake Champlain smelts concerns commercial importance and evidence of depletion; constituents of the population; spawning function; distribution; food supply; and the reciprocal biological relationships with the other fishes of the lake. There were no observations of the actual spawnings of smelts of the lake, but more correlative observations are discussed. Distribution of adult, yearling, and young smelts is treated in reference to indications of relationships between the races and to the other fauna of the lake. Comparative material of the smelts of Canandaigua and Owasco Lakes and of the Saranac chain of lakes is discussed at appropriate places throughout the study. Certain recommendations with reference to conservation and stocking policies are made on the basis of this study. (GKS)

1931. (Hunter, R. P., and Senning, W. C.). Stocking policy for streams, lakes, and ponds in the Oswegatchie and Black River systems, in A biological survey of the Oswegatchie and Black River systems: New York State Conserv. Dept., 21st Ann. Rept. Supp., p. 18-53.

The area of the watershed is inaccessible in many places, and a system was set up to determine which lakes and streams to investigate. The parameters in setting up a stocking policy for the Oswegatchie and Black River systems were: temperature, chemical requirements, food supply in a stream, calculation of the number of trout to be planted in a stream, and fish present. The problems considered were: improvement of fish-food conditions in different types of water, water power and storage in relation to fishing, and beaver and trout fishing. (GKS)

GREENE, C. W. (continued)

1932. (Hunter, R. P., and Senning, W. C.). Stocking policy for streams, lakes and ponds in the Upper Hudson watershed, in A biological survey of the Upper Hudson watershed: New York State Conserv. Dept., 22d Ann. Rept. Supp., p. 26-63.

The large number of ponds (700) in the drainage basin made it necessary to study those that had a previous known stocking record and to determine the reasons for the success or failure of the fish stocked. This article discusses stocking policies for several specific areas of the drainage basin. It takes into account the physical, chemical, and biological factors of the streams. It also discusses calculation of the number of trout that should be planted in a stream, general trout stocking, and stocking methods. (GKS)

1933. (Hunter, R. P., and Senning, W. C.). Stocking policy for streams, lakes, and ponds in the Raquette watershed, in A biological survey of the Raquette watershed: New York State Conserv. Dept., 23d Ann. Rept. Supp., p. 20-52.

This article discusses the formulation of a stocking policy, how the number of fish for planting is determined, and some suggestions for trout stocking of the Raquette watershed. Some special problems considered are: (1) the stocking recommendations for posted areas; (2) beaver work in relation to stream temperatures; (3) sucker control in Adirondack surface water; (4) power development with respect to fishing; (5) the effect of brown and white water on temperatures; and (6) newly impounded waters. (GKS)

1934. (and Senning, W. C.). Stocking policy for streams, lakes, and ponds of the Mohawk-Hudson watershed, in A biological survey of the Mohawk-Hudson watershed: New York State Conserv. Dept., 24th Ann. Rept. Supp., p. 24-62.

The formulation of a stocking policy for the Mohawk-Hudson watershed is similar to that of previous years. Descriptions of the methods employed and extent of information gathered may be found in preceding survey reports. The kinds of fish stocked is dependent mainly on four factors: (1) the fish already present; (2) water temperature; (3) size of the body of water involved; and (4) gaseous relationships. The formulation of a sound stocking policy for a lake or pond depends on a knowledge of the physical, chemical, and biological factors. This article discusses stocking recommendations and policies for the streams, ponds, and lakes in the Mohawk-Hudson watershed. (PAV)

1937. Stocking policy for the Allegheny and Chemung watersheds and discussion of some fish management policies, in A biological survey of the Allegheny and Chemung watersheds: New York State Conserv. Dept., 27th Ann. Rept. Supp., p. 22-47.

The principal objective of the stream unit was to supply reports of the fish production capacities of all streams of possible importance in the area. The reports give information on the general environmental situations of the streams including temperatures and comparative evaluations of the pools and food production. These data supplement those from more specialized groups of the survey, all of which are utilized in formulating the stocking policy published as a part of this report. Locations advised for stocking, polluted areas, locations of dams and other information valuable to the fisherman are shown on the maps at the end of the report. (author)

1939. Stocking policy for the Ontario watershed with suggestions for other fish management methods, in A biological survey of the Lake Ontario watershed: New York State Conserv. Dept., 29th Ann. Rept. Supp., p. 20-41.

Characteristics of fish populations of the Ontario watershed indicate the basis for a stocking policy, but lack of necessary information makes this difficult. Subjects worthy of special consideration and study in this area are: management of the estuaries, competitive aspects of rainbow trout in the upper Salmon River, and the advisability of transfers of wild trout from crowded to underpopulated water. (GKS)

GREENE, R. A.

1973. Eutrophication--Its causes and effects in fresh water lakes: Human-accelerated Eutrophication of Freshwater Lakes Conf., Proc., Ossining, N.Y., Dec. 1973, p. 4-7.

GREENE, R. A. (continued)

Each lake must be considered as a living entity with its own set of problems and its own physical, chemical, and biological characteristics. Eutrophication control efforts should be balanced with the intended use of the lake. While chemicals are effective for weed control in spot treatment applications, their major drawback is that they only treat the symptoms of the problem. Eutrophic conditions in lakes, such as increased productivity and turbidity, hinder game fish and contribute to the incidence of summer and winter fishkill. Nutrient removal is the best method for controlling eutrophication, and is most effective when the sources are eliminated. (author)

GREESON, P. E.

1968. Eutrophication of Oneida Lake, New York: Albany, N.Y., U.S. Geol. Survey open-file rept., 9 p.

The report, presented to the 23rd annual meeting of the Oneida Lake Association discusses eutrophication and how the natural process applies to the problems in Oneida Lake. A brief physical description of the lake is given followed by a resume of historical events around the lake. The report concludes that Oneida Lake has been eutrophic for at least 350 years resulting from the inflow of nutrients from natural sources. (author)

1969a. (Robison, F. L., and Williams, G. E.). Instructions for data storage--Characteristics of New York lakes. Part 1--Gazetteer of lakes, ponds, and reservoirs: New York State Water Resources Comm., Rept. of Inv. RI-4, 28 p.

An automatic data processing schedule has been developed for the systematic handling of physical information on the lakes of New York State. The information, when complete, will be compiled as a gazetteer. The manual provides definitions of, and instructions for gathering and processing, the information. Physical parameters included are: (1) name of the body of water; (2) county location; (3) number of counties; (4) name of topographic map; (5) number of topographic maps; (6) major and minor drainage basins; (7) coordinates of location; (8) lake stage; (9) surface area; (10) length of shoreline; (11) volume, and (12) regulation. As further data are obtained regarding New York State lakes, the system as presented in the manual can be expanded. (author)

1969b. (and Meyers, G. S.). The limnology of Oneida Lake, an interim report: New York State Water Resources Comm., Rept. of Inv. RI-8, 64 p.

This interim report discusses the general concepts of lake eutrophication and presents the findings of the first year of field investigations on the eutrophication of Oneida Lake, New York. Routine biological and chemical data revealed that the lake has become eutrophic both through the natural processes of lake aging and from the inflow of nutrient-rich water from the fertile drainage basin. The four most important factors affecting the biological activities within the lake are: (1) the high fertility of the drainage basin; (2) the physical position and shallowness of the lake; (3) mixing of the water by wind action; and (4) the inclusion of bottom sediments in the recycling of nutrient materials. (author)

1970a. (and Robison, F. L.). Characteristics of New York lakes. Part 1--Gazetteer of lakes, ponds, and reservoirs: New York State Dept. Environmental Conserv. Bull. 68, 124 p.

New York State has more than 4,000 lakes, ponds, and reservoirs. The gazetteer is an alphabetical listing of all New York lakes having a surface area greater than 0.01 square mile and includes the following characteristics of each lake: name, county, number of counties in which the lake is located, quadrangle, number of quadrangles on which the lake is located, major and minor drainage basins, latitude, longitude, surface elevation, drainage area, surface area, length of shoreline and volume. More than 800 unnamed ponds are listed in the gazetteer. (author)

1970b. (and Williams, G. E.). Characteristics of New York lakes. Part 1A--Gazetteer of lakes, ponds, and reservoirs by counties: New York State Dept. Environmental Conserv. Bull. 68A, 121 p.

GREESON, P. E. (continued)

An alphabetical listing with physical descriptions of the lakes, ponds, and reservoirs of New York State was published as New York State Department of Environmental Conservation Bulletin 68 by Greeson and Robison, 1970. As an aid to water-resources managers, planners, and developers, the alphabetical entries have been arranged in Bulletin 68A according to the 62 counties of New York State. (author)

1970c. (and Williams, G. E.). Characteristics of New York lakes. Part 1B--Gazetteer of lakes, ponds, and reservoirs by drainage basins: New York State Dept. Environmental Conserv. Bull. 68B, 122 p.

An alphabetical listing with physical descriptions of the lakes, ponds, and reservoirs of New York State was published as New York State Department of Environmental Conservation Bulletin 68 by Greeson and Robison, 1970. As an aid to water-resources managers, planners, and developers, the alphabetical entries have been arranged in Bulletin 68B according to the drainage basins of New York State. (author)

1970d. Factors affecting the natural eutrophication of Oneida Lake, New York: Albany, N.Y., U.S. Geol. Survey open-file rept., 7 p.

The report, presented to the 25th annual meeting of the Oneida Lake Association, discusses the factors contributing to the natural eutrophication of Oneida Lake. The northern tributaries to the lake carry 62 percent of the water but only 17 percent of the total nutrients entering the lake. The southern tributaries carry 33 percent of the water and 76 percent of the total inflowing nutrients. Chittenango Creek alone contributes 37 percent of the nutrients entering Oneida Lake. It is estimated that more than 85 percent of the nutrients entering Oneida Lake are from natural sources. (author)

1971. Limnology of Oneida Lake with emphasis on factors contributing to algal blooms: Albany, N.Y., U.S. Geol. Survey open-file rept., 185 p.

Oneida Lake is a naturally eutrophic lake that has existed for about 10,500 years. It has been in a eutrophic state for at least 350 years, and the geochemically derived dissolved materials entering the lake from the drainage basin are of sufficient quantity to support annual algal blooms. Water which enters the lake is from direct precipitation and from surface-water inflow. Water leaves the lake by outflow through the Oneida River and by evaporation. The four most important factors affecting the ecological processes in the lake are: (1) high fertility of the drainage basin, (2) physical position and shallowness of the lake, (3) mixing caused by the wind, and (4) fertility of the bottom sediments. (PAV)

1972. Natural eutrophication and improvement of lake quality--A case history, Oneida Lake, New York: Am. Water Resources Assoc., 8th Am. Water Resources Conf., Short Papers, ser. 16, p. 82.

Oneida Lake has become eutrophic through natural events. During the summer months the lake characteristically exhibits a tremendous growth of planktonic, blue-green algae. This growth can be attributed to the four major southern tributaries, which drain the Oneida River basin. These tributaries carry only 28 percent of the water but 71 percent of the total inflowing nutrients. Algal blooms could be controlled, reduced, or possibly eliminated by diversion of the southern tributaries around or away from the lake. Diversion would decrease the lake's total concentration of nutrients, decrease the amount of inflowing nutrients to the lake, and reduce the retention of nutrients by the lake. This would not only reduce the severity of algal blooms, but would also slow the rate of eutrophication of Oneida Lake, without adversely affecting any other environmental or cultural system. (PAV)

GRIER, N. M.

1925. Unreported plants from Long Island, N.Y.: Torreya, v. 25, no. 1, p. 5-9, 29-35.

This is an annotated list of water plants obtained from Long Island, including descriptions of these plants. (GKS)

GRIFFIN, K. C.

1974. Alkaline phosphatase as an ecological parameter in Cayuga Lake: Ithaca, N.Y., Cornell Univ., M.S. thesis, 83 p.

GRIFFIN, K. C. (continued)

This study emphasizes an examination of the possible ecological importance of alkaline phosphatase in the phosphorus nutrition of a fresh water community. Bacteria and algae are known to synthesize the enzyme. Fitzgerald and Nelson (1966) and Berman (1970) state that only phytoplankton are important producers of alkaline phosphatase in the lakes they investigated. Neither, however, gives any evidence for this point, although Berman states his claim is based on unpublished data. In light of the small amount of data for natural systems, emphasis was also given to obtaining a data base of sufficient size. Alkaline phosphatase activity was investigated in relation to the physical parameters of pH and time of day, which laboratory studies have suggested as most important. Also the relations of activity to phytoplankton numbers, species, chlorophyll levels, and to three forms of phosphorus--soluble reactive, total dissolved, and soluble unreactive--were investigated. (author)

GRIFFITH, J. S., Jr.

1967. The effect of a reduction in population density on growth and production of brook trout in an Adirondack pond: Ithaca, N.Y., Cornell Univ., M.S. thesis, 98 p.

Bear Pond presents a striking contrast to the average Adirondack lake. The pond, containing only brook trout, consistently maintains through natural production a standing crop of approximately 90 pounds per acre. To remove a weight of trout equal to the standing crop present at the beginning of the study, angling was supplemented by netting. This study was carried out to determine if the growth rate of the remaining fish would change after a weight of trout was removed. The objective was to determine the amount of angling pressure to which the pond could be subjected. (GKS)

GROSSLEIN, M. D.

1962. Estimations of angler harvest on Oneida Lake, New York: Ithaca, N.Y., Cornell Univ., Doctoral dissert. 296 p.

An intensive sample creel survey was done on Oneida Lake during the summer and winter of 1957, 1958, and 1959. The primary objective of this survey was to estimate the total angler catch of walleyes in each year. Another objective was to describe the characteristics of the Oneida Lake sport fishery with respect to fishing effort, average fishing success, and species composition of the catch. Average catch rates were based on incomplete trip interviews obtained with a roving creel census, and estimates of total effort were based on angler (or boat) count from a south-shore tower. (GKS)

GROW, W. C.

1970. A water quality survey of West River, Naples Creek, and Canandaigua Lake, summer and fall, 1970: Geneseo, N.Y., State Univ. Coll., M.S. thesis.

Water from West River and Naples Creek, which flows into Canandaigua Lake, was studied to ascertain whether it met the New York State classification specifications. It was confirmed that it does meet the specifications except in respect to coliform bacteria counts. The study entailed measurements of dissolved oxygen, conductivity, inorganic nitrogen, phosphate, and acidity of seven sampling sites on the two streams. In light of the high contribution of nutrients to the lake by these streams, it was recommended that a more detailed study be made of the nitrate and phosphate factors. (PAV)

GRUENDLING, G. K.

1973. (and Malanchuk, J. L.). Studies on the seasonal and spatial distribution of phosphates, nitrates, and silicates in Lake Champlain: Plattsburgh, N.Y., State Univ. New York, Lakes and Rivers Research Lab. Tech. Rept., p. 25-50.

Major nutrient concentrations were measured during 1970 in Lake Champlain. Nitrates in the northeast arm stations are significantly different throughout the year from the open lake and bays stations in the western portion of the lake. Seasonal trends of high concentrations in the summer probably reflect various stages of runoff, turnover, and phytoplankton uptake. The general trend of silica for the lake is that concentrations are high during the spring and then drop off rapidly during and immediately after the spring diatom bloom. There are very few times that any soluble phosphate was measured in any areas of the lake. Most of it is taken up by planktonic organisms. (author)

HALL, D. J.
1967a. Limnology of Oneida Lake: Ithaca, N.Y., Cornell Univ., Prog. Rept., mimeo., 39 p.

The research completed on Oneida Lake shows the lake to be highly productive, with frequent pronounced fluctuations in species and abundance of both phyto- and zooplankton during the warm months. The current study is directed at elucidation of the fish-population regulating factors, particularly the zooplankton. This is achieved through accumulation of long-term quantitative data on the nature and dynamics of the plankton, combined with associated data on the physical-chemical factors and fish populations of the lake. The potential value of this study lies in (1) increased understanding of the population biology of plankton, (2) applications to fish production and food relations, and (3) increased knowledge of the limnology of Oneida Lake. (GKS)

1967b. (and Waterman, G. G.). Zooplankton of the Finger Lakes: Limnology and Oceanography, v. 12, no. 3, p. 542-544.

This report gives a preliminary study of crustacean zooplankton distribution in the known Finger Lakes. Plankton was collected from all 11 Finger Lakes in the spring and early autumn of 1965. One sample, representing from 3,000 to 24,000 litres, was taken from each lake during daylight hours in the spring and fall. In the laboratory, each sample was thoroughly explored under a dissecting microscope and all species were keyed. Two tables show the results of the study. (PAV)

1968. (and Waterman, G. G.). Zooplankton of the Adirondacks: New York Fish and Game Jour., v. 15, no. 2, p. 186-190.

This paper lists the occurrence of crustacean zooplankton species in 36 lakes and ponds representative of the major drainage basins in the Adirondack region. A total of 30 species is reported, of which 17 are cladocerans and 13 are copepods. In addition, the planktonic larva of the insect Chaoborus was found in 16 lakes. Six species that are both widespread and abundant, were recorded in 20 or more lakes: Epischura lacustris, Diaptomus minutus, Mesocyclops edax, Holopedium gibberum, Daphnia catawba, and Bosmina longirostris. (PEG)

1970. (Cooper, W. E., and Werner, E. E.). An experimental approach to the production dynamics and structure of freshwater animal communities: Limnology and Oceanography, v. 15, no. 6, p. 839-928.

The effects of three levels of inorganic nutrients and two predator densities on aquatic animal communities were examined in a series of twenty freshwater ponds. The treatments were cross-classified in a randomized block design and continued over 3 years. Analyses of the responses include community composition, secondary production, and demographic description of the dominant species of both zooplankton and benthos. The fish populations and their feeding behavior are described in detail. Ancillary data on water chemistry and primary production are available. (author)

HAMILTON, D. H., Jr.
1966. Eutrophication of water resources of New York State--A study of phytoplankton and nutrients in Lakes Cayuga and Seneca: Ithaca, N.Y., Cornell Univ. Water Resources and Marine Sci. Center, Pub. 14, 24 p.

Of the 8 to 10 lakes in central New York known as the Finger Lakes, by far the most important as water resources are Cayuga and Seneca, simply because of their size. The objective of this study was to determine the degree and extent of eutrophication in Cayuga and Seneca Lakes, primarily by describing the distribution of chlorophyll a and essential plant nutrients. Cultural uses of the lakes differ, and it was initially expected that nutrients and chlorophyll a concentrations might reflect the differences. Since each lake has a human population concentration at the southern end, it was further expected that gradients of nutrients and chlorophyll might occur from one end of the lake to the other. It is shown that the differences in the lakes cannot be distinguished on the basis of nutrient levels and chlorophyll a concentrations. (GKS)

1967. Nutrient limitation of summer phytoplankton growth in Cayuga Lake: Ithaca, N.Y., Cornell Univ., Doctoral dissert. 112 p.

HAMILTON, D. H., Jr. (continued)

1969. Nutrient limitation of summer phytoplankton growth in Cayuga Lake: Limnology and Oceanography, v. 14, no. 4, p. 579-590.

The effect of various components of a defined culture medium on natural phytoplankton populations has been assayed by measurement of "C assimilation" under controlled conditions. Phytoplankton populations in Cayuga Lake are partially nutrient limited during the period of stable conditions succeeding the vernal bloom. Sodium silicate consistently stimulated photosynthesis in June, July, and August. This is associated with the presence of silicon-requiring plankters, including some nondiatomaceous forms, and correlated with nutrient levels *in situ*. Despite low natural concentration, augmented phosphate did not stimulate photosynthesis, and some evidence is presented for inhibition by phosphorus. Inhibition and enhancement by other components of the medium are discussed, as well as modifications of the "C enrichment" technique. (author)

HANLON, E. H.

1938. A geography of the sequent occupance of the southern littoral zone of Oneida Lake: Syracuse, N.Y., Syracuse Univ., M.A. thesis, 162 p.

For 125 years the southern littoral zone of Oneida Lake has been used for agriculture, including dairy farming, poultry raising, and truck gardening. More recently, recreation has become of major importance. Always a comparatively stable region in population growth and agricultural practices, the future portends no radical changes. There is, however, a trend toward large-scale poultry raising. Production of vegetables for market may also increase in the future, especially in the Cicero Swamp area. The recreational land seems to have reached an optimum stage of development along the southern shore of the lake. Future growth in recreation will probably be on the north shore. (PAV)

HARMAN, W. N.

1967a. (and Jackson, D. F.). A late winter survey of the macroscopic invertebrates in Green Lake, Fayetteville, New York, *in* Some aspects of meromixis: Syracuse, N.Y., Syracuse Univ. Press, p. 190-214.

This article gives a geographic description of the Green Lake area. It describes the macroscopic invertebrate distribution found in Green Lake from February through April 1965. Samples were taken through holes in the ice for near-surface samples, and an aqualung was used for deep-water samples. Data analysis showed that the population distribution is much lower than that of other central New York lakes. (GKS)

1967b. Unionid fauna of Canandaigua Lake Outlet, New York: The Nautilus, v. 81, no. 3, p. 67-68.

The author gives a list of various mollusk species that he observed in the Canandaigua Lake Outlet at Alloway in Wayne County. (GKS)

1968a. Interspecific competition between Bithynia and pleurocerids: The Nautilus, v. 82, no. 3, p. 72-73.

A comparison is made between Bithynia and pleurocerids. Both feed by grazing on substrates. *Bithynia tentaculata* possesses filter-feeding capabilities that enable it to feed in waters (Oneida Lake, Erie Canal, etc.) that are rich in suspended nutrients. (PAV)

1968b. Replacement of pleurocerids by Bithynia in polluted waters of central New York: The Nautilus, v. 81, no. 3, p. 77-83.

In the Oswego River drainage basin, members of pleurocerids are able to withstand moderately polluted conditions, but are unable to successfully compete with a recently introduced species from Europe, *Bithynia tentaculata*. Pleurocerid fauna invaded the St. Lawrence watershed after the ice sheet retreated and spread to New York lakes through the Oswego system. Increases in pollution have caused the species to diminish in large numbers, while *B. tentaculata* has survived. The author feels that the elimination of pleurocerids from major rivers and Oneida Lake is due directly to competition with *B. tentaculata*. (PAV)

1968c. Valvata piscinalis in Cayuga Lake, N.Y.: The Nautilus, v. 81, no. 4, p. 143-144.

HARMAN, W. N. (continued)

The author collected two living specimens of Valvata piscinalis from the southern end of Cayuga Lake during the summer of 1967. This gastropod, a Eurasian species, was first discovered in the Great Lakes in 1878. The author believes that the organism arrived in Cayuga Lake by way of the Oswego and Seneca Rivers from Lake Ontario and that it is probably present in the entire Finger Lakes drainage basin. (PEG)

1969. The effect of changing pH of the Unionidae: The Nautilus, v. 83, no. 2, p. 69-70.

Three separate collections of the freshwater bivalves (Unionidae) taken during the summer of 1966 in central New York indicate that at least four species can and do occur in soft waters. It was previously reported that the species could only live in calcium-concentrated environments. Freshwater bivalves are no longer present in many streams where "non-toxic" chemical wastes are disposed. The author feels that pH changes may be partially responsible for their eradication. (GKS)

1970a. Alterations in the molluscan fauna of a meromictic, marl lake: The Nautilus, v. 81, no. 1, p. 21-30.

Documented alterations of the physical characteristics in Green Lake, Onondaga County, have correlated with changes in the species composition of the molluscan fauna. Data indicates that in the recent past rather extensive shallow littoral waters supported dense populations of the larger pulmonate gastropods. A reduction in lake level occurred that practically destroyed these warm, shallow areas. At this time, the littoral zone consists of an extremely narrow and precipitous band around the lake that will only support depauperate populations of mollusks. (author)

1970b. Anondontoides ferussacianus (Lea) in the Susquehanna River watershed in New York State: The Nautilus, v. 83, no. 3, p. 114-115.

This article describes a biological survey undertaken at the source of the Susquehanna River (Otsego Lake) in which six species of Unionidae were collected. (GKS)

1970c. New distribution records and ecological notes on central New York Unionacea: Am. Midland Naturalist, v. 84, no. 1, p. 46-58.

Members of the freshwater bivalve superfamily Unionacea have been collected in the Oswego and Susquehanna watersheds in central New York. Distribution maps show 90 locations where mussels were found by the author between 1963 and 1969. Ecological notes are included concerning habitat distribution and intraspecific variation. Photographs illustrate the display of branchial mantle flaps in Lampsilis cariosa. (author)

1970d. (and Doane, T. R.). Changes in the aquatic flora of Otsego Lake between 1935-1969: New York Fish and Game Jour., v. 17, no. 2, p. 121-123.

As a part of an intensive study of Otsego Lake, rooted aquatic plants were collected, identified, and mapped for distribution. The findings were compared with data compiled in a similar study done in 1935. (PEG)

1970e. (and Forney, J. L.). Fifty years of change in the Molluscan fauna of Oneida Lake, New York: Limnology and Oceanography, v. 15, no. 3, p. 454-460.

Three studies of the molluscs in Oneida Lake were compared to determine what changes occurred between 1917 and 1967. The molluscan fauna present in 1917 were initially enriched by species immigrating from the western Great Lakes drainage basins after the opening of the Erie Barge Canal in 1925. In recent years, species diversity has been reduced, and one family (Pleuroceridae) has become locally extinct. Concurrently, populations of the introduced European gastropod Bithynia tentaculata (Hydrobiidae) have greatly increased and now dominate the molluscan community. (author)

1970f. (and Berg, C. O.). Fresh-water Mollusca of the Finger Lakes region of New York: Ohio Jour. Sci. v. 70, no. 3, p. 146-150.

A study of the molluscan fauna in central New York State has provided information on the distribution of fresh-water mollusks in that region, and on the species composition of snails

HARMAN, W. N. (continued)
and pearly fresh-water mussels in the major Finger Lakes and thirteen additional lakes and reservoirs in the Oswego River drainage basin. The data are based on 120 collections taken by hand picking, sieving, and the utilization of diving equipment.

Small isolated upland lakes, meromictic lakes, and reservoirs with abnormal silt content and frequently fluctuating water levels support only a few species of mollusks. In the meromictic lakes, empty shells collected are believed to represent former molluscan populations whose shells are preserved by the calcium-rich waters. Morphometrically oligotrophic lakes on the major waterways possess moderate numbers of molluscan species. In contrast, the shallow lakes of the limestone belt in direct contact with the larger rivers have the greatest species diversity. (author)

1971a. Mollusks of Otsego Lake, New York: The Nautilus, v. 85, no. 2, p. 70.

This paper describes the ecological and limnological studies being undertaken on Otsego Lake. The author discusses the variety of molluskan species and their distributions in the lake. (PAV)

1971b. (and Berg, C. O.). The freshwater snails of central New York with illustrated keys to the genera and species: Ithaca, N.Y., Cornell Univ. Agr. Expt. Field Sta., Search Agriculture, v. 1, no. 4, 67 p.

This paper provides descriptions, illustrations and usable keys for identification of the freshwater snails and limpets in central New York, presents information on their distribution and ecology, and relates their distribution to regional geology and limnology. Covering a comparable area and presenting similar types of information, this paper is intended as a companion to Memoir 367 (Clarke and Berg, 1959), entitled "The freshwater mussels of central New York with an illustrated key to the species of northeastern North America." (author)

1972a. Aquatic biology studies: Oneonta, N.Y., State Univ. New York Biol. Field Sta., 4th Ann. Rept. (1971), p. 4-15.

1972b. Benthic substrates--Their effect on fresh-water Mollusca: Ecology, v. 53, no. 2, p. 271-277.

Mollusks have been collected from various locations (ditches, swamps, rivers, lakes, etc.) in central New York since 1966 to determine habitat preferences of the various species. Mollusk pattern distributions were observed in Lakes Skaneateles, Otsego, and Oneida. The mollusks were collected by sieve or by hand, and the chemical and physical data recorded for each site. The data indicated that under normal conditions the occurrence and distribution of mollusks within fresh-water habitats was primarily determined by the substrate types and patterns in those biotopes; species diversity was correlated with substrate diversity. Chemical stresses and biotic interactions often act in a negative manner, reducing species diversity within these ecosystems. (author)

1973. The Mollusca of Canadarago Lake and a new record for Lasmigona compressa (Lea): The Nautilus, v. 87, no. 4, p. 114.

This survey of the molluscan fauna of Canadarago Lake was undertaken to acquire baseline data that could be used for comparison with studies in future years in order to trace possible improvements in water quality. (PAV)

1974a. Snails (Mollusca--Gastropoda), in Pollution Ecology of Freshwater Invertebrates: New York, Academic Press, Inc., p. 275-312.

This paper discusses the role of gastropods as indicator species. An indicator species is an organism that, by its presence in a biotope, denotes particular characteristics of its environment that would otherwise be difficult to determine. The paper also explains the gastropods' sensitivity to various types of water pollution (thermal, chemical, eutrophy) and their use as an indicator of the amount of pollutants occurring in a particular biotope. (PAV)

1974b. Aquatic ecology studies: Oneonta, N.Y., State Univ. New York Biol. Field Sta., 6th Ann. Rept. (1973), p. 4-27.

HARMAN, W. N. (continued)

1974c. The effects of reservoir construction and canalization on the mollusks of the Upper Delaware watershed: Am. Malacological Union, Inc., Bull., v. 41, p. 12-14.

The most stable aquatic biotopes are our major rivers, and the greatest diversity of freshwater mollusks occur in these environments. Unfortunately many of our rivers are becoming chains of impoundments. The construction of reservoirs often results in destabilization of substrates and increased siltation. The silt is often found in suspension causing abrasion of molluscan shells. This erodes the periostracum, allowing carbonic acids to quickly corrode the $CaCO_3$ (calcium carbonate) layers underneath. Suspended salt also effects light penetration, decreasing dissolved oxygen levels and reducing primary productivity. (PAV)

1974d. Phenology and physiognomy of the hydrophyte community in Otsego Lake, New York: Rhodora, v. 76, no. 808, p. 497-508.

This describes the seasonal changes that take place in the littoral zone of Otsego Lake. (PAV)

HART, LARRY

1967. The Sacandaga story--A valley of yesteryear: Schenectady, N.Y., Riedinger and Riedinger, 69 p.

This popularized booklet presents a historic account of the valley of the Sacandaga River prior to the impoundment of Sacandaga Lake in 1930. (PEG)

HARTMAN, W. L.

1957. Finger Lakes rainbows--A chronicle of their progress from egg to adult: The Conservationist, v. 11, no. 6, p. 20-22, 34.

Growth of a newly hatched trout fry, barely 1 inch long, into an 8-pound rainbow trout on the end of a fishline, is a fascinating life story. After the eggs slowly hatch in late May or early June, they move out of the egg pits and begin to feed on minute particles of food carried along in the water. Young trout migrate to lakes in the spring, and larger (8- or 9-inch) 3-year-olds develop a silvery coat. Many are caught at this time. Many of the mature trout swim up the streams beginning in late fall, and thus migration reaches a peak in March, when spawning starts. The article discusses other interesting characteristics of the rainbows' life cycle. (GKS)

1958a. Biology and vital statistics of rainbow trout in the Finger Lakes region, New York: Ithaca, N.Y., Cornell Univ., Doctoral dissert., 134 p.

Four subalpine oligotrophic lakes near Old Forge were sampled twice a year from 1955 to 1957 in a study of productive capacity. Two lakes are shallow and unstratified and two are regularly stratified. All are neutral, soft-water lakes with total hardness ranging from 2 to 10 parts per million. All lakes were reclaimed with rotenone and restocked with rainbow trout. Lakes were sampled in May and October by trap netting, and stream traps were operated during October and November. The samples provided data for computation of growth, and trout captured were tagged for use in population estimation. Items studied were sampling procedures, age determination, growth rates, population size in each lake, and mortality rates. Results of production computations form the basis of recommended management procedures for waters studied. (GKS)

1958b. Estimation of catch and related statistics of the stream rainbow trout fishery of the Finger Lakes region: New York Fish and Game Jour., v. 5, no. 2, p. 205-212.

A creel census was conducted during the opening week of stream fishing for rainbow trout in the Finger Lakes region in 1955, 1956, and 1957. Estimates of total catch and related statistics were derived from the collected data.

Data on the distribution of fish among successful fishermen permitted an evaluation of the present creel limit of five fish. It did not function in restricting the catch. If it is found desirable in the future to further limit exploitation of the rainbow trout spawning runs, the creek limit would not become an effective means unless it was reduced to two fish. (author)

HARTMAN, W. L. (continued)

1959. Biology and vital statistics of rainbow trout in the Finger Lakes region, New York: New York Fish and Game Jour., v. 6, no. 2, p. 121-178.

A joint study of the rainbow trout in Cayuga, Seneca, Skaneateles and Canandaigua Lakes, and their major spawning tributaries, was carried out from 1953 to 1957. Substantial populations in these waters are being maintained by natural propagation. Spawning runs were sampled each spring. Life history data for the first four years, as well as tag returns and creel-census records for 1957, are summarized.

Maintenance and improvement of stream conditions in the spawning tributaries are fundamental to the future of the rainbow-trout fishery in the Finger Lakes region. At the same time, the data indicate that the fishery is not fully utilizing the adult populations. Extension of the lake-fishing season into the fall months appears to be the most practical means of fostering an increased harvest. (author)

HASSER, E. G.

1954. A study of lake Iroquois and Post-Lake Iroquois sediments in a peat bog: Syracuse, N.Y., Syracuse Univ., M.S. thesis, 71 p.

This report gives the results of a study of sediments and the sequence of sediment deposition in the Cicero swamp, south of Lake Oneida in Madison County. Sediments encountered were peat, marl, and fine clastics composed of clay, silt, and fine sand. The sources of the sediments and their manner of deposition are discussed. (GKS)

HASTINGS, G. T.

1921. Succession of algae in the Grassy Sprain Reservoir: New York Bot. Garden Jour., v. 22, p. 64-66.

Grassy Sprain Reservoir is a long, narrow lake created by the damming of a small valley. Algae were collected in the spring during February and March (1920). No attempt was made to classify the numerous diatoms. The filamentous green algae were abundant from the time the ice melted in March through July. The largest amounts were found in May and June when large floating masses of Mougeotia, Zygnema, and Spirogyra were common all along the shore. This article discusses other types of algae successions in the reservoir during the remainder of the year. (GKS)

1924. Water plants of the Kanawauke Lakes: Torreya, v. 24, no. 6, p. 93-97.

The Kanawauke Lakes are a group of small lakes between Rockland and Orange Counties in the Bear Mountain-Harriman section of Palisades Interstate Park. This article discusses the water plants of these lakes, including an annotated list of them. (GKS)

1940. Algae communities of Tully Lake: Torreya, v. 40, no. 1, p. 33.

This article discusses various algae species found in Tully Lake. (GKS)

HATCH, R. W.

1956. Some factors affecting the success of natural spawning in rainbow trout of the Finger Lakes: Ithaca, N.Y., Cornell Univ., M.S. thesis, 53 p.

Spawning areas available to rainbow trout have been classified on the basis of quantity and quality in four Finger Lakes tributaries: Keuka Inlet, Catharine Creek, Grout Brook, and Cayuga Inlet. The first three maintain natural rainbow trout populations. The efficiency of natural production in the three streams was measured by redd sampling. An experimental planting of rainbow eggs in Vibert boxes was undertaken to obtain comparable data for Cayuga Inlet. Indications are that (1) Finger Lakes tributaries provide a good environment for natural spawning, and (2) approximations of egg mortality values found by Hobbs (1948) may be applied to other salmonid populations maintained by natural reproduction. (GKS)

1957a. Finger Lakes rainbows--Spawning habits: The Conservationist, v. 11, no. 4, p. 20-22.

This article discusses nest preparation, egg laying, and fertilization of the rainbow trout. The author carefully dug up an egg pit (after 3 weeks) and described his findings. The article discusses some of the hatching hazards, the best stream factors for spawning, and how the eggs hatch and the young trout leave the egg pit. (GKS)

HATCH, R. W. (continued)

1957b. Success of natural spawning of rainbow trout in the Finger Lakes region of New York: New York Fish and Game Jour., v. 4, no. 1, p. 69-87.

The efficiency of natural spawning in three Finger Lakes tributaries supporting natural spawning runs was measured by redd sampling. Forty-five redds were excavated when eggs were at the eyed stage. The mean pre-eyed loss was 11 percent, the median 8 percent. Only three redds had losses greater than 25 percent. Nonfertilization accounted for 2 percent of the losses. No correlation was found between pre-eyed losses and the amount of fine material (silt and clay) within the redd. The amount of fine material exceeded 1 percent (by weight) in only one redd. (author)

1959. Trout production in four Adirondack lakes: Ithaca, N.Y., Cornell Univ., Doctoral dissert., 220 p.

Rainbow trout are abundant in several of the Finger Lakes. These populations have been maintained largely by natural propagation since initial introductions in the 1880's and additional plantings in the 1920's. A cooperative investigation of several populations was undertaken in 1953 by the New York State Conservation Department and Cornell University. Items studied were rainbow trout migration, spawning, distribution, trout lengths for various ages, spawning behavior of the sexes, parasitic pressure by lake lampreys, annual survival rates, and annual rates of total mortality. Present management regulations for both stream and lake fisheries were considered. The author concluded that extension of the lake fishing season into the fall is the only practical means of increasing the use of spawning populations. (GKS)

1961. (and Webster, D. A.). Trout production in four central Adirondack Mountain lakes: Ithaca, N.Y., New York State Coll. Agr., Mem. 373, 81 p.

This study was conducted to estimate the standing crop and rate of turnover of brook trout populations in soft-water, subalpine lakes typical of the Adirondack region. Estimation of these characteristics requires a knowledge of population size, age composition, growth, mortality, and harvest rates. These parameters were estimated by intensive sample netting during the spring and fall of 1958. (PEG)

HAWKINS, R. H.

1972. (and Judd, J. H.). Water pollution as affected by street salting: Water Resources Bull., v. 8, no. 6, p. 1245-1252.

The use of salt to melt ice and snow on streets and roads has become prevalent throughout the northeast United States. Several states apply as much as 20 tons per lane-mile. Eventually the salt reaches streams and lakes. In Meadowbrook, the chloride content reached a high of 11,000 ppm in December 1969. The runoff from the watershed was emitted in several surges. Chloride concentrations declined with the onset of summer, but still remained high, suggesting that some of the salt applied during the past winter appeared in the summer streamflow. Salt runoff entered a small lake, and flowed directly to the lake bottom. The buildup of high density saline water in the lower portion of the lake prevented complete mixing in the spring. Incomplete mixing led to anoxic conditions in the lower lake strata. (author)

HAZEN, A.

1907. (and Fuller, G. W.). Relation of reservoir stripping to improvement in quality of water: City of New York, Board of Water Supply, Ann. Rept., p. 181-255.

This article discusses the feasibility of soil stripping the proposed Ashokan and Kensico Reservoirs. Stripping involves the removal of soil from the bottom and sides of the reservoir, which eliminates at the outset practically all organic matter. After much investigation in Massachusetts, where some stripping had been done, the authors concluded that stripping would improve the water quality for 15-20 years, but that bad odors and tastes would result. Filtration and aeration without stripping could do the job required. The authors recommended that bottom and sides be cleaned without stripping. They concluded that stripping would not affect the efficiency or the cost of filtration. (GKS)

HAZZARD, A. S.

1929. Stocking policy for the streams, lakes, and ponds of the Champlain watershed, in A biological survey of the Champlain watershed: New York State Conserv. Dept., 27th Ann. Rept. Supp., p. 22-43.

The size of the stream, the number and the type of pools, and the abundance of food are the primary factors in determining the excellence of a trout water and the number of trout to be planted in that water. The highest temperature that brook trout will endure is 75°F, whereas that for browns and rainbows is 80°F. Several streams and ponds were sampled and analyzed for the gaseous content; results are shown in tables. The article also discusses other fish that can be stocked, as well as the aquatic characteristics of other drainage systems in the watershed. (GKS)

1930. Stocking policy for the streams, lakes, and ponds of the St. Lawrence watershed including the Grass, St. Regis, Salmon, Chateaugay systems and the St. Lawrence between Ogdensburg and the international boundary, in A biological survey of the St. Lawrence watershed: New York State Conserv. Dept., 20th Ann. Rept. Supp., p. 14-43.

The streams, lakes and ponds of this watershed have been examined and classified as follows: (1) water for which no stocking is recommended; (2) water suited to the production of warm-water fishes; and (3) waters suited to the production of trout and whitefish. Stocking policy recommendations are given individually for the St. Lawrence and smaller tributaries, Chateaugay Trout River, Salmon River, St. Regis system, and Grass systems. (GKS)

HEADY, H. F.

1942. Littoral vegetation of the lakes in the Huntington Forest: Roosevelt Wildlife Bull., v. 8, p. 4-37.

This report embodies observations made by the author during July and August 1940, when he was employed at the Archer and Anna Huntington Wildlife Forest Station. A preliminary survey was made of the aquatic vegetation in five lakes in the Forest, exclusive of the phytoplankton and attached algae (except Chara species and Nitella species). The data obtained are presented with emphasis on the coverage since it seems to be closely correlated with the number of animals that find food and protection in the littoral area. A few tables summarize the results. (GKS)

HELLERMAN, JOAN

1962. A study of the diatoms of Mohawk Lake, New York, and vicinity: New Brunswick, N.J., Rutgers Univ., M.S. thesis, 118 p.

A total of 315 diatom species were found in the study of Mohawk Lake. It appears that 13 of the diatom species found are undescribed taxa. The data from this study suggest that the use of the diatom spectra method provides a broader and more accurate characterization of the samples than the quotient method. (PAV)

1965. The fossil diatoms of the Mohawk Lake area, New York, and their ecological significance: New Brunswick, N.J., Rutgers Univ., Doctoral dissert., 134 p.

The diatom assemblages of the sediments from Mohawk Lake and Rhododendron Swamp show that there have been ecological changes in both during their post-glacial existence (roughly 10,000 years). The diatom assemblages in the sediments of Rhododendron Swamp indicate that at its inception it was an alkaline pond, becoming increasingly acid and shallow with time. A total of 435 diatom taxa were observed in the course of the study. Of these, 226 have not previously been reported from New York, 30 appear to be new to the United States, and 14 appear to be new to science. (PAV)

HELMRICH, WILLIAM

1960. Industrial use and conservation at Kingston: Am. Water Works Assoc. Jour., v. 52, no. 2, p. 175-179.

Kingston has a population of 30,000 and enjoys a water supply of excellent quality. It draws water from a reservoir system through gravity feed at a rate of approximately 5 million gallons per day. This article discusses Kingston's water uses, plant facilities, conservation practices, safeguards, and future developments. (GKS)

HENDERSON, C. R.
1969. (Johnson, W. L., and Inglis, A.). Organochlorine insecticide residues in fish: Pesticide Monitoring Jour., v. 3, no. 3, p. 145-171.

As part of the National Pesticide Monitoring Program, fish were collected from 50 sampling stations located in the Great Lakes and in major river basins throughout the United States. Three composite samples, consisting of five adult fish of each of three species, were collected at all stations during the spring and fall of 1967 and 1968. The composite whole fish samples were analyzed by commercial laboratories for residues of 11 organochlorine insecticides. DDT and/or metabolites were found in 584 of the 590 composite samples, with values ranging to 45 ppm (mg/kg wet wt., whole fish). Dieldrin was found in 75 percent of the samples, with values ranging upward to nearly 2 ppm. Other organochlorine insecticides residues were found in fewer samples, but some had fairly high residue levels. (author)

HENDRICKSON, G. E.
1973. (Knutilla, R. L., and Doonan, C. J.). Hydrology and recreation of selected cold-water rivers of the St. Lawrence River basin in Michigan, New York and Wisconsin: U.S. Geol. Survey Water-Resources Inv. 8-73, 73 p.

Cold-water rivers can be evaluated in terms of recreational potential and use. Recreational potential is chiefly dependent on hydrologic factors--streamflow, water quality, and character of bed and banks. Recreational use also is dependent, in part, on hydrologic factors, but other factors, such as accessibility and proximity to populated areas, may be dominant. The recreational potential of 10 cold-water streams is described in terms of esthetic attractiveness, suitability for boating, camping and fishing. (author)

HENLEY, R. J.
1967. Water quality influences on outdoor recreation in the Lake Ontario basin: Internat. Assoc. Great Lakes Research, 10th Conf. Great Lakes Research, Proc., Toronto, Ontario, p. 427-440.

The relationships between water quality and the uses of recreational water resources in the Lake Ontario basin are surveyed. There is also a discussion of water quality indices (high bacteria counts, algae masses, fish mortality and water turbidity). Recreational value of water is analyzed in light of the influence of poor water quality on swimming, with particular attention to situations in which swimming has been banned by public officials. The value of pollution control to such water recreation is stressed. Predictions are made for the future demand of the public for swimming and other water-related recreation activities; indications point to an increase in this demand. (author)

HENNICK, D. G.
1973a. Alewife growth rate and foraging effort in Cayuga Lake as related to standing crop: Ithaca, N.Y., Cornell Univ., M.S. thesis, 85 p.

Zooplankton production may be influenced by alewives because these clupeids are capable of drastically altering zooplankton community structure. The zooplankton, in turn, affect alewife production because limnetic alewives are obligate planktivores.

Several factors may have important effects on alewife production; one of these is mass mortalities, which cause reduction of total biomass and changes in growth rate. The purpose of this thesis was to investigate the relationship of alewife growth rate and foraging effort to zooplankton standing crop so that the factors that influence alewife growth rate can be better understood. (PAV)

1973b. (Youngs, W. D., and Oglesby, R. T.). Trophic level interrelationships in Cayuga Lake, New York: Ithaca, N.Y., Cornell Univ. Water Resources and Marine Sci. Center, Tech. Rept. 75, 85 p.

This article describes the results of a research investigation of the relationship of alewife growth rate and foraging effort to zooplankton standing crop. Data were collected from Cayuga Lake and consisted of length-frequency measurements of alewives and zooplankton, and catch per unit of alewives. Seasonal variance in the growth rate of yearling alewives in Cayuga Lake can be accounted for solely by fluctuations in food supply; growth rate is not affected by summer range temperatures. Evidence from both gill net catch per unit effort and

HENNICK, D. G. (continued)
the relationship between alewife growth rate and zooplankton concentration indicated that alewife foraging effort is proportional to food supply. Zooplankton standing crop is a vital measure of the food supply of alewives. (PAV)

HENSON, E. B.

1954a. Pontoporeia affinis var. brevicornis in Cayuga Lake, N.Y.: Ecology, v. 35, no. 4, p. 579.

Pontoporeia affinis is one of the most significant profundal invertebrates of the Great Lakes and other deep oligotrophic lakes in North America and Europe. In the course of an investigation of the profundal benthic fauna of Cayuga Lake, specimens of Pontoporeia affinis var. brevicornis were obtained that differ in certain respects from the described form. (author)

1954b. The profundal bottom fauna of Cayuga Lake: Ithaca, N.Y., Cornell Univ., Doctoral dissert., 140 p.

Samples were taken from May through August (1953) and seasonal changes of the component groups were observed. This thesis describes how sampling was done, how the samples were handled, and the limnology of the Finger Lakes region. In 1952, the total population increased numerically from 3,000 in May to over 9,000 in November, averaging 6,000 individuals per square metre. The oligochaeta and Pontoporeia made up about 97 percent of this average. (GKS)

1959. Evidence of internal wave activity in Cayuga Lake, New York: Limnology and Oceanography, v. 4, no. 4, p. 441-447.

Temperature observations from a station near the southern end of Cayuga Lake reveal variations in the depths of the isotherms which suggest the presence of temperature seiches, or internal waves. The theoretical period of oscillation of a uninodal internal wave, based on summer temperature conditions of the lake, ranges between 55 and 58 hours. A sequence of temperature observations at the level of the metalimnion for the first eight days of August (1951) are presented, and the observed variations are in accord with the theoretical variations. The winds during the time under consideration were reinforcing and occurred in synchrony with the seiche movements. Observations of surface currents and temperatures give supporting evidence for the presence of internal wave activity. (author)

1961. (Bradshaw, A. S., and Chandler, D. C.). The physical limnology of Cayuga Lake, New York: Ithaca, N.Y., New York State Coll. Agr., Mem. 378, 63 p.

An investigation of the physical characteristics of Cayuga Lake was initiated in 1950. Observations of temperature, dissolved oxygen, pH, and alkalinity were made for 3 years at a reference station located about 10 miles from the southern end of the lake. This report summarizes the observations and is intended to serve as a point of departure for future specialized studies of the lake. It is a compendium of information about the lake, and brings together scattered material and references from diverse disciplines. (GKS)

1966. (and Potash, Milton). A synoptic survey of Lake Champlain, summer, 1965: Ann Arbor, Mich., Univ. Michigan, Great Lakes Research Div. Pub. 15, p. 38-43.

On August 25, 1965, three boats were deployed for the first synoptic coverage of Lake Champlain. Stations were located toward the middle of the long narrow lake to minimize local influences. Data were collected from 36 stations and 105 reference points.
The relationship of total alkalinity and pH indicated three possibly distinct water masses: (1) main Lake Champlain water, (2) northeast arm water, and (3) water from Missisquoi Bay. On the basis of this study it would appear that, as Lake Champlain water flows through its basin, its water loses total alkalinity and cation concentration. This indicates that the water is diluted by igneous surface drainage or ground water intrusion as it flows through the basin. (author)

1969a. (and Vibber, J. H.). Precipitation into Lake Champlain, U.S.A.--A source of dissolved minerals: Internat. Vereinigung für theoretische u. angew. Limnologie, Verh., v. 17, p. 148-153.

HENSON, E. B. (continued)

The objective of this study has been to obtain values for estimating the amounts of certain basic minerals added to Lake Champlain through the atmosphere. The sparse literature pertaining to this subject suggests the significance of geographic variations, seasonal variations (Gambell and Fisher, 1966), and marked changes in the chemical composition of a single rainfall (Gambell and Fisher, 1964). The variabilities are not to be underestimated since extreme variability is a genuine ingredient with this type of study. This paper is devoted to the large scale attempt to derive an order of magnitude for the amount of mineral material entering the lake through the atmosphere, and this should contribute to an appraisal of the mineral budgets of the lake. These first approximations are derived with the intention of refining the values as more extended observations continue to be made. (author)

1969b. (and Potash, Milton). Lake Champlain in relation to regional water supply: Internat. Assoc. Great Lakes Research, 12th Conf. Great Lakes Research, Proc., Ann Arbor, Mich., p. 441-448.

Lake Champlain is a deep glacial lake of the St. Lawrence drainage, and is congeneric with the Great Lakes. It is the easternmost major contributor of fresh water to the St. Lawrence system before the St. Lawrence becomes brackish. Because of its large size (440 sq mi) and considerable depth (400 ft), Lake Champlain has been singled out as a potential regional water supply for the metropolitan areas of New England and New York City. An analysis has been made of the water budgets of the lake to ascertain its reliability as a major water supply. (author)

1970. (and Potash, Milton). Limnology of Lake Champlain: 1965-1970: Burlington, Vt., Vermont Univ. Water Resources Research Center, Natl. Tech. Inf. Service, 23 p.

This five year study assembled information on physical, chemical, and biological characteristics of Lake Champlain, one of the largest and deepest lakes in the United States. The determinations included currents of the lake, water thermal and optical features, alkalinity, pH value, selected cations, dissolved oxygen, nitrates, phosphates, mercury, lead, phytoplankton, zooplankton, micro- and macro-benthos, colonization of shorelines, Polychaeta worms, and seston content. (author)

1972. Immediate and remote data processing system for Lake Champlain: Burlington, Vt., Vermont Univ., Lake Champlain Studies Center Completion Rept., 19 p.

Details are given for communications and data processing system developed to assist and facilitate hydrologic research on Lake Champlain. The system functions for Audio Information Transmission (AITS) and for Remote Informations Processing (RIPS). Both of these functions utilize broadcasting signals to a repeater unit situated on a television tower on the top of Mt. Mansfield. The repeater then transmits the signal to base control at the University of Vermont on another assigned frequency. The AITS allows voice communication between base control and any of four research vessels on the lake, or between any of the four vessels. The research leader is therefore able to coordinate sampling with as many as four boats on the lake at the same time. The RIPS is able to collect, translate, transmit, and record selected data from a remote position on the lake according to an assigned time schedule. (author)

1973. (and Potash, Milton). Concepts of watershed management--The sodium budgets of Lake Champlain, in Water for the human environment: Internat. Water Resources Assoc., 1st World Cong. on Water Resources, Proc., Chicago, Ill., p. 428-441.

The complex morphometry of Lake Champlain precludes the use of a simple approach to potential watershed management; therefore, a model was developed for evaluating materials budgets in the lake. Results of this study suggest that approximately 59,000 metric tons of sodium enter Lake Champlain annually, about two-thirds from Vermont and Canada on the east, one-fourth from New York on the west, and the remainder from the southern end of the drainage basin. Of the total input, about 22,000 tons apparently remain in the lake. A geographic evaluation of the sodium budget shows that input exceeds removal in all hydrographic regions; however, about one-fourth of all sodium enters in the populated region of Burlington, Vermont. (author)

HESS, A. D.

1940. A preliminary study of the annual temperature cycle in Cayuga Lake: Ithaca, N.Y., Cornell Univ., M.S. thesis, 5 p. (unpub.).

HESS, A. D. (continued)
Temperature studies of Cayuga Lake were made from July 20, 1939 to July 15, 1940. The lake's annual temperature cycle was marked by only two main periods, winter circulation and summer stagnation. Three significant periods of homothermy were evident: the condition of maximum fall homothermy occurred in November; the condition of minimum homothermy occurred early in the spring; and the condition of maximum spring homothermy occurred later in the spring. The temperatures of, the dates of occurrence of, and the intervals between these three periods of homothermy may be useful in the classification and ecological study of temperate lakes. (GKS)

HETLING, L. J.
1972. Technical memorandum regarding Lake George phosphorus balance: Albany, N.Y., New York State Dept. Environmental Conserv., mimeo., 11 p.

1973. (and Sykes, R. J.). Sources of nutrients in Canadarago Lake: Water Pollution Control Federation Jour., v. 45, no. 1, p. 145-156.

A study of the nutrient balance of Canadarago Lake in east-central New York revealed that approximately 52 percent of the phosphorus input came from land runoff, 46 percent from waste water, and 2 percent from rainfall. Detergents represented approximately 56 percent of the phosphorus load. Approximately 23 percent of the total phosphorus was trapped in the lake. Of the soluble phosphorus, 72 percent came from waste water. Of total nitrogen, 91 percent was from land runoff. Waste water loadings of chlorides, magnesium, and potassium were minor. Control measures might reduce phosphorus load by two-thirds and improve the lake, perhaps even to the mesotrophic state, in 2 to 3 years. (author)

1974. Observation on the rate of phosphorus input into Lake George and its relationship to the lake's trophic state: Albany, N.Y., New York State Dept. Environmental Conserv., Tech. Rept. 36, 19 p.

There is a general agreement that an excessive addition of phosphorus to Lake George will accelerate the cultural eutrophication process, eventually changing the present quality of the lake and reducing its value as a recreational and water supply resource. In the fall of 1972, a loading rate of phosphorus into Lake George was calculated and distributed to interested parties via a technical memorandum. Since that time, several studies have been completed and additional data have become available that make a more precise loading rate available. In order to increase the usefulness of this loading rate comments on the limnological implications of the phosphorus input rate have been added. (PAV)

HEWLETT, J. D.
1956. The development of vegetation on the Solvay waste beds: Syracuse, N.Y., State Univ. Coll. Forestry, M.S. thesis, 143 p.

As a subject for an ecological study, the Solvay waste beds on the shore of Onondaga Lake have several interesting aspects. When abandoned, they become an area for primary rather than secondary plant succession. Parts of the bed have been abandoned at fairly regular intervals, so it should be possible to establish an accurate picture of early succession. Furthermore, it is an excellent testing ground on which to determine what species of plants are able to colonize a piece of barren land. The purpose of the study was to (1) assess the progress of natural vegetation in restoring the unsightly wastelands to an esthetic condition; and, (2) determine the main limiting factors in order to find a means to speed up this process. (PEG)

HEYWOOD, J. S. (ed.)
1973. Annual Report--Rensselaer Fresh Water Institute at Lake George: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., 3d Rept. 73-17, 12 p.

HINMAN, R. C.
1969. The impact of reservoir recreation on the Whitney Point microregion of New York State: Ithaca, N.Y., Cornell Univ. Water Resources and Marine Sci. Center, Natl. Tech. Inf. Service, 73 p.

Increased income, more leisure time, and improved transportation systems enable Americans to allocate more time to recreational activities. Of particular importance to this study is the continued increase in demand for outdoor recreation. Governmental legislation and grants and

HINMAN, R. C. (continued)
other public, as well as private, sources have been supporting resource allocation to insure the availability of outdoor recreational benefits to the American people. The economic impact of introducing reservoir recreation on the economy of the Whitney Point microregion in central New York State is analyzed. The setting, background and development of the Whitney Point Reservoir recreation area are discussed. (author)

HINSDALE, G.
1969. Chemical survey related to plankton on an east-west traverse of Seneca Lake: Corning, N.Y., Coll. Center of the Finger Lakes (unpub.).

HITCHCOCK, L. B. (ed.)
1967. The freshwater of New York State--Its conservation and use: Dubuque, Iowa, William C. Brown Co., 255 p.

This report covers the proceedings of a symposium held in Buffalo, June 13-17, 1966. The objectives of the symposium were to: (1) provide an opportunity for the exchange of ideas and for discussion on the wide use of water resources in New York; (2) identify and discuss the major problems of the State in conserving and extending the availability of its water resources as population and industry continue to grow; (3) define the goals toward which people must work in order that the domestic, agricultural, industrial, and recreational needs for water of appropriate quality are assured for the future; and (4) point out the technology required to achieve these goals and where that technology is available, to identify the gaps in our knowledge. (GKS)

HITCHCOCK, R.
1881a. Croton water in August: Am. Monthly Micros. Jour., v. 2, p. 156-157.

This is a short (one-column) article that describes the Croton waters of Rochester during the month of August. The article includes a list of algae in the water. (GKS)

1881b. Report on Croton water: Am. Monthly Micros. Jour., v. 2, p. 238.

This article describes the odors of Croton waters. These odors are caused by the plants, Caelosphaerium and Anabaena. (GKS)

1923. Tolypella longicoma in Cayuga Lake, New York: Torrey Bot. Club Bull., v. 50, no. 5, p. 173-176.

This article discusses the Tolypella longicoma, a water plant growing in Cayuga Lake. The plant was found on June 26, 1921, growing in tufts in the shoal water. The plants were fruiting finely in the upper whorls; the sporophydia and antheridia were both brilliant. They grow remarkably fast under favorable conditions and frequently reach, in a few weeks, their full size and development. They break up and disappear with the same quickness. The plant is described in detail along with some facts about its growth. (GKS)

HO, T. S.
1973. The feeding of amoeba on algae in culture: Ithaca, N.Y., Cornell Univ., M.S. thesis, 87 p.

Since little study has been devoted to the biological control of algae, a study was initiated to investigate whether there are effective natural enemies of algae. Certain protozoan species found to prey upon different algae were found in the present research. The specific purposes of this study were to examine the relationships between protozoan predators and algal prey and to learn which protozoa were the better feeders on algae and why. (author)

HOAG, E. H.
1950. An ecological investigation of an open and closed bog in central New York: Syracuse, N.Y., Syracuse Univ., M.S. thesis, 76 p.

This report describes and compares the successional stages of development in an open and closed bog in the southeastern part of Oswego County. Euclid Bog has open water with a floating mat that is not present in Bog B. They differ in the following characteristics: (1) a number of bog species appeared a week earlier in Euclid Bog, (2) Urticularia macrorhiza, Utricularia cornuta and Eriophorum callitrix appear only in Euclid Bog, (3) there are more

HOAG, E. H. (continued)
bog forest trees in Euclid Bog, and (4) Similacia trifolia and Lemma minor are only in Bog B. Both Bogs have (1) similar plant species in successional stages from open water to a young bog forest, (2) similar air and substratum temperatures, (3) the same hydrogen in concentrations of substratum and peat, (4) the same period of maximum flowering for the bog plant species, and (5) more abundant Vaccinium corybosum varieties near the edge than in the interior. (GKS)

HOFFMAN, W. A.
1918. Notes on the food of the yellow perch in Cayuga Lake: Iowa Acad. Sci., v. 25, p. 213-219.

Yellow perch were caught during the summer (1915) in the southern end of Cayuga Lake. As soon as the perch were killed, a slit was made anterior to the anal fin. Further action of the digestive juices upon the food was prevented by placing the fish in an 8-percent solution of formaldehyde. The fish and stomach contents were examined in detail, and the findings are summarized. (GKS)

HOFMANN, P.
1972. Consumption of young yellow perch by a walleye population in Oneida Lake: Ithaca, N.Y., Cornell Univ., Doctoral dissert., 75 p.

The walleye is the predominant predator in Oneida Lake, and the yellow perch is its primary prey. Daily consumption of young perch by walleyes was estimated in 1967 and 1968 from the incidence of perch in stomachs of walleyes collected in the field, and stomach evacuation times were determined in the laboratory. Mark and recapture techniques were used to estimate the walleye population and to determine the total number and weight of young perch eaten during the growing season. The rapid decline in numbers and biomass of young perch demonstrated that this forage supply was intensively grazed by predators. Walleye predation accounted for nearly half of the perch loss from August to mid-October. (PAV)

HOHN, M. H.
1951. A study of the distribution of diatoms (Bacillarieae) in western New York State, including some observations with the electron microscope: Ithaca, N.Y., Cornell Univ., Doctoral dissert., 122 p.

The diatoms of western New York, as revealed in this study, include 430 species and varieties representing 43 genera in 13 families. Of this total, 50 were found only in brackish water, 99 in both fresh and brackish water, and 281 in fresh water. This thesis discusses the abundance of various diatoms from the viewpoint of water temperature, movement of the water, and the presence of submerged aquatic and inanimate objects. Several pages of tables show the number of species of diatoms found in the different habitats. (GKS)

1952. Contributions to the diatoms of western New York State: Am. Micros. Soc. Trans., v. 71, no. 3, p. 270-271.

This article describes two new diatom species discovered in western New York, Navicula bergeni sp. nov. and Cosinodiscus subtilis var. radiatus var. nov. (GKS)

HOPKE, P. K.
1972. (and others). Chemical studies of Chautauqua Lake, in Chautauqua Lake Studies: Fredonia, N.Y., State Univ. Coll., Lake Erie Environmental Studies Program, p. 78-96.

In the initial studies of the concentrations of various chemical species, emphasis was put on the development of accurate analytical techniques. The species chosen and reported were determined by the procedures that were most easily perfected. This paper describes the development of accurate analytical methods for soluble orthophosphate ion and nitrate ion concentrations as part of an effort to analyze greater numbers of the biologically important species. (PAV)

HOPKINS, A. S.
1956. Lake George: New York State Conservation Dept., Recreation Circ. 6, 25 p.

This report discusses the recreational facilities and potential of Lake George. A map is provided. (PEG)

HOPKINS, T. C.

1910. Glacial lakes and channels near Syracuse [abs.]: Geol. Soc. Am. Bull., v. 21, no. 4, p. 761.

Where the south-moving glacier met the northern slope of the Allegheny plateau with its northward drainage, considerable ponding of water resulted, which could only be released through an east or west outlet. During this east-west drainage across the divides, many high channels would be formed. Where these glacial streams dropped over a cliff, a basin or pool would be carved out at the bottom, creating a pond or lake that would remain after the disappearance of the glacial stream. The author has evidence indicating that some glacial lakes were not formed in this manner, but through solution by ground water. (PAV)

HOUDE, E. D.

1965. Food of pelagic young of the walleye, Stizostedium vitreum vitreum (Mitchell), in Oneida Lake, New York: Ithaca, N.Y., Cornell Univ., M.S. thesis, 140 p.

The objective of this study was to gather information on the food of walleye fry from time of hatching to 6 weeks of age. Stomach analyses were done on fry samples in 1961, 1962, and 1963. The major component of fry food was copepods, but cladocera and fish contributed substantially to their diet. Changes in food consumption, which occurred as fry grew, were studied by analyzing several length classes of fry. Little correlation was found between abundance of zooplankton during a year and numbers of food organisms in fry stomachs. Evidence was present for selectivity in feeding by walleye fry. Though copepods usually were not highly selected food items, critical examination of the three copepod genera found in stomachs provided information on the differential selection of these genera as food by walleye fry. (GKS)

1966. Effect of wind-produced currents and plankton density on distribution and survival of walleye fry: Ithaca, N.Y., Cornell Univ., Job Completion Rept. I-d, Proj. F-17-R-10, mimeo., 9 p.

Large numbers of pelagic walleye fry have been found in several bays on the south shore of Oneida Lake. Currents and eddy systems observed in these bays might concentrate walleye fry. Exposed areas such as Shackelton Point and Constantia often had swift currents at depths far below the surface and no characteristics which would appear to concentrate fry. Current patterns were extremely variable at most areas which were studied.

Zooplankton, collected on May 13-15, 1965, was most abundant at the lake's east end and was more abundant at south shore sampling stations than at stations on the north shore. Walleye fry were also most abundant on the south shore and east end on May 18 and 19. Wind-generated water currents are suggested as a factor in the distribution of both zooplankton and walleye larvae. (author)

1967. Food of pelagic young of the walleye, Stizostedion vitreum, in Oneida Lake, New York: Am. Fisheries Soc. Trans., v. 96, no. 1, p. 17-24.

Food of walleye larvae in Oneida Lake during the first 6 weeks of life in 1961-63 consisted mainly of copepods supplemented by cladocera and fish. As walleye larvae grew from 7.0 to 24.0 mm in length they ate larger food organisms. Feeding commenced before complete absorption of the yolk reserves. For the three years, 31 percent of the sac fry contained food whereas 91 percent of the post-yolk sac fry had fed.

Although zooplankton was more abundant in the plankton samples of 1962 than in those of 1961 or 1963, the number of food items in stomachs of fry was nearly the same each year. Abundance of zooplankton food organisms and walleye larvae were positively correlated at five of six stations sampled in 1962. Walleyes generally ate copepods in proportion to their abundance in the plankton. (author)

1968. The relation of water currents and zooplankton abundance to distribution of larval walleyes, Stizostedion vitreum vitreum, in Oneida Lake, New York: Ithaca, N.Y., Cornell Univ., Doctoral dissert., 164 p.

Catches of walleyes and yellow perch were correlated with water current directions. Walleye larvae were positively correlated with current direction because highest catches occurred in west-moving currents. Yellow perch larvae were negatively correlated with current direction and highest catches were from westerly currents. Water currents in bays along the south shore

HOUDE, E. D. (continued)
of Oneida Lake had patterns that might retain walleye larvae under most conditions, but currents along the north shore were swift and unlikely to concentrate larvae. Bottom currents on the north were of relatively high velocity, usually moving west, counter to the surface currents induced by the prevailing westerly winds.

Interspecific associations of several zooplankton genera with both walleye and yellow perch larvae usually were insignificant, but partial correlations of walleye larvae with zooplankton showed a significant positive relation with copepod nauplii. Yellow perch larvae had a significant, positive partial correlation with Cyclops and a significant, negative correlation with copepod nauplii. (PEG)

1969a. Distribution of larval walleyes and yellow perch in a bay of Oneida Lake and its relation to water currents and zooplankton: New York Fish and Game Jour., v. 16, no. 2, p. 184-205.

Walleye and yellow perch larvae were collected in Billington Bay on four days in 1967 to determine their distribution, and both zooplankton abundance and water currents were measured. Walleye larvae were progressively concentrated in the western third of the bay as the season advanced, but the distribution of perch larvae varied in response to changing winds.

Zooplankton distributions were variable from day to day and were not easily related to water currents in the bay. Although distributions of walleye and yellow perch larvae were usually different, a high, positive partial correlation was noted between the two species when several environmental factors were held constant. Few significant correlations existed between larvae and zooplankton, and no relation between abundance of potential food organisms and fish larvae could be recognized. (author)

1969b. Sustained swimming ability of larvae of walleye (Stizostedion vitreum vitreum) and yellow perch (Perca flavescens): Fisheries Research Board of Canada Jour., v. 26, no. 6, p. 1647-1659.

Sustained swimming ability of limnetic larvae of walleye and yellow perch from Oneida Lake was compared in an experimental apparatus. The current velocity that 50 percent of the larvae could sustain in 1-hour tests was recorded for each 1-mm length class. Yellow perch larvae swam better than walleye larvae for length classes less than 9-10 mm total length (TL), but swimming ability of the two species was equal for length classes from 9 to 15 mm. Velocities that larvae under 9.5 mm TL could sustain were less than 3.0 cm/sec, and it was concluded that newly hatched young of both species would be subject to transport by lake currents of greater velocity. Relative swimming ability, expressed as the number of body lengths/sec that a larva could sustain for 1 hr, approached an asymptote between 3 and 4 lengths per second for larvae longer than 9.5 mm. The greater swimming ability of newly hatched yellow perch larvae, compared with that of walleyes, appeared to be related to the smaller yolk sac of yellow perch at hatching. (author)

1970. (and Forney, J. L.). Effects of water currents on distribution of walleye larvae in Oneida Lake, New York: Fisheries Research Board of Canada Jour., v. 27, p. 445-456.

HOUSE, H. D.
1918. The vegetation of the eastern end of Oneida Lake: New York State Mus. Bull. 197, p. 61-110.

HOWARD, H. H.
1963. Primary production, phytoplankton, and temperature studies of Cayuga Lake, New York: Ithaca, N.Y., Cornell Univ., Doctoral dissert., 126 p.

The primary productivity of Cayuga Lake was studied from May 1957 to August 1958. Phytoplankton populations, temperature, and available light energy were measured as variables affecting primary productivity. The lake's production varied with the seasons, although the same season in consecutive years differed. There was no significant correlation between productivity and available light energy or phytoplankton populations, but there was correlation between temperature and the two parameters. Net primary production usually occurred at 20 metres in the lake. The lake is a warm, stratifying, holomictic lake that overturns from late fall to June or July, when a thermocline is established. (GKS)

1968. Phytoplankton studies of Adirondack Mountain lakes: Am. Midland Naturalist, v. 80, no. 2, p. 413-427.

HOWARD, H. H. (continued)

The 203 taxa of plankton algae collected from six Adirondack mountain lakes are distributed in phyla as follows: Chlorophyta (127), Cyanophyta (45), Chrysophyta (20), Pyrrhophyta (7), and Euglenophyta (4). Desmids (73) compose the largest group within the green algae.

Dominants vary between lakes and the common species of dominants are Dinobryon bavaricum, Tabellaria fenestrata, Asterionella formosa, and Anabaena flos-aquae. Occurrence of dominant species in lakes may be influenced by water chemistry and underlying bedrock. Three species (Nephrocytium limneticum, Crucigenia rectangularis, Arthrodesmus phimus) show a high frequency of occurrence in the Adirondack lakes in comparison with other studied areas.

Dominant taxa and other indicator species suggest that these lakes are in a mesotrophic stage of evolution. (author)

1973. Phytoplankton in the Lake George Ecosystem: Troy, N.Y., Rensselaer Polytech. Inst., Internat. Biol. Program, Eastern Deciduous Forest Biome, Memo. Rept. 73-71, 14 p.

Phytoplankton was collected at one station in Lake George on 7 dates in 1972 and 1973. Biomass and cell-colony number were determined at 1/2, 2, 5, 10 and 15 m on most dates. Biomass ranged from 9.1 to 615 μg/liter and maxima occurred in April and September. Biomass dominants were predominantly diatoms with Cyclotella comta the most frequent dominant species. Cell-colony number ranged from 0.052 to 1.14×10^6 per liter. In contrast to their importance in the biomass, diatoms were dominant only 13 times as particles. Flagellates were frequent dominants as particles. Nanno- and ultraplankton made up about 90 percent of the organisms observed. (author)

HOWE, M. A.

1903. A note on the "flowering" of the lakes of the Adirondacks: Torreya, v. 3, no. 4, p. 150-154.

This article discusses the author's trip to the Adirondack region in the spring of 1902 to determine the species of a small alga. This alga was noted in the summers of 1891, 1892, and 1893 by a Mrs. Annie Morrill Smith, who sent the author to the area. The alga turned out to be Gloeotrichia echinulata. This article discusses the life cycle of this alga and cites several published references to the alga in other geographical locations. (GKS)

1921. The "working" of Long Lake: New York Bot. Garden Jour., v. 22, p. 156-159.

During the months of July, August, and September 1921, the water of Long Lake, in the southeastern part of the New York Botanical Garden, remained conspicuously murky. When a vial of this water was held toward the light and examined with a hand lens, it was found to have great numbers of very delicate, short threads in suspension. Examination with the higher powers of the microscope and comparison with descriptions, figures, and available specimens indicated that the organism was Oscillatoria prolifica, one of the blue-green algae. The distribution of this particular species is discussed. (GKS)

1932. The geologic importance of the lime-secreting algae with a description of a new travertine-forming organism: U.S. Geol. Survey Prof. Paper 170, p. 57-64.

The ability of microscopic algae, especially blue-green algae, to deposit lime in calcareous hot springs and calcareous streams has long been recognized. This situation is present in many locations throughout the United States and is generally caused by the action of the algae or their chlorophyll in consuming or decomposing the carbon dioxide in water, thus reducing the amount of calcium bicarbonate that is held in solution. The precipitated lime is a byproduct of the photosynthesis of the little plants. On Squaw Island in Canandaigua Lake, a "water biscuit" was found. This is caused by the accumulation of calcium bicarbonate around a pebble or twig. Coral reefs are formed in a similar fashion. The article discusses other historical aspects of this phenomenon. (GKS)

HOWE, R. H.

1951. A pollution survey of the southern end of Cayuga Lake: Ithaca, N.Y., Cornell Univ., M.C.E. thesis, 34 p.

This thesis is a preliminary survey of pollution contributions to the southern end of Cayuga Lake from four of its tributaries. Emphasis was placed on the sanitary qualities of the stream waters and included determinations for suspended solids, pH, dissolved oxygen, biochemical oxygen demand, and coliform bacteria. (PEG)

HOWELL, J. A.

1970. (Kiser, K. M., and Rumer, R. R., Jr.). Circulation patterns and a predictive model for pollutant distribution in Lake Erie: Internat. Assoc. Great Lakes Research, 13th Conf. Great Lakes Research, Proc., Buffalo, N.Y., p. 434-443.

A transition probability matrix method is developed to represent, in a compact and usable form, the flows measured in a rotating model of Lake Erie. The matrix was determined for the case of zero wind stress and restricted to the western basin of Lake Erie. The resulting representation was in good conformity with the model and also showed some similarities with average bulk flows in the prototype. The model was used to predict the steady state concentration distribution of a non-conservative pollutant in the western basin under conditions of zero wind stress. (author)

HUBER, M. A.

1964. Economic feasibility of a water-based recreation facility: Ithaca, N.Y., Cornell Univ., M.S. thesis, 114 p.

The purpose of this thesis is to describe and demonstrate a method of evaluating the economic feasibility of alternatives for small-scale, water-based recreational development. The method is an application of decision theory, which provides a basis for choice between the alternatives proposed. The formulation of the problem in a decision theory framework is an aid to the investigator in defining the problem in precise terms, charting the steps needed to reach a solution, and acquiring the information required to carry out each step. (PAV)

HULBERT, D.

1972. (and Myer, G. E.). Hypsometry of Lower Chateaugay Lake and a pond on the Saranac River: Plattsburgh, N.Y., State Univ. New York, Lakes and Rivers Research Lab., Tech. Rept., p. 180-186.

Lower Chateaugay Lake is a small lake about 3 km long, 1309 ft above sea level in the Adirondack mountains in New York State. The lake is relatively flat bottomed with relatively steeply sloped sides along the easterly and westerly shores. The northern and southern ends of the lake are comparatively shallow and show evidence of deposition of sediments. Rooted aquatic plants are numerous in these shallow regions. A hypsometry curve and a hypsometric map are presented. A small pond on the Saranac River is about 1 km long and is located near Plattsburgh. This pond was formed by the flooding of a region on either side of the Saranac River behind a small dam owned by Georgia Pacific Paper Company and used for the generation of electric power. The river's channel through the pond can be seen easily in the hypsometric map. (author)

HULMAN, L. G.

1972. (and Erickson, D. K.). Delaware River basin modeling: Am. Soc. Civil Engineers, Hydraulics Div. Jour., v. 98, no. HY1, p. 105-121.

In order to facilitate analysis of the effects of the 1960 drought in the northeastern states, a mathematical simulation modeling technique (employing daily flow data) was developed to study the lower Delaware Basin and proposed engineering structures. Evaluation of the ability of proposed engineering structures to meet flow requirements had been hampered by the diversity of projects, political constraints in the upper basin, and numerous alternative demands on available surface water. This study analyzed the simulation technique and its application to the Delaware River, presented the results of the reappraisal of project yields, and compared them with pre-1960 yield estimates. (author)

HUNKINS, K.

1973. (and Fliegel, M. H.). Internal undular surges in Seneca Lake--A natural occurrence of solitons: Jour. Geophys. Research., v. 78, no. 3, p. 529-548.

During the summer and fall when Seneca Lake is well stratified, internal surges often travel from south to north. A thermistor array was monitored at barge sites in Seneca Lake for four seasons. The isotherms are as much as 20 m deeper after the surge, which travels at a speed of 35 to 40 cm/sec. A wave train with two distinctive parts characterized these surges. Recent results by others have elucidated the generation and propagation of waves that have large amplitudes but that do not break. The numerical calculations for these waves explain some aspects of the internal surges in Seneca Lake. (author)

HUNNINEN, A. V.

1935. Studies of fish parasites in the Delaware and Susquehanna watersheds, in A biological survey of the Delaware-Susquehanna watershed: New York State Conserv. Dept., 25th Ann. Rept. Supp., p. 237-245.

A total of 40 species of parasites, a few which are important from the fisherman's point of view, were found in 19 species of fish. The black spots of bass and sunfish occurred in a little over half of these fish but the infection was always at a low level. Seven percent of the yellow perch, 2 percent of the chain pickerel, 11 percent of the brook trout, and 28 percent of the pike perch contained undetermined species of Neascus, which were causing black spots. Only 21 of the 1,312 fish examined carried infections with the yellow grub. The bass tapeworm was found to occur in fish from 26 ponds. (author)

HUNTER, G. W., III

1929. Studies of the parasites of fishes of the Lake Champlain watershed, in A biological survey of the Champlain watershed: New York State Conserv. Dept., 19th Ann. Rept. Supp., p. 241-260.

This report is divided into two parts: the first concerns the continuing studies on the bass tapeworm, Proteocephalus ambloplitis (Leidy), and the second part consists of brief analyses of the degree of parasitization in the more important fish of the Lake Champlain watershed. The Adirondack frostfish (Prosopium quadrilaterale) and the smelt (Osmerus mordax) were studied in great numbers because of their importance in future stocking policies. Sportsmen have always been interested in the northern pike (Esox lucius) and the yellow perch (Perca flavescens). These fish are fast becoming unpopular because of their infestation with parasites; the pike is often heavily infested with black cysts containing Strigoid larvae and grubs (Clinostomum marginatum). Many other species of fish were examined during the course of the summer. Such a vast amount of material was obtained that it proved impossible to include it all in this report. (GKS)

1930. (and Hunter, W. S.) Studies on fish parasites in the St. Lawrence watershed, in A biological survey of the St. Lawrence watershed: New York State Conserv. Dept., 20th Ann. Rept. Supp., p. 197-216.

Of prime importance in a study of fish parasites is a knowledge of their distribution in the fish of the various watersheds. The data collected were divided into three groups: (1) special problems on the life histories of the most important parasites in the territory covered; (2) a study of fish-eating birds, and (3) a general distribution of fish parasites. (GKS)

1931. (and Hunter, W. S.) Studies on parasites of fish and of fish-eating birds, in A biological survey of the Oswegatchie and Black River systems: New York State Conserv. Dept., 21st Ann. Rept. Supp., p. 252-271.

During the summer of 1931 a total of 971 fish were examined to determine the parasitic fauna of the fish in the Oswegatchie and Black River systems. Forty-two different species of fish were examined. In most of these fish, the percentage of infection was low in comparison to findings of other years in other watersheds. This article discusses the infections of wild small-mouthed bass, large-mouthed bass, rock bass, common sunfish, bluegill, brook trout, rainbow trout, brown trout, whitefish, suckers, wall-eyed pike, northern pike, yellow perch, and the common bullhead. Food and parasites of some fish-eating birds--great blue heron, American herring gull, kingfisher, common tern, and American bittern--were also examined. (GKS)

1933a. (and Hunter, W. S.) Studies of fish and bird parasites, in A biological survey of the Raquette watershed: New York State Conserv. Dept., 23d Ann. Rept. Supp., p. 245-254.

This article discusses general parasitism in the Racquette watershed--fish lice or parasitic copepods, the black spots of bass, the yellow grub--and feeding experiments with the American bittern and the great blue heron. Two questions considered were: (1) how are the eggs of the yellow grub distributed; and (2) how long do the adult parasites live. Included is a table summarizing the feeding habits of the great blue heron. (GKS)

1933b. (and Hunninen, A. V.). Studies on the plerocercoid larva of the bass tapeworm, Proteocephalus ambloplitis (Leidy), in the smallmouth bass, in A biological survey of the Raquette watershed: New York State Conserv. Dept., 23d Ann. Rept. Supp., p. 255-261.

HUNTER, G. W., III (continued)

The bass tapeworm has been found widely distributed throughout lakes in the eastern United States. The three main questions posed in this investigation were: (1) what is the difference between infestation in young and mature bass; (2) what effect do the larvae of the bass tapeworm have on their hosts; and (3) what is the relationship between parasitism in lake and river bass. A summary of the results of these experiments is included. (GKS)

1934. Further studies of fish and bird parasites, in A biological survey of the Mohawk-Hudson watershed: New York State Conserv. Dept., 24th Ann. Rept. Supp., p. 267-283.

This article discusses the life cycles of the black grub, Crassiphiala ambloplitis, and the yellow grub, Clinostomum marginatum. (GKS)

1936. Parasitism of fishes in the Lower Hudson area, in A biological survey of the Lower Hudson watershed: New York State Conserv. Dept., 26th Ann. Rept. Supp., p. 267-273.

Fish, fish-eating birds, and snails from the Lower Hudson area were examined in a study of fish parasites. The findings may be summarized as follows: fish from reservoirs had relatively few different species of parasites, where fish from the Hudson supported a greater diversity of fauna. The bass tapeworm (P. ambloplitis) was well established in fish throughout the Croton and Kenisco Reservoir systems, except for the roundworm (Eustrongylides sp.) in the flesh of eels as well as in the flesh of body cavities of the following: wall-eyed pike, large and small-mouthed bass, rock bass, yellow perch, and the red-bellied sunfish from these bodies of water; the parasite occurs in these hosts in a larval stage and matures in a fish-eating bird. The white liver grub (N. multicellulata) was produced experimentally by cercariae emerging from snails (Physa gyrina), which penetrated common sunfish; herons are the definitive hosts. (author)

HUTCHINSON, B. P.

1968. The effect of alewife predation on the zooplankton population of Black Pond, a small Adirondack lake: Ithaca, N.Y., Cornell Univ., M.S. thesis, 69 p.

Rotifers were the most abundant zooplanktons in Black Pond throughout the summer (1965). Typocyclops prasinus and cyclops vernalis were the dominant copepods, and Bosmina longirostris and Holopedium gibberum were the dominant cladocerans during the sampling period. In general, rotifers were not the dominant zooplankton group in the "non-alewife" ponds near Black Pond. Stomach analyses of alewives taken from Black Pond in 1966 showed that cyclopoid copepods (Bosmina and Holopedium), and Diptera pupae were the alewives' major source of food during the summer, whereas analyses of October 1958 showed that Diaptomus minutus, Epischura locustria, mesocyclops edax, and Daphnia catawba were their major source of food. The evidence clearly suggests that the alewives have had an effect on the zooplankton community of the pond. (GKS)

1971. The effect of fish predation on the zooplankton of ten Adirondack lakes, with particular reference to the alewife: Am. Fisheries Soc. Trans., v. 100, no. 2, p. 325-335.

Stomach contents of alewives collected in Black Pond in 1958 consisted primarily of Diaptomus, Epischura, Mesocyclops, and Daphnia. Food of Black Pond alewives in 1966 consisted mainly of Bosmina, Holopedium, cyclopoid copepods (Cyclops, Macrocyclops, Tropocyclops), and chironomid pupae. Alewife stomach contents were compared with limnetic plankton samples to determine whether the alewives were selective in their choice of food organisms. Both species and size selectivity were observed. The evidence collected suggests that alewife predation was responsible for a change in the zooplankton community of Black Pond. The zooplankton communities of ten Adirondack lakes were compared. The species and size composition of these communities appeared to be influenced by the presence of planktivorous fish. (author)

HUTCHINSON, G. E.

1957. A treatise on limnology. Volume I--Geography, physics, and chemistry: New York, John Wiley and Sons, 1015 p.

This book gives an account of the events characteristically occurring in lakes. It examines the whole sequence of interdependent geological, physical, chemical, and biological events that operate together in a lake basin. (GKS)

HUTCHINSON, G. E. (continued)
1967. A treatise on limnology. Volume II--Introduction to lake biology and the limnoplankton: New York, John Wiley and Sons, 1115 p.

This book describes the nature and origin of the fresh-water biota. An investigation of fresh-water biology includes a discussion of: the structure and terminology of the lacustrine biological community; the hydromechanics of plankton; the nature and distribution of phytoplankton; phytoplankton associations; the seasonal succession of phytoplankton; the nature and biology of zooplankton; the vertical migration and horizontal distribution of zooplankton; and a discussion of cyclomorphosis. (PAV)

HYATT, J. D.
1882. Sporadic growth of certain diatoms and the relation thereof to impurities in the water supply of cities: Am. Micros. Soc., 5th Ann. Mtg., Elmira, N.Y., Proc., p. 197-199.

Diatom collectors who have visited the same locations for several years in succession have observed the changes in the orders, genera, and species of these plants. These changes take place with the varying conditions of temperature and water chemistry that occur during the year. The author discusses this phenomenon for a few different locations. (GKS)

HYLANDER, C. J.
1923. Notes on the desmids of New York: Torreya, v. 23, no. 4, p. 59-62.

During the summer and autumn of 1922, the author collected desmids at four locations in New York. These collections were not particularly fruitful and did not yield any new species. (GKS)

INTERNATIONAL CHAMPLAIN-RICHELIEU ENGINEERING BOARD
1974. Regulation of Lake Champlain--Final report to the International Joint Commission: Montreal, Canada, Internat. Champlain-Richelieu Eng. Board, 68 p.

This report presents the results of a feasibility study, prepared to develop sufficient data to assess alternative means for achieving the regulation of Lake Champlain and the Richelieu River. The study was conducted to determine whether regulation for flood control purposes is environmentally acceptable and economically feasible. (PAV)

INTERNATIONAL PAPER COMPANY
1972. Statistical analysis of water quality in Lake Champlain, New York-Vermont: Ticonderoga, N.Y., Internat. Paper Co., 27 p.

JACKSON, D. D.
1905. Purification of water by copper sulphate: Municipal Eng., v. 29, p. 245-246.

This article discusses the results of experiments on Baisley's Pond, Jamaica, Long Island. The experiments tested the feasibility of using copper sulfate to control algal growth in the pond. (GKS)

JACKSON, D. F.
1958. (and Dence, W. A.). Primary productivity in a dichothermic lake: Am. Midland Naturalist, v. 59, no. 2, p. 511-517.

During the summer of 1955, the authors investigated the unusual primary production in the first dichothermic and meromictic lake described in the United States. They concluded that the primary food source in the lake was bacteria, since only a few planktonic algae were found and a large zooplankton population was observed at every depth down to 75 feet. (PEG)

1961. Comparative studies of phytoplankton photosynthesis in relation to total alkalinity: Internat. Vereinigung für theoretische u. angew. Limnologie, Verh., v. 14, p. 125-133.

One of the facets of primary productivity is the relationship between various kinds of phytoplankton and alkalinity. Photosynthetic activities were measured in 12 New York lakes that had average alkalinity concentrations of from 8 to 17 milligrams per liter. The average photosynthetic rate for the Cyanophyta was 1.65, the highest value for any division measured. Pyrrhophyta and Chrysophyta had rates of 1.48 and 1.45, respectively. Chlorophyta exhibited the lowest average photosynthetic rate. The average value was 1.29. (PEG)

1964. (Nemerow, N. L., and Rand, M. C.). Ecological investigations of the Oswego River drainage basin. I. The outlet: Ann Arbor, Mich. Univ. of Michigan, Great Lakes Research Div., v. 11, p. 88-99.

The Oswego River drainage, containing 5,121 square miles, is the largest drainage area of the eastern part of Lake Ontario. In order to ascertain its effect on the lake, a series of sampling stations has been established at 10 different sites along contributing streams. This report represents the results obtained at Station 1, the outlet of the Oswego River into Lake Ontario, from January 10 through March 6, 1964. Weekly average values for phosphates, total Kjeldahl nitrogen alkylbenzene-sulphonate, pH, water temperature, algae, coliforms, and zooplankton are given. (PAV)

JACKSON, D. F. (ed.).
1967. Some aspects of meromixis: Syracuse, N.Y., Syracuse Univ. Press, 243 p.

The text is a compilation of eight papers presented during a symposium on meromictic lakes held at Fayetteville, New York, April 23-24, 1965. (PEG)

1968a. Algae, Man, and the Environment: Syracuse, N.Y., Syracuse Univ. Press, 554 p.

This book is the result of an international symposium held June 18-30, 1967 in Syracuse to discuss ways in which algae can better serve man through fundamental and applied research. The discussions are in three sections: (1) fundamental aspects of phycology, (2) applied aspects of phycology, and (3) some algae studies in New York State. (GKS)

JACKSON, D. F.
1968b. Onondaga Lake, New York--An unusual algal environment, in Algae, man, and the environment: Syracuse, N.Y., Syracuse Univ. Press, p. 515-524.

The history of pollution in Onondaga Lake is described in detail. Laboratory cultures of 25 genera of algae were prepared using filtered lake water as a medium. The author concluded that filtered Onondaga Lake water alone would not support the growth of planktonic blue-green algae. The conditions in the lake are changing, however, and the methods described in the paper will be beneficial in determining algal growth potentials. (PEG)

JACOBSEN, T. V.
1966. Trends in abundance of the mayfly (Hexagenia limbata) and chironomids in Oneida Lake: New York Fish and Game Jour., v. 13, no. 2, p. 168-175.

JACOBSEN, T. V. (continued)

Analysis of bottom sample collected at three stations in Oneida Lake from 1956 to 1964 showed a decrease in the abundance of the mayfly (Hexagenia limbata) and an increase in chironomid populations. Oxygen depletion in the hypolimnion during periods of calm weather and possibly increased eutrophication of Oneida Lake were probably responsible for these population changes. (author)

JACOBY, H. D.

1972. (and Loucks, D. P.). Combined use of optimization and simulation models in river basin planning: Water Resources Research, v. 8, no. 6, p. 1401-1414.

Simulation models have proved extremely useful as an aid to river basin planning. All suffer a common difficulty, however, since the analyst himself must formulate the physical design to be studied in each computer run. If the basin is large and offers a variety of developmental opportunities, the number of alternative system plans from which he must choose can be extremely large. This paper reports on an investigation of the use of analytical optimization models to "screen" the set of possible plans and to select a small number worthy of simulation analysis. The Delaware River basin being used as an example, deterministic and stochastic optimizing models have been developed and applied to both static and dynamic (multiperiod) planning problems. The resulting designs have been analyzed by using a large-scale digital simulation model of the basin so that the ability of the screening models to identify high-valued alternatives can be evaluated. In this context the results indicate considerable promise for the combined use of optimization and simulation models. (author)

JELACIC, A. J.

1970. Physical limnology of Green and Round Lakes, Fayetteville, New York: Rochester, N.Y., Univ. Rochester, Doctoral dissert., 296 p.

1971. Physical limnology of Green and Round Lakes, Fayetteville, New York: Rochester, N.Y., Univ. Rochester, Doctoral dissert., 307 p.

The thermal regimes of Green and Round Lakes have been examined in detail. Both lakes are meromictic, and the condition has been traced to saline ground water from Silurian Camillus shale. The depth of the chemocline in each lake appears to have the same stratigraphic control. The waters of both lakes are extraordinarily clear during the spring, but transparency falls by a factor of three in the summer when calcite precipitates into the mixolimnion. Clarity is also affected by a nearly opaque layer or plate of sulfur bacteria located at the bottom of the chemocline. (PAV)

JAMNBACK, H. A.

1955. (and Collins, D. J.). The control of black flies in New York: New York State Mus. Bull. 350, 113 p.

This article summarizes the techniques used and the results of these techniques in controlling the blackflies of New York State. It also includes recommendations and suggestions for control. (GKS)

JESUELE, J. J.

1972. (Kooyoomijian, K. J., and Rio, R. F.). An analysis with conclusions concerning the Sylvan Beach breakwater pier: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 72-14, 13 p.

The Fresh Water Institute at Rensselaer Polytechnic Institute has embarked upon an expanded in-depth questionnaire survey of four lakes in New York State. The lakes selected for study are Oneida Lake, Lake George, Schroon Lake, and Saratoga Lake. Each lake selected satisfies the following criteria: (1) a distinct trophic state (refers to the nutrient and productivity condition of the lake), (2) a unique lake size, and (3) a unique character as being primarily a recreational lake. The survey work is oriented toward water quality and environmental quality research on the lakes. From this, information can be obtained for the proper management and utilization of each lake. (author)

JOHANNSEN, O. A.
1915. (and Lloyd, J. T.). Genera of plankton organisms of the Cayuga Lake basin: Ithaca, N.Y., Cornell Univ., 27 p.

This paper includes an annotated list of the genera of plankton organisms in the Cayuga Lake basin. (GKS)

JOHNSON, L. N.
1894. On some species of Micrasterias: Bot. Gaz, v. 19, no. 2, p. 56-60.

During the summer of 1884, the author studied a number of species, including one or two rare forms. Most of the species were collected at several large ponds at Cold Spring Harbor on Long Island. Probably the most interesting find was Micrasterias foliacea Bailey. The article also discusses other species of Micrasterias. (GKS)

JOHNSTONE, D. B.
1967. Isolation of Azotobacter insignis from fresh water: Ecology, v. 48, no. 4, p. 671-672.

Azotobacter insignis Derx has been isolated from flowing fresh water streams in Vermont and appears most frequently associated with submerged aquatic plants. This is the first report of the only strictly aquatic species of aerobic nitrogen-fixing bacteria in North America. Added to the isolations in Java, Denmark, and Scotland, it suggests a wide distribution. (author)

JONAS, R. S.
1973. Lake formation, sedimentation, control of algae: Human-Accelerated Eutrophication of Freshwater Lakes Conf., Proc., Ossining, N.Y., Dec. 1973, p. 8-12.

This presentation was directed to a group of citizens concerned about lake quality. Causes of eutrophication are erosion or movement of soil into lakes and aquatic growth spurred by nutrient import. The deeper a lake is, the easier it is to manage. In designing a pond, a steep shoreline and maximum depth are recommended. Recommendations for management of submerged plants in a newly-created lake include light limitation by various methods. Ninety-five percent of sediment import from disturbed soil can be controlled by rigid control of construction methods, and by revegetation of all disturbed areas as soon as possible with at least temporary cover. (author)

JONES, J. A.
1969. Lake Erie environmental studies annual report 1968-1969: Fredonia, N.Y., State Univ. Coll., Lake Erie Environmental Studies Program, 39 p.

The State University College at Fredonia, New York has developed a studies program on Lake Erie. This report discusses the development of the program, lists the parameters measured, and gives a record of the cruises and field trips that have been made. No specific data are given. (author)

JUBINVILLE, R. P.
1973. (and Dowd, J. F.). Adirondack odyssey: The Conservationist, v. 27, no. 6, p. 3-8.

The Adirondack canoe route from Old Forge to Tupper Lake is a picturesque water route. A new perspective for this route is the concept of sailboat camping on a budget, illustrating the point that mobility need not have a detrimental effect on our environment. (PAV)

KAHN, M. C.
1920. Microscopical trouble-makers in the water supply: Nat. History, v. 20, no. 1, p. 83-90.

This article describes some of the diatoms and algae that exist in the water supplies of New York State. It also discusses their cellular structure, life cycle, and control. (GKS)

KANTROWITZ, I. H.
1964. Bedrock topography in the Oneida Lake area, New York, in New York State Geol. Assoc. Guidebook: 36th Ann. Mtg., mimeo., p. 39-41.

The article presents and discusses a map of the buried bedrock surface in the Oneida Lake area. Construction of the map was based on data from about 375 water wells. (PEG)

KARAS, NICHOLAS
1967. Oneida--Fishiest lake of them all: Field and Stream, v. 72, no. 3, p. 98-105.

This article presents an interesting account of the fishery resources of Oneida Lake and describes a fishing trip on the lake. (PEG)

KARDOS, L. P.
1972. (and Eaton, S. W.). Zooplankton and benthic fauna of Canandaigua Lake: St. Bonaventure, N.Y., St. Bonaventure Univ., Sci. Studies, v. 28, p. 45-93.

Stratified plankton samples and temperatures were taken from April 1971 to January 1972. Changes in population structure and vertical distribution of zooplankton species are illustrated and numbers compared with earlier data. Temperatures are compared with earlier data, and bottom samples taken during June, August, and October are described. Larger zooplankters have declined since Birge and Juday. Smaller zooplankters have increased in numbers and species. The epilimnion is 1.5 to 2.0°C warmer than 1910-1918 when the lake was monomictic. Oligochaeta, Pontoporeia, and midges seem to have been reduced 20-50 percent from 1910-1918, while Sphaerium has increased. (author)

KARROW, P. F.
1961. (Clark, J. R., and Terasmae, J.). The age of Lake Iroquois and Lake Ontario: Jour. Geol., v. 69, no. 6, p. 659-667.

Recent geological and engineering investigations at Hamilton, Ontario, have resulted in the discovery of buried plant-bearing beds in deposits of Lakes Iroquois and Ontario. Fossils in these beds indicate cold, shallow-water conditions of sedimentation for the earlier-deposited beds and warmer conditions for later-deposited layers. Radiocarbon dating of buried wood suggests that Lake Iroquois was formed during the retreat of Port Huron ice. The Valders drift boundary is inferred to be north of Lake Ontario. Lake Ontario is probably about over 10,000 years old. (author)

KATSIGIANIS, T. S.
1973. (and Harman, W. N.). Variation in the radular teeth of Helisoma anceps (Menke): The Nautilus, v. 87, no. 1, p. 5-7.

Variation in the structure of the radular teeth in several populations of Helisoma anceps (Menke) have been studied in central New York State.
A ratio was calculated, utilizing measurements obtained from a series of the first lateral radular teeth from individuals in each population. The data show that interpopulation variation is greater than intrapopulation variation, and that individual variation is less than intrapopulation variation. (author)

1974. (and Harman, W. N.). Ecological notes on the trematode parasites of Helisoma anceps (Menke) in a eutrophic lake: New York Sterkiana, no. 55, p. 39-55.

A population of Helisoma anceps (Menke) was studied from June 1972 to June 1973 at the State University College at Oneonta Biological Field Station, Cooperstown, Otsego County. Monthly collections of snails were made to determine the species of larval trematodes developing within this particular host. Water temperature and pH were measured during each collection to determine their effect on the incidence of infection.

KATSIGIANIS, T. S. (continued)
Two species of larval trematodes were found. Differences in the seasonal abundance of each trematode are correlated with the habits of the definitive host. In addition, the behavior of each trematode larve is correlated with that of the second intermediate host. (author)

KAULFUSS, H. P.
1972. Recreation and open space--Fulton, New York: Johnstown, N.Y., Fulton County Plan. Dept., 27 p.

This report includes analysis of problems and trends affecting recreation and open space in Fulton County. It covers two unique open space features, the Adirondack State Park and the Great Sacandaga Lake, and their impact on Fulton County. Planning standards for recreation and open space are indicated. (author)

KEENAN, J. D.
1970. The algal growth bioassay as a comparative sanitary and limnological parameter applied to Onondaga Lake, New York: Syracuse, N.Y., Syracuse Univ., M.S. thesis.

Modern urbanization and industrialization trends have hastened the eutrophication of many lakes. This natural process may result in a devalued water due to increased nutrient levels which stimulate nuisance algal growths. The nutrient requirements of the algae were reviewed and it was concluded that specific generalizations relating algal growth to water chemistry are impossible to make. The bioassay procedure is a method used to overcome this difficulty. With this technique, the growth of an algal inoculum is used as a measure of the overall nutrient availability in a test water. The bioassay was used in this study to evaluate the biostimulatory effects of Onondaga Lake. (author)

KELLEY, J. W.
1968. Effects of incubation temperature on survival of largemouth bass eggs: Progressive Fish-Culturist, v. 30, no. 3, p. 159-163.

KENDALL, W. C.
1929. (and Dence, W. A.). The fishes of the Cranberry Lake region: Roosevelt Wildlife Bull., v. 5, no. 2, p. 219-309.

This article describes the brook trout population in Cranberry Lake and its tributaries. A detailed exploration of the area was made. This article discusses associated trout, spawning, fishing conditions, and fish management recommendations for the future. (GKS)

KETELLE, M. J.
1971. (and Uttormark, P. D.). Problem lakes in the United States: U.S. Environmental Protection Agency, Office of Research and Monitoring, 282 p.

A survey of 45 eutrophic lakes was compiled based on responses from 40 states requesting information as to (a) name, location, size, and depth; (b) description of the problem, including accounts of previous corrective treatments, if any; (c) remedial action that might be appropriate; (d) a description of available background data, indicating whether sufficient data exists to document a change if rehabilitation were undertaken. Categories of the problems in the survey were: nuisance algal growth, nuisance aquatic vegetation, fishkills, bacterial contamination, toxic contamination, oil brines, unstable water levels, siltation, excessive dissolved solids, and unspecified eutrophic conditions. (author)

KHAN, R. K.
1974. Developmental morphology of Calothrix parietina (Nageli) Thuret (-Gloeotrichia echinulata) (J. E. Smith) Richter: Binghamton, N.Y., State Univ. New York, Doctoral dissert., 129 p.

Drouet (1973) on a morphological basis and the present author in his laboratory and field studies on the life gyre (cycle) and developmental morphology have shown that Gloeotrichia echinulata and Calothrix parietina are the same species. However, according to International Code of Botanical Nomenclature (1972), C. parietina takes taxonomic priority. (author)

KIDDER, R. B.

1972. (Ahrnsbrak, W. F., Allen, S. J., Barnes, M. E., Dorman, S. R., and others.). Allocthonous pollutants in Seneca Lake: Geneva, N.Y., Hobart Coll., Natl. Sci. Found., Student Oriented Studies Program, 58 p.

This study was designed to assess the relative contributions of nutrients and other parameters defined as pollutants to Seneca Lake from the surrounding watershed. No recent tabulation has been made of a wide range of parameters in the water discharging into the lake, therefore, it was deemed advisable to investigate a wide range of parameters at a large number of sources. This data would provide a basis for further investigation.

The parameters which were monitored are: discharge, water temperature, dissolved oxygen, biochemical oxygen demand, chemical oxygen demand, coliform bacteria, chloride ions, nitrate nitrogen, ammonia nitrogen, total and fixed total residue, total volatile solids, orthophosphate, phosphorus, acid-hydrolyzable phosphorus, total phosphorus, specific conductance, pH and alkalinity. (author)

KINGSBURY, J. M.

1967. Annotated bibliography of periodical literature dealing with algae of New York State and contiguous waters--Preliminary report: Albany, N.Y., New York State Dept. Health, 37 p.

This bibliography lists and abstracts over 350 published articles considering the algae of New York State. The earliest article is dated 1841 and the latest article was published in 1965. (PEG)

1968. Review of the algal literature for New York State, in Algae, man, and the environment: Syracuse, N.Y., Syracuse Univ. Press, p. 525-547.

New York State is unique among states in its aquatic resources. It is the only state having an open shoreline on both the Great Lakes and the Atlantic Ocean. The central part of the state is dominated by the Finger Lakes, of unusual depth, and Oneida Lake, of nearly opposite characteristics. Fayetteville Green Lake presents a textbook example of chemical stratification. Pristine mountain lakes of the Adirondacks in the east contrast with eutrophic Chautauqua Lake at the western end of the state.

Limnological investigations of the waters of New York State have been comprehensively reviewed. This article, therefore, emphasizes investigations relating particularly to algae. Included in the essay are water supply investigations from 1860-1905 and New York State biological survey which occurred in 1927-1940. (author)

KLAUSNER, S. D.

1974. (Zwerman, P. J., and Ellis, D. F.). Surface runoff losses of soluble nitrogen and phosphorus under two systems of soil management: Jour. Environmental Quality, v. 3, no. 1, p. 42-46.

Evaluation of surface runoff losses of soluble nitrogen (NO_3-N, NH_4-N) and phosphorus (inorganic P) was initiated due to recent concerns about the discharge of plant nutrients from the agricultural sector. The annual loss of these two elements from field plots, as derived from natural rainfall, was determined. The influence of a crop rotation, soil management practice and fertilizer rates of the previous 15 years was studied. Corn, beans, and wheat were combined factorially with two rates of fertilization (high and moderate) and two soil management practices (good vs. poor). Well-managed soils produced the least surface runoff losses of N and P. Ammoniacal N losses were not significantly associated with crop, fertility level, or management practice. (author)

KLIMEK, J. C.

1972. Forecasting industrial water requirements in manufacturing: Water Resources Bull., v. 8, no. 3, p. 561-570.

Procedures used to establish current and prospective manufacturing water withdrawals in a river basin are described. The needs study incorporated a computerized analysis of industrial requirements at basin, county and county subarea levels. Current usage in the universe of industries was examined preparatory to the determination of probable future withdrawals, to facilitate plan formulation with constraints involving large masses of data. In preparing the need estimates, it was assumed that employment data on an establishment basis would provide a reasonably current, consistent and continuing basis for relating the water demands of an

KLIMEK, J. C. (continued)
industry to the operating rate of its establishments, when changes in employment were related to the trend in output per employee, and intake per employee was related to water use technology by analysis of reuse, and use by function. (author)

KLING, G. F.
1974a. A computer model of diffuse sources of sediment and phosphorus moving into a lake: Ithaca, N.Y., Cornell Univ., Doctoral dissert., 96 p.

The research of this dissertation formulates a model for the phosphorus and sediment transport within a drainage basin. The objectives of this study were: (1) to determine the sources and amounts of the phosphorus and sediment deposited in a lake; (2) to elucidate the method of transport; and (3) to propose methods of reducing phosphorus and sediment yields in the different parts of the drainage basin. (author)

1974b. (and Loag, W.). Computer modeling of sediment and phosphorous movement into Canadarago Lake: Ithaca, N.Y., Cornell Agronomy, Mimeo. 74-11, 26 p.

Much of the phosphorus moves downslope on eroded soil particles. More than 50 tons of sediment per acre per year are lost from some areas. Soil loss was calculated for 4,192 10-acre cells in the drainage basin. Sediment deposition as well as soil loss was considered for each computer cell. Movement of sediment and attached phosphorus was modeled from cell to cell until ultimate deposition in streams emptying into the lake. This calculated sediment transport model accounted for more than 90 percent of the variation of measured annual phosphorus losses. Via computer, effects of three proposed land use changes were simulated. (author)

KLOPPEL, R.
1969. Chromatographic procedure for analysis of DDT in fish fats: Corning, N.Y., Coll. Center of the Finger Lakes (unpub.).

KNABEL, R.
1973. Land use and zoning, septic effluents and the responsibility for adequate control, in Human-Accelerated Eutrophication of Fresh-Water Lakes Conf., Ossining, N.Y., Dec. 1973, Proc., p. 39-40.

Cultural eutrophication is really a function of land use and development around lakes. The problem becomes a question of zoning, real estate interests and regulation and control within the town or the area that the lake is located. Many of these areas are now being converted to year-round use, and almost all of them are still operating on their part time sewage disposal systems. The biggest problem with the lakes in the Westchester County area is sewage effluent reaching the lakes, thus providing the nutrient material for plant growth, turbidity, and all the other things that are associated with a eutrophic lake. Eutrophication is encouraged by the approach that is taken in land development or by not providing or requiring the necessary safeguards when these areas go through a conversion process. The relationship between subsurface disposal methods, the ground water table and the inevitability of septic nutrients getting into the water body and creating the eutrophic situation is ignored. (author)

KOBAYASHI, SHIGERU
1972. Mineral cycling--The humic materials of Lake George: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 72-22, 8 p.

The mineral cycling studies at the Lake George during the summer of 1972 included an investigation of the soluble organic material within the lake. Results of a preliminary study are reported, although procedural evaluations represented the major effort. (author)

1973a. The dissolved organic carbon of Lake George, New York: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 73-23, 8 p.

The assessment of carbon flows in Lake George in 1973 was concerned with the temporal, spatial, and depth variations in the soluble forms of carbon: the dissolved organic carbon (DOC) and the humic materials (HM). As a part of this report, samples have been collected from stations in the northern and southern basins of the lake and from selected tributaries. Particulate organic carbon and dissolved organic carbon fractionation studies are not included in this report. (PAV)

KOBAYASHI, SHIGERU (continued)

1973b. Mineral cycling--The dissolved organic materials of Lake George: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 73-27, 8 p.

In studying the dissolved organic matter present in Lake George, emphasis has been placed on the analysis of carbon since the on-going nutrient study has been, and is, concerned with the analysis on nitrogen and phosphorus. The scope of the carbon analysis is to include three major areas. These include the following: (1) total carbon analysis of the lake and tributaries, (2) the extraction of soluble "humic materials" in both lake and tributary samples, and (3) the fractionation of the dissolved organic carbon on Sephadex and XAD-2 resins, where the eluted fractions may be assessed for their decomposition potential and their relation to the "humic materials" composition. (author)

KOHBERGER, R. C.

1972. (Fisher, J. S., and Wilkinson, J. W.). FIND--Freshwater Institute Numeric Database: Am. Soc. Inf. Sci., ann. mtg., Washington, D.C., 9 p.

FIND--Freshwater Institute Numeric Database is an information system for scientific data management. The system is designed to aid investigators participating in a long-range research project at Lake George. The objective of the research is to study the aquatic ecosystem of a soft-water oligotrophic lake. (author)

KOOYOOMIJIAN, K. J.

1974. (and Cleseri, N. L.). Perception of water quality by select respondent groupings, in inland water-based recreational environments: Water Resources Bull., v. 10, no. 4, p. 728-744.

This paper examines four lake environments which are paired by lake size and trophic state, where trophic state is employed as an identifier of water quality. Two large lakes and two intermediate-sized lakes, with each pair having one oligotrophic lake and one eutrophic lake are selected for cross-sectional survey-oriented questionnaire research. This paper focuses upon one aspect of the research, namely, the perception of water quality by three user groups. The user groups examined are recreationists, cottage and homeowners, and fishermen. The groups are compared utilizing percentage response profiles and cluster level groupings. It appears from a preliminary analysis of the data that the lakes selected are viable trophic state end-points for questionnaire analysis of respondents. Each user group surveyed does appear sensitive to select water quality parameters; where shifts in sensitivity appear within and between user groups with changes in ecological settings, as well as with factors independent of ecological settings. (author)

KRALL, D. B.

1966. Fluvioglacial drainage between Skaneateles and Syracuse, New York: Syracuse, N.Y., Syracuse Univ., M.A. thesis, 156 p.

KRAMEK, W. C.

1972. Food of the frog Rana septentrionalis in New York: Copera, v. 1972, no. 2, p. 390-392.

In August and September 1968, 159 frogs were collected from Setback Pond. Sex and size were recorded and stomach contents analyzed. Stomachs contained mainly Odonata, Coleoptera and Homoptera. Aphids were consumed most often and in greatest volume (21.7 percent). Total volume of plant material was small (6.46 percent). Occurrence of prey taxa reflects availability, and habitat selection can determine diet by offering different species of prey organisms. No difference in diet was observed between male and female, indicating that food preference and differential capture success of prey taxa do not exist. (author)

KUMAR, I. J.

1971. Comparison of thin-film evaporation and freeze drying methods of concentration of organics in water: Troy, N.Y., Rensselaer Polytech. Inst., M.S. thesis, 104 p.

Trace organics in water samples from Lake George and Saratoga Lake, as well as raw sewage and sewage effluent from the Clifton Knolls Sewage Treatment Plant, were concentrated using both thin-film evaporation and freeze-drying methods. Organic carbon recovery by thin-film evaporation was superior to that of freeze-drying for all samples. Chromatographs obtained for both methods showed an identical number of peaks at about the same elution volume, and the cumulative percentage versus molecular weight curves were also similar, with a maximum difference of

KUMAR, I. J. (continued)
2 to 3 percent ascribed to experimental error. These results demonstrate: (1) no significant polymerization of degradation was observed in either technique; (2) although recovery from freeze-drying is less than that of thin-film evaporation, no evidence of selective removal of a compound or compounds during freeze-drying is apparent. (author)

LA BASTILLE, ANNE

1972. Canoeing through time--The Eckford Chain: Adirondack Life, v. 3, no. 4, p. 36-40.

From the summit of Blue Mountain, the Eckford Chain of lakes spreads out to the west. Blue Mountain, Eagle, and Utowana Lakes lie spangled with afternoon sunbeams. Near the southwestern horizon of sharply rolling hills is the glint of Raquette Lake. This uncommonly scenic section is still one of the wildest parts of the Adirondacks, being lightly laced with roads and campsites. Nevertheless, this series of waterways saw a tremendous tourist trade long before the first road penetrated. (author)

LANCIANI, C. A.

1968. (and Harman, W. N.). Snail shells as oviposition sites of water mites: The Nautilus, v. 82, no. 1, p. 34-35.

Four species of female red water mites (Eylais) lay their eggs on the hard, smooth surfaces of living snails. The egg area appears pink; that is, a white, translucent matrix overlies red eggs. The snail carries the egg mass for 19 to 36 days. The mites go through their natural stage of growth. The major effect on snails may be to increase the risk of predation. (GKS)

LANCIANI, G. D.

1965. (and Kingsbury, J. M.). Soil algae of forty ponds under construction at Ithaca, N.Y.: Rhodora, v. 67, no. 771, p. 242-254.

To allow experimental study of basic ecology of aquatic weeds and their control by herbicides, 92 ponds have been constructed at two locations in the Ithaca area. The purpose of this study was to determine the algal flora of the soil from which one group of 40 ponds was constructed. After the ponds were built, three samples were taken from the soil of each pond: one from the upper area, one from 3 to 5 feet down the slope, and one from the pond floor. In each case, the top 3 to 6 inches of soil was sampled so as to yield well-mixed 10-gram samples. The samples were cultured in 5 different media. Culture vessels were 50-ml Delong culture flasks and 18x15-mm test tubes. Different methods were used to identify the algae as they grew in the cultures. The article discusses the results of the study and gives a taxonomic list of the identified algae. (GKS)

LANDGRAFF, H. C.

1911. Oneida Lake--Past and present: Albany, N.Y., New York State Library, 42 p.

This interesting article is a compilation of newspaper articles published between February 24 and April 28, 1911 by the Lakeside Press of Cleveland, N.Y. The clippings provide a descriptive historical narrative of the cultural settlement of Oneida Lake and vicinity. Occasional references are made to the biota of the lake. (PEG)

LANDRETH, W. B.

1921. (and Gibson, G. E.). Report on practical operation of the Hinckley Reservoir: Albany, N.Y., State Engineer and Surveyor, Ann. Rept. Supp., p. 5-20.

A study of the water surface elevations in the Hinckley Reservoir from 1915 through 1919 shows that the general practice in those periods was to keep the reservoir full or nearly so until about the first of December, the end of the canal season, and then to draw it down quite rapidly so as to have it empty early in February.

Various studies and reports have been made to ascertain, if possible, whether a more logical and scientific method of operation of the reservoir could be devised. This report considers the studies and offers recommendations for future consideration. (PEG)

LANE, P. A.

1969. A winter-spring study of the phytoplankton population of New York State ponds: Elisha Mitchell Sci. Soc. Jour., v. 85, no. 1, p. 23-30.

1971. A comparative study of zooplankton communities: Albany, N.Y., State Univ. New York, Doctoral dissert., 216 p.

LANGMUIR, I. G.

1938. Surface motion of water induced by wind: Science, v. 87, no. 2250, p. 119-123.

LANGMUIR, I. G. (continued)

On August 7, 1927, during an Atlantic crossing, large quantities of seaweed arranged in streaks were noticed floating parallel to the wind direction. Each streak of seaweed was two to six metres wide. It was hypothesized that the seaweed accumulated in these streaks because of transverse surface currents converging toward the streaks. The water in these converging currents descends under these streaks. Between the streaks, rising currents flow out laterally toward the streaks upon reaching the surface. During the years 1928 and 1929, a large number of experiments were made on Lake George to test this hypothesis of helical motion; that is, vortex motion of water between the streaks caused by wind. This article presents the results of these experiments. (GKS)

LA ROCK, P. A.

1969. (and Ehrlich, H. L.). Bacterial oxidation of manganese in a fresh water lake: Bacteriological Proc., p. 27.

Lake sediments from aerobic and anaerobic locations were collected at 10-day intervals from July through November 1967 and analyzed for microbial Mn [manganese]-oxidizing activity and manganic oxide content. These data were correlated with measurements of pH, temperature, dissolved oxygen, Mn^{II}, and algal numbers. A radiotracer procedure was used to test the capacity of lake microflora in bulk bottom sediments to oxidize Mn^{II}. The results indicated that a microbial population capable of oxidizing Mn^{II} existed in the sediments of the shallow aerobic locations. Anaerobic regions, by comparison, never exhibited Mn^{II}-oxidizing activity even several months after turnover when conditions became favorable for such activity. Mn^{II} oxidation was suppressed when the dissolved oxygen fell below 7.6 to 8.3 mg/liter [milligrams per liter]. It was also suppressed by organic carbon added to the sediments by algal die-off. (author)

LA ROW, E. J.

1972. Secondary production in Lake George: Troy, N.Y., Rensselaer Polytech. Inst., Internat. Biol. Program, Eastern Deciduous Forest Biome, Memo. Rept. 72-67, 9 p.

It was the objective of this investigation to determine the total nitrogen content and phosphorus content of all dominant species of zooplankton in Lake George.

In delineating the nitrogen and phosphorus budgets for Lake George, one of the items of importance was the relative amounts of these nutrients tied up in the biomass of the various trophic levels. Knowing total nitrogen and phosphorus of the dominant zooplankton forms and their seasonal abundance, one can calculate the total nitrogen and phosphorus tied up in zooplankton biomass on a seasonal basis. (author)

1973. Effect of food concentration on respiration and excretion in herbivorous zooplankton: Troy, N.Y., Rensselaer Polytech. Inst., Internat. Biol. Program, Eastern Deciduous Forest Biome, Memo. Rept. 73-69, 10 p.

A factorial experiment was designed to determine the effect of food concentration and temperature on the respiration and excretion rates for three dominant species of zooplankton found in Lake George. Experimental temperatures were 10 and 20°C; the three food levels were 500,000; 5 million; and 10 million cells per liter. The total physiological response of the plankton increased with both temperature and food concentration. However, increased food concentration had a depressant effect on the physiological response of the organism to temperature change. (author)

LARSEN, A. A.

1956. A study of the fresh-water crustacea (Copepoda) of the Rochester area: Rochester, N.Y., Univ. Rochester, M.S. thesis, 122 p.

LAUER, G. J.

1972. The scientific bases for evaluation of the ecological condition of Ticonderoga Bay, Lake Champlain: New York, New York Univ., Lab. for Environmental Studies, 9 p.

LAURENCE, G. C.

1969. The energy expenditure of largemouth bass larvae, Micropterus salmoides, during yolk absorption: Am. Fisheries Soc. Trans., v. 98, no. 3, p. 398-405.

1971. Digestion rate of larval largemouth bass: New York Fish and Game Jour., v. 18, no. 1, p. 52-56.

LAURENCE, G. C. (continued)

This paper asserts that the relationship between digestion rate and temperature for active to nonactive digestion was approximately 2:1 for all temperatures. The rates of digestion decreased linearly as temperature increased. (PAV)

1972. Comparative swimming abilities of fed and starved larval largemouth bass (Micropterus salmoides): Jour. Fish Biol., v. 4, no. 1, p. 73-78.

Sustained swimming abilities of fed and straved larval largemouth bass (Micropterus salmoides L.) were compared in the first week after swimming initiation. Fed larvae improved to a sustained velocity of 4.0 cm/sec while starved larvae attained a velocity of only 1.5 cm/sec. Swimming behavior for fed and starved larvae was quantified for a number of moves, average distance per move, and total distance for all moves in 1-minute intervals. Fed larvae were always more active than starved larvae, although real difference did not appear until the fourth day after swimming initiation. (author)

LEDYARD, L. W.

1855. The green lakes of Onondaga: Putnam's Monthly, v. 6, p. 618-623.

This article, written in the form of a novel, describes the geography and geology of the lakes and surrounding area between Syracuse and Chittenango. (GKS)

LEE, J. A.

1951. A study of the waterfowl resources in the capital district region, New York: Ithaca, N.Y., Cornell Univ., M.S. thesis, 149 p.

An attempt has been made to study the waterfowl resources in the capital district area in order to supplement waterfowl investigations being carried out by the New York State Conservation Department. Fieldwork was done with four main objectives: (1) conduct a general survey of waterfowl habitat conditions; (2) obtain data on duck food plants and duck species and abundance; (3) obtain information on waterfowl breeding and brood survival; and (4) study of hunting pressure, composition of game bags, and success in relation to time spent. (GKS)

LeFLER, V. M.

1934. The Characeae of the Cayuga Lake basin, New York: Ithaca, N.Y., Cornell Univ., M.S. thesis, 42 p.

This thesis annotates the distribution of Characeae in the Cayuga Lake basin. Data were obtained from materials collected between 1894 and 1934. During the latter two years, the author visited all waters in the Cayuga basin. A taxomomic key is provided. (PEG)

LEISTER, C. W.

1928. A plant survey of Cayuga Lake at Ithaca: Ithaca, N.Y., Cornell Univ., M.S. thesis, 7 p. (unpub.).

This thesis lists types of vegetation in the several areas of Cayuga Lake where ducks commonly feed. It presents a plane-table survey map of the Ithaca end of the lake with plotted depths of water and names of plants at various locations. Areas where ducks are known to have fed in the past are indicated on the map. (GKS)

LeTENDRE, G. C.

1969. (and Schneider, C. P.). Age and growth of male walleyes in spawning runs from Black Lake, New York: New York Fish and Game Jour., v. 16, no. 2, p. 136-144.

Walleyes from Black Lake were measured and jaw tagged, and scale samples were taken, on the spawning runs each spring from 1961 to 1964. A sample of 711 males, in which only age groups three to nine were represented, was selected for a study of age and growth. The age three males on the spawning run were faster growing than the males that spawned first at age four. The maximum length to be expected was calculated to be 17.7 inches. Growth of male walleyes compared well with that reported for other lakes of the northern United States. The data suggest that a negative correlation between year-class abundance and growth exists in Black Lake. In years of poor growth the minimum rates of angling success were higher than in years when growth was better. (author)

LETSON, E. J.
1905. Checklist of the Mollusca of New York: New York State Mus. Bull. 88, p. 1-112.

LEVANDOWSKY, MICHAEL
1970. An ordination of phytoplankton populations in ponds of varying salinities: New York, Columbia Univ., Doctoral dissert., 382 leaves.

This paper explores methods of collecting and ordering assemblages of phytoplankton species found together in different circumstances. This approach may lead to the delineation of characteristic "indicator" assemblages, which may have predictive value. Less obvious qualities of such assemblages may then be examined. Little work of this type has been done with marine phytoplankton, but one may cite the interesting work of Ueny (1961) on the dominant populations in Osaka Bay (Japan), and Hulburt's (1963) study of the coastal waters of Venezuela. (PAV)

LEVEY, R. A.
1973. (Nicholson, S. A., and Clute, P. R.). Macrophytes and sediments in Chautauqua Lake, in Chautauqua Lake Studies: Fredonia, N.Y., State Univ. Coll., Lake Erie Environmental Studies Program, p. 322-344.

This report describes in detail near-shore sediments associated with macrophytes in various locales. (PAV)

LEWIS, J.
1874. Land and freshwater shells of the State of New York: Buffalo Soc. Nat. Sci. Bull., v. 2, p. 127-142.

This is a list of the molluskan species that occur in New York State. (GKS)

LEWIS, W. B.
1870. Report on the microscopical examination of the Croton and Ridgewood waters: New York, Metropolitan Board of Health, Ann. Rept., 422-425.

This article discusses microscopical examinations of samples from Croton and Ridgewood waters. The Croton water was taken from the Central Park and Fifth Avenue Reservoirs. The Ridgewood water was taken from the Prospect Park Reservoir and the Courthouse hydrant in Brooklyn. This article discusses the kinds of debris and organisms in the samples. A short annotated list of these organisms is included. (GKS)

LIKENS, G. E.
1967. Some chemical characteristics of meromictic lakes in North America, in Some aspects of meromixis: Syracuse, N.Y., Syracuse Univ. Press, p. 19-62.

This article discusses the chemical characteristics of meromictic lakes in North America. It includes a summary of the general chemical characteristics of these lakes, specific considerations of meromictic lakes in Alaska and Wisconsin, and meromictic lakes as experimental models. At the end of the article is a list of North American meromictic lakes, with graphs, charts, and illustrations of some of their chemical properties. (GKS)

1972. The chemistry of precipitation in the central Finger Lakes region: Ithaca, N.Y., Cornell Univ. Water Resources and Marine Sci. Center, Tech. Rept. 50, 46 p.

In attempts to determine the nutrient balance for various aquatic ecosystems such as the Finger Lakes, the chemical inputs from precipitation frequently have been ignored or overlooked. A notable exception to this is the work of Gorham (1958a, 1961) in Great Britian. Moreover, no synoptic, long-term observations of precipitation chemistry have been reported for the United States. There have been a few comprehensive studies of precipitation chemistry in the United States, but these have been largely limited to regional or short-term considerations. Data from these studies suggest that the input of nutrients and other chemicals via precipitation may have significant effects on the ecological and geological relationships in terrestrial and aquatic ecosystems. These measurements of precipitation chemistry are important to construct a quantitative nutrient balance (input and output flux) for ecosystems, such as Cayuga and Seneca Lake, in the central Finger Lakes region. (author)

1974a. The runoff of water and nutrients from watersheds tributary to Cayuga Lake, New York: Ithaca, N.Y., Cornell Univ. Water Resources and Marine Sci. Center, Tech. Rept. 81, 124 p.

LIKENS, G. E. (continued)

In June 1970, a detailed study was initiated to measure the water and nutrient inputs for Cayuga and Seneca lakes via streams and precipitation. The Finger Lakes play a major role in recreation and water supply as well as affect the general economy of the region in several ways. The Cayuga Lake drainage area is described in respect to and including geologic, land use, and climatic considerations. Streamflow was continuously gaged in only four major tributaries in the watershed adjacent to Cayuga Lake. Study results are discussed in detail. It was found that stream-water chemistry varies considerably throughout the Cayuga Lake basin. (PAV)

1974b. Water and nutrient budgets for Cayuga Lake, New York: Ithaca, N.Y., Cornell Univ. Water Resources and Marine Sci. Center, Tech. Rept. 83, 94 p.

A study initiated in June 1970 to measure the nutrient inputs for Cayuga Lake via streams and precipitation is reported. Hydrologic components, including runoff, outlet discharge, lake renewal time, and hydrologic budget are discussed, and nutrient budgets are considered. Although light is important, the input and availability of nutrients undoubtedly determines the ultimate trophic status of a freshwater ecosystem. The on-site turnover rate and the flux (direction and rate) of nutrients across the ecosystem's boundaries are of diagonistic value in determining the trophic status of the lake. The studies were undertaken on the Cayuga Lake watershed to measure the nutrient and water inputs and outputs by geologic and meterologic vectors for the lake's ecosystem. (PAV)

1974c. (and Bormann, F. H.). Linkages between terrestrial and aquatic ecosystems: Bioscience, v. 24, no. 8, p. 447-456.

The purpose of this paper is to consider some of the ecological interactions and linkages that occur between aquatic and terrestrial ecosystems within the broader context of a watershed (drainage basin) or landscape. (author)

1974d. Nutrient flux and cycling in freshwater ecosystems: Ithaca, N.Y., Cornell Univ Water Resources and Marine Sci. Center, Ms. Rept., 55 p.

Flux and cycling of matter describe the biogeochemistry of an aquatic ecosystem. The flux of matter across ecosystem boundaries is facilitated by the movement of air, water, and animals, and identification of the ecosystem's boundaries is critical to a quantitative evaluation of these fluxes. A lake's metabolism reflects the biogeochemistry (output of water and materials) of its watershed. Meteorologic inputs of nutrients usually represent a major proporation of the total annual input for nutrient-poor lakes. In nutrient-rich lakes, however, geologic inputs dominate. Careful hydrologic measurements are imperative for the construction of quantitative material balance data for lakes. Studies are needed to relate measured nutrient loading with calculated loading values for large lake ecosystems. The sediments of lakes may act as "sinks" for nutrients moving within a landscape; more than 50 percent of the annual phosphorus input to a lake may accumulate in the sediments. Aquatic and terrestrial ecosystems interact and respond to a series of inputs and outputs that functionally link the biogeochemistry of these systems within a landscape. (PAV)

LINCOLN, D. F.

1892. Glaciation in the Finger Lakes region of New York: Am. Jour. Sci., v. 144, no. 262, p. 290-301.

This article describes the geologic structure of the Finger Lakes region. Parameters discussed are the lake basins layouts, topographic features left by the glacier, hydrographic characteristics of the lakes, preglacial topography and drainage, amount of glacial corrosion, and bulk of drift deposit. (GKS)

1894. The amount of glacial erosion in the Finger Lakes region of New York: Am. Jour. Sci., v. 147, no. 278, p. 105-113.

This article describes in detail the glacial erosion of the Finger Lakes region. It includes a discussion of the sandstone and limestone formations along the Lake Ontario and Niagara River area; the general topography of the region--hills, valleys, and slopes; origins and changes of glacial lakes; and geologic characteristics such as faulting and folding. (GKS)

LIND, A. O.

1973a. Application of ERTS-1 imagery in the Vermont-New York dispute over pollution of Lake Champlain: Greenbelt, Md., Natl. Aeronautic and Space Adm., Remote Sensing Lab., Contract Rept., 5 p.

Three ERTS-1 images from different dates were used to document the effluent pattern in Lake Champlain emanating from the large paper mill north of Fort Ticonderoga. A composite map shows the plume. Vermont is currently suing both the International Paper Company and the State of New York for degrading the waters of Lake Champlain. Vermont proposed that the map and the enlarged reproductions of ERTS imagery be entered in evidence. The special United States Supreme Court Master accepted the ERTS imagery and the ERTS-derived information in evidence. This is the first time that satellite imagery and satellite-derived information have been used as evidence in a court of law. (author)

1973b. Ice development on Lake Champlain: Greenbelt, Md., Natl. Aeronautic and Space Adm., Remote Sensing Lab., 3 p.

One usable ERTS-1 scene was available for lake ice survey of Lake Champlain. The January 8, 1973, coverage revealed various ice tones, patterns, and arrangements as well as open water. While it was not possible to differentiate open water from 1- to 2-day old ice, it was possible to interpret the tonal signatures of the frozen portion in terms of freezing history of age. The dark gray tones of new, smooth ice contrasts with the medium gray tones of older ice and with the rough texture of windjammed bay ice. Mapping of these ice patterns is quite feasible with moderate enlargement of the scene. (author)

LIS, S. A.

1973. (and Hopke, P. K.). Anomalous arsenic concentrations in Chautauqua Lake: Environmental Letters, v. 5, no. 1, p. 45-51.

Levels of dissolved arsenic from 3.5-35.6 ppb were measured during a preliminary survey of Chautauqua Lake in southwestern New York State. Possible relationships between the arsenic concentrations and other measured parameters are discussed. (author)

LIU, C. S.

1971. (Brennan, L., and Tedrow, A. C.). Use of systems analysis in the development of water resources management plans for New York State: New York State Dept. Environmental Conserv., Bur. Water Resources Plan.

This report extended an earlier report whose objective was to develop tools of systems analysis for use in New York State's water resources planning. A systems analysis approach to allocate flood control storages from the lakes and reservoirs of the Oswego River system was investigated. The linear programming technique used generated a flood control utility measuring function to the monthly operations model which indicated the available storage for conservation purposes. A new simulation program was developed which considered alternative systems, operating rules and other system configurations. A simulation analysis studied the Oswego system's ability to meet projected water demands. A systems functional evaluation included actual water deliveries and shortages and stage frequency distributions. A single reservoir operations analysis provided a tool in assisting project analysis of small-scale development in the Oswego Basin study. (author)

1972a. (Muralidhar, D., and Tedrow, A. C.). Multipurpose operation studies of a canal-lake-river system--Oswego River system, New York: Water Resources Bull., v. 8, no. 2, p. 349-358.

Use of systems analysis techniques for setting up flow regulation rules for the Oswego River System, a canal-river system with eight lakes, was examined. Two sets of lake regulation rules were proposed: the rule curve for each lake, and the lake-use priority curves for all the lakes. The former specifies balanced allocation of the storage in lakes to conservation pools and flood control pools, and the latter determines lakes' releases depending upon the type of operation, the time of the year, and systems objectives. A generalized mathematical representation of the complex, multipurpose, multilake river system's operation is described. With appropriate measures of effectiveness and details of analysis, the problem was then solved with simulation and optimization. Use of the results in assisting basin plan formulation is also discussed. (author)

LIU, C. S. (continued)

1972b. Flood control storage allocations by linear programming: Water Resources Bull., v. 8, no. 5, p. 976-986.

The setting of rule curves for reservoirs or lakes operation requires balancing the flood control storages reserved against the storage requirements for various conservation uses. In this study, a linear programming model is developed to perform single purpose analysis that minimizes flood damages of a multi-lake river system under various initial and input conditions. A flood control utility measure function is arrived at from the resulting analysis, and the inclusion of the function in conservation analysis could provide the total functional analysis.

The river-system transition function involving time-lags of short duration is described. The function constitutes the basis for the optimization model, and also provides the transformation to reduce significantly the size of the problem. The application to a critical subsystem in the Oswego River System is reported. (author)

1973a. River systems transition function and operation study: Am. Soc. Civil Engineers, Hydraulics Div. Jour., v. 66, no. HY6, p. 889-900.

A general and compact representation of the interaction of storage, release, and diversion operations for a reservoir-river system is described. For any system configuration, the systems transition function has the same form; the difference between reservoir systems is reflected solely in the elements of the A matrix, the system configuration matrix, in the function. The systems conservation operation functions are derived from it and with relatively simple programming, the method can be applied to large-scale systems conservation analysis. The storage reallocation method is formulated to handle linear and nonlinear operating rules. The flexibility of the algorithm permits analysis of the reservoir system for a variety of management policies. A multipurpose operation of the Oswego River System, a canal-river system with eight lakes, provides a case study for testing the computation procedures. (author)

1973b. (and Tedrow, A. C.). Multilake river system operation rules: Am. Soc. Civil Engineers, Hydraulics Div. Jour., v. 99, no. HY9, p. 1369-1381.

Seasonal operation rules for a multilake river system under multiuse requirements are derived utilizing a combination of dynamic programming and the multivariable pattern search technique. The model is formulated to handle linear and nonlinear objective functions. With the application of a river systems transition function, the optimization problem is reduced from a three-decision to a two-decision vector problem. The problem of dimensionality is resolved by employing functional equations expressed in analytical form; multiple regression analysis and random sampling techniques add to the computation efficiency and accuracy of the analysis. The application to the Oswego River System with five major lakes in system-basis operations is described. Two sets of lake-system operating rules are established from the analysis; the lake rule curves and the lake-use priority curves. The effects of system inflow variations and system operation measuring criteria upon the rules are also examined. (author)

LOACH, K. W.

1973. Dissolved organic matter in natural waters--A selected bibliography, with emphasis on analytical methods: Plattsburgh, N.Y., State Univ. New York, Lakes and Rivers Research Lab. Tech. Rept., p. 191-205.

This bibliography is a selection of references of interest to anyone wishing to do experimental work on the chemistry of dissolved organic matter (DOM). The references are classified under the following headings: occurrence of DOM in natural waters, conversions and interactions of DOM, surface-active effects of DOM, and interactions of DOM with trace metals. (author)

LOCHHEAD, WILLIAM

1895. Pre-glacial drainage of the upper Cayuga basin: Ithaca, N.Y., Cornell Univ., M.S. thesis, 78 p.

This thesis discusses glaciation of the Cayuga Lake basin. The conclusions reached are: (1) with few exceptions, the present drainage lines and divides remain practically the same as they were before the glacial period; (2) the courses of the streams of the upper Cayuga basin were disturbed to a marked extent near the lake only; (3) the Cayuga valley was deepened by ice

LOCHHEAD, WILLIAM (continued)
action, probably to 600 feet in its deepest part; and (4) the glacial period was bipartite--separated by an interglacial epoch when a great amount of stream erosion occurred, as can be seen in many gorges that are evidently not postglacial. (GKS)

LOEB, H. A.
1955. An electrical surface device for carp control and fish collection in lakes: New York Fish and Game Jour., v. 2, no. 2, p. 220-231.

An electrical surface device was constructed and tested to determine the relative effectiveness of moving electrode devices in capturing various species of fish, especially carp. It consisted of four electrodes suspended from the corners of a scow and powered by a 230 volt alternating current generator. Experiments under different conditions in a variety of types of habitat are described and the characteristics of the electric fields created are presented. The data also apply to underwater equipment such as the deep-water trawl.

The surface device proved to be effective for collecting fish on a small scale, especially in weedy and stumpy areas. Observations indicated that larger fish are more easily shocked than smaller ones, but are more capable of evading the electric fields. Electrical devices of this type are inefficient as means of controlling fish populations by capture. (author)

1957. Night collection of fish with electricity: New York Fish and Game Jour., v. 4, no. 1, p. 109-118.

The populations of carp, yellow perch, and small mouth bass in East Masonville Lake were estimated with the aid of an electric surface device. Daylight operations were found to be effective only under special circumstances. However, the number of fish collected at night with the aid of spotlights was greater than expected. Accordingly, electrical techniques for night operation were developed and then used successfully in Lamoka and Waneta Lakes. Fish were also successfully collected from Hyde Lake. The device failed in Onondaga Lake because of the low water resistivity. (author)

1958. Comparison of estimates of fish populations in lakes: New York Fish and Game Jour., v. 5, no. 1, p. 66-76.

Population studies involving a number of fish species, but carp primarily, were carried out in three lakes ranging from 30 to 800 acres in size. Different sampling techniques were used and the data were analyzed by both the Schnabel method and direct proportion.

It is concluded that estimation by direct proportion, based on a relatively small number of marked fish, random sampling, and a substantial interval between marking and sampling, will give sufficiently accurate results for many practical purposes. (author)

LONG, E. T.
1922. Minor faulting in the Cayuga Lake region: Am. Jour. Sci., v. 203, no. 16, p. 229-248.

The drought of the summer of 1921 caused many of the creeks in the vicinity of Cayuga Lake to run almost dry. During the drought, rocks exposed in the creek beds and on their banks were studied to determine the nature of the numerous small faults of the region. This article discusses the detailed investigation of the beds of approximately 30 creeks covering a distance about 20 miles to the north of Ludlowville, and 4 miles to the south, in addition to the whole of the east shore of Cayuga Lake. (GKS)

LOREFICE, G. J.
1974. (and Monawar, Mohiuddin). The abundance of diatoms in the southwestern nearshore region of Lake Ontario during the spring thermal bar period: Internat. Assoc. Great Lakes Research, 17th Conf. Great Lakes Research, Proc., pt. 2, Hamilton Ontario, p. 619-628.

As a part of the International Field Year for the Great Lakes, an intensive study was carried out during April and May 1972 in the nearshore region of Lake Ontario. Water samples were collected from 45 stations on the southwestern nearshore area of Lake Ontario at 1/2, 4 and 8 km. Using the Utermohl technique, phytoplankton was analyzed qualitatively and quantitatively. During the investigation period the thermal bar remained within the study area. In April it stayed shoreward of the 4 km stations, dipping into and out of the shore. By May it had advanced farther out but in most cases to less than 8 km.

LOREFICE, G. J. (continued)

Total phytoplankton biomass along with diatoms, particularly Melosira binderana Kutz. showed high concentrations on the nearshore side of the thermal bar. This observation may be related to temperature and the concentration of nutrients in the nearshore region. (author)

LOUISON, C. H.

1969. A brief chemical and bacteriological study of the south end of Seneca Lake: Corning, N.Y., Coll. Center of the Finger Lakes (unpub.).

LOVETT, R. J.

1972. (Gutenmann, W. H., Pakkala, I. S., Youngs, W. D., and Lisk, D. J.). A survey of the total cadmium content of 406 fish from 49 New York State fresh waters: Fisheries Research Board of Canada Jour., v. 29, no. 9, p. 1283-1290.

Fish from New York's fresh waters were surveyed for total cadmium. Fishes from central New York waters rarely contained cadmium greater than 30 ppb. Fish from Adirondack waters contained cadmium above 20 ppb most consistently. These higher concentrations may be related to generally higher background cadmium levels in this Adirondack area where many metallic ore deposits are located with which cadmium is typically associated. Cadmium accumulation only occasionally appeared species-dependent. No relation was obvious between total residues of the metal and size or sex of fish or age of lake trout. The cadmium concentrations observed are comparable to those commonly present in many other foods. (author)

LUDLAM, S. D.

1967. Sedimentation in Cayuga Lake, New York: Limnology and Oceanography, v. 12, no. 4, p. 618-632.

The sediments in the southern half of Cayuga Lake are generally banded. The couplets are about 2 centimeters thick at a depth of 1.5 meters in the sediment and contain finer laminae approximately 1 millimeter thick. Major bands can be correlated over a distance of 19 kilometers and apparently correspond to recorded periods of unusually rapid runoff or high lake levels. It is concluded that the deposition of the couplets is controlled by annual variation in the supply of allochthonous organic detritus and clastic sediment. A total of 2×10^{11} grams dry weight of clastic sediment enters the lake annually through its tributaries. Turbidity currents apparently are responsible for the distribution of a large fraction of this material in the lake. (author)

1969. Fayetteville Green Lake, New York. III--The laminated sediments: Limnology and Oceanography, v. 14, no. 6, p. 848-857.

The surficial sediments of Fayetteville Green Lake show laminated and unlaminated beds. Couplets of a basal pale and an overlying dark lamina are varves. Unlaminated beds are probably deposited from density currents. Varve sedimentation averages 0.07 g cm^{-2} yr^{-1} [gram per square centimeter per year] dry weight or 0.05 g cm^{-2} yr^{-1} $CaCo_3$ [calcium carbonate]. Turbidities account for 40 to 65 percent of the total sediment accumulation. (author)

1974. Fayetteville Green Lake, New York. VI--The role of turbidity currents in lake sedimentation: Limnology and Oceanography, v. 19, no. 4, p. 656-664.

Turbidity currents are formed in Fayetteville Green Lake by sediment slumping on the sides of the lake basin. Deposition from these currents accounts for about 50 percent of all sediment accumulation on the floor of the main basin. Rate of sediment loss from the basin sides through the formation of turbidity currents approximately equals nonturbidite sedimentation rates on the gently sloping basin floor. Major turbidity currents arise most frequently where sources of terrestrial sediment are present. (author)

LUENSMAN, J. R.

1972. (Malinoski, Andrew, and Phillips, David). Chautauqua Lake watershed land use survey, in Chautauqua Lake Studies: Fredonia, N.Y., State Univ. Coll., Lake Erie Environmental Studies Program, p. 29-40.

The purposes of this survey were to examine the patterns of land use in the Chautauqua Lake watershed and to make observations on change in the patterns. The earliest and best record that could be found was the 1938-39 U.S. Department of Agriculture aerial photography. The information was generated as background material for the Chautauqua Lake Benchmark Study. (PAV)

LYTLE, ROBERT
1972. (Colon, E. M., and Cleseri, N. L.). Lead time investigations at Lake George, N.Y.: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 72-29, 6 p.

This report documents the development of a hydrologic and climatologic network as part of the hydrologic modeling work being done on the Lake George/International Biological Program site. This network was developed to provide formerly unavailable data within the Lake George basin. (author)

MA, P. S.
1974. Application of the finite element method to problems of temperature distribution analysis for bodies of water: Ithaca, N.Y., Cornell Univ., Doctoral dissert., 187 p.

This study is devoted to the development and application of the finite element method to problems of temperature distribution analysis for bodies of water, with particular reference to stratified lakes and cooling ponds. A series of component problems are first treated, including the formation of depth-wise temperature gradients as defined by a one-dimensional model. The two-dimensional transient hydrothermal response of a cooling pond is then calculated. Also a finite element formulation is constructed for subsurface discharge of a thermal jet into a thermally stratified lake. (author)

MacCLINTOCK, PAUL
1960. (and Terasmae, J.). Glacial history of Covey Hill: Jour. Geology, v. 68, no. 2, p. 232-241.

The abandoned spillway across Covey Hill has long been accepted as one of the overflow channels of the Great Lakes, occupied when "the ice sheet" had receded to a position north of the Adirondacks but still blocked the St. Lawrence drainage below this level, now a thousand feet above present sea level.
Current investigation reveals that the area has been glaciated by two Wisconsin ice invasions. The first one came from the northeast and overrode the whole area, whereas the second one came as a readvance from the northwest and only impinged against the north flank of Covey Hill where it built a terminal moraine. It was this latter ice that dammed the St. Lawrence and caused its drainage to overflow at Covey Hill. (author)

MACHIN, THOMAS
1799. The first map of Cayuga Lake: Ithaca, N.Y., Cornell Univ. Libr. (photostat).

MACK, G. L.
1964. (and Corcoran, S. M., Gibbs, S. D., Gutenmann, W. H., Reckahn, J. A., and Lisk, D. J.). The DDT content of some fishes and surface waters of New York State: New York Fish and Game Jour., v. 11, no. 2, p. 148-153.

Sixteen species of fish taken from New York waters contained from 0.2 to 7.0 mg/l of DDT on a wet-weight basis. Certain tissues such as visceral fat, gills, eggs and the sex organs contained up to 40 mg/l. The surrounding water and sedimentary mud contained much smaller amounts, indicating that fish may concentrate DDT in their tissues. Aldrin, dieldrin, lindane, chlordane, heptachlor and endrin were not detected at a sensitivity limit of 0.03 mg/l. (author)

MACKIEWICZ, J. S.
1960. Studies on the Caryophyllaeidae (Cestoidea) of Catostomus commersoni (lacepede), with emphasis on those from fish near Ithaca, New York, (Tompkins County), U.S.A.: Ithaca, N.Y., Cornell Univ., Doctoral dissert., 391 p.

A sample of 625 fish representing four species of the family Catostomidae was examined for the presence of Caryophyllaeidae (Cestoidea). Seven species and one larval Caryophyllaeidae are described from *C. commersoni* near Ithaca. Five others have been described as new species. One other has been found only in the larval stage and has been designated as *Biacetabuloides sp*. Except for *H. lintoni*, the remaining species are in the sub-family Caryophyllaeidae. For each of the species found in *C. commersoni*, data were presented in the following areas: anatomy and morphology, site of infection, worm burden, seasonal distribution, host specificity, geographical distribution, iconography, review of records, and in the case of new species, systematic position. An attempt was made to reappraise all published records of caryophyllaeids from *C. commersoni*. (GKS)

MacNAB, K. T.
1968. A general survey of the locations of E. coli and Streptococcus in Seneca Lake: Corning, N.Y., Coll. Center of the Finger Lakes (unpub.).

MALANCHUK, J. L.
1973. (and Gruendling, G. K.). Toxicity of lead nitrate to five species of freshwater algae: Plattsburgh, N.Y., State Univ. New York, Lakes and Rivers Research Lab. Tech. Rept., p. 1-24.

MALANCHUK, J. L. (continued)

Toxicity of $Pb(NO_3)2$ (lead nitrate) to five species of algae was measured. Portions of unialgal cultures were inoculated into low salt medium and were used to test all species at 10, 20, and 30 ppm lead. This medium approximated the salt concentrations of natural aquatic environments. Three different cell weights were used for each concentration of lead and for the control to determine a relationship between cell weight and toxicity. (author)

MALONEY, M. T.

1942. (and Tressler, W. L.). The diurnal migration of certain species of zooplankton in Caroga Lake, N.Y.: Am. Micros. Soc. Trans., v. 61, no. 1, p. 40-52.

A study was made of the Copepoda in Caroga Lake to determine the species characteristic of the lake and to determine if a thermocline in a lake acts as a barrier to diurnal migration. Diaptomus minutus exhibited a definite concentration below the thermocline. The organisms remained approximately constant in numbers within the thermocline, but there was a slight migration above as well as below the thermocline. Cyclops bicuspidatus congregated in large numbers above the thermocline, but showed a definite movement to and from the surface. Epischura nevadensis avoided the cold bottom water, but showed a complex migration from the surface to the depth of 15 metres. In this lake the thermocline does not act as a barrier to the diurnal migration. (GKS)

MARKLE, M. S.

1950. The algae of the Edmund Niles Huyck Preserve: Indiana Acad. Sci. Proc., v. 59, p. 80-81.

The Edmund Niles Huyck Preserve is a private wildlife sanctuary near Rensselaerville. It was established in 1931 as a memorial to Edmund Niles Huyck and is managed by a corporation that made possible this brief study in the summer of 1946. The preserve consists of Lincoln Pond, Myosotis Lake, and Tenmile Creek, which drains the two lakes and includes a series of cascades called the Rensselaerville Falls and most of the watershed of this drainage system. This article discusses some of the algae found in this preserve. (GKS)

MARSHALL, W. B.

1890. Beaks of Unionidae inhabiting the vicinity of Albany, N.Y.: New York State Mus. Bull. 2, p. 169-189.

This article describes the beaks of various species of Unionidae. A descriptive list is included. (GKS)

1892. Preliminary list of New York Unionidae: New York State Mus. Bull. 1, 17 p.

This is a list of the Unionidae found in New York State. (GKS)

1895. Geographical distribution of New York Unionidae: New York State Mus., 48th Ann. Rept., p. 47-99.

MARTIN, R. O.

1966. (and Hanson, R. L.). Reservoirs in the United States: U.S. Geol. Survey Water-Supply Paper 1838, 115 p.

This report summarizes storage capacities and related data of reservoirs and controlled natural lakes for the United States. Data are given for all storage facilities having a usable capacity of 5,000 acre-feet or more and completed or under construction as of January 1, 1963.

A descriptive list of reservoirs in the United States completed as of January 1, 1947, was first published (Geol. Survey Circular 23) in March 1948. In 1956 (Water-Supply Paper 1360-A) this list was updated and included lists of reservoirs completed or under construction as of January 1, 1954. Some of the data shown for reservoirs constructed before 1954 may have been corrected on the basis of the latest available reservoir survey.

This report lists 1562 reservoirs and lakes; their usable storage totals 359,360,000 acre-feet, and the corresponding surface area is 14,831,000 acres. (author)

MASON, C. P.

1961. The ecology of Cladophora in farm ponds: Ithaca, N.Y., Cornell Univ., Doctoral dissert., 100 p.

MASON, C. P. (continued)

The ecology of Cladophora glomerata (L.) Keutzing was studied in five farm ponds near Ithaca. An additional control pond that lacked the alga was also studied. In each of the five ponds, C. glomerata in the vegetative condition was found during the entire year. Environmental conditions such as temperature, pH, light, and dissolved phosphates had no influence on algal productivity. A direct correlation was found between nitrate and biochemical oxygen demand concentrations and the production of C. glomerata. (PEG)

1965. Ecology of Cladophora in farm ponds: Ecology, v. 46, no. 4, p. 421-428.

The ecology of Cladophora glomerata (L.) Keutzing was studied in five farm ponds near Ithaca, in comparison with a control pond in which the alga was absent. Samples were taken for temperature, pH, light penetration, water level, nitrate, phosphate, biochemical oxygen demand, plankton, and condition of Cladophora glomerata. C. glomerata was found to live throughout the year in the vegetative condition. In the pond that contained the most of them, akinetes were abundant throughout the year except in May when a large percentage of them germinated. Filaments that overwintered on the bottom began rising to the surface in mid-May, and their vegetative growth during late June and early July caused the greatest increase of the alga. Increase in mass of the alga from germinating akinetes and zoospores was minor compared with vegetative increase from overwintered filaments. This article discusses the relationship between each of the physical and chemical properties determined with algae growth. (GKS)

MATTICE, J. C.

1972. Production of a natural population of Bithynia tentaculata L. (Gastropoda, Mollusca): Ckologia Polska, v. 20, no. 39, p. 525-539.

This study concerns the productivity of a natural population of Bithynia tentaculata, a prosobranch gastropod mollusca in the eutrophic Oneida Lake. Regular growth samples revealed that Bithynia lives for 17 to 18 months and shows a typical growth curve for a freshwater snail in a harsh temperate environment. Field density counts were combined with analyses of total organic carbon (by wet oxidation) of snails at selected times of the year to yield assessments of population biomass. Mortality data obtained from comparative density measurements and collections of empty shells made possible the estimate of carbon lost from the population over a 12 month period. (author)

MAURY, C. J.

1916. Freshwater shells from central and western New York: The Nautilus, v. 30, no. 3, p. 29-33.

This is a list of mollusks, along with lakes where they are found in central and western New York. (GKS)

MAXWELL, T. F.

1971. Hormogones in the developmental morphology of Gloeotrichia echinulata: Fort Collins, Colo., Colorado State Univ., Phycological Soc. Am. Program.

Colonies of the planktonic blue-green alga, G. echinulata were obtained from Conesus Lake. These were cultured and the developmental morphology observed. Emphasis in this report is on the formation and development of the hormogone. (author)

1974. Developmental morphology of Gloeotrichia echinulata Richter: Geneseo, N.Y., State Univ. Coll., M.S. thesis.

Studies in developmental morphology and life cycle of the blue-green algae Gloeotrichia echinulata are reported. Observations were directed to the natural habitat of Conesus Lake and to cultures derived from alga collected there. A proposed sequence for the development of G. echinulata is provided. (PAV)

MAYLATH, R. E.

1971. Water, water everywhere: The Conservationist, v. 25, no. 5, p. 14-17.

New York State is blessed with abundant water resources. The New York State Department of Environmental Conservation operates a water quality surveillance network to measure the biological, physical, chemical, bacteriological, and radiological characteristics of the State's

MAYLATH, R. E. (continued)
waters. The main objective of the surveillance program is to evaluate the results of water pollution abatement activities and determine their effects upon water quality. (PAV)

1972. Automatic surveillance of New York's waters: New York State Dept. Environmental Conserv., Water Quality Instrumentation Rept. ISA-VI, 64 p.

The four components of the New York State water quality surveillance program--manual, automatic, aerial, and public surveillance--are described. The program's major objective is to evaluate the results of the water pollution abatement activities and determine their effect on water quality. The program is designed to: (1) acquire, evaluate, and disseminate water quality information from various sources; (2) determine the long-term trends and variations of water quality; and (3) provide a rapid intelligence system for the preservation of the waters and the protection of the water users. (author)

McDONALD, G. C.
1969. Organic nutrient factors affecting algal growth--Phase I progress report: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 69-3, 11 p.

The main purpose of the present study is to ascertain and identify those organic compounds present in treated secondary waste water effluent which have an effect on algal growth. It was, therefore, of importance to select an effluent for investigation, which would give representative data for secondary waste water effluent. (author)

1970. (Spear, R. D., Lavin, R. J., and Cleseri, N. L.). Kinetics of algal growth in austere media in properties and products of algae: New York, Plenum Press, p. 97-105.

After growth rates had been established in various media, distilled water, and Lake George water combinations, the concentrations of nitrogen and phosphorus were reduced to one half and one quarter of the full amount and new growth rate levels at each concentration were ascertained. Results demonstrated an inhibitory effect, as evidenced by reduced growth rates, when Lake George water was used as dilution water in either medium. The extent and causative factors for such inhibition became the focal point for further investigation. Results also showed that the nitrogen concentration in modified tenth Gorham's medium may be reduced to one-half the deposited level without any significant growth rate changes for Selenastrum capricornutum. (author)

1973a. (and Cleseri, N. L.). Effect of wastewater organic fractions on the growth of selected algae, in Bioassay techniques and environmental chemistry: Ann Arbor, Mich., Ann Arbor Sci. Publishers, Inc., p. 479-496.

This report describes an attempt to determine the existence of algal growth and the extent of algal growth enhancement brought about by the addition of wastewater organic fractions to representative algal cultures. (PAV)

1973b. (Cleseri, N. L., Kummar, I. J., and Green, W. J.). Organic growth factors affecting algal growths: U.S. Environmental Protection Agency, Ecological Research Ser., 302 p.

Effects of wastewater organic fractions on the growth rate of Selenastrum capricornutum and Anabaena flos-aquae were investigated. Effluent from a conventional activated sludge facility was membrane filtered, freeze-dried, and gell fractionated. Apparent molecular weights (AMW) were assigned to the appropriate fractions. These and organic carbon data showed 69 percent of the effluent organics has an AMW less than 700. Selenastrum growth rates were monitored using Lake George water as the dilutant for the media employed. An inhibition in growth occurred. In concentrating organics from natural water (Lake George and Saratoga Lake), raw sewage, and sewage effluent, thin film evaporation was preferred when using natural waters whereas freeze-drying was advantageous when working with sewage samples. Also, the soluble organic component in municipal waste water was characterized and the effect of chemical-physical treatment on it has been shown. (author)

McEWEN, H. B.
1967. A chemical analysis of Seneca Lake: Corning, N.Y., Coll. Center of the Finger Lakes (unpub.).

McKEE, G. D.
1970. (Parrish, L. P., Hirth, C. R., Mackenthum, K. M., and Leup, L. E.). Sediment-water nutrient relationships: Water and Sewage Works, v. 117, no. 6, p. 203-206.

A thorough review of the mechanisms of nutrient deposition and exchange in aquatic environments led to the following conclusions: (1) a portion of the nutrients, soluble and insoluble, in a water body are ultimately destined to become part of the sediments; (2) organisms are primary concentrations of dissolved nutrients; (3) the initial areas of deposition may be only temporary, the nutrient-containing sediments may be re-dissolved or may be physically transported; (4) wind-induced currents are a major factor that determines the rate and area of final deposition and the contact time between suspended sediments and water; (5) morphology of the water body affects the ultimate area of deposition; (6) aquatic organisms convert inorganic nutrients to organic nutrients and vice versa; (7) suspension of sediments increases their effect on the overlying water; (8) the sediments act as reservoirs of nutrients for the overlying water; (9) the rapidity of sediment build-up will affect the degree of influence on the overlying water. (author)

McKINNEY, W. M. (ed.)
1972. Lake Skaneateles--Sewage, garbage dumping prohibited: State of New York, Sess. Laws, chap. 60, secs. 1153-1153a.

This statute amends a previous New York statute by extending a prohibition against discharging sewage and other offensive matter and depositing garbage or other refuse into Skaneateles Lake and its tributaries. The local Board of Health shall have jurisdiction and shall cause violations to be abated by injunction or otherwise. The discharging of sewage is a misdemeanor punishable by a fine of not more than five hundred dollars or by imprisonment for not more than one year or by both. The punishment for depositing garbage or other refuse is a fine of not more than fifty dollars. (author)

McLAY, R. W.
1971. (Hundal, M. S., Martinek, F., and Henson, E. B.). Mathematical modeling of nuclear plant; thermal effects in Lake Champlain: Mechanical Engineering, New York, v. 94, p. 69.

Prediction of the thermal effects of a proposed nuclear plant on Lake Champlain is made by means of mathematical models programmed for the digital computer. The models simulate the thermal effects in three distinct regions: (a) the open channel at the outfall, (b) the mixing regime immediately adjacent to the entry, and (c) the regime, at some distance from the outfall, where mass and energy exchange with environment occurs and the heated plume is driven by lake currents and wind shears. The codes are briefly discussed along with their verification. The Lake Champlain problem is simulated for cases representing the extreme and typical summer conditions and optimum winter operation. (author)

McNAUGHT, D. C.
1972a. Determination of secondary production by herbivores in Lake George: Troy, N.Y., Rensselaer Polytech. Inst., Internat. Biol. Program, Eastern Deciduous Forest Biome, Memo. Rept. 72-68, 18 p.

The copepod genera Cyclops and Diaptomus account for 85 percent of the total production of crustacean zooplankton in Lake George. In an unusual year (1972) Cyclops bicuspidatus, likely a predator on young copepods, accounted for 43 percent of the total production of limnoplankton. The cladocerans are presently not important in Lake George, with Daphnia and Bosmina responsible for only 15 percent of total production. Most species exhibit high birth rates in the phytoplankton rich south end of Lake George. Production, on the other hand, is more likely to be maximum in mid-lake. These 1972 data have already been used to validate a model for zooplankton resource allocation. (author)

1972b. (Bogdan, Kenneth, and O'Malley, James). Zooplankton community structure and feeding related to productivity: Troy, N.Y., Rensselaer Polytech. Inst., Internat. Biol. Program, Eastern Deciduous Forest Biome, Memo. Rept. 72-69, 43 p.

Both zooplankton feeding and community structure are reflected by zooplankton production in Lake George. Phosphorus limits phytoplankton growth in Lake George. In an experimental study to estimate the effect of phosphate additions on secondary production, it was demonstrated that additional phosphate leads to increased lipid levels in Chlamydomonas, which in turn is related to increased births by grazers such as Daphnia.

McNAUGHT, D. C. (continued)

Zooplankton community structure is related to the feeding habits of community constituents. Only 9 of 15 crustaceans and copepods reach 10 percent of theoretical carrying capacity in Lake George. These most successful species are also the most efficient utilizers of food resources. (PAV)

1973a. (and Bloomfield, J. A.). A resource allocation model for herbivorous zooplankton predicts community changes during eutrophication: Troy, N.Y., Rensselaer Polytech. Inst., Internat. Biol. Program, Eastern Deciduous Forest Biome, Memo. Rept. 73-17, 10 p.

Seeking solutions to the alleviation of the symptoms of cultural eutrophication, and especially the conversion of excess algal production into useful animal biomass, must be one of the goals of the International Biological Program. Intensive field studies at aquatic sites in the Deciduous Forest Biome have provided measures of zooplankton production, estimates of the feeding rates of herbivorous zooplankton, and levels of primary production. The model has been validated and found to adequately predict extant levels of animal density in Lake George. (author)

1973b. (and Bogdan, Kenneth). Studies of size selective feeding by zooplankton designed for implementation of process modeling: Troy, N.Y., Rensselaer Polytech. Inst., Internat. Biol. Program, Eastern Deciduous Forest Biome, Memo. Rept. 73-66, 21 p.

Selective grazing by zooplankton upon phytoplankton may influence the rate of eutrophication of aquatic ecosystems. Experimentally three species of zooplankton were fed netplankton, nannoplankton and bacteria. The total phytoplankton (NETP. + NANNOP.) [net plankton plus nannoplankton] represented a natural assemblage from Lake George. Their filtering rates were measured on one tagged food resource in the presence of the other two. Experiments were limited to 10 minutes to eliminate the problem of excretion of radioactive matter. On phytoplankton foods, both Diaphanosoma and Diaptomus were shown to select small phytoplankters (NANNOP.), while Daphnia showed no preference. Both Daphnia and Diaphanosoma preferred bacteria over algae. These data will be valuable in calibration of zooplankton biomass and resource allocation models. (author)

McVAUGH, R. S.

1937. Aquatic vegetation of the Allegheny and Chemung watersheds, in A biological survey of the Allegheny and the Chemung watersheds: New York State Conserv. Dept., 27th Ann. Rept. Supp., p. 176-195.

The present study was made for determining extent and composition of vegetation of the larger lakes of the Allegheny and the Chemung watersheds, as well as that of the Allegheny and the Chemung Rivers themselves. Much of the time was spent on Chautauqua Lake, the largest lake in the area as well as the most diversified from the standpoint of vegetation. The smaller lakes are rich in plant life with extensive weed beds but are more uniform in the composition of their vegetation. The rivers are in general too swift-flowing to support many aquatic plants.

An annotated list of species gives the abundance and distribution of the 122 larger aquatic plants found in the area. (author)

MEEK, S. E.

1899. Notes on the fishes of Cayuga Lake basin: New York Acad. Sci. Annals, v. 15, nos. 10, 11, p. 297-316.

This is a list of fishes present in the Cayuga Lake region, together with notes on their distributions. (GKS)

MENZEL, B. W.

1972. (and Green, D. M., Jr.). A color mutant of the chain pickerel, Esox niger LeSueur: Am. Fisheries Soc. Trans., v. 101, no. 2, p. 370-372.

1973. (and Raney, E. C.). Hybrid madtom catfish, Noturus gyrinus x Notutus miurus, from Cayuga Lake, New York: Am. Midland Naturalist, v. 90, no. 1, p. 165-176.

Three additional specimens of the hybrid combination N. gyrinus x N. miurus are described. Morphologically they are similar to those previously reported by Troutman (1948) and Taylor (1969), being generally intermediate between the parental species. Hybrid vigor is indicated in one individual by its large size and robustness. All four specimens are female but only the

MENZEL, B. W. (continued)
largest appears to have been capable of reproduction. Ecological observations suggest that a combination of factors, including perhaps submarginal habitat and unequal numbers of the parental species resulted in mismating to produce the hybrids. Madtoms may lack the ethological barriers to hybridization that are characteristic of other ictalurids. (author)

MEREDITH, D. D.
1974. (Rumer, R. R., Jr., Chien, C. C., and Apman, R. P.). Chlorides in Lake Erie basin: Water Resources and Environmental Eng. Research Rept. 74-1, 82 p.

The de-icing salt runoff from Buffalo, New York and selected nearby communities has been measured. In the case of Buffalo, approximately 90 percent of the de-icing salt applied is recovered by the combined sewer system. The Lake Erie drainage basin was subdivided into regions and a search of the literature was made to establish the historical data for chloride discharge from each region. Time-dependent equations were estimated for the annual chloride discharge from each source region and used in conjunction with a mathematical model for chloride balance in Lake Erie. It was possible to fairly reproduce the historical trend of chloride build-up in Lake Erie by this method. The calibrated model projects a chloride concentration in Lake Erie of 135 ppm by the year 2050. The effects of a few selected salt management programs on future chloride levels in Lake Erie are examined utilizing the model. (author)

METZGER, W. J.
1973. (Anderson, Robert, Levey, Ray, Mittlefehldt, David, and Ostrye, Tom). Geological studies of Chautauqua Lake, in Chautauqua Lake Studies: Fredonia, N.Y., State Univ. Coll., Lake Erie Environmental Studies Program, p. 214-231.

During the summer of 1973, the geological studies centered on two major problems. The first was an attempt to measure the discharge of the streams that were tributary to Chautauqua Lake. The second was to remap the deltas in the lake that had been studied during the summer of 1972 to ascertain if measurable annual changes in the configuration or sediment distribution could be detected. Each of these aspects is discussed in detail in this report. (author)

METZLER, D. F.
1974. Legal problems in water pollution control: Am. Soc. Civil Engineers, Hydraulics Div. Jour., v. 100, no. HY1, p. 221-227.

The history of enforcement legislation and practices in New York are traced and problem areas defined in respect to federal-state relations with the following major conclusions drawn: (1) standards for surface and ground water provide a sound basis for a water pollution control program; (2) enforcement programs should be aimed at strengthening regional solutions where these have shown to be feasible through comprehensive planning; (3) water pollution laws should be expanded and interpreted through rules and regulations adopted by a Board or Commission representing various parts of society which use water; (4) a well-managed permit system is essential and should be supported by a monitoring program; and (5) the control of runoff from farm land and mining areas is not amenable to the same approach as for point sources. (author)

MEYERS, S. P.
1970. (Ahearn, D. G., and Cook, W. L.). Mycological studies of Lake Champlain: Mycologia, v. 62, no. 3, p. 504-515.

Analyses of the seasonal fluctuation of yeast populations in Lake Champlain demonstrated a standing crop composed predominantly of Cryptoccus albidus, Rhodotorula spp., Torulopsis spp., yeasts of the Candida krusei-Pichia membranaefaciens complex and the omnipresent black yeast-like fungus Aureobasidium pullalans. In sectors of the Lake affected directly by industrial or urban effluents, distinctive yeast populations regularly exceeded 300 cells/100 ml. These yeasts rarely were isolated from other regions of the Lake. In areas receiving heated wood-pulp wastes, thermoduric strains capable of growth at 45°C were isolated. Comparison of data on yeast populations with those obtained in earlier studies of substropical waters demonstrates the feasibility of using species distribution patterns as indicators of water quality. (author)

MICCHIA, R. L.
1971. Seasonal variations in the physical-chemical parameters of McCargo Lake: Brockport, N.Y. State Univ. New York, M.S. thesis, 204 p.

MILLER, J. G.
1954. A survey of the sport fishing at the north end of Cayuga Lake: Ithaca, N.Y., Cornell Univ., M.S. thesis, 100 p.

The purpose of this survey was to evaluate the sport fishery at the north end of Cayuga Lake and to compare the growth of fishes of this area with that of fishes from other sections of the lake. The north end of the lake is shallow and very weedy compared to the rest of the lake. All fish brought into the livery during the checking period were checked for length and weight. Bait or lure used, where caught, and the method of fishing were recorded, and a scale sample was taken. The comparison showed that the fish caught at the north end have a more rapid growth rate and reach a larger size than the others. This is probably due to the more abundant food supply and longer growing season in the shallow north end of the lake. (GKS)

MILLER, N. G.
1973. Late glacial plants and plant communities in northwestern New York State: Cambridge, Mass., Harvard Univ., Arnold Arbor Jour., v. 54, no. 2, p. 123-159.

MILLER, R. W.
1972. Three methods for determining dissolved oxygen concentrations near fish embryos: Progressive Fish-Culturist, v. 34, no. 1, p. 39-42.

Because oxygen diffuses through the chorion of fish eggs, respiring eggs in a stagnant environment should create zones of oxygen depletion around themselves. A water current, such as that created by a male largemouth bass fanning the eggs, should disperse this oxygen-depleted water. To test these two assumptions, methods were worked out for measuring the dissolved oxygen in water as close as possible to the eggs without disturbing any depletion zones. (author)

MILLER, W. J.
1925. A remarkable Adirondack glacial lake: Geol. Soc. Am. Bull., v. 36, no. 2, p. 513-520.

A recent examination of the Hudson-Schroon valleys of the southeastern Adirondack region has furnished evidence that a remarkable, long, narrow glacial lake lay in those valleys during the end of the last great ice sheet. The lake was nearly 65 miles long and reached a width of as much as two miles in a few places. The most prominent branches of the lake reached into the Sacandaga Valley, between Luzerne and Conklingville, into the Hudson Valley between Warrensburg and the Glen, over the sites of Chestertown and Loon Lake, and over the site of Paradox Lake. The author has previously described Glacial Lake Warrensburg and Glacial Lake Pottersville, which are believed to have been but parts of this glacial lake. The lake has been named Glacial Lake Warrensburg. Its waters were ponded by an ice blockade of the waning Champlain-Hudson lobe of ice. Due to post-glacial tilting of the land, the lake deposits rise with a fair degree of uniformity from an altitude of somewhat less than 700 feet on the south to about 1,000 feet on the north, or at the rate of over 4 feet per mile. (author)

MILLS, E. L.
1971. (and Oglesby, R. T.). Five trace elements and vitamin B_{12} in Cayuga Lake, New York: Internat. Assoc. Great Lakes Research, 14th Conf. Great Lakes Research, Proc., Toronto, Ontario, p. 256-267.

The seasonal variations and spatial distribution of cobalt, copper, zinc, lead, cadmium and vitamin B_{12} were studied in Cayuga Lake and hypotheses developed relative to their ecological significance. Both particulate and soluble forms of each element were measured. Except for cadmium, a large portion of trace elements and B_{12} entering Cayuga Lake via tributary streams was in particulate form. Presumptive evidence indicates that if the levels of certain trace elements were increased, this might result in a stimulation of phytoplankton production in Cayuga Lake during late summer. Seasonal patterns of trace elements in lake water showed a marked seasonal decrease during this period. Mean concentrations of each trace element in Cayuga Lake were among the lowest reported in the literature. (author)

1974. (and Oglesby, R. T.). Lead, Cd, Zn, Cu and Co in streams and lake waters of Cayuga Lake basin, New York: Environmental Sci. and Technology, v. 8, no. 3, p. 243-248.

Waters of 12 tributary streams of Cayuga Lake were studied to determine the levels and seasonal and geographic patterns of trace elements in the Cayuga Lake basin. Trace elements in

MILLS, E. L. (continued)
soluble form and in suspended particulates were studied. The trace element concentrations were generally low, but a seasonal pattern reflecting higher concentrations with high stream flow was noted in the case of Pb [lead]. Values for streams of rural areas reflect levels associated with normal geochemical processes and soil weathering. An impact of urbanization was reflected in higher levels of the trace elements in suspended particulates carried by these streams that flow through Ithaca. (author)

MINER, N. A.
1933. The origin and history of Green and Round Lakes in Green Lake State Park at Fayetteville, New York: Syracuse, N.Y., Syracuse Univ., M.A. thesis, 43 p.

The purpose of the present investigation is to interpret the origin and history of Green and Round Lakes from field and map studies. The work includes all that area which is vitally connected with the formation of these two bodies of water. The geology of the region in which the park is located has heretofore not been studied in detail and mention of the lakes from the standpoint of their origin and history has been very sketchy. (author)

MITCHELL, C. T.
1899. Mollusca of Canandaigua Lake region: The Nautilus, v. 13, no. 8, p. 87-89.

This is an annotated list of mollusks in the Canandaigua Lake region. (GKS)

MOFFA, P. E.
1970. (and Rand, M. C.). Engineering considerations of a eutrophic water body: Internat. Assoc. Great Lakes Research, 13th Conf. Great Lakes Research, Proc., Buffalo, N.Y., p. 693-706.

Onondaga Lake is a shallow eutrophic water body at the northern edge of the city of Syracuse in central New York. The effluent of this lake ultimately discharges into the southeastern end of Lake Ontario at Oswego.
Chemical and biological parameters were measured in depth at two stations, located in the center of the lake's two deep pools. From these measurements, contour plots, illustrating oxygen, total oxygen demand (carbonaceous and nitrogeneous demand) and temperature were made. The "critical" 10-day period (minimum dissolved oxygen) was then observed.
Influent streams were measured as part of the study. Lake residence equivalents derived from the study were compared to measured lake concentrations to evaluate the significance of minerals in precipitating and (or) adsorbing phosphorus within the lake. Pollution abatement programs were evaluated in consideration of the above. (author)

1971. (Drehwing, F. J., Karanik, J. M., and Hennigan, J. J., Jr.). Comprehensive abatement program for a eutrophic lake: Internat. Assoc. Great Lakes Research, 14th Conf. Great Lakes Research, Proc., Toronto, Ontario, p. 690-705.

Owing to the public concern about the condition of Onondaga Lake, Onondaga County started a comprehensive program to restore the lake to a quality which would allow the highest recreational uses. The lake study encompassed physical, chemical, biological and geological investigations in order to develop the essential functions in the lake, and in addition monitoring of all discharges entering the lake. Based on the developed relationships, engineering evaluations were made to determine those facilities required to reclaim what is now a lake banned to fishing, to a lake with such water quality that fishing and swimming would be allowed under the appropriate Federal and State requirements. The most significant evaluations were made with respect to the influence of chemical gradients on stratification within the lake, bottom sediment, sources of phosphorous and oxygen-demanding materials, effects of the input materials on the water quality and distribution of same within the lake. (author)

MONNETT, V. E.
1922. The glacial physiography of the Skaneateles basin: Ithaca, N.Y., Cornell Univ., Doctoral dissert., 109 p.

This thesis discusses the results of an extended investigation of the glacial history of the Skaneateles Lake basin. Some of the conclusions reached are: (1) the basin differs from the larger basins of the Finger Lakes group in that its pre-glacial drainage was probably westward instead of to the north or south; (2) effective glacial erosion in the basin is evidenced by the shape of the lake basins, the character of the divides, the nature of the drift, and by the

MONNETT, V. E. (continued)
rock-rimmed character of the basin; (3) the difficulty of demonstrating any possibility of a buried outlet indicates the basin is almost certainly rock-rimmed; (4) minimum estimates of the vertical of glacial erosion in the basin range from 200 to 400 feet; (5) the deepest part of the lake occurs where the geologic features would favor notable glacial erosion; (6) high level glacial lakes existed in the basin during the ice retreat; and (7) post-glacial changes have been only slight. (GKS)

1924. The Finger Lakes of central New York: Am. Jour. Sci., v. 208, no. 43, p. 33-57.

This article discusses the general characteristics of each of the Finger Lakes, with special emphasis on Skaneateles Lake. In the matter of pre-glacial drainage, the Skaneateles basin differs from the larger basins of the group because its drainage was westward instead of to the north or south. (GKS)

MONOSTORY, L. G.
1967. Planning for quality in a recreational watershed--Chautauqua Lake, New York: East Lansing, Mich., Michigan State Univ., M.S. thesis, 182 p.

The surface and ground water resources within the Chautauqua Lake watershed have thus far been utilized independently by the various agricultural, municipal, industrial, and recreational interests, without serious consideration for each other's needs and requirements. Since the 1950's, a series of unusually dry years combined with increased per capita use of water have led to domestic and industrial water supply problems for the City of Jamestown, the Village of Lakewood, and other communities. A broad investigation of the following issues was undertaken: (1) the pattern of seasonal and permanent waterfront home constructions; (2) the major needs and interests of the various water-user groups within the watershed; (3) biological factors which affect the recreational utilization of Chautauqua Lake; (4) the present system of lake regulation and management; and (5) watershed management proposals by local, state, and federal governmental agencies. (author)

MOON, F. F.
1921. History of forest development on an undrained sand plain in the Adirondacks: Syracuse, N.Y., New York State Coll. Forestry, Tech. Pub. 13, 47 p.

This bulletin describes the conditions under which peat beds are formed. Special attention is given to the course of vegetation as it develops on and contributes to the formation of peat. The geographic area studied is known as the Grasse River marsh. It is a tract of land lying along the southern fork of the Grasse River, 10 miles east of Cranberry Lake village. (GKS)

MOORADIAN, S. R.
1973. (and Shepherd, W. F.). Management of muskellunge in Chautauqua Lake: New York Fish and Game Jour., v. 20, no. 2, p. 152-157.

During the 1930's, the muskellunge fishery in Chautauqua Lake began to show a drastic decline due to many accountable factors. A decision was made to protect the remaining population with more restrictive regulations which commenced in 1941. Within a few years the spring netting catch of spawning muskellunge and the angler harvest began to increase. In addition to the more restrictive regulations, a second major management practice initiated in 1941 was maintenance stocking with fingerling muskellunge along with muskellunge fry. Studies conducted between 1961 and 1971 to evaluate the fingerling stocking program have illustrated the importance of the hatchery-stocked muskellunge to the lake fishery. (author)

MOORE, F. K.
1971. (and Mackenzie, J. F.). A prediction of changes in the thermal cycle of a stratified lake used to cool a 1000 MW power plant: Ithaca, N.Y., Cornell Univ. Water Resources and Marine Sci. Center, Pub. 32, 23 p.

A model is computed showing the effects of nuclear powerplant cooling water pumped across the thermocline of a deep, stratified lake. A one-dimensional or lake-averaged representation is adopted on the basis that horizontal diffusion is so rapid that only vertical temperature gradients need be considered. Basically, the lake and therefore the representational model can be considered to be a one-dimensional thermal oscillator responding to an oscillatory heat input to its surface. The equations for the model are simply the heat balances for the separate

MOORE, F. K. (continued)
layers involved. The simple model is proposed for the estimation of changes in the temperature cycle due to thermal discharge from one or more 1000 MW [megawatts] power plants. The mixing process is modeled by semi-empirical stratification criteria and a single summer diffusion coefficient. The power plant is considered to increase heat input and to enhance the lake's mixing process during the summer by the withdrawal and return of lake water. (author)

1972. (and Jaluria, Y.). Thermal effects of power plants on lakes: Am. Soc. Mech. Engineers Trans., Jour. Heat Transfer, v. 94, no. 2, p. 163-168.

The natural thermal cycle of a stratified water body used for powerplant cooling will be disturbed both by heat addition and the mixing effect of withdrawal and return. Constant heat flux from the stratified layer is based on assumed wind-driven return current profiles. This heat flux and the diffusion coefficient at the thermocline are the critical parameters of the simple one-dimensional line-segment model, chosen to imitate the natural cycle of Cayuga Lake. The model is then perturbed in terms of both heat flux and diffusion to simulate powerplant impact on the lake. Both transient and final cycle changes of summer and winter temperatures and stratification and overturn are calculated. Heat and diffusion effects are shown to be comparable; the latter may be dominant if the discharge is diluted to meet a thermal standard. Different strategies are suggested for using lake water to cool the powerplant. (author)

MOTTLEY, C. M.
1937. Carp control studies with special reference to Chautauqua Lake, in A biological survey of the Allegheny and Chemung watersheds: New York State Conserv. Dept., 27th Ann. Rept. Supp., p. 226-287.

The Chautauqua Lake carp population was studied as a part of the general investigation of the status of carp control in New York State. In addition to the samples taken by the lake unit, 200 specimens were seined at spawning time in early June and the number of eggs, the rate of growth and age composition were determined. An important finding was the extremely high proportion of three-year-olds in the spawning population. This suggests a good survival from the 1934 spawning. Because very little fishing for carp was done this year, this extra survival indicated the desirability of controlling the number of spawning fish. (author)

MT. PLEASANT, R. C.
1961. (Rand, M. C., and Nemerow, N. L.). Chemical and microbiological aspects of Oneida Lake, New York: New York State Dept. Health, Research Rept. 8, 95 p.

Oneida Lake is a highly productive lake, with a physical, chemical, and biological character similar to that of other eutrophic lakes. Nitrates and total phosphorus are important to the productivity of the lake as they are taken up by algae during the active growing season. Alkalinity does not appear to contribute directly to algae growth. The most important contributors to conditions in the lake are its five main tributaries: the Barge Canal, and the Chittenango, Canaserago, Oneida, and Scriba Creeks. They contribute substantially to the fertilization of the lake. The major problem in the lake is the overabundance of algae, which produces an objectionable condition when deposited on leeward shores and shallows. (GKS)

MOYLE, P. B.
1966. Comparative behavior of different strains of hatchery-reared brook trout (Salvelinus fontinalis (Mitchell)): Ithaca, N.Y., Cornell Univ., M.S. thesis, 107 p.

The purpose of this thesis was to continue research interests concerned with comparing domestic and wild brook trout. Included in the paper is a general discussion of domestication in trout and additional observations and experiments on the behavior of different strains of brook trout. The results of all experiments and observations are summarized. (GKS)

MUELLER, J. F.
1937. Parasitism in fishes in the Allegheny and Chemung areas, in A biological survey of the Allegheny and Chemung watersheds: New York State Conserv. Dept., 27th Ann. Rept. Supp., p. 214-225.

A total of 274 fish, representing 43 different species, were examined for external and internal parasites, and special studies were made of the bullhead and muskellunge in Chautauqua Lake. Results of the studies are summarized as follows: (1) neither Diphyllobothium latum nor D. manosonoides, both tapeworms, occur in the Chautauqua Lake region; (2) Cassadaga Lake had the

MUELLER, J. F. (continued)
only serious abundance of bass tapeworms; (3) four species of parasitic copepods occur in the fishes of Chautauqua Lake; (4) sixteen new species of Dacylogyrus were discovered on the gills of various minnows; ... (5) bullheads in Chautauqua Lake are not heavily parasitized; (6) all the adult muskellunge from Chautauqua Lake are infected with a ciliate protozoan, Trichodina sp; (7) young muskellunge in rearing ponds at the Chautauqua hatchery were found to be heavily infested with the tapeworm Proteocephalus pingius; and (8) sporozoan parasites of the gills of smallmouth bass occur in numbers on smallmouth fingerlings at both the Randolph and Chautauqua hatcheries. (author)

MUENSCHER, W. C.
1927a. Plankton studies of Cayuga, Seneca, and Oneida Lakes, in A biological survey of the Oswego River system: New York State Conserv. Dept., 17th Ann. Rept. Supp., p. 140-157.

Plankton studies were made on Cayuga, Seneca, and Oneida Lakes. The purpose of this study was to obtain more information on abundance, vertical and horizontal distribution, and periodicity of the various kinds of plankton organisms in each lake. The author attempted to obtain information on the condition of the environment under which plankton organisms occur by measuring some of the characteristics of the lake waters. These determinations were made at each of five stations. They included measurements of temperature, transparency, dissolved oxygen content, free carbon dioxide content, total alkalinity, quantitative determinations of the various species of plankton, and total dry matter, organic matter, and ash in the lake water. Each of these measurements is discussed in detail. (GKS)

1927b. Vegetation of Silver Lake and Conesus Lake, in A biological survey of the Genesee River system: New York State Conserv. Dept., 16th Ann. Rept. Supp., p. 66-71.

This article discusses certain characteristics of the vegetation of Conesus and Silver Lakes. They include the distribution of large aquatic plants, the distribution of bottom flora and fauna, the quantity and vertical distribution of plankton in Silver Lake, and the transparency of Silver Lake. (GKS)

1929a. Aquatic vegetation of the Lake Champlain watershed, in A biological survey of the Champlain watershed: New York State Conserv. Dept., 19th Ann. Rept. Supp., p. 164-185.

To fully understand the factors that govern the fish population and productivity of a body of water, it is necessary to consider the vegetation it supports. Aquatic plant life consists of two general types: (1) microscopic unattached plants, which are suspended mostly in the upper water penetrated by light, like the plankton; and (2) the larger, attached plants consisting of the larger algae and higher plants like pondweeds, which are rooted to the bottom in shallow water. The present discussion concerns the larger aquatic plants commonly called "weeds" or "pondweeds." The article is divided into four parts: (1) a general discussion of lakes and their vegetation, (2) the principal weed areas in Lake Champlain, (3) notes on certain plants, and (4) an annotated list of the larger aquatic plants in the Lake Champlain watershed. (GKS)

1929b. Plankton studies in the Lake Champlain watershed, in A biological survey of the Champlain watershed: New York State Conserv. Dept., 19th Ann. Rept. Supp., p. 146-163.

The Lake Champlain watershed survey during the summer of 1929 included a quantitative study of the plankton of the larger lakes as well as a study of seasonal, vertical, and horizontal distribution of the planktonic organisms in Lake Champlain. Plankton station locations included 18 localitions in Lake Champlain and one station each on Lake Placid, and on Upper, Middle, and Lower Saranac Lakes. The following determinations were made at each station: (1) temperature of water, (2) transparency of the water, and (3) quantitative determinations of the various kinds of plankton organisms. (GKS)

1930a. Aquatic vegetation of the St. Lawrence watershed including the Grass, St: Regis, Salmon, Chateaugay systems and the St. Lawrence between Ogdensburg and the international boundary, in A biological survey of the St. Lawrence watershed: New York State Conserv. Dept., 20th Ann. Rept. Supp., p. 121-144.

Aquatic plants consist of two general types: (1) microscopic unattached plants like the plankton, which are suspended in the upper lake water; and (2) the larger, attached plants consisting of algae, some mosses, and higher plants like pondweeds, which are rooted to the bottom in shallow water. This article is concerned with the larger aquatic plants known as

MUENSCHER, W. C. (continued)
"pondweeds." The subject is treated in four sections: (1) the vegetation of the lakes and streams; (2) the principal areas of aquatic vegetation; (3) plants used for food by wild ducks; and (4) an annotated list of the larger aquatic plants in the St. Lawrence watershed. (GKS)

1930b. Plankton studies in some northern Adirondack lakes, in A biological survey of the St. Lawrence watershed: New York State Conserv. Dept., 20th Ann. Rept. Supp., p. 145-160.

During the summer of 1930, plankton in 15 lakes and ponds in the Adirondack region were studied. Some of these lakes were selected for study because they were representative of the lakes of the region; others were selected because they presented particular problems associated with their fish populations or with the development of fish-stocking policies. Studies were made at two stations in each lake, one in fairly deep water in the open part of the lake, usually near its middle, and the other near shore, in shallow water 1 to 3 metres deep. The determinations made in each lake were water temperature, transparency, and quantitative determinations of the different kinds of planktonic organisms. (GKS)

1931. Aquatic vegetation of the Oswegatchie and Black River watersheds (including the eastern end of Lake Ontario and the upper stretch of the St. Lawrence River), in A biological survey of the Oswegatchie and Black River Systems: New York State Conserv. Dept., 21st Ann. Rept. Supp., p. 199-221.

This report on the field studies of aquatic vegetation includes a discussion of the location and composition of the principal areas of aquatic vegetation within the Oswegatchie and Black River watersheds, and an annotated list of all the species of larger aquatic plants in the watersheds. The water of the area can be classified into four geographic groups: (1) the St. Lawrence River with its bays and the mouths of its tributaries; (2) the bays and the lower courses of streams entering the eastern end of Lake Ontario; (3) the lower lakes; and (4) the Adirondack mountain lakes. The article discusses the vegetation of each of these geographic areas in detail. (GKS)

1932. Aquatic vegetation of the Upper Hudson watershed, in A biological survey of the Upper Hudson watershed: New York State Conserv. Dept., 22d Ann. Rept. Supp., p. 216-238.

This article discusses the large rooted aquatic plants in the Upper Hudson watershed. These plants form a very important link in the chain of food relations that insure high fish production in this area. Most of the larger lakes and many ponds and streams in the area were studied to locate the principal areas of aquatic plants. The Upper Hudson watershed was divided into four areas: (1) the lower lakes; (2) the higher Adirondack lakes; (3) the Hudson River; and (4) impounded waters. Each of these is discussed in detail. An annotated list of plants is included. (GKS)

1933. Aquatic vegetation of the Raquette watershed, in A biological survey of the Raquette watershed: New York State Conserv. Dept., 23d Ann. Rept. Supp., p. 209-221.

This article discusses the location of the principal areas of aquatic vegetation in the Racquette watershed. It presents an inventory of the species of large aquatic plants present, gives their scientific and common names, and lists their distribution and the conditions under which they grow in this watershed. (GKS)

1934. Aquatic vegetation of the Mohawk watershed, in A biological survey of the Mohawk-Hudson watershed: New York State Conserv. Dept., 25th Ann. Rept. Supp., p. 228-249.

An adequate supply of food, one of the major factors determining the suitability of a body of water for fish life, depends largely on the plant life that the body of water supports. The rooted aquatic plants are of interest because they frequently cover extensive areas of water and offer protection or shelter for the young fish. The bodies of water studied in the summer of 1934 included the Mohawk River, a stretch of the Hudson River between Waterford and Hudson City, 10 small lakes east of the Hudson River, several lakes in the southern Adirondacks draining into the Mohawk River, and the larger of the lower lakes in the eastern part of the Mohawk Valley. An annotated list of the weeds in the watershed is included. (GKS)

MUENSCHER, W. C. (continued)

1935. Aquatic vegetation of the Susquehanna and Delaware areas, in A biological survey of the Delaware-Susquehanna watershed: New York State Conserv. Dept., 26th Ann. Rept. Supp., p. 205-221.

The study of the aquatic vegetation was confined to the larger lakes, reservoirs, and a few ponds of special interest. Of the two major lakes, Canadarago Lake, a relatively shallow and warm water lake, supports numerous weed beds composed of many species and extending over large areas while Otsego Lake, a deep cold-water lake, contains few species and supports relatively small weed beds. Most of the smaller lakes had luxuriant vegetation of rather uniform composition.

In the Delaware watershed the reservoirs were shallow and very weedy, although the bulk of the vegetation consisted of few species. The lakes had much less uniformity in type of vegetation than was observed in the Susquehanna watershed. (author)

1936. Aquatic vegetation of the Lower Hudson area, in A biological survey of the Lower Hudson Watershed: New York State Conserv. Dept., 26th Ann. Rept. Supp., p. 231-248.

The study of the aquatic vegetation was directed largely to the 100-mile section of the Hudson River between the New Jersey border and the Catskill mountains. It included the larger lakes and a few reservoirs and ponds of special interest. The shallow bays and the mouth of the larger tributaries of the Hudson River produce an abundance of aquatic vegetation that is rather uniform in botanical composition. In addition to a few common species of wide distribution, several "estuarine species" were found throughout the tidal region of the Hudson River. An annotated list describing the distribution of aquatic vegetation in the lower Hudson is included. (PAV)

1938. Aquatic vegetation of Long Island waters, in A biological survey of the fresh waters of Long Island: New York State Conserv. Dept., 28th Ann. Rept. Supp., p. 88-101.

Aquatic vegetation of twenty selected lakes and ponds, the Peconic and Missequogue Rivers, and several of the smaller spring-fed brooks on Long Island were studied. Several of the marine bays and bordering brackish marshes were also examined. The composition of the principal areas of vegetation in these bodies of water is discussed and the chief species in each are indicated. In general, the vegetation of the streams and ponds in relatively undisturbed areas was found to be luxuriant but quite uniform in composition. Many of the smaller lakes and ponds did not support extensive areas of aquatic vegetation. (author)

MULLER, E. H.

1957. Filled bedrock gorges in the drainage basin of Cayuga Lake, New York: Geol. Soc. Am. Bull., v. 68, no. 12, p. 1771.

1964. Surficial geology of the Syracuse field area, in New York State Geological Association, Guidebook, 36th Ann. Mtg: p. 25-35.

This article provides a frame of reference for field trips in the Syracuse area. The trips range from Rome in the east to Marcellus in the west and from Boonville in the north to Tully in the south. No effort is made to provide uniform treatment through the area; rather geological relationships at certain stops are developed in detail, whereas others are treated only in general terms. (author)

1967. Geologic setting of Green and Round Lakes near Fayetteville, New York, in Some aspects of meromixis: Syracuse, N.Y., Syracuse Univ. Press, p. 97-121.

This article discusses the geologic makeup of Green and Round Lakes. The physiographic relationships of the area are considered in detail. This includes basin layout, glacial scour, drift cover, erosion and the reasons for the shapes and features of specific lakes and streams. The article also discusses the origins of the basins of Green and Round Lakes. It mentions the plunge-pool action that created the basins for the two lakes. The postglacial modification is considered in a final section. Geologic maps and charts are included. (GKS)

MULLIGAN, H. F.

1966. Comparative application of an electronic particle counter in analyzing natural phytoplankton dynamics in ten replicated ponds: Ithaca, N.Y., Cornell Univ., Doctoral dissert., 64 p.

MULLIGAN, H. F. (continued)

One hundred identical experimental ponds have been constructed at Cornell University to study the ecology of aquatic weeds. The purpose of this dissertation was to follow the succession of phytoplankton populations in selected ponds, to obtain and correlate ecological data with population results, and to determine the feasibility of applying an electronic particle counter to the collection of useful data from a large number of ponds. This study was initiated in virgin ponds and continued for two seasons. Data obtained by the electronic particle counter are compared with results of phytoplankton population changes determined using a number of conventional indices. Biomass and species composition are evaluated with reference to several physical, chemical, and biological parameters. (GKS)

1968. (and Kingsbury, J. M.). Application of an electronic particle in analyzing natural populations of phytoplankton: Limnology and Oceanography, v. 13, no. 3, p. 499-506.

Phytoplankton dynamics in 10 morphometrically identical ponds were analyzed using an electronic particle counter. Results were compared with data obtained by several standard methods. While the counter cannot distinguish living from dead particles, nor species from species, its use in sizing and counting plankton populations yields values for biomass against time which provide a highly resolved profile of pond dynamics. Peaks of biomass can often be correlated with presence of a particular phytoplankton as determined by simple microscopic examination. Biomass determined in this way was more precise than that obtained by determining chlorophyll a or dry weight. Far more data could be obtained in a given time by this means than with a hemocytometer. (author)

1969a. (and Baranowski, A.). Growth of phytoplankton and vascular aquatic plants at different nutrient levels: Internat. Vereingung für theoretische u. angew. Limnologie Verh., v. 17, p. 802-810.

Greenhouse experiments to determine optimal levels of inorganic nitrogen and phosphorous for the growth of aquatic plants were conducted as a basis for establishing eutrophic conditions in twenty experimental ponds. Various formulations, levels, and ratios of inorganic nitrogen and phosphorus were applied to cultures of aquatic vascular plants (Myriophyllum spicatum var. exalbescens, Potamogeton crispus and Elodea canadensis), and freshwater phytoplankton populations were established in battery jars containing natural soil and water. Applied nutrient levels ranged from 0.015-50 mg/l N [milligrams per litre nitrogen] and 0.005-5 mg/l P [milligrams per litre phosphorus]. The yields of the plants after five weeks growth under experimental conditions were used as indices of response. This report presents the results of the experiments. The laboratory data suggest that future uncontrolled enrichment of natural bodies of water will result in the growth of larger populations of phytoplankton at the expense of benthic aquatic macrophytes. These conclusions are being examined under natural conditions in experimental ponds. (author)

1969b. Management of aquatic vascular plants and algae, in Eutrophication: Causes, consequences, correctives: Washington, D.C., Natl. Acad. Sci., p. 464-482.

This article discusses the detailed role of macroscopic aquatic plants and phytoplankton in eutrophication. Emphasis was placed on the chemical, mechanical, and biological control of aquatic weeds. The effectiveness of various herbicides was considered in detail. (GKS)

MUMFORD, WARREN

1973. (Czapski, U., and Felon, M.). Dissipation of heat from a thermal effluent: Water Resources Research, v. 9, no. 6, p. 1565-1578.

The relative magnitudes of surface cooling, lateral diffusion and advection from a thermal effluent are investigated. Data have been gathered at Nine Mile Point, east of Oswego. An estimate of the energy balance of this plume is made. The effective lateral diffusion coefficient obtained from this budget is larger than most values published. Also, surface cooling is suggested to be larger than that estimated by a Dalton type formula. This suggestion is supported by an estimate of advection of sensible heat above the plume. A modification of the temperature of the air over the plume is indicated by the data, although no increase in vapor pressure is observed. However, the variance of the vapor pressure in both time and space suggests a high degree of turbulence. (author)

MURPHY, C. B., Jr.

1973a. Effect of restricted use of phosphate-based detergents on Onondaga Lake: Science, v. 182, no. 4110, p. 379-381.

A marked decrease in the concentration of total inorganic phosphate in the epilimnion and hypolimnion of Onondaga Lake has been observed between July 1971 and January 1973. Grab samples, collected every two weeks at 3-meter intervals from the surface to the bottom at a station located in the southern basin, have shown decreases of 85 and 76 percent in the average condensed inorganic phosphate concentrations in the epilimnion and hypolimnion, respectively. The orthophosphate concentrations were found to decline by 47 and 15 percent, respectively, over the same period of time. There is little growth of plankton in the winter; a diatom population develops in the spring; and the green algae Chlorella, Scenedesmus obliquus, Scenedesmus quadricauda, and Oocystis parva dominate the summer period. Blue-green algae (Aphanizomenon) follow the die-off of the greens, and dominate the late summer and early fall. In 1972, Aphanizomenon was absent in the succession. Instead, the green algae blooms continued through the summer and fall with cell counts comparable to those measured in previous years. It appears that the alteration of the phytoplankton seasonal succession is the result of reducing the phosphorus concentrations in the photic zone. (author)

1973b. (Moffa, P. E., and Karanik, J. M.). Effects of nutrient reductions on Onondaga Lake: O'Brien and Gere Engineers, Inc., 46th Ann. Conf. of Water Pollution Control Federation, Proc., Cleveland, Ohio, 13 p.

The expenditure of large sums of money for the construction of treatment facilities is not the only tool available for the control of water pollution. Other alternatives include the optimization of present facilities operation and the regulation of the use and contents of certain disposable consumer products. The purpose of this paper is to show the effect of phosphate limiting detergent legislation and an interceptor maintenance program on the water quality of a receiving water body, Onondaga Lake. We will also show the response of the biota of Onondaga Lake to the above mentioned pollution control measures.

During the period of 1968-69, an extensive limnological investigation was conducted on Onondaga Lake, which presently serves as a baseline to assess the effectiveness of abatement programs on the receiving water body. Following the baseline study a monitoring program was established in 1970 to gain insight into the reaction of the aquatic community to pollution control measures adopted around the lake. (author)

MYER, G. E.

1968. Thermal structure and vertical heat transport in Langmuir circulations, in The role of Langmuir circulation in mixing of Lake George: Albany, N.Y., State Univ. New York, Atmospheric Sci. Research Center Pub. 61, p. 19-41.

This paper reports the results of a study to determine thermal structure associated with streaks and the role of Langmuir circulations in epilimnion mixing. A floating instrument probe was constructed to obtain data on Lake George from August 1967 through December 1967. The thermal structure of Langmuir circulations under stable and unstable conditions was obtained. Autocorrelations of water temperature were computed and indicated that there was a scale of turbulence associated with streaking conditions much larger than that of ordinary turbulence. Thermal effects in the air implied an organization to the air flow over streaks. From this study it was found that Langmuir circulations are a major cause of epilimnion mixing and thermocline formation and movement in summer and autumn. (author)

1969. A field study of Langmuir circulations: Internat. Assoc. Great Lakes Research, 12th Conf. Great Lakes Research, Proc., Ann Arbor, Mich., p. 652-663.

This paper reports the results of a study to determine the thermal structure and importance of Langmuir circulations. Under thermally stable conditions Langmuir circulations transport heat downward. Langmuir circulations are a major cause of epilimnion mixing and thermocline development and decline in lakes. The Langmuir circulations appear to be coupled to the wind by some indirect mechanism. The mechanisms for this coupling that best fit field observations on Lake George are those acting at or very near the water surface. (author)

1971a. Structure and mechanism of Langmuir circulations on a small inland lake: Albany, N.Y., State Univ. New York, Doctoral dissert., 113 p.

MYER, G. E. (continued)

Langmuir circulation with spacings of approximately 2 to 10 metres were studied on Lake George from 1967 through 1970. Detailed thermal structure of Langmuir circulations was obtained. The circulations were found to be important in the mixing of heat in the epilimnion and in the development of the thermocline in Lake George. Measurements were taken of airflow above Langmuir circulation and of the wave structure at the water surface. These measurements were used to assess some of the mechanisms proposed to explain the existence of Langmuir circulations. (PAV)

1971b. A field study of Langmuir circulations in physical studies on Lake George and Lake Ontario: Troy, N.Y., Rensselaer Polytech. Inst., Lake George Studies Rept. 6, p. 652-663.

Under thermally stable conditions Langmuir circulations transport heat downward. Langmuir circulations are a major cause of epilimnion mixing and thermocline development and decline in lakes. The Langmuir circulations appear to be coupled to the wind by some indirect mechanism. The mechanisms for this coupling which best fit field observations on Lake George are those acting at or very near the water surface. (author)

1973a. A general model for vertical thermal stratification in ice free lakes: Plattsburgh, N.Y., State Univ. New York, Lakes and Rivers Lab. Tech. Rept., p. 81-179.

A general model was developed to simulate the vertical thermal development of most mid-latitude lakes during their ice free period. The model is based on the heat balance of lakes, including solar radiation, longwave radiation, latent heat exchange, sensible heat exchange, heat exchange with rivers, and heat exchange at the bottom of the lake. Vertical mixing is modeled in three ways to simulate mixing primarily caused by density instabilities, wind stress on the surface, and eddy diffusion. The model is written in the form of a fortran computer program. The model was tested by simulating the thermal development of three lakes ranging in size from Lake Champlain to lower Chateaugay Lake. (author)

1973b. (and Scarpinato, A.). Hypsometric map of Harris Lake, New York: Plattsburgh, N.Y., State Univ. New York, Lakes and Rivers Research Lab. Tech. Rept., p. 187-190.

Harris Lake is a small elongate lake about 3 kilometers long located in the Adirondack Mountains. The shoreline of the lake is quite irregular and the main portion of the lake consists of two elongate basins which lie along a generally east-west line. A third smaller basin is connected to the south side of the lake. The hypsometric curve and a hypsometric map for the lake are presented. (author)

MYERS, R. E.

1962. Farm ponds in New York--Their value to waterfowl and owner: Ithaca, N.Y., Cornell Univ., M.S. thesis, 76 p.

Many ponds in Allegheny, Orleans, and Tompkins Counties were surveyed to appraise the wildlife use of farm ponds, especially by waterfowl. It was also desired to determine the use, interest, and value of the pond to the owner. This thesis discusses the results of the survey and offers recommendations for improvment of the ponds. (GKS)

NAGY, JAMES

1972. (Kohberger, R. C., and Wilkinson, J. W.). ADLIB--Abstract data librarian--A bibliographic retrieval system for data set abstracts with interaction with the FIND System: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 72-18, 7 p.

A series of programs for bibliographic retrieval of data set abstracts is described. The programs are designed to operate with FIND for a total information system. The programs store and retrieve data set abstracts. The programs are written in IBM Assembler Language. (author)

1973. (Fisher, J. S., Kohberger, R. C., and Wilkinson, J. W.). A user's guide to ADLIB--Part 1: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 73-4, 9 p.

ADLIB is a series of programs for bibliographic retrieval and data manipulation and analysis. The first part of this manual describes the bibliographic retrieval section of ADLIB. Part 2 will discuss the data manipulation and analysis section of ADLIB. Abstracts currently on the system describe data sets that are filed on the databank. It is possible that in the future, abstracted journal articles and books may be stored.

In order to use ADLIB, the time sharing system (currently ALPHA) and the command syntax of ADLIB must be understood. This manual will give all the information that is needed to use the ADLIB System. (author)

NATIONAL ACADEMY OF SCIENCES

1969. Eutrophication--Causes, consequences, correctives: Washington, D.C., Natl. Acad. Sci., 661 p.

This book contains the proceedings of an international symposium on eutrophication held at the University of Wisconsin during 1967. Five general topics were discussed: (1) geographical concepts of eutrophication, (2) eutrophication, past and present, (3) detection and measurement of eutrophication, (4) preventive and corrective measures, and (5) contributions to science from the study of eutrophication. Recommendations were developed for the effective management of problems and for the course of future research. (GKS)

NEEDHAM, J. G.

1901. Aquatic insects in the Adirondacks: New York State Mus. Bull. 47, 612 p.

This article is a result of a field study of Adirondack aquatic insects that had the following objectives: (1) to increase the State Museum collections, (2) to increase the knowledge of the aquatic insect fauna of the region, (3) to study the place of aquatic insects in natural societies, (4) to study the reproductive capacity of insects; (5) to study the habits of aquatic insects; (6) to study the food relations of insects, fishes, and other aquatic animals; and (7) to study the life histories of aquatic insects. Most of these objectives are summarized in the article. (GKS)

1903. (MacGillivray, A. D., Johannsen, O. A., and Davis, K. C.). Aquatic insects in New York State: New York State Mus. Bull. 68, 499 p.

This article describes the life histories of aquatic insect groups in New York State. Included are several illustrations of insects and their habitats. (GKS)

1905. (Morton, K. J., and Johannsen, O. A.). May flies and midges of New York: New York State Mus. Bull. 86, 352 p.

This bulletin contains a large list of the midges and mayflies of New York State. It is a generic treatment of the world fauna, together with detailed descriptions and life histories (mostly new) of New York's known species. (GKS)

1918. A new mayfly, Caenis, from Oneida Lake, New York: Syracuse, N.Y., New York State Coll. Forestry., Tech. Rept. 9, p. 249-251.

A new species of mayfly, Caenis lacustris sp. nov., which resembles the European species, Caenis harrisella, is described from Oneida Lake. (PEG)

1920. Burrowing mayflies of our larger lakes and streams: U.S. Bur. Fisheries Bull., v. 36, p. 267-292.

NEEDHAM, J. G. (continued)
1921. A biological examination of Lake George, N.Y.: Sci. Monthly, v. 12, p. 434-438.

During the summer of 1920, the New York State Conservation Commission maintained a field laboratory on Juanita Island in Lake George. A study was conducted to (1) measure temperature, plankton, and dissolved gases at different depths, and (2) to study the food of fishes and trace it back to its source in the lake vegetation along the shores and to plankton. The water of Lake George is "soft," and dominant plants and lesser animals differ from those of the lakes in central New York. The most abundant plant in the lake--the one of greatest bulk--is the stonewort, Nitella opaca. Two green algae that inhabit the lake bed below the level of Nitella are the "Siphone alga" (Dichotomosiphon), and a species of Cladophora. The article cites several other types of algae and the lake habitats where they thrive. (GKS)

1922. (Juday, C., Moore, E., Sibley, C. K., and Titcomb, J. W.). A biological survey of Lake George, N.Y.: New York State Conserv. Comm. Rept., 78 p.

The chief object of this study was to find out as much as possible in a single season about the conditions affecting the welfare of the food and game fishes of Lake George. This report deals only with matters affecting fish production. First are noted some of the physical and hydrographic conditions affecting the life of the lake, followed by a brief account of the plants and animals in general and of their mutual relationships. The fishes receive particular attention. The diets of carnivorous fry and fingerlings fall into the following categories: waterfleas, midges, miscellaneous insects, scuds, and crayfishes. Cannibalism occurs among the smaller fingerlings when natural food is scarce or when they are confined under unnatural conditions. The article discusses other conclusions. (GKS)

NEIL, J. H.
1967. (Johnson, M. G., and Owen, G. E.). Yields and sources of nitrogen from several Lake Ontario watersheds: Internat. Assoc, Great Lakes Research, 10th Conf. Great Lakes Research, Proc., Toronto, Ontario, p. 375-381.

The yield of nitrogen was estimated from six selected southern Ontario watersheds representing rural and urban land uses. A discharge total nitrogen rating curve was calculated and applied to the hydrograph of each watershed to develop these estimates. Total annual yield of nitrogen was found to be 3,200 lbs N/mi^2/yr [pounds nitrogen per square mile per year] for rural watersheds and 34,000 lbs N/mi^2/yr for urban watersheds when effluents from secondary treatment plants were included. The nitrogen yield from rural watersheds during February, March and April constituted 58 percent to 69 percent of the annual contribution, whereas the yields from urban watersheds were uniformly high. Yields calculated from concentration of phosphorus found in the same samples indicated a ratio of nitrogen to phosphorus (PO_4) of 1.5 to 1 for urban watersheds and 8 to 1 for rural watersheds. (author)

NEMEROW, N. L.
1964. (and Rand, M. C.). Algal nutrient removal from domestic wastewaters: N.Y. State Dept. Health and N.Y. Water Pollution Control Assoc., Water Quality Research Symposium, Albany, N.Y., 1964, Proc., p. 37-58.

The removal of suspended and dissolved organic matter and pathogenic microorganisms from wastewater is no longer sufficient treatment. Other contaminants needing removal are phosphates, nitrates, and chlorides. The more these contaminants increase, the more algae increase. The problem is one of preventing algal growth by limiting the inorganic nutrients so vital to algae. This study is to ascertain whether the removal of inorganic nutrients from domestic wastewater is sufficient treatment to control algal blooms. The article discusses the physical experiments of the study, after which the following general conclusions were drawn: (1) phosphates are removed efficiently by lime precipitation and ion-exchange treatment of raw domestic wastewaters; they are also removed to lesser extent by algae cultivation with subsequent algae removal; (2) algal regrowth in receiving streams can be reduced visibly and qualitatively by these treatments. The quantitative reduction of algae by these treatments under natural environmental conditions has not been satisfactorily ascertained at this time. (GKS)

1968. (and Rand, M. C.). Algal growth affected by degree and type of wastewater treatment, in Algae, man and the environment: Syracuse, N.Y., Syracuse Univ. Press, p. 391-402.

NEMEROW, N. L. (continued)

Eutrophication of streams and lakes has been linked to the increased contamination reaching these waters both from municipal sewers and through underground percolation from soil treatment systems. After a study of the effects of municipal sewage on algal growth, the authors concluded that algal growth can be retarded both by proper pretreatment of sewage and by percolation through sand, as well as by little or no treatment followed by percolation through soil composed of 85 percent sand and 15 percent silty clay. (PEG)

NETH, P. C.

1955. Assessment of a control program for common whitefish (Coregonus clupeaformis) and round whitefish (Prosopium quadrilaterale) in Little Moose Lake, New York: Ithaca, N.Y., Cornell Univ., M.S. thesis, 101 p.

In the fall of 1952, a control program was initiated in Little Moose Lake in an effort to reduce the adult common whitefish and round whitefish populations and thereby to increase the survival of juveniles of these two species. The ultimate objective of this program is to increase the population of landlocked salmon in the lake. Comparison of the growth rates determined from 1952 and 1953 common whitefish samples showed that the mean length and the mean weight of the 1953 samples were 1.4 percent and 13.1 percent greater, respectively, than those of the 1952 sample. Round whitefish, on the other hand, showed no change in growth rate between 1952 and 1953, nor was any change evident in the condition factors. A trend toward reduction in the average spawning age was noted for common whitefish in a comparison in 1952 and 1953. The annual mortality rates of common whitefish and round whitefish were 31 percent and 27 percent, respectively. Estimates of the spawning common whitefish population in 1952 and 1953 were 2,800 and 1,725 fish respectively. Stomach analysis indicated that egg predation may be important in controlling juvenile production. (GKS)

1959. Reduction of whitefish populations in an Adirondack salmon lake. An effort towards increased production of young: Ithaca, N.Y., Cornell Univ., Doctoral dissert. 153 p.

In the fall of 1952, a control program was started in Little Moose Lake to reduce the abundance of adult common whitefish and round whitefish. The ultimate objective of this program was to increase the growth rate of landlocked salmon in the lake on the theory that the young of of these two whitefishes may serve as a forage for the larger salmon. All evidence derived from an analysis of changes in the two whitefish species indicates that the control program did not increase production of young whitefish. The overall objective to increase the growth rate of landlocked salmon was not realized. Of other species considered as a possible forage fish, the landlocked alewife appears to have the greatest potential value. (GKS)

NEUMAIER, G. J.

1969a. A program to assess the thermal discharge from a planned nuclear power plant on Cayuga Lake: Internat. Assoc. Great Lakes Research, 12th Conf. Great Lakes Research, Proc., Ann Arbor Mich., p. 664-673.

Cayuga Lake is the site of an operating fossil-fuel plant and the proposed site of a nuclear power installation. Cornell Aeronautical Laboratory has conducted a program to determine the physical changes that would occur in the lake when the proposed plant goes into operation.

Infrared aerial surveys have been taken over the site under a variety of meteorological, seasonal and lake conditions to collect lake surface temperature data for thermal plumes of interest. Four buoys have been placed in the site area. Temperature measurements recorded from a set of 48 thermistors spaced at various depths provide an accurate and nearly continuous picture of the thermocline at those four buoy locations. Lake current and meteorological measurements are being made and used through an extensive modeling program in predicting the thermal changes in the lake that would result from construction of the nuclear power plant. (author)

1969b. (and Bock, D. H.). Cayuga Lake and Bell Station. Physical effects--Final report summary: Buffalo, N.Y., Cornell Aeronautical Laboratory, Rept. VT-2616-0-1, 55 p.

The New York State Electric and Gas Corporation proposes to add an 830 megawatt nuclear-powered steam plant to its network. The proposed plant, Bell Station, would be located on Cayuga Lake. Cooling water would be withdrawn from the lake at the rate of approximately 550,000 gallons per minute, circulated through the steam condensers, where its temperature would be increased by about 20°F, and then discharged into the lake.

NEUMAIER, G. J. (continued)

The report summarizes a study of the physical characteristics of the lake and implies the ecological consequences. The summary first presents general background information necessary to a fuller understanding of the physical state of Cayuga Lake and its thermal structure. The report also provides a condensed discussion of principal study objectives and conclusions. A glossary of terms is provided. (PEG)

1969c. (and Bock, D. H.). Project Caloric--An investigation of heat release patterns associated with present and planned electric power plants on Cayuga Lake: Buffalo, N.Y., Cornell Aeronautical Laboratory, Rept. VT-2616-0-3.

NEVIN, F. R.

1934. (and Townes, H. K.). Studies of invertebrate forage organisms in selected areas with notes on the effects of pollution upon them, in A biological survey of the Mohawk-Hudson watershed: New York State Conserv. Dept., 24th Ann. Rept. Supp., p. 214-227.

The object of this study of typical creeks, rivers, and a few representative lakes of the watershed was to determine qualitative and quantitative abundance of the larger invertebrate animals present as potential fish food. In the qualitative studies, attempts were made to obtain specimens of all insects, crustaceans, and other potential food organisms at many stations in order to provide an indication of local conditions. The article discusses these organisms in relation to specific rivers and lakes. A few tables summarize the results of the survey. (GKS)

1935. A study of the larger invertebrate forage organisms in selected areas of the Delaware and Susquehanna watersheds, in A biological survey of the Delaware-Susquehanna watersheds: New York State Conserv. Dept., 25th Ann. Rept. Supp., p. 195-205.

This report, chiefly in the form of summaries, lists and tabulates the larger invertebrate fauna. The material is arranged so that relationships among different factors considered may be readily observed as species, the weight in grams of square-foot samples, the areas from which samples were taken and the relationship of stream width to productivity. The effect of floods, of seasonal changes, and of pollution on the invertebrate population are considered. Data are included on adult forms of insects indicating dates and frequency of occurence and habitat preferences. (author)

NEWBOLD, J. D.

1974. (and Liggett, J. A.). Oxygen depletion model for Cayuga Lake: Am. Soc. Civil Engineers, Environmental Eng. Div. Jour., v. 100, no. EE1, p. 41-59.

Depletion of dissolved oxygen from hypolimnia of stratified lakes is both an integral and serious aspect of eutrophication. While it has been established that the degree of deoxygenation is related to productivity, questions remain regarding the specific processes by which the depletion occurs and the quantitative relationships among the thermal structure of a lake, its biological activity, and the resultant oxygen regime. These parameters are related through the use of a mathematical model of Cayuga Lake, from which a clearer explanation of the physical and biological processes of oxygen depletion are derived. The model, and others of similar nature, can indicate what the critical parameters might be. In the lowest parts of the lake the benthic demand, still largely unknown, appears to dominate; in the upper parts benthic demand (depending on lake configuration), respiration, and decay all play important parts and interact with diffusion. (author)

NEWLAND, D. H.

1942. (and Vaughan, H.). Guide to the geology of the Lake George region: New York State Mus. Handb. 19, 234 p.

NEW YORK STATE ATOMIC AND SPACE DEVELOPMENT AUTHORITY

1970. A thermal profile of the waters of New York State: New York State Atomic and Space Devel. Authority Rept., 26 p.

Existing temperature patterns of New York State's major bodies of water were determined. Baseline data on the extent and location of natural and artificial heat sources are provided. Large natural variations in water temperatures caused by geographic location and seasonal variations were recorded along with the "fine structure" of temperature influenced by flow, depth, tidal effects and mixing. Diffusion and dissipation patterns of manmade thermal discharges in

NEW YORK STATE ATOMIC AND SPACE DEVELOPMENT AUTHORITY (continued)
various bodies of water were investigated. The survey was conducted in ponds, marshes, rivers, lakes and coastal waters. Airborne infrared sensing devices and data collection and recording equipment were used and reduced by computer to produce the thermal profiles. Results of the survey will be used for site selection for future nuclear powerplants and for predicting dissipation and dispersion of future thermal discharges along with better designs of outfall and cooling facilities for full protection of the environment. (author)

NEW YORK STATE CONSERVATION DEPARTMENT

1927a. A biological survey of the Genesee River system: New York State Conserv. Dept., 16th Ann. Rept. Supp., 100 p.

In April 1926, the State Legislature appropriated $15,000 from the conservation fund for use by the Conservation Department to initiate its program of biological surveys. As defined in the enacting clause, the purposes of such surveys are "to determine the most practical methods of increasing fish production." In pursuance of this provision, the first investigation undertaken deals with the pressing problem of formulating a stocking policy based on the condition of the streams receiving the millions of fish propagated annually in the hatcheries of the State. Subjects covered in this report are: (1) stocking policy for the Genesee River system; (2) chemical investigation of the Genesee River system with special reference to pollution; (3) biological studies of polluted areas in the Genesee River system; (4) fishes of the Genesee region with annotated list; (5) vegetation of Silver Lake and Conesus Lake. (GKS)

1927b. A biological survey of the Oswego River system: New York State Conserv. Dept., 17th Ann. Rept. Supp., 248 p.

This biological survey covers the area of the Finger Lakes and Oneida Lake. The primary objective of the survey was the development of a stocking policy for the streams and lakes of the watershed. The investigation consisted of a lake survey, a stream survey, and a carp-control study as well as studies dealing with pollution, distribution, parasitism, and plankton and other fish-food resources. Maps and stocking lists are included as interpretative aids. (GKS)

1928. A biological survey of the Erie-Niagara system: New York State Conserv. Dept., 18th Ann. Rept. Supp., 244 p.

This year's biological survey covers the area along the Lake Erie shoreline of approximately 70 miles stretching from the Pennsylvania border to Buffalo. It covers the frontage of 37 miles of the Niagara river. Upper and lower stretches of the river represent adjuncts of Lakes Erie and Ontario as sources for replenishment of the lake supply. The tributaries and headwaters of the watershed spread over six counties--Erie, Niagara, Genesee, Wyoming, Cattaraugus, and Chautauqua. Three of the largest stream systems, Cattaraugus, Tonawanda, and Buffalo Creeks, have their sources in the plateau section. Trout live in the headwaters and panfish live in the lower stretches of these creeks. Some of the studies of this survey include chemical and biological investigations, fish and fish food of the watershed, fish diseases, establishment of a stocking policy, and carp control studies. (GKS)

1929. A biological survey of the Champlain watershed: New York State Conserv. Dept., 19th Ann. Rept. Supp., 321 p.

Intensive investigations were carried on in the New York State part of the Lake Champlain watershed. Adjoining tributaries were given some study in order that the lake might receive consideration as a unit in the survey program. Study was begun for the development of a stocking policy. Investigations included the study of many important phases of fish life. Investigations on Lake Champlain embraced studies on the distribution of the numerous species of fish in the lake; correlations of the great plant areas or weed beds with the breeding and food habits of the more popular angling species; study of the predatory species; food studies of all catches taken; parasitism; pollution conditions affecting fish life; minnows of the area; and an intensive study of smelt. Emphasis was placed also on studies of the smaller lakes and ponds of the watershed that have afforded traditionally good "backwoods fishing" but now produce insignificant catches of small-sized fish. (GKS)

1930. A biological survey of the St. Lawrence watershed: New York State Conserv. Dept., 20th Ann. Rept. Supp., 233 p.

This biological survey includes the area restricted to the main stretch of the St. Lawrence River from Ogdensburg to the international boundary, to the four large tributaries--the Grass, St. Regis, Salmon, and Chateaugay systems--and to scattered lesser tributaries. Incorporated also in this publication are two progress reports, one on the subject of carp control and the other on reactions of fish to certain chemicals frequently entering streams as polluting wastes. Subjects of the investigation were temperature analysis; natural food available; spawning and hiding places and flow and purity of water; conditions favoring or hindering natural propagation; species already present and their relative abundance and distribution in the stream system; the presence and nature of fish diseases occurring in various habitats; the problem of the so-called "vermin" fish; quantity, kind, and distribution of plankton; and the weed areas bearing directly or indirectly on fish productivity. (GKS)

1931. A biological survey of the Oswegatchie and Black River systems: New York State Conserv. Dept., 21st Ann. Rept. Supp., 344 p.

The extensive area embraced by the current survey includes all water areas--streams, lakes, and ponds--within the boundaries of Jefferson and Lewis Counties and in parts of St. Lawrence, Herkimer, Hamilton, Oneida and Oswego Counties. It is a territory of approximately 4,300 square miles. It includes the drainage systems of the Oswegatchie and Black rivers that rise eastward in the timbered slopes of the Adirondack plateau, grade downward along the sloping plains westward for a distance of more than 100 miles, and empty into the St. Lawrence system. It includes the New York side of the St. Lawrence River and all tributaries from Ogdensburg to Cape Vincent. The surface features of this area are characterized by the highland region where an extensive lake belt occurs. Another feature of the topography that influences the fisheries are the numerous stretches of streams with rapid fall. The investigation programs concentrated on fish collections and analysis, pollution, food for fish, water plants, and chemical investigations. (GKS)

1932. A biological survey of the Upper Hudson watershed: New York State Conserv. Dept., 22d Ann. Rept. Supp., 341 p.

The Upper Hudson drainage area, including all the tributaries of the Hudson north of the Hoosic River, represented the season's undertaking. The water area of this basin spreads over parts of six counties. It lies mainly within the Adirondack Park boundary. It is an area exceedingly diverse topographically and is characterized by fishing facilities of great extent and variety, including warm water of open and wooded lowlands and cold water of the northernmost mountain districts and wilderness areas. In this drainage area of about 3,500 square miles there are nearly 40 lakes and more than 700 ponds. The report presents an interpretation of prevailing conditions where stocking has failed to show adequate returns. The survey included special investigations related to the problem of production as shown in the natural food supply, on the plankton crop, and on compositon, extent, and distribution of the weed areas. (GKS)

1933. A biological survey of the Raquette watershed: New York State Conserv. Dept., 23d Ann. Rept. Supp., 298 p.

The headwaters of the Raquette River lie in the Adirondack Plateau. The watershed incorporates numerous interesting and beautiful bodies of water--Big Tupper, Long, Raquette, Blue Mountain, and Forked Lakes. These and many smaller lakes and ponds and swampy basins were studied. Also included in the investigations was the main river with its tributaries from its meandering course through the highland region and through its drop with frequent cascades into the long, narrow valley to its junction with the St. Lawrence River. The area of the watershed is approximately 1,269 square miles. The survey included investigation of numerous and varied biological and physical factors related to fish production; the distribution of all species of fish, their abundance, and the associations in which they thrive best; the adaptability of introduced species; the kinds and amounts of natural food available; plant and plankton studies; presence of disease; readings of scales of fish specimens to determine their age; stream improvement; results of overstocking; and the unsuitability of certain prevailing stocking programs. (GKS)

1934. A biological survey of the Mohawk-Hudson watershed: New York State Conserv. Dept., 24th Ann. Rept. Supp., 379 p.

The initial objective of this year's survey was to develop a new stocking policy that would (1) cut down the serious waste of fish under the former system, which stocked hatchery-reared fish solely on information supplied by applicants, and (2) prevent introduction of species likely to damage local resources. This survey comprised studies of the great drainage area of the Mohawk River system and a section of the Hudson River extending from the Hoosic River on the north to and including Kinderhook Creek on the south. This coverage includes several thousand miles of streams, more than a thousand small ponds, many sizable lakes, and several extensive reservoirs. The results of the investigation afford a revealing picture of a fish population tolerant to the conditions imposed by civilization in the valley. (GKS)

1935. A biological survey of the Delaware and Susquehanna watersheds: New York State Conserv. Dept., 25th Ann. Rept. Supp., 356 p.

This report presents data of the biological survey of the Delaware and the Susquehanna watersheds during the summer of 1935. The investigations cover subjects that pertain to the objective of an improved stocking policy for the hatchery-reared fish. In its survey of the watershed, the field program included: temperature and chemical tests of the water, measurements of depth and flow, and pool and shade conditions. The studies also examined other factors affecting the welfare of this resource: distribution of all fish species in the watershed; their abundance and the associations in which they thrive best; the adaptability of introduced species; the unsuitability of certain prevailing stocking programs; quantitative food studies; aquatic vegetation and plankton; and fish diseases. (GKS)

1936. A biological survey of the Lower Hudson watershed: New York State Conserv. Dept., 26th Ann. Rept. Supp., 371 p.

This report on the Lower Hudson watershed is the 11th issued by the Biological Survey in the Department's long-range program to study comprehensively all bodies of water of New York State that provide fishing. Since the initiation of the surveys in 1926, the one most important objective of this work has been that of improving the fish-stocking program through recommendations based on field studies of each body of water. As progress has been made and experience gained, the scope of the surveys has broaded and the character of the investigations has intensified with increasing emphasis on such problems as the improvement of forage conditions, the control of undesirable fish; the results of overstocking; the growth rate of fishes; quantitative studies of fish production; and specialized research in parasitology. (GKS)

1937. A biological survey of the Allegheny and Chemung watersheds: New York State Conserv. Dept., 27th Ann. Rept. Supp., 287 p.

This watershed survey comprised investigations of the New York part of the Allegheny and Chemung watersheds. The area is hilly and supports mainly agriculture and grazing. Topography produces a rapid runoff, which subjects the land to erosion and frequent flooding. The largest body of water in the region is Chautauqua Lake. Water analyses in this area indicate that watershed conditions favor mainly the warm-water fish species and that a relatively small stream mileage offers suitable conditions for trout. Stocking during the previous 10 years was heavy in relation to the amount of available water. Fieldwork of the area consisted of pond, stream, and lake studies, and an inventory of fish species, chemical conditions, food relationships, rate of fish growth, character and extent of weed beds, and fish parasites and diseases. The twofold purpose for securing basic information was to formulate a stocking policy and to improve methods of fish management. (GKS)

1938. A biological survey of the freshwaters of Long Island: New York State Conserv. Dept., 28th Ann. Rept. Supp., 128 p.

The Long Island district was covered by the Biological Survey during 1938. The separate nature of freshwater and marine problems of the area necessitated a division of the survey work according to two principal ojectives. One of these required covering the freshwater bodies of water on Long Island by an inventory type of survey comparable to previous watershed studies, which have been underway in the State since 1926. The objective of these studies is to provide essential, basic information for improved stocking and management policies. The other objective, that of carrying on a fact-finding biological and statistical survey of the saltwater district and its important fisheries, necessitated a different approach from the usual watershed investigations. The result of the investiations of saltwater fisheries will be incorporated in

NEW YORK STATE CONSERVATION DEPARTMENT (continued)
a subsequent report. This report of the freshwater covers only the studies of principal streams, lakes, ponds, and reservoirs of Long Island and the adjoining islands in New York State's marine district. (author)

1939. A biological survey of the Lake Ontario watershed: New York State Conserv. Dept., 29th Ann. Rept. Supp., 261 p.

This report presents results of fisheries studies of the Lake Ontario watershed during the 1939 season. The study completes the statewide reconnaissance of all watersheds in the State. (PAV)

1947. Oneida Lake: The Conservationist, v. 1, no. 2, p. 8-11.

This article presents historical, geographical, geological, recreational, and other information about the largest lake that is wholly in New York State. A recreational map is included. (PEG)

1968. Keuka Lake, fisheries investigation, 1963-1968: Olean, N.Y., Bur. Fish Management, mimeo., 31 p.

Reorganization of the Division of Fish and Game, New York State Conservation Department in 1961, resulted in the assignment of fish management responsibilities for Keuka Lake to the Region 2 office located in Olean. During 1964 the Olean office received a request from the Yates County Federation of Sportsmen for a full-scale fisheries investigation of Keuka Lake due to the reported lack of large lake trout and a sharp decline in the alewife population. Brief experimental gill netting was conducted in the fall of 1964; and then, in spring 1965, a fairly intensive fisheries investigation was begun and has continued to date. A variety of fish collecting methods were utilized to sample various fish species. The growth of Keuka Lake trout has remained comparatively stable from the 1940's to the present time. Netting data confirm the anglers' complaint that few large trout are present in the population. The alewife, formerly the most abundant forage species in the lake, has drastically declined in numbers. The smelt, a recently introduced species, has not increased significantly since 1964. Bass, pickerel and panfish provide satisfactory fishing in those areas of the lake which are suitable for them. (author)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
1971. St. Lawrence basin, phase 2--Evaluation of water resources alternatives: New York State Dept. Environmental Conserv., Water Resources Div.

This report presents alternatives for early-action (to 1980) for water resources management and development in the St. Lawrence Basin. These alternatives are based on the results of investigations of needs and resources made in Phase 1 and on more detailed investigations made during Phase 2 (some of which are not completed at this time). It is the intention of this report to provide a base which can be reviewed, revised and expanded as necessary in the plan formulation process. (author)

1972. Alterations in watercourses and lakes: New York State Environmental Conserv. Law, sec. 15-0701.

Private riparian land-owners may alter the natural flow, quantity, quality or condition of a natural water-course or lake either on or below the surface of the earth. Withdrawal, impoundment or obstructions of the water in such watercourse or lake or addition of water thereto or changes in the banks, beds, course or other physical characteristics of such watercourses or lakes is permissible if reasonable, as long as it is not immediately injurious to neighboring riparian or non-riparian owners at the time of commencement of such alterations. No action for injunction or for nominal damages shall be maintainable unless such alterations are causing plaintiff harm or would cause immediate harm if and when begun. "Harm" shall mean interference with a present use of the water by the complaining party, a decrease in the market value of his interest in riparian land, or interference with his present enjoyment of such riparian lands. (author)

1973. The problem of phosphorous in New York's waters: New York State Dept. Environmental Conserv., 23 p.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (continued)

A major cause of accelerated eutrophication of lakes in New York State is the enrichment of lake water with phosphorus from detergents. Studies have shown household detergents to be the source of about half of the phosphorus content in municipal waste water discharges. Recognizing this problem, the New York State Legislature adopted laws to limit the phosphate content of household cleaning products to 8.7 percent by January 1, 1972 and to trace levels by June 1, 1973. It is also the policy of the State to reduce phosphorus in waste water discharges through the use of tertiary sewage treatment, because this will remove the phosphates contributed by detergents and other sources as well. However, implementation of tertiary treatment will take a minimum of ten years, as many lake communities do not have sewers or central treatment plants. Modifications of the New York State Law may be needed to cope with certain problems which have developed with the banning of phosphates. (author)

1974. Proposed alternative releases from New York City reservoirs in the Upper Delaware River basin: New York State Dept. Environmental Conserv., 55 p.

This report describes the present operation of three New York City reservoirs with the environmental management problems that result. It proposes an alternative operating program which will greatly restore downstream environmental quality while continuing to meet existing water supply and flow requirements. (PAV)

NEW YORK STATE DEPARTMENT OF HEALTH

1951a. The Onondaga Lake drainage basin: New York State Dept. Health, Oswego River Drainage Basin Survey Ser. Rept. 1, 151 p.

The present survey was made to obtain data necessary to classify the waters in the Onondaga Lake drainage basin and to measure the present defilement. The survey was done between August 8, 1950, and February 7, 1951. The contents of this report are based on conditions existing at the time of the field survey with additional data taken from previous surveys. The studies include collection of data for determination of best probable future uses of the water for water supply, bathing and swimming, fishing and fish culture, agricultural purposes and industrial processes, transportation and navigation, and sewage and industrial waste disposal. Also included were studies of the present and possible future uses of the district bordering these waters for residential, agricultural, industrial, or recreational purposes. (GKS)

1951b. Sauquoit Creek drainage basin: New York State Dept. Health, Mohawk River Drainage Basin Survey Ser. Rept. 1, 23 p.

This is a report on studies of the surface waters within the Sauquoit Creek drainage basin. It is intended to fulfill the requirements of a public health law pertaining to the proper study of specific waters prior to classification and assignment of water quality standards to such water. Consideration was given to the particular requirements of the law; namely, physical and hydrological features, use of land bordering the waters, past and present water uses, and the extent of present defilement. The report contains recommendations for classification of all surface waters within the designated area. (GKS)

1951c. Sparkill Creek drainage basin: New York State Dept. Health, Lower Hudson River Drainage Basin Survey Ser. Rept. 2, 31 p.

This is a report on studies of the surface waters within the Sparkill Creek drainage basin. It is intended to fulfill the requirements of a public health law pertaining to the proper study of specific waters prior to classification and assignment of water quality standards to such water. Consideration was given to the particular requirements of the law; namely, physical and hydrological features, use of land bordering the waters, past and present water uses, and extent of present defilement. The report contains recommendations for classification of all surface waters within the designated area. (GKS)

1952a. The Mohawk River drainage system: New York State Dept. Health, Mohawk River Drainage Basin Survey Ser. Rept. 2, 245 p.

This survey was made to obtain data necessary to classify the waters in the Mohawk River drainage basin (except Sauquoit Creek, East Canada Creek, and Schoharie Creek drainage basins) and to measure the sediment of each of the major streams listed in the report. The following items are discussed: population distribution, present water uses, present sources of discharge, coliform density, dissolved oxygen, 5-day biochemical oxygen demand, and effects of significant sources of pollution. Recommended classifications are included. (GKS)

1952b. Wappinger Creek drainage basin: New York State Dept. Health, Lower Hudson River Drainage Basin Survey Ser. Rept. 3, 33 p.

This is a report on studies of the surface waters of the Wappinger Creek drainage basin. It is intended to fulfill the requirements of a public health law pertaining to the proper study of specific waters prior to classification and assignment of water quality standards to such water. Consideration was given to the particular requirements of the law; namely, physical and hydrological features, use of land bordering the waters, past and present water uses, and the extent of present defilement. The report contains recommendations for classification of all surface waters within the designated area. (GKS)

1953a. The Black River drainage basin: New York State Dept. Health, Black River Drainage Basin Survey Ser. Rept., 197 p.

This is a survey of the surface waters of the Black River drainage basin. This report is intended to fulfill the requirements of a public health law pertaining to the proper study of specific waters prior to classification and assignment of water quality standards to such water. Consideration was given to the particular requirements of the law; namely, physical and hydrological features, use of land bordering the waters, past and present water uses, and the extent of present defilement. The report contains recommendations for classification of all surface waters within the designated area. (GKS)

1953b. Ramapo River and Mahwah River drainage basins: New York State Dept. Health, Lower Hudson River Drainage Basin Survey Ser. Rept. 4, 43 p.

This is a report on studies of the surface waters within the Ramapo River and Mahwah River drainage basins. It is intended to fulfill the requirements of a public health law pertaining to the proper study of specific waters prior to classification and assignment of water quality standards to such water. Consideration was given to the particular requirements of the law; namely, physical and hydrological features, use of land bordering the waters, past and present water uses, and the extent of present defilement. The report contains recommendations for classification of all surface waters within the designated area. (GKS)

1953c. Saw Mill River drainage basin: New York State Dept. Health, Lower Hudson River Drainage Basin Survey Ser. Rept. 6, 25 p.

This is a report on studies of the surface waters of the Saw Mill River drainage basin. It is intended to fulfill the requirements of a public health law pertaining to the proper study of specific waters prior to classification and assignment of water quality standards to such water. Consideration was given to the particular requirements of the law; namely, physical and hydrological features, use of land bordering the waters, past and present water uses, and the extent of present defilement. The report contains recommendations for classification of all surface waters within the designated area. (GKS)

1954. Lower Esopus Creek drainage basin: New York State Dept. Health, Lower Hudson River Drainage Basin Survey Ser. Rept. 7, 35 p.

This is a report on studies of surface waters within the Esopus Creek drainage basin. It is intended to fulfill the requirements of a public health law pertaining to the proper study of specific waters prior to classification and assignment of water quality standards to such water. Consideration was given to the particular requirements of the law; namely, physical and hydrological features, use of land bordering the waters, past and present water uses, and the extent of present defilement. The report contains recommendations for classification of all surface waters within the designated area. (GKS)

1955a. Newton Creek drainage basin: New York State Dept. Health, Chemung River Drainage Basin Survey Ser. Rept. 1, 43 p.

This is a report on studies of surface and ground waters of the Newton Creek drainage basin. It is intended to fulfill the requirements of a public health law pertaining to the proper study of specific waters prior to classification and assignment of water quality standards to such water. Consideration was given to the particular requirements of the law; namely, physical and hydrological features, use of land bordering the waters, past and present water uses, and the extent of present defilement. The report contains recommendations for classification of all surface waters within the designated area. (GKS)

1955b. Oswego River and Lower Seneca River drainage basin: New York State Dept. Health, Oswego River Drainage Basin Survey Ser. Rept. 3, 71 p.

This is a report on studies of the surface waters of part of the Oswego River Drainage Basin. This part includes the Oswego River and the Seneca River between its mouth at Three Rivers and Skaneateles Creek. All the tributaries and these rivers in the section covered are included except the Oneida River and Onondaga Lake and their tributaries.

This report is intended to fulfill the requirements of a public health law pertaining to the proper study of specific waters prior to classification and assignment of water quality standards to such water. Consideration was given to the particular requirements of the law; namely, physical and hydrological features, use of land bordering the waters, past and present water uses, and the extent of present defilement. The report contains recommendations for classification of all surface waters within the designated area. (GKS)

1955c. Skaneateles Creek drainage basin: New York State Dept. Health, Oswego River Drainage Basin Survey Ser. Rept. 2, 51 p.

This is a survey of the surface waters of the Skaneateles Creek drainage basin. It is intended to fulfill the requirements of a public health law pertaining to the proper study of specific waters prior to classification and assignment of water quality standards to such water. Consideration was given to the particular requirements of the law; namely, physical and hydrological features, use of land bordering the waters, past and present water uses, and the extent of present defilement. The report contains recommendations for classification of all surface waters within the designated area. (GKS)

1956. Finger Lakes drainage basin: New York State Dept. Health, Oswego River Drainage Basin Survey Ser. Rept. 4, 361 p.

This is a report on studies of the Finger Lakes Drainage Basin, which is a part of the Oswego River drainage basin. It is intended to fulfill the requirements of a public health law pertaining to the proper study of specific waters prior to classification and assignment of water quality standards to such water. Consideration was given to the particular requirements of the law; namely, physical and hydrological features, use of land bordering the waters, past and present water uses, and the extent of present defilement. The report contains recommendations for classification of all surface waters within the designated area. (GKS)

1959. Oneida River Drainage basin: Albany, N.Y., Water Pollution Control Board, Oswego River Drainage Basin Survey Ser. Rept. 5, 173 p.

This is a report of the studies of the surface water of the Oneida River drainage basin. The studies commenced in June 1956, and the fieldwork was completed in November 1956. In this study consideration was given to the physical and hydrological features, past and present land and water uses and the extent of present defilement. Land uses include residential, agricultural, industrial, and recreational. Water uses include domestic water supply (filtered and unfiltered), bathing, fishing, agricultural or industrial water supply, navigation and transportation, and sewage and waste disposal. The determination of defilement involves (a) engineering studies of the source of pollution, and (b) sampling programs based on the results of these studies. Tabular values and maps are included in the report. (GKS)

1960a. Chemung River drainage basin (except Newton Creek drainage basin): New York State Dept. Health, Chemung River Drainage Basin Survey Ser. Rept. 2, 179 p.

This is a report on the surface waters of the Chemung River drainage basin except Newton Creek drainage basin, which has been covered in another report.

This report is intended to fulfill the requirements of a public health law pertaining to the proper study of specific waters prior to classification and assignment of water quality standards to such water. Consideration given to the particular requirements of the law; namely, physical and hydrological features, use of land bordering the waters, past and present water uses, and the extent of present defilement. The report contains recommendations for classification of all surface waters within the designated area. (GKS)

1960b. Drainage basins of streams entering the Hudson River in Orange, Ulster, Dutchess and Putnam Counties: New York State Dept. Health, Lower Hudson River Drainage Basin Survey Ser. Rept. 8, 181 p.

This is a report on surface-water studies of a part of the lower Hudson River drainage basin comprising subdrainage basins of streams entering the Hudson River from shorelines of Putnam, Dutchess, Ulster, and Orange Counties with the exception of those drainage basins already reported--Esopus Creek below Ashokan Reservoir, Rondout Creek below Rondout Reservoir, and Wappinger Falls Creek.

This report is intended to fulfill the requirements of a public health law pertaining to the proper study of specific waters prior to classification and assignment of water quality standards to such water. Consideration was given to the particular requirements of the law; namely, physical and hydrological features, use of land bordering the waters, past and present water uses, and the extent of present defilement. The report contains recommendations for classification of all surface waters within the designated area. (GKS)

1960c. East Canada Creek drainage basin: New York State Dept. Health, Mohawk River Drainage Basin Survey Ser. Rept. 5, 76 p.

This is a survey of the surface waters of part of the Mohawk River drainage basin, namely, East Canada Creek and its tributary lakes and streams. This report is intended to fulfill the requirements of a public health law pertaining to the proper study of specific waters prior to classification and assignment of water quality standards to such water. Consideration was given to the particular requirements of the law; namely, physical and hydrological features, use of land bordering the waters, past and present water uses, and the extent of present defilement. The report contains recommendations for classification of all surface waters within the designated area. (GKS)

1960d. Lower Hudson River from mouth to northern Westchester-Rockland County lines: New York State Dept. Health, Lower Hudson River Drainage Basin Survey Ser. Rept. 9, 293 p.

This is a survey of the surface waters of the Lower Hudson River between its mouth at the Battery in New York City and the northern limits of Westchester and Rockland Counties. The report also covers all the area tributary to the Hudson River within these limits except the Saw Mill River drainage basin.

This report is intended to fulfill the requirements of a public health law pertaining to the proper study of specific waters prior to classification and assignment of water quality standards to such water. Consideration was given to the particular requirements of the law; namely, physical and hydrological features, use of land bordering the waters, past and present water uses, and the extent of present defilement. The report contains recommendations for classification of all surface waters within the designated area. (GKS)

1960e. Schoharie Creek drainage basin: New York State Dept. Health, Mohawk River Drainage Basin Survey Ser. Rept. 4, 115 p.

This survey was made to obtain data necessary to classify the waters in the Schoharie Creek drainage basin and to measure present defilement. The following items are discussed: history of studies, hydrology, streamflow, and land use of the basin; population distribution; present and potential future water use; result of the survey; and recommended classifications. (GKS)

1960f. West Canada Creek drainage basin: New York State Dept. Health, Mohawk River Drainage Basin Survey Ser. Rept. 3, 87 p.

This survey was made to obtain data necessary to classify the waters in the West Canada Creek drainage basin and to measure present defilement. The following items are discussed: history, past studies, and hydrology of the basin; population distribution; present water uses; potential future waters uses; extent of present defilement; recommended classifications. (GKS)

1962. Drainage basins of streams entering the Hudson River in Albany, Columbia, Greene, and Rensselaer Counties: New York State Dept. Health, Lower Hudson River Drainage Basin Survey Ser. Rept. 11, 243 p.

NEW YORK STATE DEPARTMENT OF HEALTH (continued)

This is a report on the surface waters of part of the Lower Hudson River drainage basin comprising subdrainage basins of streams entering the Hudson River from the shorelines of Albany, Columbia, Greene, and Rensselaer Counties.

This report is intended to fulfill the requirements of a public health law pertaining to the proper study of specific waters prior to classification and assignment of water quality standards to such water. Consideration was given to the particular requirements of the law; namely, physical and hydrological features, use of land bordering the waters, past and present water uses, and the extent of present defilement. The report contains recommendations for classification of all surface waters within the designated area. (GKS)

1963. Drainage basins of streams entering the Hudson River in Orange, Ulster, Dutchess and Putnam Counties: New York State Dept. Health, Lower Hudson River Drainage Basin Survey Ser. Rept. 8, 115 p.

This report contains the official classifications and standards of water quality and purity assigned to fresh surface waters within drainage basins of streams entering the Hudson River in Orange, Ulster, Dutchess, and Putnam Counties, except certain parts of Rondout, Esopus, and Wappinger Creeks as stated in this report. (GKS)

1965. Periodic report of the water quality surveillance network: New York State Dept. Health, 345 p.

Objectives of New York State's Water Quality Surveillance Network are to: (1) acquire, interpret, and disseminate information on the quality of waters for and from the different State, Federal, and local governmental agencies and to commercial, industrial, and individual entities; (2) determine the long-term trend and variation of water quality; (3) provide a rapid intelligence system for the protection and preservation of waters, and to ensure compliance with water quality standards. This report pertains to surface water quality. Summary data of routine chemical, physical, bacteriological, and radiological parameters are presented. (GKS)

1966. Periodic report of the water quality surveillance network, 1960 thru 1964: New York State Dept. Health, 345 p.

This is the first periodic report (1960 through 1964) on the quality of New York State's waters. It was published to satisfy a growing need for information concerning a precious resource. The report gives a basin description of the several areas involved. Most of the book consists of tables of water characteristics and constituents. (GKS)

NEW YORK STATE LEGISLATURE

1912. Report of the Joint Committee of the Legislature on the conservation of water: Albany, N.Y., New York State Legislature, 938 p.

This report, a result of the Joint Committee's investigations, has the following objectives: (1) examination of the various watersheds of the State with attention to the possible development of their water power, and examination of the benefits to public health, safety, and commerce to be derived from proper regulation of the flow of the rivers; (2) study of the existing statutes on water rights and water powers; (3) consideration of the laws of other states and governments that have attempted to deal with the question of conservation of natural resources; (4) consideration of the legal questions that will arise on the adoption of any comprehensive plan of conservation; (5) consideration of the attitude the State should assume toward the development of water power, and the propriety of its engaging in the development and sale of hydroelectric power. (GKS)

1933. Complete report of the Special Joint Legislature Committee to investigate the potable water resources of the State of New York: Albany, N.Y., New York State Legislature, 703 p.

This committee was created in 1931 for two reasons: the drought of 1930, and the problem of insuring an adequate future supply of potable water for New York City and the rapidly growing communities of Long Island. The Committee's investigation is summarized in this report. The Committee studied laws, did extensive fieldwork on Long Island, and operated a large hydrologic data-gathering network. (GKS)

1945. Lake George--Complete report of the New York State Joint Legislative Committee on Lake George water conditions: Albany, N.Y., New York State Legislature, 239 p.

NEW YORK STATE LEGISLATURE (continued)

In recent times disputes have arisen between those who have been attracted to Lake George for its beauty and recreational benefits and those who have taken advantage of the lake's opportunities for industrial activity. The controversy has been heightened, not by the lake's scenic features or by its geographical location, but by the fluctuation of its water levels due to operation of the Barge Canal. This is the problem the committee has been directed to investigate, and, if possible, to solve. (PEG)

NEW YORK STATE OFFICE OF LOCAL GOVERNMENT

1963. Lake George Watershed--Report on water pollution control programming: Albany, N.Y., New York State Office of Local Govt., mimeo., 28 p.

On November 4, 1963, a meeting was held in Glens Falls to discuss pollution control activities on the Lake George watershed and to determine action that would make pollution control procedures more effective. The report, a result of the meeting, was prepared to provide background information for future discussions and for developing alternative courses of action. (PEG)

NEW YORK STATE WATER RESOURCES COMMISSION

1963a. Cayuga Lake Basin--Preliminary investigation of its problems: New York State Conserv. Dept., Water Resources Div., 29 p.

Cayuga Lake is a precious natural resource which is most extensively used for diverse recreational pursuits and also a source of water supply. Areas within the lake are polluted. Sediment deposition at the extreme northern and southern ends of the lake creates difficult problems. The level of the lake, which is controlled by the Department of Public Works in connection with its operation of the Barge Canal, is of concern to many different people. In order to meet the requirements of many diverse interests, every effort is made to hold the level of the lake within comparatively narrow limits.

From background information, it has been determined that further investigation, data, and analyses are needed to adequately define the problems. Feasible means for resolving equitably the obvious conflicts of interest must be developed. Undesireable practices such as a discharge of unauthorized sewage and sewage effluent must be eliminated. Finally, technical guidelines for optimum regulation of the lake must be established and put into effect. (author)

1963b. Conesus Lake basin--Preliminary investigation of its problems: New York State Conserv. Dept., Water Resources Div., 14 p.

Conesus Lake is a natural resource which is extensively utilized for recreational activities and also serves as a source of municipal water supply. The lake is highly productive of fish life and is also a breeding habitat for waterfowl.

Low lake levels occur during the summer which are a source of dissatisfaction due to the exposure of relatively large segments of the lake bottom near the natural shoreline and the difficulty of boat launching. Flooding is reported around the lake and along its outlets in the spring when high water, and sometimes ice, damage cottages, docks, retaining walls, and grounds.

A detailed engineering study of artificial water level control of Conesus Lake is desirable; however, it will take about three or four years to complete the comprehensive study. In the meantime, further consideration should be given to the legal requirements associated with artificial water level control. (author)

NEW YORK STATE WATER SUPPLY COMMISSION

1906. First annual report of the State Water-Supply Commission of New York: Albany, N.Y., New York State Legislature, 196 p.

The Commission was organized in 1905. It holds public hearings on applications from muncipalities for formal approval of water plans, gives legal rulings on water controversies, and, in general, oversees management and development of the State's water resources. (GKS)

NEW YORK ZOOLOGICAL SOCIETY

1913. Destruction of fishes by algae: New York Zool. Soc. Bull., v. 16, p. 1048.

When algal populations become immense, the oxygen content of ponds and shallow lakes can be decreased; this condition endangers the life of fish. The article discusses some of the aspects of the problem and presents some control measures. (GKS)

NICHOLS, L.

1967. Clay and carbonate mineralogy of the sediments of a meromictic lake, in Some aspects of meromixis: Syracuse, N.Y., Syracuse Univ. Press, p. 124-150.

This article describes some of the features of a lake located in Green Lake State Park. Discussions include glacial time, age, length, width, depth, surrounding relief features, temperature, etc. A study was initiated in 1965 to ascertain the mineralogy, relative abundance, and distribution of these sediments and to analyze and classify chemical, physical or biological data on them. Optical petrographic and electron microscopic techniques were used to describe the textural features and general mineralogy. X-ray diffraction was used to study the crystalline nature, size, and habit of the clays and silt-sized materials. Results indicate that the most predominant minerals in the bottom ooze and restricted littoral zone are illite, illite-montmorillonite, and quartz. (GKS)

NICHOLS, M. A.

1895. Abnormal fruiting of Vaucheria: Bot. Gaz., v. 20, no. 6, p. 269-271.

In specimens of Vaucheria geminata, var. racemosa, brought into the laboratory in October 1894, some interesting examples of abnormal fruiting organs were observed. The material was collected in the grassy flats of Cayuga Lake, at a spot covered by the overflow of a small stream. The variations from the normal were frequent and included three general types: (1) those in which the oogonia were aborted and in which fruiting-branch stumplike protuberances were left, (2) those in which the oogonia were prolonged into vegetative filaments, and (3) those bearing fully developed antheridia in places normally occupied by oogonia. Numerous combinations of these types with different intermediate forms were also present. The article discusses these in detail. (GKS)

NICHOLSON, S. A.

1971. (Breisch, A. R., Cooper, S., and Scott, J. T.). A sample of the vegetation in the Lake George drainage basin, part I: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 74-6, 26 p.

This report summarizes the findings of the first two years of a planned five year study of the Lake George drainage basin. The results presented here are part of a larger analysis of the basin including studies of: (1) vegetation composition, productivity and ordination, (2) soils and landuse, (3) phenology, (4) consumer populations including small mammals, and (5) physical attributes including stream nutrient budgets, climatology and hydrology. (author)

1972a. Biological data and studies, in Chautauqua Lake Studies: Fredonia, N.Y., State Univ. Coll., Lake Erie Environmental Studies Program, p. 114-189.

The summer of 1971 marked the first year of the Lake Erie Environmental Studies Program's macrophyte (weed) studies. First-year objectives fell into two general categories: characterization of major spatial and temporal variations, and assessment of the effects of Ortho Diquat, a "weed killer" used in Chautauqua Lake. One of these studies (Schultz, Anderson, and Boenig) examined floristic details. This report summarizes the results of the macrophyte studies. (PAV)

1972b. (and Scott, J. T.). A sample of the vegetation in the Lake George drainage basin--Part 2--Composition of the canopy vegetation and some aspects of physiographic and horizontal variation within the basin: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 74-7, 34 p.

Hemlock (72 percent of stands), sugar maple (69 percent), white pine (64 percent), red maple and northern red oak (57 percent) were the most frequently encountered of 35 tree species occurring in 75 randomly selected stands in the Lake George drainage basin. Hemlock led in density in 32 percent stands, followed by white pine (13 percent), beech (12 percent), northern red oak (9 percent) and red/sugar maple (8 percent). A test of sampling adequacy for tree species in 55 south basin forest stands showed that importance values (relative density plus relative basal area, divided by 2) of species that accounted for 75 percent of total importance were estimated to within 5 percent. Distribution patterns of hemlock and white pine were well defined as hemlock was most abundant in sloping stands at the lowest elevation (100 meters) and generally prevailed on the east side of the basin, while white pine was best represented in level stands around 200 meters, but was uncommon in the east. (author)

NICHOLSON, S. A. (continued)

1972c. (Breisch, A. R., and Scott, J. T.). A sample of the vegetation in the Lake George drainage basin--Part 3--Estimates of biomass and production in the canopy vegetation: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 74-8, 31 p.

Biomass and net production of the tree layer (stems $\geq$ 10.2 cm, dbh [diameter at breast height]) were estimated for 79 stands in the Lake George drainage basin by dimension analysis. Typical biomass and production ranges (100-300, x 10^3 kg/ha; 5-11 x 10^3 kg/ha/yr) were comparable to estimates for similar communities elsewhere. Since site factors were masked by past disturbance, biomass and production were largely a function of successional status. They increased linearly throughout the range sampled, except for a plateau at 80 yrs on coarse textured sites. Biomass and production in conifer and angiosperm dominated stands of comparable site and successional status did not differ appreciably. (author)

1973a. (and Rosenthal, B. R.). Midsummer nearshore phytoplankton communities of Chautauqua Lake, in Chautauqua Lake Studies: Fredonia, N.Y., State Univ. Coll., Lake Erie Environmental Studies Program, p. 255-275.

The purpose of this study was to document abundance of phytoplankton taxa at the surface on several nearshore (2 meter) study sites where macrophyte response to diquat treatment was being monitored concurrently. Since considerable difficulty was encountered in determining which study areas were herbicide-treated versus herbicide-untreated, detailed analysis and discussion of phytoplankton data are not possible at this time. (author)

1973b. (and Aroyo, Beth). A case study of hydrarch zonation, in Chautauqua Lake Studies: Fredonia, N.Y., State Univ. Coll., Lake Erie Environmental Studies Program, p. 287-303.

The vegetation sequence revealed by a transect through the undisturbed hydrosere in Chautauqua Lake was: submergents (1.1-1.6+ meters), deep floating leaf (1.0-1.1 m), emergents (0.6-0.9 m), and shallow floating leaf (0.5-0.6 m). However, the three major life forms (submergents, emergents, floating leaf) overlapped broadly at various depths, as submergents accounted for 60-80 percent of species, 54-71 percent of cover, and 24-63 percent of aboveground biomass where floating leaf and emergent vegetation were best represented. Trends in major community characteristics (stratification, biomass, and species diversity) across the hydrosere were similar, varying little except for a pronounced peak in the emergent zone. The efficient resource use, creation of microhabitats for submergents, and general stabilizing influence of the dominant emergent *Pontederia cordata* are probable explanations for the high productivity and diversity characteristic of this zone. (author)

1973c. (Acciardi, Frances, Clute, P. R., Aroyo, Beth, Rosenthal, B. R., Clerman, R. J., and others). Standing crop of macrophyte communities in Chautauqua Lake in 1973, in Chautauqua Lake studies: Fredonia, N.Y., State Univ. Coll., Lake Erie Environmental Studies Program, p. 304-321.

The quantity and activity of macrophytes in Chautauqua Lake has been a topic of local interest for many years. Macrophytes are important in lakes for many reasons; they constitute food and cover for consumers (animals), trap nutrients that stimulate algal growth, and add oxygen to the water, to mention a few of their major functions.

Therefore, measurements of the standing crop (biomass) and production (biomass accumulation rate) are desirable because they reflect the overall importance of macrophytes in a lake. These data are also of interest because of the impact of macrophytes on economic and aesthetic factors. (author)

1973d. (and Machlan, L. W.). Ash content of macrophyte species from Chautauqua Lake, in Chautauqua Lake Studies: Fredonia, N.Y., State Univ. Coll., Lake Erie Environmental Studies Program, p. 345-350.

Sixty-two ash content determinations were made on five major macrophyte species from Chautauqua Lake. Intraspecific seasonal variations (May-June-July-August), examined for *Myriophyllum sp.* only, were not statistically significant. However, many significant interspecific differences were noted. A review of determinations on similar taxa elsewhere revealed that ash content tended to increase with alkalinity in the Potamogetonaceae and Halgoridaceae (*Myriophyllum sp.*), but not in the Hydrocharitaceae (*Anacharis sp.*, *Vallisneria sp.*). Possible mechanisms for this trend are suggested. (author)

NOBLE, R. L.

1968a. Effect of limnological changes on survival of young fish in Oneida Lake: Ithaca, N.Y., Cornell Univ., Job Prog. Rept. I-e, Proj. F-17-R-12, mimeo., 5 p.

Distribution of aquatic macrophytes and bottom fauna was assessed by sampling in Lower South Bay during July, 1967, for comparison with samples taken in 1916. Although analyses of the samples are incomplete, changes in aquatic plant and mollusk composition have been found. The aquatic macrophytes Herteranthera dubia and Ceratophyllum demersum, which were not recorded in the earlier survey, were abundant in 1967. Occurrence of plants of the genus Potamogeton has declined. The mollusk samples consisted almost entirely of the gastropod Bythinia tentaculata, relatively uncommon previously. More detailed analyses of habitat changes must be made before the ecological significance of the plant and mollusk changes can be determined. (author)

1968b. Mortality rates of pelagic fry of the yellow perch, Perca flavescens (Mitchell), in Oneida Lake, New York, and an analysis of the sampling problem: Ithaca, N.Y., Cornell Univ., Doctoral dissert., 104 p.

Differential mortality during the early life stages has often been considered the cause of fluctuations in year class strength of fish. Mortality rates of yellow perch fry were estimated in 3 years to determine whether survival of the 8-20 mm pelagic larvae stage caused year class fluctuations. Catches of yellow perch were distributed according to the negative binominal distribution at length of 10 mm, yellow perch fry began to avoid the Miller high-speed sampler and other samplers had to be used. Distribution of fry in Oneida Lake is not uniform. Growth rates ranged from 0.46 mm per day and caused up to 50 percent annual variation in time spent in the pelagic stage. Mortality rates were estimated for each year from decline in catch adjusted for volume strained and from avoidance of samplers by the fry. (GKS)

1969a. Effect of limnological changes on survival of young fish in Oneida Lake: Ithaca, N.Y., Cornell Univ., Job Prog. Rept. I-e, Proj. F-17-R-13, mimeo., 10 p.

Biological and water quality data acquired since the early 1900's were reviewed. Distribution of aquatic macrophytes and bottom fauna of Lower South Bay in 1967 was compared with that in 1916. There has been a general increase in sponges, tubificids, and amphipods, accompanied by a decline in isopods, mayflies, and caddisflies. The gastropod Bithynia tentaculata has become the dominant mollusk, while all other mollusks have declined. The most pronounced changes in bottom fauna occurred in the deeper waters. Composition of submergent vegetation has changed from principally Potamogeton spp. to Heteranthera dubia and Ceratophyllum demersum. The changes in bottom fauna of Lower South Bay probably reflect in part the changes which have occurred in the deeper waters of the lake in response to oxygen deficits. (author)

1969b. (and Forney, J. L.). Fish survey of Onondaga Lake, summer 1969: Ithaca, N.Y., Cornell Univ., M.S. thesis (unpub.), 9 p.

Under contract with O'Brien and Gere Engineers, Syracuse, a fish survey of Onondaga Lake was done during the summer of 1969 by the Cornell University Department of Conservation. Objectives of the study were to determine the species composition of the fish population and its general condition. Except for a large population of white perch, species composition has not changed appreciably from that reported in the surveys of 1927 and 1946. Despite the unusual chemical and physical characteristics of Onondaga Lake, growth of most game- and panfish compared favorably with published growth rates of fish in other waters of the northeast. Reproduction appeared to be very limited in 1969; however, young fish examined were of good size and condition. (GKS)

1970a. Parasites of yellow perch in Oneida Lake, New York: New York Fish and Game Jour., v. 17, no. 2, p. 95-101.

Parasites of 54 yellow perch from Oneida Lake in 1966 were compared with those found over 35 years earlier. The trematodes Tetracotyle sp., Apophallus brevis and Urocleidus adspectus, previously unrecorded from perch in Oneida Lake, have become common, but Clinostomum marginatum, previously common, was not found. Some of these changes may be related to changes in the bottom fauna. Changes in incidence of other trematodes, cestodes, acanthocephalans and nematodes were probably the result of areal and seasonal differences in sampling. (author)

NOBLE, R. L. (continued)

1970b. An evaluation of the Miller high-speed sampler for sampling yellow perch and walleye fry: Fisheries Research Board of Canada Jour., v. 27, no. 6, p. 1033-1044.

1971. An evaluation of the meter net for sampling fry of the yellow perch, Perca flavescens, and walleye, Stizostedion v. vitreum: Chesapeake Sci., v. 12, no. 1, p. 47-48.

The meter ring net has been commonly used for surveys of pelagic larval fishes in both marine and freshwater habitats. Avoidance of slow-moving nets such as the meter net during daylight hours, however, may be a serious limitation to their use in quantitative surveys. In Oneida Lake, meter nets were used to estimate abundance of pelagic fry of yellow perch, Perca flavescens, and walleye, Stizostedion v. vitreum, for several years. To determine the validity of the catch per volume method of estimation, the efficiency of the meter net was evaluated by comparison of catches with those in high-speed samplers. (author)

1972a. Distribution of walleye and yellow perch fry in a bay of Oneida Lake: New York Fish and Game Jour., v. 19, no. 2, p. 168-177.

Densities of walleye and yellow perch fry were usually greater inshore than offshore in samples taken during early June. Walleye fry concentrated at a variable depth, whereas yellow perch fry were uniformly distributed to a depth of 3.7 metres except during calm weather. Although vertical and horizontal distributions of the two species did not coincide, catches were correlated within localized areas. Correlations between the abundance of yellow perch fry and their occurrence in walleye fry stomachs indicated that the association between the two species may have been caused by a predator-prey relationship. The overall difference in distribution indicated that perch abundance was not the major influence on the distribution of walleye fry. (author)

1972b. A method of direct estimation of total food consumption with application to young yellow perch: Progressive Fish-Culturist, v. 34, no. 4, p. 191-194.

In a study of production dynamics of young yellow perch (Perca flavescens) in Oneida Lake, it was necessary to estimate consumption of zooplankton. Since young perch are principally daytime feeders, it was hypothesized that the Bajkov method for diurnal feeding periodicity could be further modified. This would allow the direct estimation of total daily consumption from stomach analyses conducted during a short period of the day. This report explains the method and presents data to show a specific application of the technique. (PAV)

1973. Evacuation rates of young yellow perch, Perca flavescens (Mitchell): Am. Fisheries Soc. Trans., v. 102, no. 4, p. 759-763.

Gastric evacuation of a single meal of zooplankters by young yellow perch was about half as fast as that of a similar meal under conditions of continuous feeding. The effect of meal sequence on evacuation time makes conventional methods of estimating digestion rate inadequate for fish that feed continuously. (PAV)

O'BRIEN, W. J.

1968. The autumn zooplankton of Cayuga Lake: Ithaca, N.Y., Cornell Univ., M.S. thesis, 5 p. (unpub.).

This study is an investigation of the abundance and species composition of the rotifer and crustacean zooplankton of Cayuga Lake from the early fall to early winter. This study was done at one station in the middle of the lake off Portland Point. On each sampling date, two samples were taken with a Clarke-Bumpus sampler fitted with a closing device and a flow meter and using a No. 20 net. The samples from the two depth strata were fixed in alcohol and formalin and stored in 4-ounce jars. All animals were identified using the sampling date and drawings in Ward and Whipple (1959). The number of animals of each genus or species per litre was determined by using a conversion factor of 3.2 litres per revolution of the flow meter on the Clarke-Bumpus sampler. These data are presented in three tables, and allow a comparison of population densities of epilimnion and hypolimnion through time. (GKS)

ODELL, T. T.

1929. The fishes of Lake Champlain, in A biological survey of the Champlain watershed: New York State Conserv. Dept., 19th Ann. Rept. Supp., p. 130-138.

Lake Champlain has many shallow bays filled with aquatic plants growing in thick masses. These shallow regions are not only the normal habitat of several adult fish species, but they furnish spawning grounds and brooding grounds for the young of other fish species. Various methods were used to collect some of these fish. The concensus of the collecting unit was that food and game fish are more abundant in Lake Champlain than in the Finger Lakes. This greater abundance is due to the existence of shallow, well-protected areas that serve as spawning grounds and "brood places" for young fish and as centers of abundant and varied food supplies. (PAV)

1930. The relative abundance of fish of some lakes and ponds of the St. Lawrence watershed, in A biological survey of the St. Lawrence watershed: New York State Conserv. Dept., 20th Ann. Rept. Supp., p. 95-108.

This survey included 28 lakes and ponds of the Grass, St. Regis, Salmon, and Chateaugay watersheds. The work included the collection fish to determine the kinds and their relative abundance in these watersheds. Ecological factors that influence fish life were recorded and soundings were taken to make depth maps of certain lakes. The article discusses each of these items in detail. Several depth maps are shown. (GKS)

1931. Lakes of the Oswegatchie and Black River Systems, in A biological survey of the Oswegatchie and Black River systems: New York State Conserv. Dept., 21st Ann. Rept. Supp., p. 94-119.

The lake unit of the New York State Conservation Department Biological Survey force has as its special task the study of the larger bodies of water within the survey area. Ecological factors that influence fish life were recorded, fishing conditions were summarized, soundings were taken, and fish were collected. Data on bottom temperatures, as well as oxygen and carbon dioxide content, were also obtained. The article discusses morphology and fish life of several lakes. Other data are summarized in tables. (GKS)

1932. Lakes of the Upper Hudson watershed, in A biological survey of the Upper Hudson watershed: New York State Conserv. Dept., 22d Ann. Rept. Supp., p. 102-129.

This article discusses the collection of data from some of the larger lakes of the watershed. Species of fish, depth, weed beds, spawning areas, and other miscellaneous data were considered. Much of the data are tabulated. (GKS)

1934a. The lakes of the Mohawk River drainage basin, in A biological survey of the Mohawk-Hudson watershed: New York State Conserv. Dept., 24th Ann. Rept. Supp., p. 102-136.

Important lakes and reservoirs of the watershed were selected to determine a proper stocking policy for them. The article discusses each of these lakes in terms of the following items: (1) physical factors (area; depth; acidity; alkalinity; oxygen and carbon dioxide content; temperature; type and extent of bottom; color, turbidity, and source of water level); (2) biological factors (larger aquatic vegetation; composition of fish population; fish diets;

ODELL, T. T. (continued)
fish growth; parasites of game species; and abundance of food organisms other than forage fish); (3) historical background (previous stocking record, fishing intensity, and records of fish caught; past and present pollution; extreme changes in water level; deforestation; and introduction of species of fish that were not originally present). (GKS)

1934b. The life history and ecological relationships of the alewife (Pomolobus pseudoharengus (Wilson)) in Seneca Lake: Am. Fisheries Soc. Trans., 64th Ann. Mtg., Montreal, Canada, p. 118-126.

This work was prompted by the need for a new forage fish in many of the lakes of New York. The work of the New York State Biological Survey has emphasized the desirability of finding a plankton-eating forage fish suitable for planting in some of the lakes of the State. Knowledge about the alewife in the Finger Lakes indicated that this species might serve the purpose. The article discusses the alewife's ecological relationships in other lakes. Graphs are included. (GKS)

1934c. The life history and ecological relationships of the alewife (Pomolobus pseudoharengus (Wilson)) in Seneca Lake, New York: Ithaca, N.Y., Cornell Univ., Doctoral dissert., 62 p.

This study was started in the fall of 1927 to study the alewife with reference to suitability as a forage fish. The thesis discusses worldwide and New York distribution, habitat and abundance in Seneca Lake, spawning, hatching, growth, age, length-weight relationship, food studies, mortality, predator types, comparison with other suggested forage fishes, and suggested methods of planting. (GKS)

1935. (and Senning, W. C.). Lakes and ponds of the Delaware and Susquehanna watersheds, in A biological survey of the Delaware and Susquehanna watersheds: New York State Conserv. Dept., 25th Ann. Rept. Supp., p. 89-139.

The stocking recommendations for ponded water are based on physical, chemical, biological, and historical facts. Tabulations show miscellaneous data for the larger bodies of water and on the relative abundance of the fishes. There are hydrographic charts for six of the deepest lakes. Several lakes and ponds are discussed in relation to their management problems. A general discussion points out: (a) the importance of forage fishes and the desirability of maintaining them in suitable balance with game fishes; (b) some common errors of unscientific stocking, including the unfortunate effects of too great concentrations of carnivorous fishes; (c) limitation of the fishermen's take of a certain species to relatively few year groups and consequent need for regular stocking; (d) unfortunate results of stocking pike-perch and large-mouth bass in small ponds; (e) variable results of ice fishing in different waters. (GKS)

1936. (and Senning, W. C.). Lakes and ponds of the lower Hudson area, in A biological survey of the Lower Hudson River watershed: New York State Conserv. Dept., 26th Ann. Rept. Supp., p. 104-145.

The more important ponds and lakes are discussed with particular reference to physical, chemical, biological, and historical data relating to fish production. Tabulations summarize miscellaneous data for the larger bodies of water and estimates of the relative abundance of fishes in these waters. There are hydrographic charts of our lakes. A general discussion deals with: the stocking of trout in lakes and ponds inhabitated by bass and perch; some factors considered in formulating the stocking policy; and the effect on fish life of copper sulfate treatment. (author)

1937. (and Senning, W. C.). Lakes and ponds of the Allegheny and Chemung watersheds, in A biological survey of the Allegheny and Chemung watersheds: New York State Conserv. Dept., 27th Ann. Rept. Supp., p. 74-101.

All the important lakes and ponds open to public fishing in the Allegheny and Chemung drainages were studied. Rushford and Lime lakes, respectively in the Genesee and Erie-Niagara drainages, were also included.

The aim in these studies was to determine chemical, physical, biological, and economic factors affecting productivity and to formulate a policy based on these data for stocking and

ODELL, T. T. (continued)
management that would be consistent with the conditions found and likely to result in increased production of legal-sized fish. Conclusions and recommendations are based on data contributed by all survey units. (author)

OGLESBY, R. T.

1969. (and Allee, D. J.). Ecology of Cayuga Lake and the proposed Bell Station (nuclear powered): Ithaca, N.Y., Cornell Univ. Water Resources and Marine Sci. Center, Pub. 27, 671 p.

In midwinter 1968, the Water Resources and Marine Science Center invited representatives of the New York State Electric and Gas Corporation to present a seminar on their plans for an atomic power station on Cayuga Lake. The power coproration indicated an interest in studying the environmental impacts of the proposed plant. Future and present investigative work were consolidated, fieldwork was conducted, and a report of the findings was prepared. The report considers topics such as basin morphometry, hydrology, thermal regime, mixing, chemical limnology, and biota of Cayuga Lake. (GKS)

1970. Lakes which produce too much: The Conservationist, v. 24, no. 6, p. 1821.

The two previous articles in this series on limnology have alluded to the causes and some of the consequences of eutrophication. Focusing on the subject of eutrophication in this article, the author reviews some of these facts and goes on to discuss the influences of man and how he may minimize undesirable effects resulting from his activities. (PAV)

1972. Eutrophication as a problem in the Finger Lakes: Ithaca, N.Y., Cornell Univ. Water Resources and Marine Sci. Center Tech. Rept. 53, 34 p.

Water quality and related parameters have been established for four of the Finger Lakes and reinforced for a fifth. This information suggests possibilities for water quality management directed at control of phytoplankton production. The classic pattern of nutrient variation with fluctuation of primary production in lakes is an inverse relationship with nutrients decreasing as the growth activity of phytoplankton increases. In evaluating these relationships for four of the Finger Lakes there is indeed a midsummer minimum of phosphorous and nitrogen roughly coinciding with a chlorophyll a maximum. However, from June through October many short term variations occur that are not so readily accounted for. Two striking features of the nutrient-phytoplankton relationship are apparent from the data: the similarity of variation in epilimnetic and hypolimnetic nutrients, and the seemingly greater dependence of phytoplankton on soluble phosphorous than on saline nitrogen. (author)

1973a. Limnological guidance for Finger Lakes management: Ithaca, N.Y., Cornell Univ. Water Resources and Marine Sci. Center, 17 p.

The Finger Lakes represent a great value to the people of New York, economically as well as socially and environmentally. The lakes have positive climatic effects on the land surrounding them, and they provide vital water supplies for a variety of water uses in the cities outside their basins. As part of a growing interest in maintaining the integrity of our lakes, this report provides guidelines for developing water quality management strategies for the Finger Lakes. Major emphasis is on the control of algae levels during the summer months. The problem of rooted plant growth is discussed briefly as is the relationship between the production of plants and fish. The report is written as an aid to groups of citizens and public officials who possess both a concern for the Finger Lakes and a desire to explore alternative courses of action to preserve or improve their quality. (author)

1973b. (Hamilton, L. S., Mills, E. L., and Welling, Peter). Owasco Lake and its watershed: Ithaca, N.Y., Cornell Univ. Water Resources and Marine Sci. Center Tech. Rept. 70, 203 p.

This report deals with Owasco Lake, the land area of its basin, and the interactions of land, water and people from the standpoint of environmental quality. A division of subject matter into land and water categories has been generally followed in presenting and discussing descriptive material. Management alternatives are presented together at the end of this document. Also included is a brief summary of an extensive survey of residents concerned with perception of water quality problems by those individuals and their willingness to act to correct them. (author)

OGLESBY, R. T. (continued)

1974a. (Schaffner, W. R., and Mills, E. L.). Nitrogen, phosphorus and eutrophication in the Finger Lakes: Ithaca, N.Y., Cornell Univ. Water Resources and Marine Sci. Center Tech. Rept. 94, 27 p.

Phosphorus has been identified as that element exerting primary control over summer phytoplankton standing crops in New York's Finger Lakes. A model relating the specific loading (Lsp) of "biologically available" phosphorus to winter total phosphorus concentrations, the latter to mean chlorophyll integrated from the upper 10 metres of the water column and Lsp to summer chlorophyll has been developed for the Finger Lakes based on limnological, demographic and land use data compiled during 1972-73. The relationships were all well described by linear regression and confidence intervals about lines are given. The dependence of transparency (Secchi disc) on chlorophyll concentrations in the upper 10 meters formed a parabolic (log-log) function. (author)

1974b. The limnology of Cayuga Lake, New York: U.S. Environmental Protection Agency, North Am. Lake Proj., ms., 142 p.

This material on the limnology of Cayuga Lake has been prepared at a time when many investigations are ongoing or have been completed, but the results are not yet published. For items of particular importance, some of this unpublished material has been used with the consent of the researchers. All of the researchers are associated with Cornell University.
This manuscript includes discussion of geographic distribution of the Cayuga water body, morphometric and hydrologic description of Cayuga Lake, limnological characterization, and nutrient budgets. (PAV)

O'KELLY, W. A.

1972. (and Masteller, E. C.). A preliminary survey of the diatom communities and physiochemical characteristics of a Lake Erie tributary, Erie County: Pennsylvania Academy Sci. Proc., v. 46, p. 53-55.

The species diversity of the benthic diatom communities near the confluence of two streams of the Lake Erie drainage basin was calculated for samples collected on several dates in the spring of 1971. Chemical analysis of the streams was determined at regular intervals. A computer program was developed in order to calculate species diversity index. A great variation as to sensitivity to chemical and physical conditions of water makes it possible for one to find some diatoms in any aquatic habitat inhabited by plants and animals, while some have a very narrow range in tolerance. Thus it is proposed that these organisms (which are representative of some of the lake communities) can act as indicators of water quality. Study was done at Four Mile Creek and the tributaries associated with it. (author)

O'LEARY, K.

1967. (and Phillips, J.). Plankton distribution in Seneca Lake: Corning, N.Y., Coll. Center of the Finger Lakes (unpub.).

OLTON, P.

1969. Locations of E. coli in Seneca Lake and correlations with temperature, pH, and nitrates: Corning, N.Y., Coll. Center of the Finger Lakes (unpub.).

O'NEILL, P. R.

1969. Calcium statification with regard to thermal properties as found in Seneca Lake: Corning, N.Y., Coll. Center of the Finger Lakes (unpub.).

ONONDAGA COUNTY

1971. Onondaga Lake Study: U.S. Environmental Protection Agency, Water Quality Office, Water Pollution Control Research Ser., 487 p.

This study was conducted to appraise the trophic status of the saline Onondaga Lake and to estimate the effects of the proposed waste treatment plant. The determined parameters included circulation patterns, distribution of chemical constituents, and the biotic contents of the lake. The predominant component of lake sediments is calcium. The salinity of lake water did not preclude occurrence of a wide variety of phytoplankton, zooplankton, and fish. Proposed waste treatments should significantly increase the supply of dissolved oxygen and lower the phosphorus concentration. The recommended monitoring program should indicate the effectiveness of the future ameliorations. (author)

ONONDAGA LAKE SCIENTIFIC COUNCIL

1966. An environmental assessment of Onondaga Lake and its major contributory streams: Syracuse, N.Y., Onondaga Lake Sci. Council, 60 p.

Since 1654, when Father Lemoyne discovered salt springs in Onondaga Lake, people have become increasingly interested, perplexed, and frustrated by this body of water. This lake has been physically and chemically degraded to the point that for many years it had been regarded as hopeless. The outlook improved with the formation of the Onondaga Lake Scientific Council, which was assigned to assess Onondaga Lake and its major contributing streams. This report describes these efforts. The Council's overall goals are: (1) to evaluate current environmental conditions in Onondaga Lake and its major contributory streams, (2) to ascertain the multiple uses that should be made of the Onondaga Lake drainage basin, and (3) to recommend plans of action for the restoration of the Onondaga Lake drainage basin. (GKS)

PACIFIC NORTHWEST ENVIRONMENTAL RESEARCH LABORATORY, CORVALLIS, OREGON
1974a. National eutrophication survey methods for lake samples in 1972: U.S. Environmental Protection Agency, Natl. Eutrophication Survey, Working Paper 1, 39 p.

The National Eutrophication Survey (NES) was initiated in 1972 in response to an Administration commitment to investigate the nationwide threat of accelerated eutrophication to fresh water lakes and reservoirs. The Survey is designed to develop, in conjunction with state environmental agencies, information on nutrient sources, concentrations, and impact on selected fresh water lakes as a basis for formulating comprehensive and coordinated national, regional, and state management practices relating to point-source discharge reduction and nonpoint-source pollution abatement in lake watersheds. (author)

1974b. Nitrogen and phosphorus in wastewater effluents: U.S. Environmental Protection Agency, Natl. Eutrophication Survey, Working Paper 22.

The National Eutrophication Survey (NES) was initiated by the U.S. Environmental Protection Agency in 1972 with the primary mission of identifying and investigating those lakes and reservoirs in the contiguous United States that are in danger of eutrophication caused by phosphorous from municipal sewage treatment plant discharges. The NES effort entailed the sampling of each lake included in the survey, the tributaries and outlets of each lake, and municipal waste treatment facilities that affected each one, either by discharge directly to the water body or to a tributary of the water body. (PAV)

1974c. An approach to a relative trophic index system for classifying lakes and reservoirs: U.S. Environmental Protection Agency, Natl. Eutrophication Survey, Working Paper 24, 44 p.

One of the major tasks confronting the staff of the National Eutrophication Survey is the assessment of the trophic condition of the water bodies being surveyed. Many of these waters were previously studied only superficially, if at all; thus, the Survey data provide the only basis for evaluation of trophic condition. The Survey's approach is to provide a numerical trophic index in order to permit more precise assignment of trophic conditions than do the general terms of oligotrophic, mesotrophic, eutrophic, and hypereutrophic. Trophic condition is a continuum and does not have the sharp demarcations suggested by the above traditional classes, thus, the trophic index used and explained in this paper should permit more accurate assessment of trophic conditions. (PAV)

1974d. Relationships between drainage area characteristics and non-point source nutrients in streams: U.S. Environmental Protection Agency, Natl. Eutrophication Survey, Working Paper 25, 50 p.

Originally, the National Eutrophication Survey (NES) visualized a detailed watershed land-use study for each of approximately 750 lakes that was to be done in conjunction with their field sampling program. The intent was to develop a quick and accurate method of assessing nutrient loadings to lakes using land-use analysis of the watersheds. The present basic objective of the NES land-use study is to investigate the relationships between types of land-use and nutrient runoff in streams in order to develop nutrient (nitrogen and phosphorus) runoff coefficients based on land use and related geographical characteristics. (PAV)

1974e. The relationships of phosphorus and nitrogen to the trophic state of northeast and north-central lakes and reservoirs: U.S. Environmental Protection Agency, Natl. Eutrophication Survey, Working Paper 33, 35 p.

During the past 30 years, considerable effort has been spent by numerous investigators studying the various factors which are causing water bodies to become eutrophic. The preponderance of evidence indicates that controlling phosphorus is the single most important step that can be taken at the present time to alleviate nuisance conditions and other interferences with water uses caused by eutrophication of water bodies (Bartsch, 1972). One of the major questions to be answered in developing a eutrophication control program is "What phosphorous level is necessary to attain the desired trophic condition." (author)

PAKKALA, I. S.
1972a. (White, M. N., Burdick, G. E., Harris, E. J., and Lisk, D. J.). A survey of lead content of fish from 49 New York State waters: Pesticides Monitoring Jour., v. 5, no. 4, p. 348-355.

PAKKALA, I. S. (continued)

1972b. (White, M. N., Lisk, D. J., Burdick, G. E., and Harris, E. J.). Arsenic content of fish from New York State: New York Fish and Game Jour., v. 19, no. 1, p. 12-31.

A survey was made of the total arsenic content of 471 fish of various species collected in 1969 from 49 New York State waters. Arsenic levels ranged up to about 0.5 ppm with fish from Lake Ontario, Canandaigua Lake, and the Hudson, St. Lawrence and Salmon Rivers. Larger fish usually contained higher arsenic concentrations. (PAV)

1972c. (Gutenmann, W. H., Lisk, D. J., Burdick, G. E., and Harris, E. J.). A survey of the selenium content of fish from 49 New York State waters: Pesticides Monitoring Jour., v. 6, no. 2, p. 107-114.

A survey was made of the selenium content of 438 fish of various species collected in 1969 from 49 New York State waters and a group of lake trout sampled in 1970 from Cayuga Lake only. The method was sensitive to about 0.1 ppm of Se in fish. Concentrations of selenium on a freshweight basis were usually below I ppm. There was little apparent correlation between selenium concentrations and species or sampling locations except that sturgeon from the Hudson River, lake trout from Lakes George and West Canada, whitefish from Raquette Lake, and several species from Lake Pleasant had consistently higher levels of selenium than other samples; all fish from Lakes Butterfield and Champlain and the Chenango and Salmon Rivers had consistently lower levels. No correlation was apparent between selenium levels and size or sex of fish. (author)

PALMER, R. B.

1966. Biochemical oxygen demand and nitrogen studies on the Ithaca and Cayuga Heights sewage treatment plant's effluents relative to their effects on the water quality in the south end of Cayuga Lake: Ithaca, N.Y., Cornell Univ., M.S. thesis, 120 p.

The purpose of this study was to determine the extent to which effluents from the Ithaca and Cayuga Heights sewage treatment plants may have contributed to the possible eutrophic conditions in the southern end of Cayuga Lake. Because of time limitations, all related facets of the problem could not be investigated experimentally. Experimental work was restricted to biochemical oxygen demand and nitrogen measurements only, and the work of other investigators was used for relevant additional information. (PAV)

PARK, R. A.

1970. (and Wilkinson, J. W.). Lake George modeling project preliminary progress report: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 70-6, 93 p.

The progress in developing a Lake George ecosystem model has been encouraging, particularly in the past three months. During the first phase of the project, simple models relating available diatom and environmental data were estimated and evaluated using methods of regression analysis.

In the second phase of the project the modellers met with various representatives of the other Lake George projects in order to identify the form of the respective submodels. As a result of these meetings, several submodels have been developed; the hydrologic, nutrient, and phytoplankton submodels although requiring additional attention to algorithms, have been developed to the point where they may now be refined with the help of the project leaders in light of data currently being collected. (author)

1971a. (and Wilkinson, J. W.). Lake George modeling philosophy: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 71-5, 60 p.

Modeling of the Lake George ecosystem utilizes a progression of models, each representing a particular level of abstraction and complexity. Conceptual models graphically depict the relationships of the ecosystem components and processes which are of interest, thus defining the scope of the data collection and analysis. Efficient data management assures accessibility of data to all site investigators. Functional models based on literature and data from ongoing studies, and including phytoplankton, herbivorous and predatory zooplankton, and nutrient models, are programmed for both time-sharing and batch-mode processing. These models are refined on a continuing basis in order to achieve content, construct, concurrent, and predictive validity. (author)

PARK, R. A. (continued)

1971b. (and Wilkinson, J. W.). Lake George modeling project--1971 final report: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 71-6, 57 p.

In general, the progress in developing an integrated set of ecosystem models has been most encouraging. It appears that the coordinated efforts by the multidisciplinary Lake George team are on the verge of yielding the comprehensive synthesis that was originally envisaged.

Much of the modeling research has been discussed previously (Park and Wilkinson, 1971); therefore, this progress report is intended as a supplement which updates the earlier report and more adequately describes certain important models.

Because the modeling project is dependent on a large number of other studies, there has to be an almost constant re-ordering of priorities as data and information become available from both field and laboratory research. For this reason the modeling effort is ahead of schedule on some tasks and is somewhat behind schedule on other tasks. (author)

1972. (Wilkinson, J. W., Bloomfield, J. A., Kohberger, R. C., and Sterling, Claudia). Aquatic modeling data analysis and data management at Lake George, New York: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 72-23, 32 p.

Modeling and data management accomplishments in 1972 are described. These include statistical consulting and the development of abstract and data retrieval systems, as well as phytoplankton-zooplankton, phytoplankton kinetic, zooplankton biomass, zooplankton resource, zooplankton vertical migration, invertebrate benthos, aquatic decomposition, mixing and sedimentation models. The philosophy and programming of the Biome aquatic ecosystem model is also discussed. (author)

1973. (Wilkinson, J. W., Kohberger, R. C., Bloomfield, J. A., Zahorcak, C. S., and Scavia, Donald). Statistical analysis, data management and ecosystem modeling at Lake George, New York: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 73-20, 6 p.

The Lake George modeling group has had primary responsibility for implementation of the Biome aquatic model (CLEAN). CLEAN has been re-programmed and expanded; it now consists of 28 coupled ordinary differential equations and can be used to simulate several different lakes in one execution. Numerous submodel terms have been refined as a result of rigorous evaluations. A general numbers-biomass algorithm was developed, and the benthos submodel has been improved significantly. Nutrient cycling has been added to the decomposition submodel. A pelagic version of CLEAN has been implemented in a step-wise fashion and subjected to extensive experimentation. (author)

1974a. (Scavia, Donald and Cleseri, N. L.). CLEANER, the Lake George model: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 74-15, 32 p.

CLEANER, an ecosystem model based on the International Biological Program model CLEAN, has a number of characteristics useful to environmental management. It represents functional physiologic and ecologic relationships for major compartments of the ecosystem, with disaggregation of trophic levels appropriate for studying competition among dissimilar forms. It exhibits good calibration and has few data requirements, facilitating transferability. It is programmed for use in interactive mode from remote terminals, with user-oriented output--including transformation of biomass values to turbidity, scum, and taste and odor indicators. (author)

1974b. (O'Neill, R. V., Bloomfield, J. A., Shugart, H. H., Jr., and others). A generalized model for simulating lake ecosystems: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 74-24, 17 p.

CLEAN, a generalized lake-ecosystem model with strong ecological realism, has been developed in response to one aspect of the growing need for models suitable for helping man to manage his environment. The model currently consists of twenty-eight ordinary differential equations which represent approximately sixteen compartments, including attached aquatic plants, phytoplankton, zooplankton, bottom-dwelling aquatic insects, fish, suspended organic matter, decomposers, sediments, and nutrients. These equations can be linked in any meaningful combination to simulate a given point in a lake. (author)

PARKER, B. L.
1974. (and Brammer, J. D.). Effects of chronic oil contamination on aquatic dipterans--A state of the art: Burlington, Vt., Vermont Univ. Water Resources Research Center, Completion Rept., 32 p.

A literature search was conducted to determine research needs in the area of petroleum pollution in aquatic environments. Oil contamination of marine fresh-water habitats was reviewed, sources of petroleum pollution in Lake Champlain were stressed. The biological (toxic, behavioral and physiological) effects of oil contamination on marine and aquatic organisms were examined with special emphasis on the aquatic stages of mosquitoes. Research needs included mechanisms of uptake and transport of hydrocarbons, physiological and morphological effects, and the effects of petroleum fractions on reproductive potential and other population parameters of aquatic organisms, especially insects. The literature search resulted in a compiled bibliography of 163 selected references. (author)

PARKHILL, S. M. (ed.)
1973. Lake restoration: Compressed Air, v. 78, no. 10, p. 11-16.

Various methods for alleviating eutrophication are described and details are given of a community action leading toward preservation of Lakes Waccabuc, Oscaleta, and Rippowam (Westchester County) in cooperation with the Union Carbide Corporation. Three sampling stations were selected in each lake where oxygen, temperature, pH, alkalinity, turbidity, conductivity, and chlorophyll concentrations were measured. The profiles for all three lakes are characteristic of moderate levels of eutrophication. The principal method of lake restoration discussed in this article was oxygenation of the hypolimnion. (author)

PASKO, D. G.
1957. Carry Falls Reservoir investigation: New York Fish and Game Jour., v. 4, no. 1, p. 1-31.

Studies were conducted during July and August in 1951 and 1955 to determine conditions in a 9-mile section of the Raquette River in St. Lawrence County before and after impoundment. The 3,200-acre impoundment, known as Carry Falls Reservoir, was for the purpose of storing and regulating the flow of water for the development of hydroelectric power downstream.

The impoundment of the river resulted in gains in the over-all production and utilization of the fish resource, although some limitations probably resulted from the great fluctuation of water level which was necessary in operation of the reservoir. No harm to tributary trout waters was noted.

No changes in fishing regulations or other management methods were recommended. (author)

PATE, V. S.
1932. Studies on fish food in selected areas, in A biological survey of the Upper Hudson watershed: New York State Conserv. Dept., 22d Ann. Rept. Supp., p. 130-156.

This report discusses bottom fauna of streams and lakes and its utilization as food for fish. The first part of the report discusses prevailing conditions in several streams; the second part discusses the six lakes studied. Discussion in the first part included relation of the width of stream to quantity of food organisms, relation of type of bottom to quantity of food present, factors limiting the bottom fauna, and comparison of food consumed by fish with food available. The article includes tabulation of the stomach contents of fish examined during the summer. (GKS)

1933. Studies of the fish food supply in selected areas of the Raquette watershed, in A biological survey of the Raquette watershed: New York State Conserv. Dept., 23d Ann. Rept. Supp., p. 136-157.

This article discusses the bottom fauna of some streams and lakes of the Raquette watershed and some indications of its use as food for fish. The article includes tabulations of the fish stomach contents examined during the summer. The article also discusses pollution studies on the watershed. (GKS)

PEASE, N. B.
1961. Age, growth and rate of exploitation of Oneida Lake yellow perch: Ithaca, N.Y., Cornell Univ., Job Completion Rept. 3, Proj. F-17-R, mimeo.

PECK, C. H.
1879. Plants, indigenous and introduced, not before reported: Albany, N.Y., Regents State Univ. New York Rept., v. 28, p. 46-82.

1880. Plants not before reported: New York State Mus. Nat. Hist. Ann. Rept., v. 33, p. 17-34.

1881. Plants not before reported: New York State Mus. Nat. Hist. Ann. Rept., v. 34, p. 41-53.

PERROTTE, W. T., Jr.
1973. Secondary productivity studies--Benthic macroinvertebrates of Lake George, a preliminary study (June 1973-October 1973): Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst. Rept. 73-31, (unpub. and incomplete), 16 p.

PETERSON, B. J.
1971. The role of zooplankton in the phosphorus cycle of Cayuga Lake: Ithaca, N.Y., Cornell Univ., Doctoral dissert., 137 p.

The importance of phosphorus regeneration by zooplankton for primary productivity in Cayuga Lake was estimated for various months of the year. It was found that during April, May and June the phytoplankton rely heavily upon phosphorus available in the surface water due to deep mixing during the unstratified winter period. Upon exhaustion of this reservoir in late June, the increases in zooplankton standing crop and metabolic activity are sufficient to regenerate phosphorus in amounts equal to or greater than the phytoplankton requirement in July, August and September. This is not to suggest that phosphorus may not be limiting to further increases in productivity. It does mean that the estimated rate of primary productivity could be maintained on the basis of zooplankton phosphorus excretion alone. (PAV)

1973. (Barlow, J. P., and Savage, A. E.). Experimental studies on phytoplankton succession in Cayuga Lake: Ithaca, N.Y., Cornell Univ. Water Resources and Marine Sci. Center, Tech. Rept. 71, 36 p.

Natural phytoplankton assemblages from Cayuga Lake were maintained under controlled nutrient conditions in large volume continuous flow laboratory cultures. Changes in the C:P [carbon: phosphorus] ratio, rate of carbon uptake per unit carbon, and species composition were followed in nutrient limited chemostats and nutrient sufficient turbidostats. Rates of change of relative abundance and final values for the C:P ratio and rates of carbon uptake per unit carbon are related to parameters describing the lake populations. These comparisons suggest that Cayuga Lake phytoplankton are limited by phosphorus but are rarely phosphorus deficient. (author)

1974. (Barlow, J. P., and Savage, A. E.). The physiological state with respect to phosphorus of Cayuga Lake phytoplankton: Limnology and Oceanography, v. 19, no. 3, p. 396-408.

Natural phytoplankton assemblages from Cayuga Lake were maintained under controlled nutrient conditions in large volume continuous flow laboratory cultures. Changes in the carbon-phosphorus ratio, rate of carbon uptake per unit carbon, and species composition were followed in nutrient limited and nutrient sufficient cultures. Rates of change of relative abundance and final values for the carbon-phosphorus ratio and rates of carbon uptake per unit carbon are related to parameters describing the lake populations. These comparisons suggest that these phytoplankton are limited by phosphorus but are rarely phosphorus deficient. (author)

PETTY, A. C.
1953. Warm water fish populations: The Conservationist, v. 8, no. 1, p. 24-25.

This article discusses the problems of fishing, fish management and fish stocking of ponds. It gives possible solutions to the problems. (GKS)

PEVERLY, J. H.
1974a. (Miller, Gary, Brown, W. H., and Johnson, R. L.). Aquatic weed management in the Finger Lakes: Ithaca, N.Y., Cornell Univ. Water Resources and Marine Sci. Center, Tech. Rept. 90, 50 p.

PEVERLY, J. H. (continued)

About 80 percent of the northern part of Cayuga Lake is infested with aquatic weeds. Water milfoil (Myriophyllum sp.) accounts for 54 percent of all plants, eel grass (Vallisneria americana) makes up 32 percent, and the Najas species about 8 percent. The chemical herbicides Diquat, 2,4-D granules, and Roundup (glyphosate) were tested for control of milfoil either in the lake or in greenhouse experiments. Plants treated with Diquat at recommended rates in the lake showed no control and those treated with 2,4-D granules exhibited almost complete control. In a greenhouse experiment using Roundup (hiyphosate), milfoil was not controlled except at prohibitively high concentrations. Under water cutting in both the lake and in the Cornell Pond Facility produced temporary control, but regrowth was rapid. Best control was achieved with two cuttings, one in late June and another in late July. Long-term solutions to the weed problem will probably require removal of the fertile bottom sediments in which milfoil now grows. (author)

1974b. (Oglesby, R. T., Vogel, Albert, and Johnson, R. L.). Continued effects of Tropical Storm Agnes (1972) on aquatic weed growth: Ithaca, N.Y., Cornell Univ. Water Resources and Marine Sci. Center, Tech. Rept. 91, 16 p.

Tropical Storm Agnes produced an increase in suspended sediments and a decrease in water transparency at the southern end of Cayuga Lake for a sustained period during the early summer of 1972. The 1972 community of submerged vascular plants were severly affected. Standing crops were drastically reduced and the species composition of the plant community changed compared to 1970. In 1973, standing crop values had increased to 87 percent of those of 1970. However, shifts in spatial distribution had occurred and the community had further changed to one highly dominated by Myriophyllum sp. with the virtual exclusion of some previously abundant forms, especially Heteranthera dubia. Shifts in species composition of an aquatic plant community may not always be the result of long-term changes in the environment, but rather be a result of single intense storm events. It is suggested that rooted aquatic plant growth could be suppressed by artificially manipulating the amount of light reaching the plants at certain critical periods of growth. (author)

PFAENDER, S. S.

1974. Microbal lysis of laboratory cultures of planktonic freshwater algae: Ithaca, N.Y., Cornell Univ., M.S. thesis, 140 p.

This research was undertaken in an effort to expand the knowledge of the natural enemies of algae and the ecology of these algal antagonists. Specifically, attempts were made to isolate from nature microbal agents capable of attacking living planktonic freshwater algae, and to determine their potential as agents of biological control. (PAV)

PHILBIN, T. W.

1970. (and Phillipp, J.). Thermal studies in New York State: Symposium on Environmental Aspects of Nuclear Power Stations, New York, 1970, 13 p.

Several thermal effects studies have been and are presently underway to determine what the effects of thermal discharges are on the water environment of New York State. At present, the results are incomplete; but they do yield enough information to allow some initial conclusions. On Lake Ontario, the Ginna and Nine Mile point studies showed that fish tended to gather around both intake and discharge structures, slightly altering the local fish and benthic distributions. On Lake Cayuga, the Bell Nuclear Station has been postponed with no immediate plans for resumption. Physical effects studies on the lake, if the Bell Station Plant were operating, have yielded a probable 0.7°F rise in the average surface temperature along with an eight to ten day longer stratification period. Moreover, in October, water could possible be drawn from the epilimnion, increasing discharged water another 5°F. However, if New York State Discharge Standards are adhered to, no acute effects are anticipated even close to the outfall. On the Hudson River, on the other hand, increased water temperatures as high as 91°F do not appear to influence the abundance of fish. (author)

PIECH, K. R.

1974. (Schott, J. R., and Stewart, K. M.). Interpretation techniques, development and application to New York State water resources: Buffalo, N.Y., Calspan Corp. and State Univ. New York at Buffalo, Dept. Biology, 27 p.

PIECZONKA, P.
1974. (and Hopson, N. E.). Phosphorus detergent ban--How effective?: Water and Sewage Works. v. 121, no. 7, p. 52-55.

The eutrophication rate of a lake is greatly increased by the addition of more nutrient, such as phosphorus. A study in Erie County attempted to answer basic questions in phosphorus detergent pollution from domestic sewage. The primary questions explored were what percentage of phosphorus reduction could be expected in the influent of a sewage treatment plant treating domestic wastes, and what effect would an effective ban of phosphate detergents have on sewage treatment costs. It was determined that the enactment of a ban on the detergents would not solve the problem of eutrophication. Phosphorus removal in waste water treatment plants was required. The Lackawanna sewage treatment plant was investigated for further solutions. It was concluded that phosphorus detergent bans reduced phosphorus loading at a domestic sewage plant by 55.7 percent, although the banning is insufficient for fighting this pollution problem alone. (author)

PIERCE, M. E.
1958. The effect of the weedicide Kuron upon the flora and fauna of two experimental areas of Lang Pond, Dutchess County, N.Y.: Northeastern Weed Control Conf. Proc., New York, v. 12, p. 338-343.

The purpose of this study was to attempt to discover what happens to the plankton and benthic organisms, as well as to the weeds, when a modern weedicide such as Kuron is sprayed over a limited area of a pond. The conditions studied were temperature, pH, dissolved oxygen, in parts per million, plankton and benthic organisms, and aquatic weeds. The studies were made from May 9 to October 1, 1957. No precise quantitative study of chemical or biological factors was even attempted in this experiment. Some results of the study were that the effect of the Kuron was to accelerate the growth of the stems of Nymphaea within a few days, after which they became weakened, broke off, and both stems and leaves died. After 4 weeks the surface of the water was fairly well cleared of lily pads, after 6 weeks better cleared, and after 9 weeks almost completely cleared. The Kuron did not appear to weaken or kill any of the submerged weeds. Plankton was constantly represented by various groups. Benthic forms were represented constantly by various groups. The article summarizes other results of the study. (GKS)

1959. Further study of the effect of the weedicide Kuron upon the flora and fauna of Lang Pond, Dutchess County, New York: Northeastern Weed Control Conf. Proc., New York, v. 13, p. 310-314.

At a concentration of 2 milligrams per litre of Kuron, most floating and submerged weeds in shallow areas were reduced in abundance or temporarily eliminated. Kuron appeared to have no effect on pH or dissolved oxygen concentration. Except for temporary growth constraints, the plankton and benthic animal forms were unaffected. Large aquatic vertebrates appeared to be unaffected by Kuron. (PEG)

1960a. A study of the effect of the weed killer, 2,4-D granular, on three experimental plots of Long Pond, Dutchess County, N.Y.: Northeastern Weed Control Conf. Proc., New York, v. 14, p. 483-487.

The purpose of this study was to compare the results on three experimental plots after each had been treated with different concentrations of granular 2,4-D. Observations were made not only of the effects upon the pondweeds, but also upon any changes occurring within the plankton and benthic populations. Nymphaea odorata was successfully eliminated by all three concentrations (which was put on three different experimental plots). Brasenia sp. was first cleared away by treatment of 1.5 ppm but made a feeble return later. Concentration of 1.5 ppm did not reduce Potamogeton, but rather seemed to accelerate it. Concentrations of 3.1 ppm and 6.2 ppm reduced but did not eliminate Utricularia purpurea. The plankton remained constant both in numbers of species represented and in abundance. The benthic forms were continuously represented by the same species, and their numbers remained constant. Fish, both young and adults, were present in all plots throughout the season. (GKS)

1960b. Progress report of the effect of Kuron upon the biota of Long Pond, Dutchess County, N.Y.: Northeastern Weed Control Conf. Proc., New York, v. 14, p. 472-475.

PIERCE, M. E. (continued)

This article discusses the continuation study of experiments carried out on Long Pond in the summers of 1957 and 1958. During the summer of 1959, the main experiment was the application of Kuron to the same 2-acre plot which had been treated in 1958. An attempt was made to determine the effect of Kuron upon the plankton and benthic organisms, as well as upon the weeds, when a limited area of the pond is sprayed. The study extended from June to September 1959. The few scattered Nymphaea odorata from the 1958 population succumbed within a few days. The submerged weeds of the shallow area were at least held in check. For a few days after spraying, the plankton suffered a decrease in number and vigor but by 2 weeks had regained the condition observed before spraying and similar to the control. Benthic forms were not affected by Kuron. The experimental plot first treated in 1957, and again in 1958 showed during the summer of 1959 a vast reduction in certain weeds. (GKS)

1961a. A study of the effect of weed killer 2,4-D aqua granular on six experimental plots of Long Pond, Dutchess County, New York: Northeastern Weed Control Conf. Proc., New York, v. 15, p. 539-543.

During the study, bottom temperature, pH, dissolved oxygen concentration, planktonic and benthic forms, large aquatic vertebrates, and pondweeds were routinely measured. The weed killer eliminated Nymphaea odorata and Brasenia sp. and reduced the abundance of Utricularia purpurea. The plankton was temporarily reduced in abundance but the benthos and larger vertebrates appeared unaffected. (PEG)

1961b. Progress report on the effect of Kuron applications after one and two years at Long Pond, Dutchess County, New York: Northeastern Weed Control Conf. Proc., New York, v. 15, p. 345.

An application of Kuron at 2 milligrams per litre eliminated Nymphaea, Nuphar, and Pontelaria from Long Pond for an entire season. An application of 1.2 milligrams per litre during the following year eliminated the few surviving Nymphaea and Nuphar for the remainder of the season. The treatment was effective into the next year. The Kuron was not as successful for controlling submerged weeds. (PEG)

1962. A comparative study of the application of three weedicides, Kurosal G, Kurosal SL, and a 2,4-D ester, to three areas in Long Pond, Dutchess County, New York: Northeastern Weed Control Conf. Proc., New York, v. 16, p. 435-441.

No significant difference was observed between the effects of three weedicides. They were most effective in quiet waters. In areas of extremely dense plant growth, the weeds appeared unaffected by treatment. Nymphaea, Brasenia, and Utricularia generally responded to treatment, but Potamogeton did not, especially where present in dense stands. Some changes were observed in the benthos but large vertebrates were unaffected. (PEG)

1963. Progress report on the application of Fenae granular to six small plots in Long Pond, Dutchess County, New York: Northeastern Weed Control Conf. Proc., New York, v. 17, p. 451-455.

The submerged weeds were growth inhibited by Fenae granular, but the effect on the floating weeds was less pronounced. Plants growing in extremely dense stands were unaffected by treatment. The plankton, benthos, and large vertebrates appeared to be unaffected by the weedicide. (PEG)

PILLAY, K. K.

1972. (Thomas, C. C., Jr., Sondel, J. A., and Hyche, C. M.). Mercury pollution of Lake Erie ecosphere: Environmental Research, v. 5, no. 2, p. 172-181.

The distribution of mercury in the ecosphere of Lake Erie was monitored using a highly sensitive and reliable neutron activation analysis procedure. A variety of samples from the fauna and flora of the lake as well as those from its immediate environment were analyzed for their mercury content. The results of this survey indicate a widespread distribution of mercury in air particulates; coal samples of the region; sediments, plankton/algae and fish samples from the lake; and in the brain tissues of long-time residents of the Lake Erie basin. (author)

PILSBRY, H. A.
1917. Amnicolidae from Oneida Lake, N.Y.: The Nautilus, v. 31, no. 2, p. 44-46.

A detailed description of three types of mollusks, Amnicola bakeriana, Amnicola clarkei, and Amnicola oneida is given. (GKS)

1918. New species of amnicolidae from Oneida Lake, New York: Syracuse, N.Y., New York State Coll. Forestry, Tech. Rept. 9, p. 244-246.

Three new species of amnicolidae are described. They include Amnicola bakeriana, Amnicola clarkei, and Amnicola oneida. (PEG)

PLANT, RICHARD
1973. (Lance, R., and Youngs, W. D.). Computer simulation of trophic level interrelationships in Cayuga Lake: Ithaca, N.Y., Cornell Univ. Water Resources and Marine Sci. Center, Tech. Rept. 69, 26 p.

An attempt is described to simulate a particular trophic chain in Cayuga Lake. The chain, consisting of phytoplankton, zooplankton, alewives and lake trout, was selected primarily because it is largely independent of other inhabitants of the lake, and represents a complete food chain running from primary producer to final predator. The primary objectives were to formulate a model displaying a behavior similar to that observed in the species populations in the trophic chain, to test the behavior of this model under variation of its parameters, and to use the model as a guide in developing programs for future research. (author)

PLATT, E. L.
1915. The population of the "blanket-algae" of freshwater pools: Am. Naturalist, v. 49, p. 752-762.

This study of the community of life focuses on the floating masses of filamentous algae, popularly known as "blanket-algae." A fine silk hand net of bolting cloth was used to lift the algae from the surface of the water. The pools are all in the vicinity of the Cornell University campus. The article discusses the types of algae that were identified from the samples, seasonal variation among different algae types, and the natural balance between algae and nutrients. (GKS)

POTASH, MILTON
1966. (and Henson, E. B.). Oxygen depletion patterns in Mallets Bay, Lake Champlain: Internat. Assoc. Great Lakes Research, 9th Conf. Great Lakes Research, Ann Arbor, Mich., Univ. of Michigan Great Lakes Div., Proc., Chicago, Illinois, p. 411-415.

Malletts Bay, near Burlington, Vermont is an area of Lake Champlain which is almost completely isolated from the open lake by railroad and highway fills. ... During 1964 it was found that dissolved oxygen concentration decreased rapidly in the hypolimnion during summer. On September 18, oxygen content was 0.24 ppm, indicating a deficiency of over 97 percent. By October 17, the next sampling date, a complete overturn had occurred, and the deeper waters were completely oxygenated.

Observations during 1965 indicated a very similar pattern. After thermal stratification was established, hypolimnial oxygen concentrations were diminished. ... Oxygen patterns indicate that the Malletts Bay water mass is quite distinct from that of adjacent areas of Lake Champlain. (author)

1968. (Sundberg, S. E., and Henson, E. B.). Epilimnetic oxygen changes associated with autumnal overturn: Internat. Assoc. Great Lakes Research, 11th Conf. Great Lakes Research, Proc., Milwaukee, Wisc., p. 565-570.

The process of overturn was followed closely in Malletts Bay, Lake Champlain, during the autumn of 1967. Strongly eutrophic conditons developed after thermal stratification was established, with hypolimnial oxygen concentrations decreasing to 0.1-0.2 mg/l at one meter from the bottom during the summer, and remaining at or near this level until overturn was completed on October 17.

POTASH, MILTON (continued)

On September 28, following 36 hours of strong southerly winds, a considerable piling of epilimnetic waters was found to exist in the north part of the bay. Concurrently, dissolved-oxygen concentration in the epilimnion decreased from 100 to 86 percent of saturation. A mechanism is suggested to account for this oxygen reduction, and the whole process may be comparable to those occurring in the bays of the Great Lakes or parts of Lake Erie. (author)

1969. (Sundberg, S. E., and Henson, E. B.). Characterization of water masses of Lake Champlain: Internat. Vereinigung für theoretische u. angew. Limnologie Verh., v. 17, p. 140-147.

Lake Champlain is located almost entirely in northeastern United States and forms a boundary between the states of New York and Vermont. Except for reports of the New York Conservation Department (1930), little limnological information has been available. Recent studies were initiated in two bays of the lake (Potash, 1965) and were then expanded to include more intensive studies in restricted areas (Henson, Potash, and Sundberg, 1966; Potash and Henson, 1966), as well as an extensive synoptic survey of the entire lake (Henson and Potash, 1966). From the data collected, particularly those relating to chemical parameters, five major water masses have been identified. (PAV)

1974. (and Henson, E. B.) . Materials input of Lake Champlain--A synoptic appraisal: Water Resources Bull., v. 10, no. 2, p. 348-359.

The complex morphometry of Lake Champlain requires that detailed, regional studies be made, and the results integrated, to yield total lake conditions. Using specific conductance measurements, and values of total dissolved solids calculated from them, we present an approach to assessing the materials budget of the lake. The sampling program involved taking inventory of all 319 tributaries, determining the watershed area for each, and dividing the Champlain basin into appropriate hydrographic regions. Data were obtained from samples collected from 41 selected streams (representing 97.5 percent of the annual water input), sampling occurring in all seasons of the year since 1970. Results indicate that over one million metric tonnes of total dissolved solids enter Lake Champlain annually, about two-thirds from the eastern (Vermont) portion and almost one-fourth from the western (New York) part of the drainage basin, the remainder entering from the south end. Of the total quantity added annually, 17.4 percent is retained in the lake, indicating that a solids build-up is occurring at a significant rate. (author)

PRATT, H. S.

1923. Preliminary report on the parasitic worms of Oneida Lake, New York: Roosevelt Wildlife Bull., v. 23, p. 55-71.

This report is a study of the parasitic worms infesting the fish, other aquatic vertebrates, and mollusks of Oneida Lake. The general plan of the work is to: (1) make as complete collections as possible of the parasitic worms infesting the aquatic animals in the lake, and (2) make an intensive study of the parasitic worms of the important fish species of the lake with the objective of learning as much as possible of the life history of these parasites. This paper gives an account of the first collections made in late summer 1917. Additional collections will undoubtedly add to the list of fish and other animal species in Oneida Lake and to the list of parasitic forms harbored by these organisms. (GKS)

PRUCHA, J. J. (ed.)

1964. Guidebook--New York State Geological Association, 36th Annual Meeting: New York State Geol. Assoc., mimeo., 65 p.

This guidebook presents three articles dealing with the geology of the Syracuse area. They include: (1) E. H. Muller, Surficial geology of the Syracuse field area; (2) I. H. Kantrowitz, Bedrock topography in the Oneida Lake area; and (3) W. P. Leutz, the Salina group. (PEG)

QUEREAU, E. C.
1898. The topography and history of Jamesville Lake, N.Y.: Geol. Soc. Am. Bull, v. 9, p. 173-182.

Jamesville Lake is one of a class of small lakes in central New York which are often called "Round Lakes," a term which distinguishes them well from the "Finger Lakes." It lies between two of the main valleys (Onondaga and Butternut) which dissect in this region the New York plateau in a general south-north direction. The portion of the plateau between these two valleys is dissected also, but not so deeply, by a series of small parallel west-east gorges or ravines, in one of which, the Jamesville gorge, the lake is situated. The immediate vicinity of the lake is channeled in a complicated manner by abandoned stream beds which run west-east, and whose sides are often terraced in such a manner as to make it evident that large quantities of water once passed across this region. Associated with these channels a number of kettle-like depressions are found, of round or oval outline and of varying dimensions. It is in one of the largest of these that the present Jamesville lake is situated. The lake basins were explained as probably caused in each case by a waterfall, which had hollowed out a depression or great pool at its foot. (author)

RAFTER, G. W.
1890. Biological examination of potable water: Rochester Acad. Sci. Proc., v. 1, brochure 1, p. 34-44.

Biological examination of water requires the determination of all minute life occurring in various classes of water and is divided into two distinct investigations, the microscopical and the bacterial. Microscopical examination includes the determination of all those forms of life that are easily studied in all their phases by use of the microscope. These forms include, among plants, the algae, larger fungi, and others; and among animals, the sponges, infusoria, rotifers, smaller crustacea, and others. Bacterial examination requires cultures as an integral part of the process; and it only incidentally makes use of the microscope, inasmuch as examinations and partial identifications may be made from plate and tube cultures without use of the microscope. This article discusses some newer techniques and methods of the microscopical examination. (GKS)

1905. Hydrology of the State of New York: New York State Mus. Bull. 85, 902 p.

This report gives some general information on the water resources of New York State. It reports briefly not only in what manner the water resources have been employed, but also the recent lines of development and the probable future of the State if the water is utilized to the fullest degree. It describes in a general way the river systems, several of the more important uses of New York water, and some of the economic problems confronting the people of the State. (GKS)

RALTON, J.
1970. Seasonal changes in fecundity of copepods of McCargo Lake: Brockport, N.Y., State Univ. New York, M.S. thesis.

RANDALL, A. D.
1972. Records of wells and test borings in the Susquehanna River basin: New York State Dept. Environmental Conserv., Bull. 69, 92 p.

RANDALL, A. D. (continued)

Groundwater resources data collected from 1965 through 1968 in the Susquehanna River basin in New York include records of 1,990 wells, chemical analyses of water from 315 wells, detailed logs of 385 wells, and logs of 725 test borings. Well records (except for remarks) and chemical analyses were compiled using automatic data-processing equipment. They are stored by the U.S. Geological Survey on machine cards and magnetic tapes. At least 90 percent of the records are from the major valleys, which constitute no more than 15 percent of total basin area. The valleys were emphasized because it is in the valleys that the most productive aquifers occur, most urban development has taken place, and future development is likely to concentrate. A few small upland areas were selected for intensive study. Salt water is known to exist at depth beneath much of the basin. To document its position, salt-water wells were sought and inventoried wherever possible. (author)

RANEY, E. C.

1942a. (and Webster, D. A.). The spring migration of the common white sucker, in Skaneateles Lake Inlet, New York: Copeia, v. 1942, no. 3, p. 139-148.

During the spring of 1939, an attempt was made to obtain an understanding of the sucker migration in Skaneateles Lake Inlet. The studies produced a general description of the main characteristics of the run. They also included the length and the peak of the migration; size, age, and sex ratio of the suckers in the run; and the loss in weight of males and females during the run. The article summarizes the results in tables and charts. (GKS)

1942b. (and Lachner, E. A.). Studies of the summer food, growth, and movements of young yellow pike-perch, Stizostedion vitreum, in Oneida Lake, New York: Jour. Wildlife Management, v. 6, no. 1, p. 1-16.

The yellow pike-perch is a very important game fish in Oneida Lake and in many other large lakes and rivers of New York. A life history study of the fish was started in July 1940. Young and older fish were collected by several methods. The collecting operation lasted from July 2 to October 24. Stomachs from 465 out of 620 young fish seined contained food; 92.9 percent of all stomach contents by volume consisted of other fish. The remaining food was invertebrates and small amounts of vegetation. Changes in eating habits during the collecting season and changes in fish lengths, as well as types of food eaten and fish migration, are discussed. (GKS)

1969. (and Menzel, B. W.). Heated effluents and effects on aquatic life with emphasis on fish--A bibliography: U.S. Dept. Interior, Office of Water Resources Research, 470 p.

This permuted bibliography contains 1,870 references produced as a computer printout. Even though emphasis has been placed on the effects of heated effluents on fish, important references have been included for other organisms. A selection of numerous references to temperature conditions of oceans, lakes, and streams also is included. (PEG)

RAYNER, H. J.

1941. The development of a management policy for the rainbow trout of the Finger Lakes: Ithaca, N.Y., Cornell Univ., Doctoral dissert., 97 p.

The objective of this study was to obtain facts on the life history of the rainbow trout and its relationship to associated species and to the environment in order to develop a management program that will make use of the water resources studies. The lake trout, cisco, common whitefish, chain pickerel, perch, rock bass, and smallmouth bass are possibly the most important fishes associated with the rainbow trout. Skaneateles Lake is probably better suited to a population of rainbow trout than any other Finger Lake studied. The thesis also discusses, in reference to Skaneateles Lake, stocking policy, competition of food between lake and rainbow trout, rainbow trout spawning cycles, natural distribution of rainbow trout, and the management of trout; and in reference to Cayuga, Keuka, and Seneca Lakes, the management of rainbow trout. (GKS)

RECKAHN, J. A.

1961. Evaluation of an extended angling season for lake trout and rainbow trout in Cayuga, Seneca, and Skaneateles Lakes: Ithaca, N.Y., Cornell Univ., M.S. thesis, 109 p.

RECKAHN, J. A. (continued)
The angling season in Cayuga, Seneca, and Skaneateles Lakes was extended in 1961 in an attempt to increase the angling exploitation of rainbow and lake trout stocks. Weekend creel census, voluntary records by boat livery operators, fishermen's diaries, and angling tag returns were used to evaluate the extended trout season. The extended season increased the weekend catch of rainbow trout in Skaneateles Lake by 57 percent. Approximately 66 percent of the rainbow trout catch in Skaneateles Lake were stocked rainbow trout and were comparable to naturally produced trout in size and age distributions. Stomach analysis of lake trout from Seneca Lake indicated that spawning alewives were largely unavailable to lake trout during late July. It was also evident that lake trout reduced feeding during their own spawning period. Management and research suggestions include an experimental year-round open trout season for the Finger Lakes, additional research on stocking policies, and the use of Cayuga Lake as the prime source of lake trout eggs for fish cultivating purposes in the Finger Lakes region. (GKS)

REED, H. D.
1909. (and Wright, A. H.). <u>The vertebrates of the Cayuga Lake basin</u>: Am. Philos. Soc. Proc., v. 48, p. 370-459.

This article lists all vertebrates that are known to inhabit the basin. It discusses the maps used for the article; the Cayuga Lake basin; surrounding hydrographic areas; life zones; areas of meteorology; and fishes, amphibia, reptilia, and birds of the area. A catalog of the species is included. (GKS)

REED, P. B., Jr.
1968. <u>Preliminary study of a green-timber-impoundment</u>: Ithaca, N.Y., Cornell Univ., M.S. thesis, 65 p.

The effects on vegetation and waterfowl in the first year of flooding of a 300-acre, green-timber impoundment on the Montezuma National Wildlife Refuge in central New York State were studied. The pool was flooded in late March and drained in early July 1965. No mortality was observed in trees during the first year after flooding. Growth of swamp white oak (<u>Quercus bicolor</u>) appeared to be stimulated by the flooding regime. Some mortality in shrubs was noted, and the standing crop of herbaceous vegetation was considerably reduced. Migrants used the impounded pool in early spring. Large numbers of waterfowl used the pool as a day-rest area in June. Waterfowl nesting was studied by searching randomly drawn transects. Thirty-one percent of the 62 nests discovered in the impoundment was successful. Thirty waterfowl broods used the impoundment until it was drained. A bait-trapping and color-marking program resulted in the banding of 256 waterfowl in June and July. (author)

REGIER, H. A.
1959. <u>An evaluation of the scale method for age and growth determination of bluegills in New York farm ponds</u>: Ithaca, N.Y., Cornell Univ., M.S. thesis, 140 p.

This study was done on 24 small farm ponds near Ithaca, N.Y. All ponds were stocked (1950-1955) with bluegills and largemouth bass; yellow perch were also stocked in one pond. The thesis (1) states the criteria for annulus recognition; (2) discusses the investigation of the statistical and practical significance of differences between body scale relationships in a number of discrete bluegill populations; and (3) discusses the validity of back-calculation with the bluegill scale data, which had been investigated by (a) comparing back-calculated lengths with length measurements of bluegills from the same populations made in previous years, and (b) analyzing the distributions of back-calculated lengths in the various year classes of a given population. The scale method, as applied here, was generally valid for age and growth determinations of bluegills in the populations studied. (GKS)

1960. <u>Bass, bluegills, shiners--and farms ponds</u>: The Conservationist, v. 14, no. 6, p. 18-20, 35.

No pond-stocking policy or any detailed series of management directions will work in every pond or for every pond owner. The farm pond investigator's task is to derive some type of compromise that is generally acceptable from economic, cultural, biological, and political viewpoints. Advice for the warmwater pond owner is that he first decide what kind of fish he wants, then arrange pond conditions to suit the fish as well as possible, then stock the pond accordingly, fish the pond, and be patient. (GKS)

REGIER, H. A. (continued)

1962. Some aspects of the ecology and management of warm-water fish in New York farm ponds: Ithaca, N.Y., Cornell Univ., Doctoral dissert., 436 p.

The objective of this study was to discuss the basis for a fish-stocking and management policy applicable to New York's warm-water farm ponds. The study includes an analysis of biological data on 65 experimental fish populations of various species combinations stocked in farm ponds of central New York. Special combinations of various fishes were tested. This thesis summarizes data on survival, growth, reproduction, standing crops, harvests, and population conditions. Numerous ecological relationships were postulated and explored in some detail. (GKS)

1963a. A cost analysis of farm ponds in Tompkins County, N.Y.: Progressive Fish-Culturist, v. 25, p. 144-148.

This article discusses the costs of pond construction and maintenance, as well as fish stocking and management in Tompkins County. Given a reasonable estimate of costs, the landowner weighs the measurable and intangible benefits against the costs. Based on this information he decides whether it is in his best interest to construct the pond. (GKS)

1963b. Ecology and management of largemouth bass and bluegills in farm ponds in New York: New York Fish and Game Jour., v. 10, no. 1, p. 1-89.

The object of this study was to discuss the basis for a fish-stocking and management policy applicable to farm ponds in New York. In order to accomplish this, various species combinations were studied. This paper deals with largemouth bass (Micropterus salmoides) and bluegills (Lepomis macrochirus) stocked according to three different formulas. Data on survival, growth, reproduction, standing crops, harvests, and population condition were summarized and compared. Pond-owner preferences and practices, and pond costs, were determined.

It was concluded that a bass-bluegill combination might prove satisfactory in larger, deeper New York ponds whose surface temperatures rise above 27°C for several weeks each summer; ponds where weeds can be controlled; and ponds whose owners have a genuine interest in fishing and managing the pond for bluegills as well as bass. (author)

1963c. Ecology and management of largemouth bass and golden shiners in farm ponds in New York: New York Fish and Game Jour., v. 10, no. 2, p. 139-169.

Experiments with largemouth bass and golden shiners were conducted in farm ponds in central New York, and the results were compared with those from experiments with largemouth bass and bluegills. Natural mortality of origionally stocked bass was somewhat lower in bass-shiner ponds than in bass-bluegill ponds. Growth rates of bass were somewhat higher in bass-shiner ponds. Bass reproduction was more regular in the bass-shiner ponds. Therefore, standing crops of bass tended to be considerably higher in bass-shiner ponds, permitting larger harvests.

Stocking with the bass-shiner combination should be encouraged on a trial basis in New York ponds. This combination may be more advantageous than bass and bluegills for the pond owner who is not particularly interested in bluegills and whose pond is quite small and fairly shallow with a surface temperature that rises above about 23°C in the summer. (author)

1963d. Ecology and management of channel catfish in farm ponds in New York: New York Fish and Game Jour., v. 10, no. 2, p. 170-185.

Experiments with channel catfish were conducted in farm ponds in central New York. This species does not appear to hold much promise for general stocking in New York farm ponds since it is difficult to produce cheaply in large numbers for stocking purposes. The survival and reproduction of stocked catfish was poor in most project introductions and the unpredictability of survival and reproduction implies that harvest quotas would be unpredictable. (author)

REHWOLDT, ROBERT

1973. (Lasko, Lawrence, Shaw, Charles, and Wirhowski, Ellena). The acute toxicity of some heavy metal ions toward benthic organisms: Environmental Contamination and Toxicology Bull., v. 10, no. 5, p. 291-294.

A study was conducted to determine the toxicity of some heavy metal ions toward benthic fauna in a freshwater region of the Hudson River. Metal ions evaluated were copper, zinc, nickel, cadmium, mercury, and chromium. Water quality during the experiment was maintained at 17°C, 50 mg/l hardness, 7.6 pH, and 6.2 mg/l dissolved oxygen. Mercury was the most toxic ion toward the

REHWOLDT, ROBERT (continued)
test organisms (bristle worms, scud, caddisflies, damselflies, midges, and snails) and was more toxic toward these organisms than toward fish studied earlier in the same area. However, with the exception of the scud and midge, benthic organisms tend to be more able to withstand heavy metal inputs than do fish. (author)

REID, G. K.
1961. Ecology of inland waters and estuaries: New York, Reinhold Publishers, 375 p.

This book describes the primary processes that make lakes, streams, and estuaries dynamic systems. It summarizes some of the major aspects of, and information obtained from, a study of inland waters and estuaries. The four topics are lake basins and lakes, natural waters as an environment, organisms in the environment, and aquatic communities. (GKS)

REIS, H.
1893. A pleistocene lake-bed at Elizabethtown, Essex County, N.Y.: New York Acad. Sci. Trans., v. 13, p. 107-109.

There are many ancestral lake beds in Essex County. Many of them are in valleys closed up by glacial debris. One particular lake bed, in the Russian Valley near Elizabethtown, indicates a lake that was 5 miles long, one-half to 1 mile wide, and 100 feet deep. This article discusses the morphology of this historic lake. (GKS)

REISMAN, H. H.
1973. (and Nicol, W.). The fishes of Gardiners Island, New York: New York Fish and Game Jour., v. 20, no. 1, p. 25-31.

Gardiner's Island is a privately owned island whose ichthyofauna had not previously been surveyed by any agency. Furthermore, it includes a series of ponds which provide an opportunity for distinctly different fish populations to become established. This paper presents information concerning the fish present and their distribution, together with data on the characteristics of the ponds. (author)

RENSSELAER POLYTECHNIC INSTITUTE
1972. Annual report Rensselaer Fresh Water Institute at Lake George: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 72-25, 10 p.

REYNOLDS, N. B.
1974. (and Mercer, L. M.). A preliminary phytoplankton survey of twelve Adirondack lakes: New York Fish and Game Jour., v. 21, no. 1, p. 58-65.

This investigation was conducted to evaluate the relationships between composition and abundance of phytoplankton in 12 lakes in the Adirondack region. Possible differences in eutrophication are also considered. Five divisions and 60 taxa were catalogued. All the lakes were found to be oligotrophic and dystrophic although there was some indication of pollution. (author)

RICH, J. L.
1906. Local glaciation in the Catskill Mountains: Jour. Geology, v. 14, no. 2, p. 113-121.

Little detailed work has been done on the glacial geology of the Catskills. A reconnaissance of the area disclosed evidence that in the higher mountains, local glaciers persisted after the withdrawal of the continental ice sheet. This article discusses the glacial geology of the area. (GKS)

1908. Marginal glacial drainage features in the Finger Lakes region: Jour. Geology, v. 16, no. 6, p. 527-548.

This article discusses the channels and scourways formed by streams associated with the Pleistocene ice sheet in the southern Finger Lakes region of New York. Several of these channels give conclusive evidence of more than one stage of glaciation. These channels indicate the direction of ice flow. (GKS)

RICHARDS, W. J.
1960. The life history, habits and ecology of the white perch, Roccus americanus (Gmelin) in Cross Lake, New York: Syracuse, N.Y., Syracuse Univ., M.S. thesis, 113 p.

This study involves the investigation of the biology of the white perch in order to indicate its role in Cross Lake. Data indicate that the white perch grows rapidly in length during the first 3 years and then grows more slowly. The study indicates that the fish in Cross Lake are in stunted condition. The young eat planktonic crustaceans and benthic insects while the older and larger fish have an exclusive diet of fish. Indications are that the young white perch compete successfully with the young of yellow walleyes, smallmouth bass, black bass, and northern pike. (PAV)

RIMSKY-KORSAKOFF, V. N.
1929. The food of certain fishes of the Lake Champlain watershed, in A biological survey of the Champlain watershed: New York State Conserv. Dept., 19th Ann. Rept. Supp., p. 88-104.

During the summer of 1929, the alimentary tracts of 2,465 fishes were examined for food content. Of these, 729 were found to be empty. In the tabulation of data, the fish are grouped according to their diets. The fish were grouped into four categories--species feeding mainly on plankton, species feeding mainly on molluska, species feeding mainly on immature and adult insects as well as crustaceae, and fish-eating species. Conclusions of this survey were that small fish are not selective in the kind of crustacea they eat; mollusks are not important in the diet of many species of fish; midge larvae are the most important part of the diet of insect-eating fish; very few fish eggs were found in the alimentary tracts examined; the diet of the fish-eating species was mainly yellow perch, tesselated darter, smelt, golden shiner, minnows, and sunfish; and the gar-pike was found to be the most predacious fish-eating species. (GKS)

ROACH, J. T.
1974. (and Kelley, J. W.). Application of the LUNR inventory system for water resources planning and management in the Susquehanna River basin: Ithaca, N.Y., Cornell Univ. Water Resources and Marine Sci. Center, Partial Completion Rept.

A study was made of the Land Use and Natural Resources Inventory (LUNR) of New York State to demonstrate its application and management in the Susquehanna River basin. The feasibility of combining in one data bank information needed both for comprehensive water resources planning and for management is explored. Examples of LUNR applications in the Susquehanna River basin are considered. One premise is that what occurs on the land in a river basin has an impact upon the water resources of that basin. Watershed management, with emphasis on flood plains, is also considered in some detail. (PAV)

ROBERTSON, I. C.
1948. (and Blakeslee, C. L.). The Mollusca of the Niagara frontier region and adjacent territory: Buff. Soc. Nat. Sci. Bull., v. 19, no. 3, p. 1-191.

Commercially, the mollusks of the Niagara frontier region are unimportant. However, in nature's economy their role is a valuable one; they help maintain the balance of life in the forest and in the waters. This article describes the physical characteristics and the life habits of mollusks. The article presents terms used to describe the Mollusca, an annotated list of Mollusca species, how and where to collect Mollusca, and a historical account of their evolution. (GKS)

ROMM, J. M.
1971. Nuclear power, Cayuga Lake and economics: Ithaca, N.Y., Cornell Univ., Doctoral dissert., 477 p.

The Cayuga Lake controversy was a political issue of resource allocation. This dissertation has proposed an interpretation of institutional change that suggests a number of ways in which an economist can contribute effectively to political allocation decisions. First it considers methods of assisting the political evaluation of physical external factors. Then it mentions methods of economic analysis that might improve the efficiency of conflict as a mechanism for internalization of institutional factors. Both of these areas deserve further thought and practical trial. The Cayuga controversy was a microcosmic expression of the emerging conflicts in America between institutions of technological progress and social preference for environmental quality. (PAV)

ROTHSCHILD, B. J.

1962. The life history of the alewife, Alosa pseudoharengus (Wilson), in Cayuga Lake, New York: Ithaca, N.Y., Cornell Univ., Doctoral dissert., 109 p.

Studies on the life history and ecology of the alewife were concentrated on age, growth, and reproduction. This thesis discusses a general solution to the age-determination problem. Fluctuations in the mean length of combined year classes could not be related to mortality; fluctuations could be related to year class abundance and growth phenomena. Evidence suggests a small increase in growth in a slightly warmer section of Cayuga Lake. Alewife density seems to have a greater effect on growth than does temperature. Mature alewives move inshore in early summer, exhibit appetitive courtship behavior, and reach a peak of spawning activity in midsummer. The cause of mass mortalities, which occur before spawning, is not known. (GKS)

1965. Aspects of the population dynamics of the alewife, Alosa pseudoharengus (Wilson), in Cayuga Lake, New York: Am. Midland Naturalist, v. 74, no. 2, p. 479-496.

Parameters of size distribution, age composition, and growth were studied for the alewife (Alosa pseudoharengus) in Cayuga Lake during 1960 and 1961. Samples enabling estimation of these parameters were taken at two locations in the lake, Taughannock and Canoga. The Canoga location was warmer and tended toward eutrophication, while the Taughannock location was oligotrophic. Emphasis was placed on studying the difference in size distribution, age composition, and growth between years and locations. Variability in size composition between locations is thought to be associated with the environmental characteristics of the two locations whereas the variability between sampling years is thought to be the effect of population structure. (author)

1966. Observations on the alewife (Alosa pseudoharengus) in Cayuga Lake: New York Fish and Game Jour., v. 13, no. 2, p. 188-195.

Observations on the seasonal movements, reproduction, phototaxis, and mass mortalities of the alewife were made at Cayuga Lake during 1960 and 1961. In Cayuga Lake the alewife winters in deep water and moves into the littoral area in the spring. This movement is accompanied by the onset of courtship behavior, followed by spawning. Fecundity estimates are given and hermaphroditism is mentioned. Positive phototactic responses of the alewife were noted except during the spawning period. The evidence concerning the causes of mass mortalities in the alewife was reviewed, and it was concluded that variables other than temperature are involved. (author)

ROWLEE, W. W.

1918. Relation of marl ponds and peat bogs: Brooklyn Bot. Garden Mem., p. 410-414.

Marl ponds are filled in near the shores and in the center where the water is not too deep. In a series of studies, it has been shown that marl is composed of the remains of the alga Chara. Chara thrives in hard water, and its cell walls are impregnated with calcium carbonate. In many marl ponds a complete transition from the living Chara to characteristic marl can be seen. Since Chara grows submerged, and the principal bog plants grow emerged, it is evident why there may be filling only at the shore of one pond but in all parts of another pond. Many peat bogs in western New York are underlain with marl. This article cites several locations where marl ponds and peat bogs have formed. (GKS)

ROYCE, W. F.

1943. The reproduction and studies on the life history of the lake trout, Cristivomen namaycush (Walbaum): Ithaca, N.Y., Cornell Univ., Doctoral dissert., 135 p.

This thesis discusses the reproductive habits and life history of young lake trout. The structure and function of reproductive organs, sexual dimorphism, spawning habits, the environment, the development of eggs and young, growth rate, and the length-weight relationship of lake trout found in Keuka Lake are discussed. (GKS)

1951. Breeding habits of lake trout in New York: U.S. Fish and Wildlife Service, Fisheries Bull. 59, p. 59-76.

RUMER, R. R., Jr.

1972. (Apmann, R. P., and Chien, C. C.). Runoff of deicing salt in Buffalo, New York, in 4th Symposium on Salt, Northern Ohio Geological Soc., Inc., p. 407-411.

RUMER, R. R., Jr. (continued)

The rising level of chloride concentration in Lakes Erie and Ontario has resulted in studies directed towards identification of salt sources, mathematical modelling of the material balance of salt in the Great Lakes basin, predictions for the future, and consideration of salt management alternatives. The present study is concerned with deicing salt retention and flushing from the City of Buffalo, a major urban area located on the eastern shore of Lake Erie. The data reveal that Buffalo is efficiently flushed of deicing salt by a combined sewer system. The salt load in the sewage flow is discharged directly into the Niagara River. The ultimate purpose of this study is to enable calibration of a material balance equation for salt build-up in the Great Lakes. (author)

1974. (Meredith, D. M., and Chien, C. C.). Chloride build-up and control in Lake Erie: Internat. Assoc. Great Lakes Research, 17th Conf. Great Lakes Research, Proc., Hamilton, Ontario, p. 520-534.

The deicing salt runoff from Buffalo and selected nearby communities has been measured, and it was found that, in the case of Buffalo, approximately 90 percent of the deicing salt applied is recovered by the combined sewer system. The Lake Erie drainage basin was subdivided into regions, and a search of the literature was made to establish the historical data for chloride discharge from each region. The effects of a few selected salt management programs on future chloride levels in Lake Erie are examined using a mathematical model. (PAV)

RYNEARSON, M. J.

1969. A study of the currents of Seneca Lake: Corning, N.Y., Coll. Center of the Finger Lakes (unpub.).

SAILA, S. B.
1950. A preliminary survey of some farm fishponds in New York: Ithaca, N.Y., Cornell Univ., M.S. thesis, 76 p.

Several conclusions from this survey during the summer of 1949 are that bass-bluegill combinations appeared reasonably satisfactory in ratios from 2:5 to 1:10 when stocked as fingerling fish; other species combinations may prove more satisfactory than the largemouth bass-bluegill combination under New York conditions; of 13 ponds listed in the summary of warm water ponds stocked for two or more years, five appeared successful; available information on trout ponds indicated that their management was simpler and more predictable than the management of bass-bluegill ponds; and trout were observed to survive in temperature conditions not ordinarily considered suitable for them. (GKS)

1952. Investigations of the management of trout in New York farm ponds: Ithaca, N.Y., Cornell Univ., Doctoral dissert., 181 p.

This dissertation describes the physical aspects of farm ponds and evaluates pond trout species. It also discusses the maturity, growth, reproduction, survival, and length-weight relationships of trout. Certain chemical and fertility observations are made, and stocking policies and population estimation methods are evaluated. (PAV)

ST. LAWRENCE-FRANKLIN REGIONAL WATER RESOURCES PLANNING BOARD
1974. Summary report on the board plan--St. Lawrence Basin: New York State Dept. Environmental Conserv., 66 p.

This report by the St. Lawrence-Franklin Board summarizes its findings and presents its comprehensive basin plan. The plan includes recommendations on policy, management, and development measures for the protection, conservation, development, and utilization of the water resources of the St. Lawrence basin. The Board plan emphasizes measures that are needed for the management and development of water and related land resources during the early action period, 1974-1980. Also, long-range water and related land resource needs and measures to the year 2020 are presented. (author)

SATRE, R. I., Jr.
1964. An ecological study of the Hemlock Lake watershed: Syracuse, N.Y., Syracuse Univ., Doctoral dissert., 152 p.

An ecological study of the vegetation of the Hemlock Lake watershed was undertaken to identify the nature of plant associations growing there, to determine the influence upon these associations by climatic and edaphic factors, and to correlate the stability of the total watershed on the basis of the adaptability of both natural and planted vegetational patterns. Several different associations were found within a rather limited climatic zone. They included oak-hickory, mixed deciduous, and coniferous associations. In addition to these rather large forested areas, smaller regions such as swamps, gullies, and shore vegetation were investigated. (PEG)

SAVARD, P. G.
1971. (and Bodine, D. N.). Studies on the plants of the Genesee County (western New York State). VIII--Algae of Conesus Lake, Livingston County, New York, initial report: Rochester Acad. Sci. Proc., v. 12, no. 2, p. 146-159.

The floral list consists of 66 genera and 101 species. A dense planktonic bloom and a profuse growth of Cladophora have been given special attention. The monthly distribution of plankton algae during 1967 is summarized. (author)

SAWCHUCK, PATRICIA
1968. Benthos of Seneca Lake: Corning, N.Y., Coll. Center of the Finger Lakes (unpub.).

SAXTON, H. L.
1963. (and Eney, H. E.). The new sounds in Seneca Lake: Naval Research Rev., p. 11-14.

One of the difficulties experienced in measuring sound underwater in several dimensions arises from the sound-wave frequencies now used in small devices. For more than a decade the trend has been to use lower frequencies, which brings about a corresponding increase in detection range. In attacking the problems that this trend has created, it is more efficient and far more economical to test, calibrate, and debug transducers, hydrophones, and associated

SAXTON, H. L. (continued)
hardware before installing them at their operating sites. A criterion in testing many transducers is the capacity to handle objects of large size and weight. A new Navy facility capable of meeting requirements, similar to the one on Lake Pend Preille in Idaho, is to be built on Seneca Lake. (GKS)

SCANLON, V. C.

1974. A survey of the diatom population of Calder Lake, Armonk, New York, 1970-1972: New York, Fordham Univ., Doctoral dissert., 188 p.

Diatoms were collected from September 1, 1970 through April 8, 1972. The diatoms were counted on clean glass slides that were suspended in the water; the area counted was 640 square millimeters. Temperature, dissolved oxygen concentration, and depth of light penetration were measured concurrently. The majority of the dominant diatom species were epiphytic or benthic, and these were more numerous along the shoreline of the lake, where suitable substrates such as rocks and aquatic vegetation are present, than in deeper parts of the lake. (PAV)

SCAVIA, DONALD

1972. A study of lakes in Rensselaer County, New York with proposals for environmental management: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 72-33, 131 p.

The purpose of the study herein reported has been to generate data on certain physical, biological, chemical and geological parameters of twenty representative fresh-water lakes and ponds in Rensselaer County. The study extended over a period of three months from June 5, 1972 to August 25, 1972. The data generated have been used to characterize the water quality of each lake throughout the summer, to compare the various lakes, and to make general recommendations as to how the present rate of deterioration can be reduced. (author)

1974a. Implementation of a pelagic ecosystem model for lakes: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 74-12, 57 p.

A compartmentalized model describing the pelagic zone of lakes is composed of two size classes of phytoplankton, three types of zooplankton, two types of fish, particulate and dissolved organic matter, decomposers and orthophosphate. Constructs for nutrient limitation, food preference, and population age-structure are described and shown to be acceptable representations of the biological processes. The validity of the model was established on three bases: (1) three five-year simulations beginning at different levels of biomass ran to the same steady state values; (2) relationships among the trophic-level compartments were shown to follow ecologic theory; and (3) predictions were shown to be reasonably accurate for both zooplankton and phytoplankton. Perturbations of phosphorous loadings, temperature, and fish stocking are used to show how the model can aid in the optimization of management decisions. (author)

1974b. (Bloomfield, J. A., Fisher, J. S., Nagy, James, and Park, R. A.). Documentation of CLEANX--A generalized ecosystem model for simulating the open-water ecosystems of lakes: Simulation, Aug. 1974, p. 51-56.

This paper outlines the software for an open-water version of CLEAN, an ecosystem model for lakes. The modular program structure is described, examples of driving variables are given, and the output (including values of several parameters) is shown. (author)

SCHIESSER, K. L.

1936. An ecological study of Vallisneria spiralis L., as it occurs on Tully Lake: Syracuse, N.Y., Syracuse Univ., M.A. thesis, 41 p.

The object of this study was to investigate the problems concerning the economy of Vallisneria spiralis, to study the demands that it makes on its environment, the means that it employs to utilize the surrounding conditions, and the adaptations of the external and internal structure and general form made for that purpose. Much of Vallisneria's success as an underwater dominant may be attributed to its vegetative structure. Each of the principal organs contributes unique adaptations that enable the plant to function actively and compete successfully with other water vegetation. Perhaps the rhizome of Vallisneria is the organ of greatest sociological significance. By means of its growth and the production of vegetative buds, rapid multiplication is accomplished, enabling it to occupy large areas in almost pure stands of growth. (PEG)

SCHMIDT, V. E.

1947. Varves in the Finger Lakes region of New York State: Ithaca, N.Y., Cornell Univ., Doctoral dissert., 205 p.

This report is the result of an investigation of varved glacial lake sediments and related deposits of the Finger Lakes region. This thesis provides the following information about these varves: (1) a detailed knowledge of the nature and sequence of glacial events and of glacial lake conditions in the area at the time the deposits were formed, (2) an understanding of the relationship between characteristics displayed by the varves and the physical conditions under which they were deposited, (3) a relative dating of the deposits through correlation of the varves with those in other areas, and (4) an explanation of the origin of the well-developed jointing that occurs in some of the varves. (PEG)

SCHOETTLE, MANFRED

1971a. (and Friedman, G. M.). Fresh water iron-manganese nodules in Lake George, New York: Geol. Soc. Am. Bull., v. 82, no. 1, p. 101-109.

Lake George is the site of a new discovery of iron-manganese nodules. These nodules occur at a water depth between 21 and 36 m along a stretch of lake extending for about 5 miles north and south of The Narrows, a constricted island-dotted area which separates the north and south Lake George basins. Nodules occur on or within the upper 5 cm of a varved glacial clay. The Lake George nodules are enriched in iron with respect to marine nodules but are lower in manganese. They have a higher trace element concentration than nodules from other known fresh-water lake occurrences, but a lower concentration than marine nodules. (author)

1971b. (and Friedman, G. M.). Sediments and sedimentation in a glacial lake--Lake George, New York: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 72-116, 24 p.

Lake George is located in a topographically rugged, heavily wooded area in the eastern Adirondack Mountains of New York State. The lake has two types of sediment floor, relict glacial sediment and modern sediment. The relict sediment include varved glacial lake clays with iron-manganese nodules (Schoettle and Friedman, 1971a) and sandy sediments derived from moraines, drumlins or deltas. We infer that most of the lake is underlain by glacial lake clays; however, these clays have become concealed beneath a cover of modern organic-rich silty clay. (author)

1973a. (and Friedman, G. M.). Organic carbon in sediments of Lake George, New York--Relation to the morphology of lake bottom grain size of sediments, and man's activities: Geol. Soc. Am. Bull., v. 84, no. 1, p. 191-198.

Lake George is in a rugged, densely wooded area in the eastern Adirondack Mountains of New York. A comparison of lake bottom morphology with both clay and organic matter content and sediment color shows that an interrelation exists between these variables. Sediment in the deeper parts of the lake is black, and clay and organic matter contents are generally high. The shallower part of the lake sediment is brown in color, usually sandy, and low in organic matter. The organic material which enters the lake is derived from vegetation in the drainage basin. The fabric of organic matter in the deeper parts of the lake cannot be identified because of advanced decomposition. The organic matter content of the bottom sediments of the southern basin of Lake George generally exceeds that of the northern basin, since pollution from permanent settlements along the shores of the southern basin accelerated the accumulation of organic matter by enhancing phytoplankton productivity. (author)

1973b. Ecosystem study of Lake George, New York--Sediment analysis: Internat. Assoc. Great Lakes Research, 16th Conf. Great Lakes Research, Abstracts, Huron, Ohio, p. 125.

Lake George, New York, is the site of a comprehensive environmental research program. The lake is divided into two basins, the more populated southern basin with Lake George Village at its end and the less populated northern basin. This produces well-defined biological and water quality gradients. The sediments so far have been investigated for mineralogy, grain size distribution, contents of organic carbon, and trace element configuration on both surface and core samples up to 50 centimeters below the sediment-water interface. Two kinds and ages of sediment form the lake floor: relict glacial sediments and modern organic-rich sediments. Sedimentation is seasonal, with organic matter accumulating in large amounts during the fall of each year. (PAV)

SCHOETTLE, MANFRED (continued)

1974. (and Friedman, G. M.). Effect of man's activities on distribution of trace elements in sub-bottom sediments of Lake George, New York: Sedimentology, v. 21, p. 473-478.

A core from the southern mesotrophic basin of Lake George shows enrichment in the concentration of trace elements near its top. By contrast, a core from the northern oligotrophic basin shows, with the exception of manganese, an almost constant trace-element concentration throughout the core. Man's activities in the watershed surrounding the southern basin are responsible for the enrichment of the trace-element concentration of newly deposited bottom sediments. The increase in trace-element concentration is not paralleled by an increase in organic-carbon concentration. (author)

SCHOFIELD, C. L., Jr.

1962. Water quality in an acidotrophic lake of the Adirondack Mountains in relation to survival of hatchery-reared brook trout, Salvelinus fontinalis (Mitchell): Ithaca, N.Y., Cornell Univ., M.S. thesis, 148 p.

This thesis discusses factors responsible for the mortality of trout in Honnedaga Lake through (1) seasonal observations on the water chemistry and survival of test fish; (2) investigation of sources of acidity and heavy metals in the Honnedaga watershed; (3) comparative studies of water chemistry in various hatcheries and laboratory experiments with test fish to determine the particular conditioning effect of the Cornell hatchery's water source; and a survey of the water quality in surrounding lakes for comparison with that of Honnedaga Lake. (GKS)

1965. Water quality in relation to survival of brook trout, Salvelinus fontinalis (Mitchell): Am. Fisheries Soc. Trans., v. 94, no. 3, p. 227-235.

Periodic water analyses and simultaneous observations on the survival of various groups of test fish made in Honnedaga Lake during 1960 and 1961 indicated a relationship between water quality and trout survival. Periods of high acidity and heavy metal content coincided with heavy mortality of brook trout from a hard water supply. Chemical analyses of 30 nearby Adirondack lakes revealed two lakes of lower salinity, two of higher acidity, and one with a heavy metal content equal to that of Honnedaga. No other lakes exhibited the combined features of very low salinity, high acidity, and relatively high heavy metals content. (author)

1968. Phosphate fixation in organic lake sediments: Ithaca, N.Y., Cornell Univ., Water Resources and Marine Sci. Center, Tech. Rept. 13, 23 p.

The mechanisms of phosphate fixation in organic sediments were studied in four oligotrophic lakes of the Adirondack Mountain region. The forms of phosphate present were determined by sequential extraction, utilizing solvents selective for the various phosphates. Iron phosphates and occluded forms were dominant in oxidizing situations whereas aluminum phosphates were prevalent in reduced sediments. Aluminum phosphates are not as mobile as iron-bound phosphates and are unstable under reducing conditions. Organic phosphorous was high in all the sediments examined. Phosphate saturation was noted in one case where the sediments were largely autochthonous and low in iron and aluminum. The high soluble phosphate content in this system was conducive to higher productivity due to the high ratio of sediment area to water volume, weak thermal stratification, and low flushing rate. (author)

1970. Water chemistry and lake productivity: The Conservationist, v. 24, no. 5, p. 9-15, 37.

This article describes the complex makeup of lake waters, how changes occur, and the effects on manifold aquatic life. Parameters examined include sources of dissolved substances, minerals dissolved from the soil, other dissolved substances and aquatic organisms, and the productivity of lakes. Lake productivity is influenced by the nutrient cycles of carbon dioxide, phosphorus, and nitrogen. (GKS)

1971a. The fertility of small oligotrophic lakes in the Adirondack Mountain region of New York--Controlling factors and possibilities for improvement: Ithaca, N.Y., Cornell Univ., Doctoral dissert., 292 p.

Factors contributing to the variability in fertility and productivity of small lakes in the Adirondack region were examined, and potential methods of increasing fertility by improving availability of existing nutrient sources, and utilizing these more efficiently, were evaluated.

SCHOFIELD, C. L., Jr. (continued)
The greater variability in productivity of small lakes was attributed to proportionally greater variation in flushing rate and in supply of available phosphorus. The sediments of these small lakes were found to act as either sinks or reservoirs for phosphorus, the net effect being determined by sediment properties and morphometric features of the basins. It was suggested that shallow, unproductive lakes have the potential for development of an actively metabolizing benthic community, but may be basically limited by sediment nutrient availability. Preliminary experiments indicated that sediment liming could increase phosphate availability by reducing iron reactivity and increasing rates of mineralization. (PAV)

1971b. Mineralization of organic phosphorus in oligotrophic lake sediments: Ithaca, N.Y., Cornell Univ. Water Resources and Marine Sci. Center, Tech. Rept., 30 p.

This investigation was concerned with determining the total amounts, forms, reactions, ability, and significance of the organic phosphorus pool in the sediments of two small oligotrophic lakes. The two lakes selected for study (Bear and Lower Sylvan Ponds) differ markedly in productivity, but have similar morphometric features which permit the sediments to play dominant, but contrasting, roles in the metabolism of the lakes. The results of this study indicate that in the unproductive lake (Lower Sylvan) the sediments act mainly as a sink for phosphorus, whereas in the productive lake (Bear) the sediments serve as a reservoir of available phosphorus. Investigation of the mechanisms responsible for this contrasting sediment influence was the primary objective and subject of this report. (author)

1973. The ecological significance of air-pollution induced changes in water quality of dilute-lake districts in the Northeast: Northeast Fish and Wildlife Conf. Proc., 1972, p. 98-112.

Increasing acidity and heavy metals contamination of precipitation over the northeastern United States poses a serious threat to communities of organisms inhabiting the numerous soft-water lakes and streams of this region. Atmospheric deposition of inorganic acids and heavy metals can be sufficient to affect surface water quality in ombrotrophic regions. The known extent of this problem in the Northeast and its occurrence in other localities is reviewed. The paucity of available information in the Northeast is noted, and the need for new programs to assess the geochemical and ecological aspects of air pollution related problems is emphasized. (author)

SCHULER, V. J.
1969. The lake trout population of Cayuga Lake in 1966, with special reference to changes since 1955: Ithaca, N.Y., Cornell Univ., M.S. thesis, 58 p.

This thesis describes the contrast of age-frequency distributions and growth rates of lake trout from two sampling periods. There have been no appreciable changes in either parameter since 1955. It also includes a discussion of several aspects of the lake trout population, including survival of stocked fish, predation, incidence of parasites, and food sources. (PAV)

SCHULTZE, E. A.
1887. A descriptive list of Staten Island diatoms: Torrey Bot. Club Bull., v. 14, no. 4, p. 69-73, no. 6, p. 109-114.

This is an annotated list of diatoms located in the fresh waters of Staten Island. (GKS)

SCHUMACHER, G. J.
1961. (Smith, S. J., and Stewart, M. M.). Biology of the Allegany Indian Reservation and vicinity: New York State Mus. and Sci. Service Bull. 383, 98 p.

This bulletin is a report on a biological investigation completed during the summer of 1957 by New York State Museum staff. Both terrestrial and aquatic environments were studied in three regions: the Allegany State Park, the Allegany Indian Reservation, and the immediate surrounding country. The purpose of the investigation was to describe and collect specimens. (PEG)

1962. Some fresh-water algae of New York: The Conservationist, v. 16, no. 6, p. 22-23, 36.

Most people who know and enjoy the wealth of nature that abounds in our State have only a casual acquaintance with the fresh-water algae. All other major plant types (the lichens,

SCHUMACHER, G. J. (continued)
fungi, mosses, ferns, and seed plants) have a definite form that can be recognized with the unaided eyè or with a hand lens. However, with a few exceptions, even the simplest identification of fresh-water algae requires the use of a microscope. This article discusses algae in a way that gives the untrained specialist a better understanding of algae's place in the plant kingdom. (GKS)

1969. Algae of the Susquehanna River basin in New York: New York State Mus. Bull. 412, 58 p.

The primary objective of this study was to collect and identify the desmids of the Susquehanna River basin. This article discusses the characteristics of this particular algae, how it was collected, a summary of taxa, where the collecting stations were, and includes an annotated list of species collected. (GKS)

SCOTT, J. T.
1968a. (Myer, G. E., Stewart, Ronald, and Walther, E. G.). On the mechanism of Langmiur circulations and their role in epilimnion mixing, in The role of Langmuir circulation in mixing of Lake George: Albany, N.Y., State Univ. New York, Atmospheric Sci. Research Center, Pub. 61, p. 1-18.

So far six mechanisms have been proposed for explaining Langmuir circulations and their associated wind streaks. One mechanism involving shearing instability and two requiring the action of a surface film are supported by the greatest amount of evidence. Studies at Lake George suggest that more than one mechanism may operate at one location. Plots of thermal structure in the near-surface layer of Lake George and measurements of vertical current velocities suggest that Langmuir circulations are the most important mixing process in the epilimnia of lakes. (author)

SCOTT, J. T. (ed.)
1968b. (and Stewart, Ronald). The role of Langmuir circulation in mixing of Lake George: Albany, N.Y., State Univ. New York, Atmospheric Sci. Research Center, Pub. 61, 68 p.

The specific aim of this research project was to determine the generating mechanism of Langmuir circulations in natural conditions and their role in the vertical transport of heat and matter. (author)

SCOTT, J. T.
1969. (Myer, G. E., Stewart, Ronald, and Walther, E. G.). On the mechanism of Langmiur circulations and their role in epilimnion mixing: Limnology and Oceanography, v. 14, p. 493-503.

Six mechanisms have so far been proposed to explain Langmiur circulations and their associated wind streaks. One mechanism involving shearing instability and two requiring the action of a surface film are supported by the greatest amount of evidence. Studies at Lake George, N.Y., suggest that more than one mechanism may operate at one location. A particular mechanism may operate at a specific site because of typical conditions at that site, but a different mechanism may be more important at another site. Plots of thermal structure in the near-surface layer of Lake George and measurements of vertical current velocities suggest that Langmiur circulations are the most important mixing process in the epilimnia of lakes. (author)

SEERY, F. J.
1929. A report of Cayuga Lake levels--Report by city engineer to mayor, Ithaca, N.Y.: ms., 54 p.

This report describes several reasons for increases in the levels of Cayuga Lake. These include precipitation exceeding 5 inches; heavy flows from Seneca and Keuka Lakes; an inflow of 40,000 cubic feet per second if no outflow occurs; discharge of over 20,000 cubic feet per second at the Baldwinsville Dam; the Seneca River must attain a depth and surface slope that would raise the level of Cayuga Lake; and water storage in the lake during heavy storms since the Seneca River cannot handle the load. (PAV)

SELLECK, B. W.
1974. Heavy minerals in the sands of southern and eastern Lake Ontario: Internat. Assoc. Great Lakes Research, 17th Conf. Great Lakes Research, Proc., pt. 2, Hamilton, Ontario, p. 697-703.

SELLECK, B. W. (continued)

The magnetic heavy mineral fraction of samples of sand-size sediment from the beaches and offshore sand bodies of southern and eastern Lake Ontario has been analyzed to determine variability in the mineral assemblage resulting from longshore transport and associated sedimentary processes. In the samples examined the ratio of monoclinic pyroxene to hypersthene progressively decreases from west to east along the southern shore. This variation is produced by the dilution of a monoclinic pyroxene-rich suite by a hypersthene-rich suite during easterly transport of sand. The monoclinic pyroxene-rich suite is derived, at least in part, from the large subaqueous sand body offshore of the Niagara River mouth in Lake Ontario. The hypersthene-rich suite is derived from the erosion of shoreline and subaqueous tills along the western New York shore. (author)

SENNING, W. C.

1938. The fresh water lakes and ponds of Long Island and Staten Island, in A biological survey of the fresh waters of Long Island: New York State Conserv. Dept., 28th Ann. Rept. Supp., p. 45-63.

Long Island fresh-water lakes and ponds open to public fishing were investigated. A brief study was also made of a few ponds on Staten Island. Complete studies were made in 59 ponds. Each complete pond study included a chemical analysis of the water at strategic stations, a census of the fish species, lake soundings and temperature readings, and miscellaneous observations on spawning areas, forage, vegetation, the success of past stocking, and the present fishing intensity. Based on the data compiled, a stocking policy believed to be consistent with existent conditions has been formulated. (author)

1939. Lakes and ponds above the Lake Ontario lake level, in A biological survey of the Lake Ontario watershed: New York State Conserv. Dept., 29th Ann. Rept. Supp., p. 98-116.

Sixty-nine lakes and ponds in the Lake Ontario drainage basin open to public fishing were investigated. Each survey study included a chemical analysis of the water, a census of fish species, lake soundings and temperature readings, and miscellaneous observations on spawning areas, forage, vegetation, types of bottom, success of past stocking and fishing history. Based on the data compiled, a stocking policy believed to be consistent with existing conditions has been formulated. (author)

SEPULSKI, P. H.

1972. The Great Sacandaga Lake Shore Study, Town of Broadalbin, New York: Johnstown, N.Y., Fulton County Plan. Dept., 85 p.

The report is a study of the existing characteristics of the Great Sacandaga Lake shore vicinity in the Town of Broadalbin, Fulton County. It identifies and constraints to future development, including demographic, physical, ecological and jurisdictional factors, contains maps and statistical tables showing existing conditions within the study area, and concludes with a future land use plan. (author)

SHABANOWITZ, R.

1969. The effect of light intensity on planktonic distribution (Seneca Lake): Corning, N.Y., Coll. Center of the Finger Lakes (unpub.).

SHAMPINE, W. J.

1973. Chemical quality of surface water in the Eastern Oswego River basin, New York: New York State Dept. Environmental Conserv., Basin Plan. Rept. ORB-6, 99 p.

The Eastern Oswego River basin may be subdivided into four regions characterized by surface water of distinctive chemical quality: Region I (roughly the northern one-third of the basin), IIA (the southern one-third of the basin), and IIB (a triangular area in the northwestern corner of the basin) are characterized by calcium bicarbonate type water with average dissolved-solids contents of 80,200 and 700 milligrams per litre, respectively; Region III (and east-west band across the central part of the basin) is characterized by calcium sulfate type water and a dissolved-solids content of about 700 milligrams per litre. Water from Regions I, IIA and IIB is suitable for public and private supplies with little treatment. The more highly mineralized water from Region III, particularly the Onondaga Lake area is unsuitable for most uses without treatment. (author)

SHANE, M. S.
1971. Distribution of blue-green algal viruses in various types of natural waters: Water Research, v. 5, no. 9, p. 711-716.

A survey was conducted in the Delaware-Maryland area to ascertain the distribution of LPP blue-green algal viruses in all types of natural waters. Their presence was determined on the basis of the ability of samples to produce lysis in cultures of the algal test organism, plectonema boryanum, and to form plaques on the host algal lawn using the soft-agar technique of Safferman and Morris. The viral concentration was determined by the direct count of the number of plaques formed per milliliter of water sample. The viral strain, LPP-1, was in clay, and white clay rivers and the elkton and rising sun oxidation ponds. LPP-viruses existed in every type of water. The oxidation ponds gave the highest percentage of samples containing at least one virus and the highest concentration of viruses. All reservoirs and industrial storage tanks which contain viruses had influents which also contained viruses. (author)

SHAPIRO, JOSEPH
1971. Arsenic and phosphate--Measured by various techniques: Science, v. 171, no. 3968, p. 234.

Most analytical techniques for measuring phosphates in water do not distinguish between phosphate and arsenate. When large concentrations of arsenic are present, measurements for phosphates are erroneous. While the Stephens technique eliminates some of the errors of the Harvey Method, this technique is not entirely free of arsenate interference. The author and others have developed a bioassay that completely eliminates arsenate interference. No details of the method are given. (author)

SHEALY, M. H., Jr.
1971. Nesting bass observed with underwater television: New York's Food and Life Sciences Quart., v. 4, no. 4, p. 18-20.

1973. (and Carlson, C. A.). Accumulation and retention of strontium-85 marks by young largemouth bass: Third Natl. Symposium on Radioecology, Oak Ridge, Tenn., 1971., Proc., p. 307-317.

First-year mortality in largemouth bass, Micropterus salmoides (Lacepede), is often higher than 90 percent. To better understand the role of predation by aquatic invertebrates in this high death rate, we marked young bass at four different ages with ^{85}Sr for subsequent use in predation studies. Resulting radiostrontium accumulation and retention curves indicate that this radionuclide is suitable for quantitative marking of prolarval, postlarval, and juvenile bass, but not embryos. (author)

SIBLEY, C. K.
1930. (and Rimsky-Korsakoff, V.). Food of certain fishes in the watershed, in A biological survey of the St. Lawrence watershed: New York State Conserv. Dept., 20th Ann. Rept. Supp., p. 109-120.

The purpose of this study was to investigate the food relations and the interrelations of the fish in the St. Lawrence watershed. Most of the time was devoted to the examination of the stomach contents of fish, and 3,865 specimens belonging to 52 species were examined. Another phase of the work was the examination of certain locations to determine the kinds and relative abundance of the food organisms at each location. Findings are discussed in relation to the environmental habits of each fish. (GKS)

1931. Fish food studies, in A biological survey of the Oswegatchie and Black River systems: New York State Conserv. Dept., 21st Ann. Rept. Supp., p. 120-232.

This article discusses (1) the determination of the numbers and species of bottom animals suitable for food, and (2) a study of the stomach contents of fish. Samples of bottom materials were taken from a few selected lakes. The numbers of each animal species in each bottom sample were determined and the results were tabulated. The dry weights of all samples were computed in pounds per acre. The article discusses the fish food organisms in specific areas of the watershed and the fish eggs eaten by other fish. This includes a concentrated study of a limestone quarry pond. (GKS)

SMALLWOOD, W. M.
1927. (and Struthers, P. H.). Carp control studies in Oneida Lake, in A biological survey of the Oswego River system: New York State Conserv. Dept., 17th Ann. Rept. Supp., p. 67-83.

Carp have become very numerous in many of the lakes of New York State. Sportsmen regard them as a distinct menace to the development and catching of game fish. This article discusses methods of seining, statistics of different fish caught, the habits of adult carp, the food of young carp, and the general considerations of carp control. (GKS)

SMITH, B. L.
1937. A WPA epic--Loudonville Reservoir: New York State Work Projects Adm., 24 p.

This popularized article describes the construction of a reservoir to serve the City of Albany. (PEG)

SMITH, D. B.
1972. Age and growth of the cisco in Oneida Lake, New York: New York Fish and Game Jour., v. 19, no. 1, p. 83-91.

Age and growth determinations were made from scales of ciscoes (Coregonus artedii) collected from 1960-1970. A false annulus occurred each calendar year during the months of highest water temperature and lowest dissolved oxygen levels. Predominance of age one and two ciscoes indicated high mortality rates in the population. Possible causes of false annulus formation and the high mortality rate are discussed. (author)

SMITH, FRANK
1918. A new species of Spongilla from Oneida Lake, New York: Syracuse, N.Y., New York State Coll. Forestry, Tech. Rept. 9, p. 239-243.

This article describes Spongilla heterosclerifera nov. sp., a new species of sponge from Oneida Lake. (PEG)

SMITH, G. M.
1924. Ecology of the plankton algae in the Palisades Interstate Park, including the relation of central methods to fish culture: Roosevelt Wildlife Bull., v. 23, p. 94-195.

The Palisades Park area, directly north of New York City, has several artificial and natural lakes that vary in size and natural features. Like some other New York lakes, these have problems with algae and algal blooms. The physical and chemical factors affecting the growth of blooms and the ecological character of the phytoplankton of the park are discussed. Different methods have been used to control algal growth. They include proper construction of artificial lakes, and chemical applications. The effect of copper sulfate treatment on fish and a systematic account of the phytoplankton of Palisades Park is discussed. (GKS)

SMITH, R. T.
1972. (and others). Chautauqua Lake benchmark study, in Chautauqua Lake Studies: Fredonia, N.Y., State Univ. Coll., Lake Erie Environmental Studies Program, p. 211-227.

This report is a general summary of research designed to develop benchmark information describing bacteriological, invertebrate, chemical, and physical features of Chautauqua Lake. This information will provide a greater understanding of the dynamics of both the lake and its watershed in order that management programs regarding the many uses of the lake and its environments might be based on relevant scientific and technical information. (PAV)

SMYTH, C. H.
1893. Lake filling in the Adirondack region: Am. Geologist, v. 11, p. 85-90.

This article discusses the obliteration of lakes by the deposition of sediment and the reduction in number of outlets. A perfect example of lake filling is furnished by the lakes and natural meadows of the Adirondack region. (GKS)

SNYDER, E. P.
1956. Evaluation of seine sampling as a means of describing composition and size of fish populations in ten New York farm ponds: Ithaca, N.Y., Cornell Univ., M.S. thesis, 73 p.

SNYDER, E. P. (continued)
During October and November 1954, fish populations in 10 New York farm ponds were observed. The objective was to test the accuracy of a specific sampling method for determining population structure and for estimating populations of the larger fish present. Sample captures were separated into species and size categories, enumerated, and weighed to determine Swingle indices (F/C, Y/C, At, A, I, E, and S values). When all species in the 10 ponds were considered, census findings showed the following overall percent agreements with the sample for Swingle indices: F/C, 70 percent; Y/C, 50 percent; At, 80 percent. When ponds containing only largemouth bass and bluegill were considered, all values increased (F/C, 83 percent; Y/C, 67 percent; At, 83 percent). This investigation indicates that for all the fall season, the sampling method used was a reliable means of determining the structures of largemouth bass and bluegill populations in farm ponds. (GKS)

SOHACKI, L. P.
1972. Limnological investigations: Oneonta, N.Y., State Univ. New York Biol. Field Sta., 4th Ann. Rept. (1971), p. 16-18.

1973. Limnological studies on Otsego Lake and limnological studies on Moe Pond: Oneonta, N.Y., State Univ. New York Biol. Field Sta., 5th Ann. Rept (1972), p. 54-61.

SPARROW, F. K., Jr.
1933. Inoperculate chytridiaceous organisms collected in the vicinity of Ithaca, N.Y., with notes on other aquatic fungi: Mycologia, v. 25, p. 513-535.

This article enumerates those members of Chytridiales found in the vicinity of Cornell University that discharge their zoospores after the deliquescence of one or more papillae. Notes on other aquatic fungi, including two operculate chytrids, collected in the Ithaca vicinity are also included. In assembling the chytridiaceous fungi on the common character of their method of sporangial dehiscence, no relationship between them is implied. The operculate or inoperable character may be found to be a matter of some significance among certain families; but in the light of present knowledge, it cannot be generally applied. (GKS)

SPENCER, J. W.
1892. The Iroquois shore north of the Adirondacks: Geol. Soc. Am. Bull., v. 3, p. 488-491.

This article discusses field investigations of the area up to 100 miles north of Watertown in search of the shoreline of Glacial Lake Iroquois. Previous shorelines had only been mapped as far as Belleville on the northern side of Lake Ontario. The article also discusses the glacial geology of the area. (GKS)

SPIKER, C. J.
1931. A biological reconnaissance of the Peterboro Swamp and the Labrador Pond areas: Roosevelt Wildlife Bull., v. 6, p. 10-151.

STARLER, NORMAN
1972. (Fisher, Ann, and Fisher, Warren). The impact of changes in Lake Erie on incomes, land values, local taxes, and employment in Chautauqua and Erie Counties--1950-1970: Albany, N.Y., New York State Sea Grant Program, p. 25-27.

This article provides an insight into the deteriorating economic basis of lake shore communities, specifically dealing with Chautauqua and Erie Counties. Lake related activities here are the catalysts which provide data for projections and planning for the economic and social future of the coastline area. (author)

1973. (and Larson, Lytle). The impact of lake related tourism and recreation on the economy of the Chautauqua Lake watershed, in Chautauqua Lake Studies: Fredonia, N.Y., New York State Univ. Coll., Lake Erie Environmental Studies Program, p. 370-390.

The object of this study was to determine the economic impact of the use of Chautauqua Lake for recreation and tourism on the Chautauqua watershed. (author)

STEBBINS, J.
1889. The relinquishing of the control of the waters of Skaneateles Lake: Syracuse, N.Y., Office of Assistant Superintendent of Public Works, 11 p.

STEBBINS, J. (continued)

The article is a published letter to the commissioners of State canals demanding the use of Skaneateles Lake as a source of water for the City of Syracuse. (PEG)

STEWART, K. M.

1969. A limnological reconnaissance of Devil's Bathtub, a meromictic lake in Western New York. Part II--Chemistry and biology [abs.]: Am. Geophys. Union Trans., v. 50, p. 194.

The geochemical nature of Devil's Bathtub is unusual. In addition to a striking increase in ionic strength in the lower waters, the "normal" milliequivalent cation sequence of $Ca^{++}>Mg^{++}>Na^{+}>K^{+}$ [calcium>magnesium>sodium>potassium] is modified in this meromictic lake to $Ca^{++}>Mg^{++}>K^{+}>Na^{+}$. The conductivity and alkalinity of the lower monimolimnion may exceed that of the upper mixolimnion by 10-15 times. The aerobic zone is shallow in summer and essentially absent in winter under ice. The yellowish-deciduous forest and decaying leaves contribute to the high organic content of the total residue from the water. The waters are mildly acidic (pH 5 to 6.5). The origin of meromixis seems linked closely to natural biochemical processes. Blooms of phytoplankton have been noted. Although rotifers are present, the general population of zooplankton is relatively sparse. (author)

1970. (and Rumer, R. R., Jr.). Mass oscillation study of Cayuga Lake, N.Y.: Internat. Assoc. Great Lakes Research, 13th Conf. Great Lakes Research, Proc., Buffalo, N.Y., p. 540-551.

Analytical, experimental, and field investigations have been made on the nature of mass oscillation in Cayuga Lake. The experimental study was carried out using a physical model of Cayuga Lake having a horizontal scale ratio of 1:15,000 and a vertical scale ratio of 1:333. A limited field study was conducted to compare actual prototype data with the analytical and experimental results. The results of these investigations demonstrate that seiche-generated lake circulation may have a significant effect on the mixing and dilution of liquid wastes introduced into the lake. Substantive information from three separate investigations has aided in the understanding of mass oscillations. (author)

1971. Education in limnology--A Limnological weekend: Bioscience, v. 21, p. 945-946.

To augment education in limnology, universities can initiate joint activities with state or private colleges that enrich courses in limnology and provide simulation for further research. One such effort, the uniting of interested students and teachers from nine colleges and universities for an intensive weekend of limnology, has been in progress in the State of New York for 3 years.

Aside from the valuable associations developed among participating staff members and the information acquired about one or more lakes, the primary beneficiary of such an exposure to several investigators in the field, to new types of limnological and oceanographic equipment, and to stimulating ideas and techniques is the student. (author)

1972. Isotherms under ice: Internat. Vereinigung für theoretische u. angew. Limnologie, Verh., v. 81, p. 303-311.

The thermal stratification and density differences beneath the ice of frozen lakes are usually slight in comparison to those found during summer. There is an increase in viscosity in colder water, but the energy requirements for water motion are still less. It was the object of this investigation to examine a variety of frozen lakes in New York and Wisconsin and check for water motion as inferred from the distribution of isotherms. (author)

1974. (and Markello, S. J.). Seasonal variations in concentrations of nitrate and total phosphorus, and calculated nutrient loading for six lakes in western New York: Hydrobiologia, v. 44, no. 1, p. 61-89.

Seasonal variations in concentrations and ranges of nitrate and total phosphorus were measured in six lakes of western New York. The variations may reflect the geochemistry of the area, local differences in lake hydrology and mixing characteristics, and the supply of nutrients from soil, man, and precipitation. Calculations of nutrient (phosphorus) loading were made for the six lakes in New York and compared to loading values for nine English lakes. The specific values derived from these calculations cannot be considered absolute but they do indicate the relative importance of human versus edaphic contributions and provide an aid in management considerations. (author)

STEWART, P. A.

1934. An ecological study of the Bergen Swamp: Rochester, N.Y., Univ. Rochester, M.S. thesis, 112 p.

1937. (and Merrell, W. D.). The Bergen Swamp--An ecological study: Rochester Acad. Sci. Proc., v. 7, no. 8, p. 209-262.

In the northern part of western New York are several large swamps in various stages of transition from an open-water condition to the climax forest. They form a series extending westward from the Genesee River toward Lake Erie and the Niagara River. Prominent among these is the Bergen Swamp, which is drained by the Black Creek into the Genesee River. This article deals with the general flora of the Bergen Swamp. This includes the ecological formations recognized, with their special flora and underlying soils; the geology of the region; the past history, present status, and possible future of the swamp; and a comparison of Bergen Swamp with other swamp regions. (GKS)

STEWART, RONALD

1968a. (and Howard, H. H.). Water pollution by outboard motors, in The role of Langmuir circulation in mixing of Lake George: Albany, N.Y., State Univ. New York, Atmospheric Sci. Research Center, Pub. 61, p. 48-52.

Over 3,000 tons of oil from outboard motors are discharged annually into waters of the United States. Oil has an adverse effect on fish growth and longevity. Since Lake George only exchanges about 10 percent of its volume annually, a considerable quantity of the discharged fuel is left to contaminate aquatic life. It is estimated that the decomposition of this remaining fuel alone would require the total oxygen content in 30 million gallons of lake water. (GKS)

1968b. (and Schmidtt, R. K.). Wave interaction and Langmuir circulations, in The role of Langmuir circulation in mixing of Lake George: Albany, N.Y., State Univ. New York, Atmospheric Sci. Research Center, Pub. 61, p. 42-47.

The interaction of two trochoidal wave trains is examined numerically to compare the computed wave shapes and locations to the observation of streaking associated with Langmuir circulations. The resulting areas of maximum amplitude form apparent streaks and move across the field of vision, similar to the motion of streaks associated with Langmuir circulations. (author)

1972. Contributions to the International Biological Program--Year II: Troy, N.Y., Rensselaer Polytech. Inst., Internat. Biol. Program, Eastern Deciduous Forest Biome, Memo. Rept. 72-71, 27 p.

This report is an analysis of climatological variables in and around the Lake George basin. Data on wind, temperature, cloud conditions, solar radiation, precipitation, etc. have been prepared for computer storage. Also physical limnological data and/or analysis on: (1) water temperature, heat storage, and currents, and (2) mathematical modeling of seiche as related to meteorological parameters. (author)

STONE, ALAN

1955. (and Jamnback, H. A.). The black flies of New York State: New York State Mus. and Sci. Service Bull. 349, 144 p.

Blackflies are blood-sucking Diptera of public health and economic concern. Next to mosquitos, blackflies are probably the most annoying insect pests to man in New York State. To develop and carry out effective control programs, it is necessary to know which species are important and how they live. The purpose of this publication is to describe the species of blackflies in New York, their distribution, and habits. The article describes several species at each stage of development. (GKS)

STONE, U. B.

1957. Finger Lakes rainbows--Tagging studies and future management: The Conservationist, v. 11, no. 4, p. 6-8, 34.

This article explains how rainbow trout are caught for tagging purposes. The routine procedure consists of obtaining lengths, weights, scale samples for age determination, condition of

STONE, U. B. (continued)
the sex organs, and tagging. The ultimate success of the tagging project depends on fishermen's cooperation in reporting the captures of tagged fish. Tag returns are obtained from two sources: letters from fishermen and creel census reports. Since all tags are not reported, the percentages obtained are minimal. (GKS)

STORR, J. F.
1962. Delta structures in the New York Finger Lakes and their relation to the effect of currents on sediment distribution and aquatic organisms: Ann Arbor, Mich., Univ. Michigan, Inst. Sci. and Tech., Great Lakes Research Div., Pub. 9, p. 129-138.

This study describes the underwater features of one delta in Seneca Lake and determines the effect of currents on the sediments and the distribution of flora and fauna. The study also evaluates the use of Desco diving equipment. Sedimentation occurred in windows around submerged trees. It was thought that the trees might act as a sediment trap under low current conditons. (GKS)

STOUT, G. J.
1970. Land use in the Conesus Lake watershed, 1930-1970: Geneseo, N.Y., New York State Univ. Coll., M.S. thesis.

This study examines land use information during forty years to determine whether there have been significant changes, and if the water quality of Conesus Lake is related to land use. Records from computerized aerial photography (1969), Agriculture Economics Census, water quality reports, and other literature were analyzed and original data on crops, fertilizer, residence occupancy and other subjects were gained by interview and mail questionnaire. A number of detailed conclusions were offered. In general, the amount of farm and forest had not changed markedly but farming practice, such as larger size of farm, increased fertilization, and decline of dairying was notable. Urbanization had placed a significantly increased mineral loading on the watershed, and no program of managing non-point sources existed. (author)

STRAUB, C. P.
1940. A study of the pollution of the Stewart Park bathing areas: Ithaca, N.Y., Cornell Univ., M.S. thesis, 103 p.

This sanitary survey was made to determine contribution the sewage of the City of Ithaca makes to the pollution of the bathing area in Stewart Park, and whether pollution is being contributed from other sources. These sources included the Cayuga Inlet, Relief Channel, Six-Mile Creek, Cascadilla Creek, and park and hillside surface wash. (GKS)

STROSS, R. G.
1969. Photoperiod control of diapause in Daphnia--Two-stimulus control of long-day, short-day induction: Biol. Bull., v. 137, p. 359-374.

Daphnia females, like all Cladocera, may be reproductively polymorphic, and produce two structurally and functionally different types of eggs, one of which later enters an embryonic diapause. It is felt that polymorphism is due to short photoperiod and a second stimulus whose effect is proportional to culture density. Experimentation and study was conducted to test this hypothesis. Materials, methods, and conclusions are discussed. The results indicate that light has some effect. (GKS)

1972. Primary productivity of Lake George, New York--Its estimation and regulation: Troy, N.Y., Rensselaer Polytech. Inst., Internat. Biol. Program, Eastern Deciduous Forest Biome, Memo. Rept. 72-72, 48 p.

Rates of production were estimated for the phytoplankton and the attached macrophytes. Daily rates of net carbon assimilation for the phytoplankton are calculated from measurements of hourly rates at expected light saturation, total daily insolation and coefficient of light attenuation.

Mean daily rates for the years 1970-72 show a 50 percent increase in the maximum summertime rate.

The macrophytes are primarily *Nitella flexilis* which grows in the depth zone of 7 and 12 meters, or on some 20 percent of the bottom. Growth morphology and oospore formation suggest that light strongly influences the *Nitella* beds on Lake George. (author)

STROSS, R. G. (continued)

1973. Zooplankton reproduction and water blooms, in Bioassay techniques and environmental chemistry: Ann Arbor, Mich., Ann Arbor Sci. Pub., Inc., p. 467-478.

Food chains are transformed and species replaced as blooms of blue-green algae develop in the plankton of lakes. While the ultimate cause, inadvertent fertilization coupled with increased nutrient mobility within the lake is known, the immediate processes that attend the development of the bloom are not. The purpose of this paper is to describe and interpret the disappearance of the grazer assemblage prior to and during development of the bloom. (author)

1974a. (and Pemrick, S. M.). Nutrient uptake kinetics in phytoplankton--A basis for niche separation: Jour. Phycology, v. 10, no. 2, p. 164-169.

Phytoplankton photosynthetic rhythms have long been observed and the total response may result from the expression of an intrinsic rhythmicity in the photosynthetic capacity of at least one major component. The photosynthetic capacity was maximal in early afternoon. Daily patterns of phosphate uptake were also rhythmic. At ambient concentrations the assemblage takes up phosphate maximally in the morning while individual cells of the large diatom take it up maximally in the evening. The large diatoms, in contrast to the total assemblage, functioned maximally at two separate times of the day: in the evening at ambient levels and in the morning at 0.4 micromoles and larger concentrations. Temporal stratification of the nutrient niche may be achieved by several uptake mechanisms in the algal cell functioning at different times of day or with a variable uptake velocity. (author)

1974b. Primary productivity of Lake George, New York--Its estimation and regulation: Troy, N.Y., Rensselaer Polytech. Inst., Internat. Biol. Program, Eastern Deciduous Forest Biome, Memo. Rept. 73-84, 23 p.

Rates of production were estimated for phytoplankton and the attached macrophytes of the sublittoral zone in Lake George. Water and plants were incubated in glass bottles with sodium carbonate for 3-hour intervals. Measurements of light saturation, temperature response, nutrient stimulation, and daily rhythm were carried out in addition to a standard seasonal evaluation of rates.

In the phytoplankton, photosynthetic capacities were measured for the fifth consective year at selected stations and depths.

Nutrient limitation of photosynthetic capacity was expressed with the addition of phosphate, but not nitrate. (PAV)

STRUTHERS, P. H.

1928. Carp control studies in the Erie Canal, in A biological survey of the Erie-Niagara system: New York State Conserv. Dept., 18th Ann. Rept. Supp., p. 208-219.

Carp control was studied on the Erie Canal between Utica (Lock 20) and May's Point (Lock 25), on the Oswego Canal, on inlets and outlets of these canals, and on the four closely associated lakes--Oneida, Onondaga, Cross, and Neatahwanta. This article discusses carp living and breeding habits, young carp, carp migration, carp food habits, other fish that associate with carp, netting of carp, and marketing of carp. Different methods of carp control are also discussed. (GKS)

1929. Continuation studies, carp control studies in the Cayuga and Owasco Lake basin, in A biological survey of the Champlain watershed: New York State Conserv. Dept., 19th Ann. Rept. Supp., p. 261-280.

Carp were first introduced in the Cayuga and Owasco Lake basins during the late 1800's. They were put in small ponds and transplanted to other bodies of water. Some carp escaped from these ponds and made their way to the lake basins. The more common regions inhabited by carp are the foot and the head of Cayuga Lake, Cayuga Inlet, Old Cayuga Canal, and the head of Owasco Lake. Nine-hundred adult carp taken from the different regions varied greatly in weight for the same age. This was mainly due to environmental factors. The article discusses carp breeding habits, young carp, carp migration, carp food habits, associated fish fauna, carp enemies and diseases, physical and chemical factors of carp habitats, and carp control methods. (GKS)

1930. Carp control studies in the Seneca, Canandaigua and Keuka Lake basins, in A biological survey of the St. Lawrence watershed: New York State Conserv. Dept., 20th Ann. Rept. Supp., p. 217-229.

STRUTHERS, P. H. (continued)

The year's biological investigation of the carp problem was focused on Seneca, Canandaigua, and Keuka Lakes. The German carp is an adverse environmental factor in these lakes. This article discusses the introduction and spread of carp, regions inhabited, growth, breeding habits, young carp migration, food habits, associated fish fauna, enemies and disease, environmental physical factors involving breeding and growth, and control methods. (GKS)

1931. A review of the carp control problem in New York waters, in A biological survey of the Oswegatchie and Black River Systems: New York State Conserv. Dept., 21st Ann. Rept. Supp., p. 272-289.

An examination of the food habits of the adult carp shows that during a part of their life they devour great quantities of food similar to that eaten by all fish during part of their lives. Examination of 600 stomachs indicates that carp prefer animal food, including: crustacea, insect larvae, nymphs, pupae, and mollusks. Carp also eat large amounts of plant material such as: Potamogeton, Elodea, Chara, and algae. These plants serve as protective cover and as a food source for many fish. This article discusses carp control methods, seining and catching carp, marketing carp, and whether seining hurts other game fish. Carp control studies over a period of 5 years indicate that no regulation other than the natural consumption of carp will successfully control their numbers. (GKS)

SUNBARAM, T. R.

1969. (and Easterbrook, C. C., Peich, K. P., and Rundinger, G.). An investigation of the physical effects of thermal discharges into Lake Cayuga. Part 1--Analytical study: Buffalo, N.Y., Cornell Aeronautical Lab., Rept. VT-2616-0-2, 306 p.

An analytical study of the physical effects of thermal discharges from power plants into a stratified lake are considered. Specifically, the possible physical consequences of the thermal discharges from a proposed nuclear power plant on the thermal structure of Cayuga Lake are predicted. The effects of the thermal discharges are analyzed in two separate spatial and temporal scales. In the first scale, which is termed the near-field scale, the effects of the thermal discharges on the region in the immediate vicinity of the outfall are considered. The behavior of the thermal plume as a function of the changing meteorological conditions above the lake and as a function of the outfall configuration are discussed. The effects of the power-plant intake on the thermocline are also discussed. In the second scale, which is termed the far-field scale, the effects of the heated discharges on the thermal structure of the entire lake are considered. In particular, the effects of the discharges on the epilimnetic characteristics and the stratification period of the lake are given. The various transient motions (such as internal seiches) that occur in a stratified lake are also analyzed. (author)

SURFACE, H. A.

1899. Removal of lampreys from the interior waters of New York: New York State Comm. Fish, Game, and Forests, Ann. Rept. 4, p. 191-245.

SUTHERLAND, J. C.

1969. Geochemical systems in Onondaga Lake (central New York State) compared with the Great Lakes: Internat. Assoc. Great Lakes Research, 12th Conf. Great Lakes Research, Proc., Ann Arbor, Mich., p. 357-363.

Onondaga Lake is a shallow, eutrophic water body containing unusually high concentrations of dissolved calcium, sodium, chloride, silicon dioxide, and phosphates. Interpretations of chemical and mineralogical data tested in equilibrium models are compared with those for the Great Lakes. The average annual condition of near equilibrium with calcite and dolomite is likely inherited from influent streams. (author)

SWANSON, G. A.

1968. Four problem areas, in Man and the quality of his environment--Western resources conf.: Boulder, Colorado, Univ. Colorado Press, p. 141-151.

Concern for the environment stems from two main causes: increasing numbers of people and increasing capability of technology to modify the environment. Four problem areas in environmental quality control are: (1) rural living, (2) cultural eutrophication of water, (3) pesticides, and (4) strip mining, especially for oil shale. A study conducted in Broome County, New York which investigated the various aspects of its rural population is discussed. Eutrophication has been hastened by greatly increased erosion and siltation, particularly by

SWANSON, G. A. (continued)
the inflow of nutrients from agricultural runoff and the inflow of both treated and untreated sewage. Two examples of adverse effects of pesticides on fishes are: Lake George, New York and Sebago Lake, Maine. There has been little research done on the effects of oil shale mining on the environment. Whereas the first example requires public education, the other three examples demand further research, public education, and government regulation. (author)

SWEENEY, R. A.
1970. The Great Lakes Laboratory of State University College at Buffalo: Limnos, v. 3, no. 1, p. 13-17.

The concern of the Great Lakes Lab is applied research concerning water pollution, and its biological, chemical, economic, legal, physical and social ramifications, education and communications cooperation. It is funded by the State University of New York, and outside sources including federal and private industries. Many aspects of Lake Erie are studied here, including properties of fish and pollution. (author)

SWEET, L. B.
1934. Rock gorges associated with the outlet of Cayuta Lake: Ithaca, N.Y., Cornell Univ., M.S. thesis, 35 p.

This study was prompted by the discovery of a rock gorge that was apparently unknown to previous workers in the area. Like two other rock gorges associated with it, the new gorge appears to have once been part of a course followed by waters draining the Cayuta Lake basin. This thesis describes and characterizes the gorge site and attempts to reconstruct the conditions under which the three gorges were formed. (PEG)

SYKES, R. M.
1971. A computer program for calculating nutrient balances: New York State Dept. Environmental Conserv., Tech. Paper 5, 33 p.

A computer program was developed to compute nutrient balances to assist in the evaluation of controls needed for controlling nutrients in lakes. Working on the assumption that the concentration of nutrients is related to the flow and that the total load of nutrients is related to concentration and total flow, this program will compute the daily and cumulative nutrient loads of both the streams and the lake. The relationships of the concentration and the load can all be changed in the program as long as the number of constants is not changed. Other restrictions include a maximum time period of 20 months, a maximum of 400 days and a maximum of 10 streams, both in and out of the lake. Data requirements for the program include: (1) stream name, (2) constants for computing concentrations and loads, (3) indicators for inflow versus outflow, (4) numbers of months of data, (5) number of days for each month, and (6) the daily flows for each day of each month. A full listing of the computer program is given as well as a sample problem with its output. (author)

SYRACUSE UNIVERSITY
1970. Benefits of water quality enhancement: U.S. Environmental Protection Agency and Syracuse Univ. Dept. Civil Eng., 194 p.

The report is concerned with the implementation of pollution abatement at a local level of government. The report is in three parts. The first contains a discussion of the past practices and recent trends in water pollution control as they relate to water quality. Next the dollar benefit of a lake or stream at a given water quality is determined by listing all uses which both affect and are affected by water quality, by valuing each use individually, and by summing the resultant values. Finally a study was undertaken of a methodology for water pollution abatement administration at the local or regional level, using Onondaga Lake as an example. (author)

SZE, P.
1972a. The phytoplankton of Onondaga Lake, N.Y.: Ithaca, N.Y., Cornell Univ., Doctoral dissert., 177 p.

A field study of the phytoplankton of heavily polluted Onondaga Lake was initiated in 1968 as part of a major limnological investigation. After an exploratory phase, a detailed full-year study of the lake environment established a reference year (1969) against which to compare further results. During the two succeeding years (1970, 1971), a less extensive sampling program was carried out and indicated the annual variability possible in the absence of any major reduction in pollutants entering the lake. (author)

1972b. (and Kingsbury, J. M.). <u>Distribution of phytoplankton in a polluted saline lake, Onondaga Lake, New York</u>: Jour. Phycology, v. 8, no. 1, p. 25-37.

During 1969, Onondaga Lake was regularly sampled at five sites in order to study the phytoplankton. The lake is relatively saline and has been found to support an algal flora characteristic of a eutrophic lake with an admixture of saline species. Seasons in the lake can be identified by floral succession with certain species of algae appearing first at the outflow and then spreading through the lake. Phosphorus and nitrogen were never limiting, but silica diminuation was limiting for further diatom population growth and was related to diatom blooms. Since the eutrophic layer was much shallower than the thermocline, turbulence and mixing were thought to play an important role in controlling certain populations. No obvious controlling relationship existed between herbivores and phytoplankton populations. Chromium and copper were high as a result of industrial discharges and may be responsible for inhibiting blooms. (author)

TADROS, M. E.

1971. (and Kalter, R. J.). Spatial allocation model for projected water based recreation demand: Water Resources Research, v. 7, no. 4, p. 798-811.

This paper develops a model designed to distribute spatially recreation use estimates forthcoming from "structural demand" equations of a recreation market. To illustrate the model's operation, a description of its empirical implementation for a regional case study area is given. Data needs and sources are specified, empirical results are set forth, and policy implications are drawn. The ability to use the model to simulate policy actions is pointed out. (author)

TAKAHASHI, TARO

1967. (Broecker, W. S., and Thurber, D. L.). Geochemistry of a meromictic lake near Fayetteville, N.Y. [abs.]: Am. Geophys. Union Trans., v. 48, no. 1, p. 240.

The water in Green Lake is permanently stratified, owing to the density difference caused by a greater concentration of dissolved salts in the deep water (18-55 metres). The surface water is chemically characterized by the presence of sulfate, the deep water by the presence of hydrogen sulfide. The lake sediments consist mainly of fine-grained euhedral calcite crystals. (GKS)

1968. (Broecker, W. S., Li, Yuan-Hu, and Thurber, D. L.). Chemical and isotopic balances for a meromictic lake: Limnology and Oceanography, v. 13, p. 272-292.

A chemical and isotopic study of the waters and sediments of Fayetteville, New York, Green Lake has allowed the cause of its meromixis to be defined. Stagnation is clearly the result of two different water types entering the lake. Water entering below the chemocline is almost twice as saline as that entering the surface layer. This conclusion is based on hydrologic, isotopic, and chemical balances. For carbon and its isotopes, the contributions of $CaCO_3$ [calcium carbonate] precipitation, of the photosynthetic cycle, of gas exchange with the atmosphere, and of hydrologic transport are considered. Our results indicate a mean residence time of two years for surface water and of 4-30 years for deep water. The water entering the deep reservoir must be richer in $Na^+ + K^+ + Cl^-$ [sodium + potassium + chloride] relative to $Mg^{2+} + Ca^{2+} + HCO^{3-} + SO_4^{2-}$ [magnesium + calcium + carbonate + sulfate] than that entering the surface reservoir. Its carbon must also be more deficient in ^{13}C and ^{14}C and its degree of supersaturation with respect to calcite lower than surface water. Although both reservoirs are supersaturated with calcite, the carbon isotope data clearly indicate that precipitation takes place largely from the surface water. (author)

TALLY, M. W.

1967. The effect of gravel cover on the behavior and development of brook trout Salvelinus fontinalis (Mitchell): Ithaca, N.Y., Cornell Univ., M.S. thesis, 52 p.

This thesis concentrates on the effects of incubation in gravel from fertilization to emergence on the behavior, size, and performance of young brook trout when they begin to feed. The thesis discusses the following questions: (1) do domestic trout profit as much from gravel cover during incubation as wild trout, or have generations of artificial propagation resulted in adaptation to hatchery conditions; (2) do reported initial improvements in size and performance disappear over time, or are these differences maintained; (3) does the effect of incubation in gravel depend on the duration of exposure, or is it related to the stage of development of the fish. (GKS)

TANNER, W. G.

1968. Thermal properties of Seneca Lake: Corning, N.Y., Coll. Center of the Finger Lakes (unpub.).

TARBY, M. J.

1972. Causes and implications of yellow perch cannibalism in Oneida Lake: Ithaca, N.Y., Cornell Univ., M.S. thesis, 38 p.

Since adult perch are abundant (2-3 times as abundant as adult walleyes), attain large size, and at times feed extensively on young perch, cannibalism may significantly affect survival of a new year class. This study, therefore, was initiated to determine seasonal and annual differences in food habits of adult perch, to identify factors affecting the annual intensity of

TARBY, M. J. (continued)
cannibalism, and to obtain an estimate of the consumption of young perch fry by adults that would permit an evaluation of perch cannibalism as a population regulatory mechanism in Oneida Lake. (PAV)

1974. Characteristics of yellow perch cannibalism in Oneida Lake and the relation to first year survival: Am. Fisheries Soc. Trans., v. 103, no. 3, p. 462-471.

Because adult yellow perch were known to be cannibalistic in Oneida Lake, this species was studied in 1965-71 to identify factors affecting the intensity of cannibalism and to evaluate the effect of cannibalism on the abundance of young perch. Adult perch changed their food habits in response to changes in the availability of different food items from June through September. Although young-of-the-year perch were most abundant in adult stomachs in August of most years, wide variations occurred in the annual intensity of cannibalism. Correlations between the annual intensity of perch cannibalism and length and abundance of young perch imply that cannibalism operates as a compensatory or possibly an extrapensatory mortality process. (author)

TARR, R. S.
1894. Lake Cayuga--A rock basin: Geol. Soc. Am. Bull., v. 5, p. 339-356.

Briefly summarized, this paper, after a description of the topography of the region and a summary of the opinions previously held, attempts to prove that lake Cayuga, and presumably other of the Finger lakes, is situated in a rock basin with a maximum depth of approximately 435 feet. The nature of the proof is that the preglacial tributaries to this valley are found to be rock-enclosed, and that their lowest points are above the present lake surface.
It presents also a brief discussion of the reasons why a rock basin was constructed with comparative ease in this region; and a rhythm of glacial erosion and deposition is suggested. The course of the preglacial Cayuga river is found to be northward, probably tributary to a river which drained at least one of the Great lakes, Ontario. As the tributaries of Cayuga river prove the rock-basin origin of lake Cayuga, so also the Cayuga river tributary to the Ontario stream indicates that lake Ontario is also a rock basin. (author)

1904. Hanging valleys in the Finger Lakes region of central New York: Am. Geologist, v. 33, p. 270-291.

The upland valleys of the Finger Lakes plateau region are mature in form; but there are numerous evidences of rejuvenation, especially the presence of steepened valley walls. The different drainage patterns of the area are complex and have been difficult to interpret. This article discusses the glacial history and the geological structure of the area and its changes. The author presents evidence for some theories of the area's drainage evolution in light of facts obtained since a previous article he had written on this subject 10 years earlier. (GKS)

1905. Moraines of the Seneca and Cayuga Lakes valleys: Geol. Soc. Am. Bull., v. 16, p. 215-228.

1906. Glacial erosion in the Finger Lakes region of central New York: Jour. Geology, v. 14, p. 18-21.

This article discusses some of the known theories of the origin of the Finger Lakes valleys in light of new facts that were discovered since older articles on the same subject were published. The author places an emphasis on the theory of double glacial origin, which is supported mainly by the hanging valleys. The article also discusses other evidence to support or disclaim other theories. (GKS)

TAYLOR, B. F.
1897. Lake Adirondack: Am. Geologist, v. 19, p. 392-396.

In early October 1893, the author and Prof. J. W. Spencer searched the northeastern part of the Adirondack mountains in search of evidence of Pleistocene submergence, and more specifically, to trace the Lake Iroquois beach at high levels. The article discusses the discovery of different geologic markings that could be the beach, but they are not definite. The author theorizes how things may have been, based on his findings. (GKS)

TAYLOR, W. G., III.
1960. A preliminary limnological investigation of Round Lake in New York: Syracuse, N.Y., Syracuse Univ., M.S. thesis, 136 p.

This report describes the physico-chemical and biological characteristics of Round Lake, a 34.5-acre body of water in Onondaga County. A meromictic condition exists as indicated by stable chemical and biological stratification and only partial circulation during the fall overturn. The upper waters of Round Lake are remarkably clear and bear an unusual green color. This clarity is largely the result of a sparse phytoplankton population. The meromictic condition and the nature of the bottom deposits limit the production of benthic organisms. Aquatic vegetation was notably sparse, and this condition probably is related to the steep declivity of the lake basin as well as its marl composition. Age and growth determinations indicate that the fish are extremely stunted. (GKS)

TEFFT, R. C.
1952. Improvement of the Champlain Waterway--An exploratory investigation: Syracuse, N.Y., Syracuse Univ., M.A. thesis, 91 p.

The paper is an exploratory investigation into the proposals to improve the Champlain Waterway, which provides a direct inland channel between New York City and Montreal. The small dimensions of the Waterway restrict the size of vessels that may pass through it. It has been suggested that this channel should be improved so that it would be comparable to either the New York State Barge Canal System or to the St. Lawrence Seaway.

The primary objective of the report is to lay the groundwork for future investigations of a more detailed nature. The major task undertaken was to seek out sources of information. The material located is classified and suggestions where future research might be most productive are made. Data presented in this paper are drawn largely from documents and interviews collected in the field and from correspondence. (author)

TEMPORARY STATE COMMISSION ON THE WATER SUPPLY NEEDS OF SOUTHEASTERN NEW YORK
1972. Scope of public water supply needs: Albany, N.Y., Temporary State Comm. on Water Supply Needs of Southeastern New York, 414 p.

By the year 2000, it is expected that the population of the Commission service area will range from 14.5 million to 15.8 million. Most of the growth will be outside of New York City proper. Ninety-six percent of the people living in the southeastern New York region are served by public water supply systems that supply 92 percent of the water used. The material in this report is based on a number of assumptions and projections. These include both extension into the future and regional distribution. The region is divided into three subregions for presentation of material: (1) mid-Hudson, (2) New York City, and (3) Long Island. The estimated water needs for the future are given for each region. The regional location of the projected needs will shift from New York City proper to the two subregions. (PAV)

1973. Proposed water supply projects for southeastern New York: Albany, N.Y., Temporary State Comm. on Water Supply Needs of Southeastern New York, 296 p.

This report is a discussion of water supply projects that can be implemented to supply the public water supply deficits of the southeastern New York region through the year 2020. Both local and regional projects are considered. The first section of the report is an inventory of available water resources. The inventory indicates what water resources are available to the region that can be developed for public water supply through local or regional projects. The next section is a brief discussion of the criteria to be applied in the process of developing project proposals and selecting projects. The potential development of local projects is determined, and potential projects of regional scope are discussed. (PAV)

THOMPSON, J. H.
1966. The geography of New York: Syracuse, N.Y., Syracuse Univ. Press, 53 p.

The geography of New York State is discussed in relation to lakes, rivers, topography, geographical features, mountain formations, glacial developments and deposits. (author)

TONG, S. C.
1972. (Gutenmann, W. H., Lisk, D. J., Burdick, G. E., and Harris, E. J.). Trace metals in New York State fish: New York Fish and Game Jour., v. 19, no. 2, p. 125-131.

TONG, S. C. (continued)

An analytical survey was conducted of the concentrations of eight metals in fish from 11 New York State waters. Analysis of barium, cadmium, cobalt, nickel, silver, tin, vanadium, and zinc in fish was performed by spark source mass spectrometry following dry ashing of samples. Barium, cadmium and silver were present in the range of 0.1 ppm. Tin and zinc were usually found at relatively higher levels of 0.5 to several ppm. Cobalt, nickel and vanadium were intermediate in concentration being most often less than 1 ppm. (author)

1974. (Youngs, W. D., Gutenmann, W. H., and Lisk, D. J.). Trace metals in Lake Cayuga lake trout (Salvelinus namaycush) in relation to age: Fisheries Research Board of Canada Jour., v. 31, no. 2, p. 238-239.

Concentrations of trace metals in lake trout were investigated in relationship to fish age. Chromium concentration increased and molybdenum and tin concentrations decreased in Lake Cayuga lake trout from age 1 to 12 years. The concentration of rhodium ranked from about 100 to 200 ppb. The concentrations of 33 other trace metals in the fish are reported. The concentrations of most metals in lake trout are apparently not related to the age of the fish. (author)

TOWNES, H. K., Jr.

1936. Studies on the food organisms of fish, in A biological survey of the Lower Hudson watershed: New York State Conserv. Dept., 26th Ann. Rept. Supp., p. 217-230.

The invertebrate fauna of the Hudson River and of six lakes and reservoirs was studied by dredging the bottom and by collecting adult insects along the shores. The bodies of water studied are described with reference to the type of bottom and fish food productivity. Fluctuating water level, copper sulfate treatment, and the silting of bottoms decrease food production of reservoirs. The deep water fauna of lakes and the fauna of the Hudson are described. Young shad feed on surface drift; the food of the young striped bass in the Hudson River is the crustacean, Gammarus fasiatus. A special study of the Bronx River and of pollution of Wappinger Creek is also described. (author)

1937. Studies on the food organisms of fish, in A biological survey of the Allegheny and Chemung watersheds: New York State Conserv. Dept., 27th Ann. Rept. Supp., p. 162-175.

The various aquatic habitats in Chautauqua Lake are described and the animals found in them discussed. A diagram is given of a typical part of the lake to illustrate the ecology and distribution of the most common animals. Dredge samples average 39 grams of animal life per square meter. An annotated list of species in the lake is given, also a table of the molluscs of several lakes near Chautauqua Lake. Effects of pollution on aquatic organisms by silt and tannery wastes are indicated for Tioga River, and by chemical wastes in Miller Creek, a good trout stream. Studies were made of the food supply in the Little Conewango Creek which disclosed a heavy population of trout in its lower part but a very scanty food supply. (author)

TRABERT, N. L.

1969. A study of the free-living protozoa of Cumberland Bay, Lake Champlain at Plattsburgh, New York: Plattsburgh, N.Y., State Univ. New York, M.A. thesis, 112 p.

TRANSEAU, E. N.

1917. A new species and a new variety of algae from Oneida Lake: Syracuse, N.Y., New York Coll. Forestry Bull., v. 9, p. 237-238.

This article discusses a new species (Mougeotia americana nov. sp.) and a new variety (Oedogonium crassum longum nov. var.) of algae. (GKS)

1918. A new species and a new variety of algae from Oneida Lake: Syracuse, N.Y., New York State Coll. Forestry, Tech. Pub. 9, p. 237-238.

This short article describes two new forms of algae, Mougeotia americana nov. sp. and Oedogonium crassum longum nov. var. (PEG)

1926. The genus Mougeotia: Ohio Jour. Sci., v. 26, no. 6, p. 311-338.

The species belonging to this genus are among the most widely distributed of all the freshwater algae. In the vegetative condition they have been collected in arctic, temperate, and tropical regions of all the continents and on the most isolated of the Pacific islands. They

TRANSEAU, E. N. (continued)
also occur in lakes, ponds, temporary pools, and in all manner of springs, streams, and rivers. In lakes, many of them form a part of the plankton either as isolated cells or as short straight or coiled filaments. In permanent streams and ponds, Mougeotia may be found throughout the year, whereas in temporary bodies of water, they are among the first algae to appear after a rainy period. Certain species of Mougeotia exhibit a union of pairs of cells in adjoining filaments and a subsequent bending of the cells at the points of contact. This is known as "genuflexing." The article describes other characteristics of this algae. An annotated list includes most of this particular genus. (GKS)

1943. Two new Ulotrichales: Ohio Jour. Sci., v. 43, no. 5, p. 212-213.

This article discusses Chaetonema ornatum sp. nov. and Colechaete sampsonii sp. nov., two new Ulotrichales found in Adirondack lakes. (GKS)

TREMBLEY, F. J.
1929. The gar-pike of Lake Champlain, in A biological survey of the Champlain watershed: New York State Conserv. Dept., 19th Ann. Rept. Supp., p. 139-145.

The long-nosed gar-pike or billfish is exceedingly abundant in Lake Champlain. This fact, in addition to its voracity, its growth to a large size, and its worthlessness as a food fish, makes it a major problem of the Champlain fisheries. Locally this fish is unpopular, but further studies of the food and of the spawning habits must be made before it can be justifiably condemned or declared a partly beneficial species. The adult gars were taken by gill nets, trap nets, and by spearing both at night and day. The gill net was the most efficient method. Spearing was the best method for obtaining specimens for stomach content examination, because contents are digested beyond recognition in other methods. The largest species caught during the summer was 4 feet 4 inches long and weighed 14 pounds. Gars were more abundant in certain bays, although they can be found in any shallow water and weedbed areas in the lake. Of 168 adult gars caught during the summer, 68 had empty stomachs. The stomachs of the others contained about 100 percent fish. The article discusses habits and economic importance of the gar. (GKS)

1930. A tentative classification of the ponds and lakes of the Grass, St. Regis, Salmon and Chateaugay systems, in A biological survey of the St. Lawrence watershed: 20th Ann. Rept. Supp., p. 161-166.

This article discusses the classifications of ponds and lakes of this region. Classification is based on a correlation of data taken on the character of the bottom, color of the water, vegetation present, temperatures taken at different levels, oxygen and carbon dioxide values, and sizes and temperatures of tributary streams. Eleven different classifications are discussed in detail. (GKS)

TRESSLER, W. L.
1933. (and Bere, R.). Plankton studies in some lakes of the Raquette River watershed, in A biological survey of the Raquette watershed: New York State Conserv. Dept., 23d Ann. Rept. Supp., p. 222-244.

Plankton were investigated during the summer of 1933 in a number of lakes of this watershed for the purpose of determining the amount of this important fish food, the extent to which it was being utilized by fishes, and its distribution. Temperature and transparency were studied, and certain chemical determinations were made in order to explain fluctuations in the distribution of microscopic life. Attention was concentrated on the vertical distribution of the plankton. Some work was done on the diurnal migration of plankton organisms and on the stomach contents of plankton-feeding fishes. The article summarizes these items in tables and discusses them in detail. (GKS)

1934. (and Bere, R.). Plankton studies in some lakes of the Mohawk-Hudson watershed, in A biological survey of the Mohawk-Hudson watershed: New York State Conserv. Dept., 24th Ann. Rept. Supp., p. 250-266.

Seven lakes and five reservoirs in the Mohawk and Hudson watersheds were visited during the summer of 1934 and quantitative plankton catches were made at 5-metre intervals of depth. The Mohawk River was also sampled. The purpose of these investigations was to determine the general productivity of the lakes and the distribution of the plankton in each lake. The vertical

TRESSLER, W. L. (continued)
distribution of the organisms making up the plankton was determined, and an explanation of such phenomena as diurnal migrations of macroplankton and the factors involved was sought. The physical and chemical factors influencing the occurrence and distribution of plankton were studied in an effort to explain the fluctuations in these phenomena. An attempt was also made to correlate the findings obtained from plankton determinations with the results of microscopical examinations of the stomach contents of certain fish inhabiting these waters. (GKS)

1935. (and Bere, R.). A limnological study of some lakes in the Delaware and Susquehanna watersheds, in A biological survey of the Delaware-Susquehanna watershed: New York State Conserv. Dept., 25th Ann. Rept. Supp., p. 222-236.

Six lakes and two reservoirs of the Delaware-Susquehanna watershed were studied for the purpose of determining plankton productivity and to what extent this elemental food was being utilized by the fish. Various physical and chemical factors which directly or indirectly influence productivity were studied in search of an explanation of certain variations and differences which are encountered in lakes. Otsego and Canadarago lakes in close proximity to one another, were studied more intensely than the other lakes. Regular vertical series at intermediate depths were made in the deepest part of each lake and samples of the plankton, the temperature and water samples were taken at these points. The total organic matter of the lake was estimated quantitatively for each of the lakes, and for four of the lakes, heat budgets were calculated. (author)

1936. (and Bere, R.). A limnological study of some lakes in the lower Hudson area, in A biological survey of the lower Hudson watershed: New York State Conserv. Dept., 26th Ann. Rept. Supp., p. 249-263.

Productivity in terms of plankton organisms was stressed in the study of six lakes and four reservoirs of the lower Hudson watershed during the summer of 1936. Vertical series at intermediate depths from surface to bottom were made in the deepest part of each lake. Plankton catches, temperature, and water samples were secured at each point of sampling. The total centrifuged organic matter was determined quantitatively for each lake and reservoir. Examinations of the stomach contents of several catches of fish from the Hudson River showed that the alewife (summer herring), anchovy, and striped bass were utilizing plankton as a source of food. (GKS)

1937. (and Bere, R.). A limnological study of Chautauqua Lake, in A biological survey of the Allegheny and Chemung watersheds: New York State Conserv. Dept., 27th Ann. Rept. Supp.

During the summer of 1937, an extensive limnological study of Chautauqua Lake was made. In these studies, chemical and physical conditions in the water and the productivity of plankton organisms were stressed. Chautauqua Lake is two lakes--in effect, an upper, deeper, clear-water half, and the lower portion, which is much shallower with abundant phytoplankton and extensive weed beds. The amount of organic matter per unit of area was relatively small, 105 pounds per acre average for the summer. Wind-distributed heat on August 3, 1937, was 11,790 gram-calories. Chemical conditions were favorable for plankton and fish growth except for dissolved oxygen at the bottom, which was present in very small amounts during the summer. A year's study of chemical, physical, and plankton conditons in Chautauqua Lake is briefly summarized. (GKS)

1938. (and Bere, R.). A limnological study of four Long Island lakes, in A biological survey of the fresh waters of Long Island: New York State Conserv. Dept., 28th Ann. Rept. Supp., p. 103-108.

During the summer of 1938 four lakes on Long Island were selected for plankton study in connection with the survey work which was carried on to secure basic information for a stocking and management program. The lakes selected were Ronkonkoma, Laurel, Fort Pond and Belmont. Productivity of microscopic life, chemical and physical conditions of the environment were stressed in these studies. Two of the lakes, Ronkonkoma and Laurel, had cold water at the bottom during the summer but no dissolved oxygen. The other two lakes were warm-water lakes. All of the lakes had clear water which was very soft. Green algae were abundant in most of the lakes but there was a great scarcity of blue-greens. Cladocera were also scarce while the other macroplankton forms were in fair abundance. The wind distributed heat for Ronkonkoma was found to be 7,110 gram calories on August 19. (author)

TRESSLER, W. L. (continued)

1939. (and Austin, T. S.). A limnological study of some bays and lakes of the Lake Ontario watershed, in A biological survey of the Lake Ontario watershed: New York State Conserv. Dept., 29th Ann. Rept. Supp., p. 188-210.

During the summer of 1939, several bays and lakes of the Lake Ontario watershed were investigated to determine the amount and quality of microscopic life, the environmental conditions under which this life existed, and the extent to which fish were utilizing this important food element in their diet. Besides quantitative plankton studies, other studies were made on dissolved gases, pH, alkalinity, temperature, transparency, and organic matter. Irondequoit Bay was the most productive of plankton in spite of the fact that the region below 30 feet had anaerobic conditions and hydrogen sulphide. Of the three ponds investigated, (Coan, Mendon, and Hindsburg Quarry), Hindsburg produced the largest amount of plankton. Organic matter was highest in Mendon Pond. Coan showed many characteristics typical of a bog pond. Heat budgets for wind-distributed heat were calculated for four of the lakes and bays as follows: Redfield, about 7,200 gram calories per unit area; Carlton, 11,750; Glenwood, 8,550; and Irondequoit Bay, 6,740. Plankton was found to be scarce in stomachs of fish in Glenwood and Carlton Reservoirs. (GKS)

1940. (Wagner, L. G., and Bere, R.). A limnological study of Chautauqua Lake. II--Seasonal variation: Am. Micros. Soc. Trans., v. 59, no. 1, p. 12-30.

Chautauqua Lake is known for its conference centers, fishing, and fish hatchery, and it is the largest inland lake in western New York. Several inland New York lakes have been investigated during the summer for plankton and chemical characteristics; but the investigations have never been carried through for a full year to determine the seasonal variation. A seasonal study was conducted on Chautauqua Lake during 1935-36, in November, February, and April. An intensive biological survey was conducted during the summer of 1937 by the New York State Biological Survey. The lake remained at uniform temperature during the fall, winter, and spring from surface to bottom. Oxygen was abundant at all depths during the winter. The plankton decreased to low numbers during the winter months but were very abundant at other times. (GKS)

1941. Seasonal variation of some limnological factors in Irondequoit Bay, New York; specific conductivity of New York and Maryland lakes: Am. Philos. Soc. Yearbook, v. 1940, p. 260-263.

Between August 15, 1939, and June 13, 1940, Irondequoit Bay, a closed-in area at the eastern outskirts of Rochester, was studied. Series of samples at various depths in the deepest part were taken monthly during this period in order to determine whether the extreme stagnation conditions became modified during the winter, as in most lakes, or whether they persisted throughout the year. The author attempted to learn whether pollution from Irondequoit Creek had any serious consequences in the bay and whether there was any noticeable interchange of water from Lake Ontario through the narrow, shallow outlet. Studies were made of the vertical distribution and seasonal variation of temperature, transparency, dissolved oxygen, carbon dioxide, hydrogen ion concentration, alkalinity, soluble and organic phosphorus, specific conductivity, particulate organic matter, and macro- and micro-plankton. The article discusses the details of this study. (GKS)

TURAND, V. S.

1967. (and Rand, M. C.). Some chemical observations on Fayetteville Green Lakes, New York, in Some aspects of meromixis: Syracuse, N.Y., Syracuse Univ. Press, p. 153-187.

This article discusses limited observations of certain chemical characteristics of Green Lake, presents a few calculations and speculations based upon the observed data, and contains remarks concerning the methodology of chemical analysis as applied to systems of this kind. The characteristics studied were sulfides, sulfates, acidity, pH, alkalinity, hardness, calcium, dissolved oxygen, and temperature. The data were collected above and below the chemocline on three different dates. (GKS)

UNION CARBIDE CORPORATION
1974. Oxygenation of the hypolimnion: Public Works Mag., v. 105, no. 2, p. 85.

The Union Carbide Corp., assisted by limnologists and aquatic biologists, have tried a new approach to oxygenating the hypolimnion of eutrophic lakes. The investigations at two sites in upper Westchester County are based on the theory that applying oxygen to only the hypolimnion will restore the eutrophic waters. Direct aeration with compressors and a special type of diffusing apparatus, and the concept of side-stream pumping using pure oxygen are the systems examined. (author)

U.S. ARMY CORPS OF ENGINEERS
1970. Beach erosion study of east end of Oneida Lake, New York: Buffalo, N.Y., Army Engineer Dist., Tech. Rept., sec. 214, Flood Control Act 1965, 75 p.

Oneida Lake is located in central New York about 12 miles northeast of Syracuse. The purpose of this beach erosion control study is to investigate the causes of reported loss of beaches and subsequent erosion damage to the shore from wave action. (author)

1971a. Valcour Harbor, Lake Champlain, New York: New York, Army Engineer Dist., Final Environmental Impact Rept., 34 p.

The project involves the construction of a 700-foot long rubble-mound offshore breakwater having an inshore depth of 4.5 feet and an offshore depth of 15 feet. The average depth at low lake level is 9.7 feet. Located on the west side of Lake Champlain, about five miles south of Plattsburgh, the project will provide a protected harbor for recreational boats, and a facility for sport fishing. Construction and operation of the project will not significantly affect fish and wildlife resources. No adverse effects are foreseen providing that regulations prohibiting the discharge of untreated sewage, mill wastes, rubbish, and other pollutants are enforced. The alternative to the project is no development. (author)

1971b. Tocks Island lake project, Delaware River, New Jersey, New York, Pennsylvania: Philadelphia, Pa., Army Engineer Dist., Environmental Impact Statement, 226 p.

The project involves construction of a dam on the Delaware River about 5 miles north of the Delaware Water Gap in Pennsylvania which will create a 12,425 acre reservoir. The project will provide flood control, water supply, hydroelectric power with a power plant capacity of 70,000 kilowatts, and recreation. The project area is a sparsely populated, heavily forested flood plain. The following environmental impacts are noted: relocation of structures, construction of flood protective works, ponding in certain areas during drawdown, reduction of fishing, loss of animal habitats, temporary esthetic impairment, and sewage disposal problems from visitors attracted to recreational sites. (author)

1972. Application for permit to construct a dam on Murderers Creek, Green County, New York: Natl. Tech. Inf. Service, 254 p.

The project entails construction of an earth fill dam on Murderers Creek just upstream of its confluence with tidewater of the Hudson River. The dam will create a 323 acre lake that would be the central feature of a recreational-residential development. The overall development will beneficially affect the local economy, land use, water quality and biological resources. Adverse environmental effects include removal of forestation, conversion of an open creek into an impoundment with the potential for eutrophication and an adverse effect on local wildlife. Construction activities would generate temporary noise and air pollution and accelerate erosion with resulting increases in turbidity and nutrient loads in the stream. The alternative to the proposed action is not to issue the permit for construction of the dam. The alternatives relevant to the overall development are building at another site, providing a series of small impoundments instead of a single large one, or varying the size of the dam and lake. (author)

1973. Water resources development in New York: New York, U.S. Army Corps of Engineers, North Atlantic Div., public affairs pamphlet, 147 p.

The U.S. Army Corps of Engineers' current water resources activities in the State of New York are surveyed in this report. The status of the projects, the Corps' role in planning and building, and the procedures for initiating and processing projects are discussed. Other authorized projects, flood-plain management, regional investigations, and surveys are included. (PAV)

U.S. DEPARTMENT OF AGRICULTURE

1974. Western New York River basins study--Allegheny River Basin: U.S. Dept. Agriculture, 201 p.

This report represents the U.S. Department of Agricultures' contribution to the formulation of a comprehensive plan for the water and related land resources of the Allegheny River basin. This information identifies water and related land resource problems and needs and recommends means for solving the problems and meeting needs. The Economic Research Service, Forest Service and Soil Conservation Service represent the U.S. Department of Agriculture in this study. Other federal, state and local interests are providing reports on other needs and recommendations which will contribute to the formulation of a comprehensive water and related land resource plan for the study area. The Board is basing its plan upon the projected needs, indicated problems, and recommended development described in these reports. (author)

U.S. DEPARTMENT OF INTERIOR

1967a. Water-oriented outdoor recreation in the Lake Ontario basin: Ann Arbor, Mich., U.S. Bur. Outdoor Recreation, 186 p.

This report considers the outdoor recreational aspects of the Lake Ontario basin in New York and Pennsylvania. Historically, one of the major uses of water in the basin has been for recreation. However, water of poor or low quality has had a deleterious effect on recreational activities. An analysis of the influence of poor water quality on swimming was made to establish an indication of the value of pollution control to recreation. Improved water quality in the Lake Ontario basin is of critical importance for public enjoyment of these activities. (PEG)

1967b. A water pollution control program for the Black River and U.S. St. Lawrence River basins: Federal Water Pollution Control Adm. and U.S. Dept. Health.

This report is a survey of the major pollution problems, the present and anticipated sources of pollution and the current and future trends in usage of the Black and St. Lawrence River basins.

Tabulated data are presented on the surface waters of both river basins. The parameters measured include pH, temperature, BOD [biochemical oxygen demand], COD [chemical oxygen demand], ammonia, nitrate, chlorides, alkalinity, hardness, turbidity, sulphate, phosphate, total dissolved solids, specific conductance and coliform count. (author)

1967c. Lake Ontario program--A water pollution control program for the Genesee River basin: Federal Water Pollution Control Adm. and New York State Dept. Health, 117 p.

This report is a survey of the major pollution problems, the present and anticipated sources of pollution and the current and future trends in water usage of the Genesee River basin.

Tabulated data are presented for the surface waters of the Genesee River. The parameters measured include dissolved oxygen, BOD [biochemical oxygen demand], pH, coliform count, acrylonitrile butadiene styrene, turbidity, temperature, dissolved solids, color and phosphorus. (author)

1968a. Report on pollution of the interstate waters of Lake Champlain and its tributaries: Edison, N.J., Federal Water Pollution Control Adm., Northeast Region, North Atlantic Water Quality Management Center, 18 p.

The report discusses basin characteristics, water uses, water quality, sources of water pollution, and pollution control programs of Lake Champlain and its tributaries. (PEG)

1968b. (and New York State Department of Health). Water pollution problems and improvement needs--Lake Ontario and St. Lawrence River basins: Chicago, Ill., Federal Water Pollution Control Adm., 125 p.

This report summarizes the water pollution problems of the United States waters of Lake Ontario and the St. Lawrence River and their tributaries. It identifies the causes of the problems or sources of pollution, discusses the needs for improvement, and presents a program of recommended actions. (PEG)

U.S. DEPARTMENT OF INTERIOR (continued)

1968c. Lake Ontario program--A water pollution control for the minor tributary basins of Lake Ontario: Federal Water Pollution Control Adm. and New York State Dept. Health.

This report presents information on the minor tributary basins of Lake Ontario, including sources of municipal and industrial wastes, water quality conditions, future waste loads, anticipated water uses, and estimated improvement costs. It also contains recommendations for future water quality improvements made by the Federal Water Pollution Control Administration and the New York State Department of Health. (PAV)

1969. Conference on pollution of the interstate waters of Lake Champlain and its tributary basins--New York-Vermont: Washington, D.C., Federal Water Pollution Control Adm., 378 p.

The Conference was convened pursuant to paragraph 10 of the Federal Water Pollution Control Act to deal with the problem of pollution of Lake Champlain. Federal, New York, and Vermont agencies were represented. The geography and characteristics of the lake basin were discussed in detail. The major area of pollution is toward the southern end of the lake, especially around a large paper factory at Ticonderoga. Specific problems such as sludge deposits, decreased oxygen supply, effect on fishing and recreation, and thermal pollution were discussed. Detailed statistical evidence of the extent of the water pollution was presented, and reports were made on the water quality criteria of New York and Vermont. Findings and conclusions were reached on the nature and extent of the pollution problem and remedial measures to be taken. Emphasis was placed on standardizing efforts by New York and Vermont in dealing with water pollution. (author)

1973. Quality of surface waters of the United States, 1968, Parts 4 and 5. St. Lawrence River basin and Hudson Bay and Upper Mississippi River basins: U.S. Geol. Survey, Water-Supply Paper 2094, 293 p.

The records of chemical analysis, water temperature, and suspended sediment of surface waters are tabulated for the St. Lawrence River basin, and Hudson Bay and Upper Mississippi River basins for the 1968 water year (October 1967 to November 1968). The Geological Survey maintained 139 stations on 93 streams for the study of chemical and physical characteristics of surface water. Samples were collected daily and monthly at 81 of these locations for chemical-quality studies. Samples also were collected less frequently at many other points. Water temperatures were measured continuously at 59 stations and daily at 24 stations. Specific conductance was determined and reported for almost all daily samples. Quantities of suspended sediment are reported for 24 stations. Sediment samples were collected one or more times daily at most stations, depending on the rate of flow and changes in stage of the stream. Particle-size distributions of sediments were determined only at miscellaneous sites. (author)

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION II

1974a. Wastewater treatment facilities construction grants for the Onondaga Lake drainage basin: U.S. Environmental Protection Agency, Region II, 246 p.

The Onondaga County Department of Public Works plans the expansion and upgrading of the existing Metropolitan Syracuse sewage treatment plant. The proposed project will expand and upgrade the existing plant from a 189,000 cu m/day [m^3/d] (50 mgd) [Mgal/d] primary treatment facility to a 327,000 cu m/day (86.5 mgd) advanced waste treatment facility (phosphorus removal). The project also includes the construction of a new shoreline outfall to Onondaga Lake. The second project involves construction of force mains and additions and alterations to the existing West Side Pumping Station. Environmental impacts are discussed. (author)

1974b. Report on Black Lake, St. Lawrence County, New York: U.S. Environmental Protection Agency, Natl. Eutrophication Survey, Working Paper 148, 26 p.

Survey data indicate that Black Lake is eutrophic. Algal assay results indicate that Black Lake was nitrogen limited in July and October 1972, but phosphorus was limited in May. There were no known point sources of nutrients affecting Black Lake during the sampling year. Since there are no known point sources, control of nonpoint sources of phosphorus will be necessary to improve the existing trophic condition of Black Lake. (PAV)

1974c. Report on Canandaigua Lake, Ontario and Yates Counties, New York: U.S. Environmental Protection Agency, Natl. Eutrophication Survey, Working Paper 149, 32 p.

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION II (continued)

Survey data and data from other studies indicate that Canandaigua Lake is oligotrophic. Algal assay results indicate that Canandaigua Lake was phosphorus limited in October 1972, the time the sample was collected. During the sampling year, Canandaigua Lake received a total phosphorus load at a rate a little less than that proposed as "permissible"; that is, an oligotrophic rate. The ban on phosphate detergents, together with the existing favorable loading rate, should preserve the oligotrophic condition of Canandaigua Lake. (PAV)

1974d. Report on Cannonsville Reservoir, Delaware County, New York: U.S. Environmental Protection Agency, Natl. Eutrophication Survey, Working Paper 150, 37 p.

Only limited survey data are available to assess the trophic condition of Cannonsville Reservoir; however, all evidence indicates that Cannonsville Reservoir is now eutrophic and is undergoing further eutrophication at an accelerated rate. No algal assay was performed on the water of Cannonsville Reservoir; however, nitrogen-to-phosphorus ratios (24:1) in May in the reservoir and in tributaries unaffected by point waste sources indicate that primary production in Cannonsville should be phosphorus limited. If point source phosphorus contributions to the West Branch, Delaware River were greatly reduced or eliminated, Cannonsville Reservoir has the potential of having very good water quality. (PAV)

1974e. Report on Carry Falls Reservoir, St. Lawrence County, New York: U.S. Environmental Protection Agency, Natl. Eutrophication Survey, Working Paper 151, 24 p.

Survey data show that Carry Falls Reservoir is mesotrophic. Algal assay results show that Carry Falls Reservoir was phosphorus limited at all sampling times. It is estimated that non-point sources contributed almost all of the phosphorus load to Carry Falls Reservoir during the sampling year. There are no known waste treatment plants affecting the Carry Falls Reservoir. (PAV)

1974f. Report on Cassadaga Lake, Chautauqua County, New York: U.S. Environmental Protection Agency, Natl. Eutrophication Survey, Working Paper 152, 24 p.

Survey data show that Cassadaga Lake is eutrophic. The results of algal assay indicate that Cassadaga Lake was phosphorus limited on all sampling occasions. Point-sources contribute 67 percent of the total phosphorus load. The statewide ban on phosphorus in detergents should result in a significant improvement in the trophic condition of Cassadaga Lake. (PAV)

1974g. Report on Cayuga Lake, Cayuga, Seneca and Tompkins Counties, New York: U.S. Environmental Protection Agency, Natl. Eutrophication Survey, Working Paper 153, 45 p.

Cayuga Lake is in very good trophic condition now and, from an overall standpoint, probably should be classified as oligo-mesotrophic. Algal assay control yield indicated primary productivity in the oligotrophic or slightly mesotrophic range. The Cayuga Lake control yield was exceeded by 80 percent of the other surveyed New York Lakes. The algal assay results, the lake chemistry, and data of others (Oglesby, 1974) indicate that Cayuga Lake is phosphorus limited. Cayuga Lake now receives a substantial phosphorus load from point sources that could be controlled, which is why the lake is not in eutrophic condition. (PAV)

1974h. Report on Chautauqua Lake, Chautauqua County, New York: U.S. Environmental Protection Agency, Natl. Eutrophication Survey, Working Paper 155, 38 p.

Survey data indicate that Chautauqua Lake is eutrophic. Results of the algal assay indicate that Chautauqua Lake was limited by nitrogen at the time the assay sample was taken. According to sources outside the survey (Hetling, 1974), Chautauqua Lake currently supports an excellent fishery, most notably for muskellunge. At the same time, in certain areas of the lake, excessive aquatic weed growths and phytoplankton blooms interfere with the esthetic and nonrecreational aspects of the lake. In this case of apparent conflict between lake uses, the detailed studies referred to above should include a determination of the optimum level of nutrient input to maintain a water quality adequate for the most important lake uses. (PAV)

1974i. Report on Conesus Lake, Livingston County, New York: U.S. Environmental Protection Agency, Natl. Eutrophication Survey, Working Paper 156, 29 p.

Survey data and the records of others (Ketelle and Uttormark, 1971) show that Conesus Lake is eutrophic. During the July 1972 sampling survey, limnologists noted an algal bloom in progress. Lake data indicate that nitrogen was limiting during the May and October 1972 samplings, and that phosphorus was limiting during the July sampling. It is estimated that nonpoint sources contributed about 93 percent of the total phosphorus reaching Conesus Lake. (PAV)

1974j. Report on Cross Lake, Cayuga and Onondaga Counties, New York: U.S. Environmental Protection Agency, Natl. Eutrophication Survey, Working Paper 157, 49 p.

Survey data indicate Cross Lake to be eutrophic. Survey limnologists described the appearance of Cross Lake as fair during the May and July 1972 samplings but quite turbid during the October sampling; hydrogen sulfide was noted in the deeper samples during the July and October sampling. Algal assay results indicate that Cross Lake was phosphorus limited at the time the assay sample was collected. Lake data also indicate that phosphorus was limiting in October as well as in May. However, the data indicate nitrogen limitation during the July sampling. This kind of temporal shift in limiting nutrient has been observed in other lakes. It seems that its extensive drainage area will ensure a eutrophic phosphorus loading to Cross Lake. (PAV)

1974k. Report on Goodyear Lake, Otsego County, New York: U.S. Environmental Protection Agency, Natl. Eutrophication Survey, Working Paper 158, 30 p.

Survey data show that Goodyear Lake is eutrophic. Survey limnologists observed heavy growths of rooted aquatic vegetation in the inlet arm of the lake. Algal assay results show that Goodyear Lake was phosphorus limited at all sampling occasions. The conclusion reached was that point-source control of phosphorus would not result in a significant improvement of the trophic condition of Goodyear Lake. (PAV)

1974l. Report on Huntington Lake, Sullivan County, New York: U.S. Environmental Protection Agency, Natl. Eutrophication Survey, Working Paper 159, 19 p.

Although Huntington Lake received a very small phosphorus load during the sampling year (1972), survey data indicate that the lake is eutrophic. Algal assay results indicate that Huntington Lake was phosphorus limited at all sampling occasions. Other than septic tanks, which deliver 10 pounds of phosphorus per year, there are no known point sources affecting Huntington Lake. (PAV)

1974m. Report on Keuka Lake, Yates and Steuben Counties, New York: U.S. Environmental Protection Agency, Natl. Eutrophication Survey, Working Paper 160, 29 p.

Survey data show that Keuka Lake is mesotrophic. Survey limnologists noted that the water was very clear on all sampling occasions, and no algal blooms were observed. The levels of nutrients observed in the lake at the time of sampling (1972) indicate a very low level of primary productivity. The lake data indicate phosphorus limitation at all sampling times. It does not appear likely that control of phosphorus from point sources would improve the trophic condition of Keuka Lake appreciably. (PAV)

1974n. Report on Long Lake, Hamilton County, New York: U.S. Environmental Protection Agency, Natl. Eutrophication Survey, Working Paper 161, 29 p.

Survey data indicate that Long Lake is mesotrophic. Lake data indicate that the lake was limited by phosphorus. Since the only known point sources (shoreline septic tanks) contributed less than 2 percent of the estimated total phosphorus load during the sampling year (1972), it is concluded that point-source control would have little effect on the trophic condition of Long Lake. (PAV)

1974o. Report on Lower St. Regis Lake, Franklin County, New York: U.S. Environmental Protection Agency, Natl. Eutrophication Survey Working Paper 162, 25 p.

Survey data indicate that the Lower St. Regis Lake is eutrophic. Lake data indicate phosphorus limitation at all sampling times. Point sources contributed 14 percent of the total phosphorus load, and nonpoint sources, 85 percent. (PAV)

1974p. Report on Otter Lake, Cayuga County, New York: U.S. Environmental Protection Agency, Natl. Eutrophication Survey, Working Paper 164, 19 p.

Survey data show that Otter Lake is eutrophic. Survey limnologists noted turbid water on all sampling dates with moderate algal blooms in progress during the July and October (1972) sampling periods. Lake data indicate phosphorus limitation at all sampling times. There are no known point sources affecting the lake, and the entire phosphorus load was contributed by nonpoint sources. During the sampling year (1972), there was an apparent loss of phosphorus from Otter Lake; that is, more phosphorus was measured leaving the lake than can be accounted for by all measured and estimated inputs. (PAV)

1974q. Report on Owasco Lake, Cayuga County, New York: U.S. Environmental Protection Agency, Natl. Eutrophication Survey, Working Paper 163, 12 p.

Survey data show that Owasco Lake is mesotrophic. Survey limnologists noted that the water was very clear on all sampling dates, and no algal blooms were observed. Algal assay results show that Owasco Lake was phosphorus limited during all sampling times. (PAV)

1974r. Report on Round Lake, Saratoga County, New York: U.S. Environmental Protection Agency, Natl. Eutrophication Survey, Working Paper 166, 26 p.

Survey data indicate that Round Lake is eutrophic. Lake data indicate that Round Lake was phosphorus limited in the fall but nitrogen limited at the other sampling times (1972). It is thought that point-source phosphorus control would have little effect on the existing trophic condition of Round Lake. (PAV)

1974s. Report on Sacandaga Reservoir, Fulton and Saratoga Counties, New York: U.S. Environmental Protection Agency, Natl. Eutrophication Survey, Working Paper 167, 38 p.

Survey data show that Sacandaga Reservoir is mesotrophic. Survey limnologists noted that the water was very clear on all sampling occasions, and no algal blooms were observed. The lake data indicate that phosphorus was the limiting nutrient at the time the assay was collected as well as the other sampling dates (1972). Phosphorus removal at the point sources would not be expected to appreciably change the trophic condition of the reservoir, but would provide additional protection for the existing trophic condition. (PAV)

1974t. Report on Saratoga Lake, Saratoga County, New York: U.S. Environmental Protection Agency, Natl. Eutrophication Survey, Working Paper 168, 35 p.

Survey data and data of others (Coffey, and others; 1974) indicate that Saratoga Lake is eutrophic. An algal bloom was in progress during the October 1972 sampling period. Despite the fact that some lake uses are impaired by algal blooms, Saratoga Lake supports an excellent fish population that includes some 25 species, and the lake is heavily used for sport fishing purposes. The results of algal assays indicate that nitrogen was the nutrient limiting primary production during the October 1972 sampling. However, data indicate that phosphorus had been limiting earlier in the growing season. This indicates that controlling phosphorus input alone would have a favorable effect on the trophic condition of the lake. (PAV)

1974u. Report on Schroon Lake, Essex and Warren Counties, New York: U.S. Environmental Protection Agency, Natl. Eutrophication Survey, Working Paper 169, 33 p.

Survey data indicate that Schroon Lake is oligotrophic. Survey limnologists noted that Schroon Lake exhibited high clarity and was clear of algal blooms at all sampling times (1972). Algal assay results indicate that Schroon Lake is phosphorus limited. It is apparent from data collected that a more detailed study of Schroon Lake nutrient sources is needed to provide a basis for assessment of nutrient controllability. (PAV)

1974v. Report on Seneca Lake, Schuyler County, New York: U.S. Environmental Protection Agency, Natl. Eutrophication Survey, Working Paper 170, 56 p.

Survey data indicate that Seneca Lake is mesotrophic. The algal assay results, lake chemistry, and data from other sources indicate that Seneca is limited by phosphorus. Of the total phosphorus load contributed by point sources, 68 percent comes from municipal waste treatment facilities. The statewide ban on phosphates in detergents may be expected to reduce the phosphorus loads from wastewater treatment plants by about 50 percent. (PAV)

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION II (continued)
1974w. Report on Swan Lake, Sullivan County, New York: U.S. Environmental Protection Agency, Natl. Eutrophication Survey, Working Paper 171, 25 p.

Survey data show Swan Lake to be eutrophic. High nutrient levels and heavy growths of rooted aquatic vegetation indicate lake deterioration. The algal assay results indicate that Swan Lake was limited by nitrogen. Nonpoint sources contributed nearly 74 percent of the total phosphorus load to Swan Lake during the sampling year. (PAV)

1974x. Report on Swinging Bridge Reservoir, Sullivan County, New York: U.S. Environmental Protection Agency, Natl. Eutrophication Survey, Working Paper 172, 41 p.

Survey data indicate that Swinging Bridge Reservoir is eutrophic. An algal bloom was noted during the July (1972) sampling. Lake data indicate phosphorus limitation in May and nitrogen limitation in July. October lake data indicate the north end of the lake was nitrogen limited and the south end was phosphorus limited. Eighty percent of the point source total phosphorus load is contributed by four wastewater treatment plants. The statewide ban on phosphates in detergents may be expected to reduce phosphorus loading from wastewater treatment plants by approximately 50 percent. (PAV)

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGIONS I AND II
1974. Report on Lake Champlain, New York and Vermont: U.S. Environmental Protection Agency, Natl. Eutrophication Survey, Working Paper 154, 206 p.

The main water body of Lake Champlain is currently in an acceptable trophic condition, although some of the embayments and South Lake Champlain have shown some signs of accelerated eutrophication. It is believed that the continued addition of unnecessarily high quantities of phosphorus will shorten the useful life of the lake. Algal assay tests indicate that phosphorus is the nutrient of major importance in controlling primary production in Lake Champlain. (PAV)

U.S. PUBLIC HEALTH SERVICE
1965. Water quality control study: Champlain Waterway--New York and Vermont: New York, N.Y., U.S. Public Health Service, Region II, 86 p.

The purpose of the study is to determine the need of storage for municipal and industrial water supply and quality control along the Champlain Canal and Lake Champlain, and to determine the effects of the existing canal and proposed improvements upon the quality of these water bodies. The study area includes a ten mile strip on either side of the two waterways and is located in northeastern New York and western Vermont. The report covers a study period to year 2020, as requested by the Corps of Engineers. (author)

U.S. WATER RESOURCES COUNCIL
1972. Genesee River basin, New York and Pennsylvania: Natl. Tech. Inf. Service, Environmental Impact Statement, 32 p.

This action involves comprehensive planning to meet projected water and related land needs through the year 2020, in the Genesee River basin. The plans for structural measures consist of 16 upland reservoirs and two multiple-purpose projects on the Genesee River from Pennsylvania through New York to Lake Ontario. The reservoir projects would provide water for irrigation, fish and wildlife habitats and municipal and industrial use, or provide recreation opportunities and insure flood protection. Aspects of the projects include channel improvements, levee construction and construction of dams and recreation areas. Nonstructural measures include land managment, reduced soil erosion, reduced sediment production and flood plain management including zoning, and flood warning and forecasting systems. Adverse environmental effects listed were: loss of about 7,500 acres of bottomland where the reservoirs are planned, loss of some free-flowing streams, and minor accelerated erosion during construction activities. (author)

UNIVERSITY OF VERMONT
1973. Survey of lake flooding from ERTS-1--Lake Champlain: Greenbelt, Md., Natl. Aeronautic and Space Adm., Remote Sensing Lab. Contract Rept., 9 p.

UNIVERSITY OF VERMONT (continued)

ERTS-1 imagery showing seasonal lake-level conditions in Lake Champlain can be used to assess shoreline change and flooding extent. Shoreline changes observed between ERTS coverages of October 10 (low water) and April 7 and 25 (high water) are readily apparent; enlargement of specific scenes by 4X provided data which can be transferred to a map base. The synoptic view provided by ERTS-1 makes it possible to map shoreline positions occurring at a specific lake stage. (author)

UPHAM, W.

1892. Relationship of the glacial lakes Warren, Algonquin, Iroquois, and Hudson-Champlain [abs]: Geol. Soc. Am. Bull. v. 3, p. 484-487.

This abstract discusses the geologic history of the glacial lakes Warren, Algonquin, Iroquois, and Hudson-Champlain. It details the old shorelines and mentions several present geographical locations that illustrate the glacial and geologic history. (GKS)

1905. Glacial lakes and marine submergence in the Hudson-Champlain valley: Am. Geologist, v. 36, p. 285-289.

This article discusses the origin and history of the Champlain-Hudson glacial lake as one body of water and later as two bodies at a continuous level. It presents a different view from that in another article by this author, which maintained that the Hudson and Champlain valleys were separate glacial lakes called Lake Albany and Lake Vermont, respectively. The article discusses the geological history of the area. (GKS)

VAN CLEAVE, H. J.
1923. Anacthocephala from the fishes of Oneida Lake, New York: Roosevelt Wildlife Bull., v. 23, p. 73-84.

The Acanthocephala are a genus of parasitic worms that spend their entire existence within the bodies of other animals. Specimens were collected between August 23 and September 17, 1917 from Oneida Lake. Only three species have been found in the fishes of Oneida Lake. Other species have been found elsewhere in North America. (GKS)

1934. (and Mueller, J. F.). Parasites of Oneida Lake fishes: Syracuse, N.Y., New York State Coll. Forestry Bull., v. 3, p. 161-334.

VanSANFORD, E. L.
1965. An ecological survey of four swamp and stream sites in central New York State: Syracuse, N.Y., Syracuse Univ., M.A. thesis, 98 p.

A partial checklist of the vascular plants found in four Central New York State swamp and stream sites is presented. Maps and descriptions of the successional stages of the vegetation are given for each site. Air, water, and soil temperature, sampling times, water and soil pH values, and relative humidity data for each week of sampling are presented and discussed. Differences in the geophysical characteristics and man's activities seemed to be the major factors involved in the variations of the vegetational character of the successional stages between and within the sites. (author)

VESLEY, M. L.
1971a. The Lake Erie Basin Committee: Buffalo, N.Y., Echo Issues, v. 1, no. 9, p. 3.

The interaction of the League of Women Voters in concern for water resources and their usage led to the formation of this group. Concerns and positions on various issues are given, including a bond issue for waste water treatment, legislative action on phosphates, and legislation to ban oil and gas exploration on Lake Erie. (author)

1971b. League of Women Voters of the United States, Lake Erie Basin Committee: Buffalo, N.Y., Echo Issues, v. 2, no. 2, p. 3-4.

The League of Women Voters describes the dilemma of waste disposal and its distribution forces on Lake Erie. Further discussion is made on New York State action concerning this matter. (author)

VINCENT, R. E.
1959. Some influences of domestication upon three stocks of brook trout (Salvelinus fontinalis Mitchell): Ithaca, N.Y., Cornell Univ., M.S. thesis, 89 p.

Three stocks of brook trout--domestic, wild, and first generation--were tested and observed for effects of domestication. The domestic stock had been selectively bred for 90 years, whereas the wild stock came from an isolated Adirondack mountain lake. To reduce differential environmental influence to a minimum, the three lots were reared from eggs in adjacent rearing troughs at the same water temperature. After 1 year under these hatchery conditions, the domestic fish were 5.2 inches in length and the wild fish, 3.6 inches. Throughout the rearing, domestic stock were tamer and exhibited less fright than wild stock fish. Survival was 43 percent for the domestic stock and 65 percent for the wild after 108 days in a pond, whereas length increase was 2.6 inches for the domestic and 2.5 inches for the wild stock. (GKS)

VOGEL, ALBERT
1973. Changes in the submerged aquatic flora at the south end of Cayuga Lake between 1929 and 1970: Ithaca, N.Y., Cornell Univ., M.S. thesis, 114 p.

Not a great deal has been done on the higher aquatic plants of Cayuga Lake, yet they are very conspicuous and a frequent cause for complaint by the swimming, fishing and boating publics. Extensive weed beds occur at both the south and north ends of Cayuga Lake. It is a widely held opinion that Myriophyllum exalbescens, or water milfoil, has "taken over" large areas of the lake and is rapidly spreading, to the overall detriment of the lake.

VOGEL, ALBERT (continued)

The purpose of this study was to determine the changes that have occurred in the submerged aquatic flora at the south end of Cayuga Lake over the past 40 years. The author hypothesizes that growth is now more abundant and is occurring over a larger area than formerly, and that fewer aquatic plant species are now present at the south end than formerly; Myriophyllum exalbescens is possibly the dominant species now. (author)

VON ENGELN, O. D.

1931. A preglacial or interglacial gorge near Seneca Lake, New York: New York State Mus. Bull. 286, p. 127-131.

An association of deposits in filled gorges in central New York might be regarded as indubitable evidence of at least two distinctly separated glacial invasions of that region. A filled gorge near Bellona, on Kashong Creek, on the west side of Seneca Lake, has the characteristics of such evidence. This article describes the geologic features of the area and gives evidence to support the theory of at least two ice invasions. (GKS)

1961. The Finger Lakes region--Its origin and nature: Ithaca, N.Y., Cornell Univ. Press, 156 p.

WAGNER, F. E.
1927a. Chemical investigations of the Genesee River system with special reference to pollution, in A biological survey of the Genesee River system: New York State Conserv. Dept., 16th Ann. Rept. Supp., p. 29-37.

A study of water conditions and the effects of natural, as well as artificially created influences, is essential to any policy of fish propagation. One of the first questions in such a study is pollution, the principal concern in this report. The types of pollution observed and evaluated were from milk condenseries, cheese factories, oil wells and refineries, paper mills, canning factories, salt refineries, chemical industries, wood products industries, and municipal sewage. (GKS)

1927b. Chemical investigations of the Oswego watershed, in A biological survey of the Oswego River system: New York State Conserv. Dept., 17th Ann. Rept. Supp., p. 108-132.

The greatest causes of pollution problems in the Oswego watershed, especially in the section around Oswego on Lake Ontario, are the woolen and paper industries and municipal sewage. This article describes the methods of investigation used and the specific sampling areas of the canal, stream, spring, and lake studies. The results of this investigation are tabulated. (GKS)

WAGNER, L. G.
1934. A limnological study of Greene Lake, Erie County, New York State: Buffalo, N.Y., State Univ. New York, M.S. thesis.

WAGNER, W. P.
1971. Glacial geology of the Champlain Valley: 1966-1970: Burlington, Vt., Vermont Univ. Water Resources Research Center Completion Rept., 11 p.

Detailed study of the distribution of surficial materials in the Champlain Valley, Vermont, established a framework for the glacial history and provided basic information relevant to water supply, waste disposal, and sand and gravel resources. Postglacial modifications of the glaciated landscape include stream incision of up to several hundred feet, deposition of stream alluvium, and progressive submergence of southern portions of the Lake Champlain basin due to isostatic uplift of the spillway to the St. Lawrence River. High yield water supplies from surficial materials are limited to alluvium but quantities sufficient for domestic supplies are available in most places. Septic systems and sanitary landfills are probably most favorably accommodated by delta sands and gravels. Sand and gravel supplies are provided by ice marginal deposits and upland deltas. (author)

WALKER, H. H.
1941. Fruitful shores of the Finger Lakes: Natl. Geog., v. 79, p. 559-594.

This article discusses the ways of making a living in the Finger Lakes region. It includes farming and marketing, recreation, and the natural and manmade scenic wonders. (GKS)

WALLE, E. M.
1970. A study of the bacterial populations and vitamin B^{12} levels in Calder Lake, New York: New York, Fordham Univ., Doctoral dissert., 298 p.

The number of bacteria per millilitre of lake water was determined weekly or bimonthly at 17 stations of different depths in Calder Lake for 14 months. The most probable number of coliforms and the fecal coliform counts were determined for each sample. Seasonal cycles were evident; maximum numbers occured during the summer months. The bacterial increases coincided roughly with the annual iron and phosphorus cycles, which confirms increased mineralization and nutrient regeneration during the summer months. (PAV)

WALSH, E. F.
1971. A study of seasonal nutrient cycles in Calder Lake, New York: New York, Fordham University, Doctoral dissert., 324 p.

A 15-month study extending from September 1968 through November 1969 was conducted in Calder Lake. Physical parameters measured onsite were temperature, oxygen, and light penetration. Chemical analyses were done for phosphorus, nitrogen, silicate, and chlorophyll. Temperature distribution was typical of a small, dimictic, temperate-zone lake. The oxygen content was

WALSH, E. F. (continued)
uniform in the colder months and was stratified in the warmer months, with a low oxygen content at the bottom and a high oxygen content in the upper strata. Phosphorus, nitrogen, silicate, and chlorophyll a show seasonal variations. (PAV)

WA-ONT-YA WATER RESOURCES BOARD

1973. Summary report on the recommended plan of the Wa-Ont-Ya basin Regional Water Resources Planning Board--Interboard plan for the Greater Finger Lakes-Oswego River Basin: Ithaca, N.Y., October 1973, Wa-Ont-Ya Water Resources Board, 47 p.

This report has been prepared by the Wa-Ont-Ya Basin Regional Water Resources Planning Board which was the second of the four boards formed in the Finger Lakes region. This report outlines the Wa-Ont-Ya Board's findings and presents a comprehensive plan to protect water and related resources of the Board's area of representation, and to satisfy future needs for utilization, management and development of these resources. The plan of the Wa-Ont-Ya Board emphasizes protection of existing environmental quality and conservation of the region's resources and results from careful consideration of needs and a wide range of alternatives to meet those needs. (author)

WARNER, KENDALL

1952. Factors limiting the abundance of land-locked salmon (Salmo salar seborga Girard) in Little Moose Lake, New York: Ithaca, N.Y., Cornell Univ., M.S. thesis, 125 p.

This thesis discusses the principal factors that limit the abundance of landlocked salmon. These factors are poor survival of the egg stage because of suffocation, incomplete use of the available spawning area and use of areas that seem inferior to others farther downstream, inadequate nursery area for salmon parr; and some loss of salmon by downstream migration in the spring. An improvement in egg survival would result in a material increase in the population of adult fish. (GKS)

WEBER, C.

1973. Public health requirements, in Human-accelerated eutrophication of Fresh-Water Lakes Conf., Proc.: Ossining, N.Y., Dec. 1973, p. 34-38.

Certain legal requirements must be observed in New York State before eutrophication control methods are undertaken. Part 327 of the rules and regulations promulgated by the New York State Department of Environmental Conservation provides that no person, including individuals, corporations, associations, organizations and so forth shall treat a lake or any body of water for purposes of control or elimination of aquatic vegetation by chemicals without first obtaining a permit. The regulation provides that the Department can review and evaluate applications and issue permits but specifically states that the permit-issuing official shall not make recommendations on the method, use, handling or efficiency of the chemical to be employed and the treatment method. Any permit that is issued will specify the type of chemical, the quantity, and the dates on which it can be applied. With respect to treatment involving dredging of lakes, the state has rules and regulations for the protection of streams which apply to such operations. (author)

WEBSTER, D. A.

1954a. A survival experiment and an example of selective sampling of brook trout (Salvelinus fontinalis) by angling and rotenone in an Adirondack pond: New York Fish and Game Jour., v. 1, no. 2, p. 214-219.

A 4.6-acre Adirondack pond was reclaimed in 1951 and was restocked with four groups of brook trout from wild and domestic sources in 1952 with the intention of observing relative survival. Owing to the inadvertent introduction of gill lice with one group of wild fish, the experiment was prematurely terminated in 1953. Angling in the pond and two subsequent treatments with rotenone produced different ratios in the recovery of the stocked fish and a group of naturally produced trout, the results of natural spawning in 1951 by adult trout which were missed in the original treatment. The ratio of the recovery for the four groups of stocked fish differed significantly from that expected on the basis of the stocking ratio. (author)

1954b. Smallmouth bass, Micropterus dolomieui, in Cayuga Lake. Part 1--Life history and environment: Ithaca, N.Y., Cornell Univ. Agr. Expt. Sta., Mem. 327, 39 p.

WEBSTER, D. A. (continued)

Two populations of smallmouth bass that frequent the west shore of Cayuga Lake are discrete, in that one is a spawning population and the other a winter aggregation. Although the two populations are separated by only a mile and a half of shoreline, recovery of bass tagged in the two areas indicates that they are also largely independent as individuals.

The absence of extensive gravel shoals and the predominance of deep water are probably important factors controlling the abundance of smallmouth bass in Cayuga Lake. As the principal food of bass is the alewife, the vertical distribution of the food species may in part determine bass distribution. (author)

1955. Cayuga, a lake trout laboratory: The Conservationist, v. 9, no. 5, p. 29-31.

Until the early 1940's, lake trout fishing was very poor in Cayuga Lake. An investigation that involved planting thousands of yearlings and fingerlings was started. Many fish were lake netted and marked for future study. The results of sampling through 1954 indicated that yearlings outnumbered fingerlings by about 4 to 1. Fingerlings have higher mortality rates; therefore, eight fingerlings are stocked for every yearling. Yearling plantings during the 1930's were probably responsible for the fish population rise of the early 1940's. The fingerlings planted during the 1930's did not always enter the water under best conditions or at best locations, which is why they did not survive better. (GKS)

1957. Finger Lakes rainbows--Review of suggestions for future management: The Conservationist, v. 12, no. 1, p. 10-11, 36.

This article summarizes the contents of three previous, related articles and discusses three important questions: (1) what are the problems in the maintenance of the present stocks of rainbows; (2) can these stocks be increased; and (3) what are the prospects for better fishing from present stocks. (GKS)

1958a. Cayuga Lake trout diary: The Conservationist, v. 12, no. 6, p. 16-18.

In 1946, the New York State Conservation Department began studying the biology and management of lake trout in Cayuga Lake. As one part of the study, each angler was asked to provide information on the content and makeup of his catch. Information to be supplied included fork length, weight, missing fins or tag number, and number and approximate length of fish released. This article summarizes the results of these diaries. (GKS)

1958b. Cayuga Lake trout--Their distribution and movements: The Conservationist, v. 13, no. 1, p. 14-15, 26.

Cayuga Lake has an area of 66 square miles and a maximum depth of 435 feet. Most of the lake is a potential trout habitat for much of the year. This article discusses depth distribution and seasonal movement of the trout in terms of a study of tagged fish. (GKS)

1958c. Cayuga Lake trout--Their food, growth, survival and management: The Conservationist, v. 13, no. 2, p. 11-13.

This article describes the lake trout's life cycle in Cayuga Lake. The main food of the trout is the alewife. Baby trout feed mostly on Pontoporeia and occasionally on bottom insects. Natural production of trout in Cayuga Lake is insignificant, presumably because of the poor quality of spawning areas. The hatching fish show satisfactory survival and produce high-quality angling. It appears that under present conditions, many more trout in the lake die of natural causes than are caught by angling. The present quality of fishing can probably be better maintained by hatchery plantings than by trying to improve spawning areas. (GKS)

1959. (Bentley, W. G., and Galligan, J. P.). Management of the lake trout fishery of Cayuga Lake, New York, with special reference to the role of hatchery fish: Ithaca, N.Y., Cornell Univ. Agr. Expt. Sta., Mem. 357, 83 p.

Lake trout fishing in Cayuga Lake has traditionally been poor compared with that of other Finger Lakes. A study was started in 1946 to evaluate fingerling versus yearling planting of hatchery-reared lake trout; to evaluate the contribution of hatchery planting to the total lake trout population; and to obtain data pertinent to the general lake trout management program in Cayuga Lake. (GKS)

WEBSTER, D. A. (continued)

1960a. (Lund, W. A., Jr., Wohl, R. W., and Youngs, W. D.). Observed and calculated lengths of lake trout (Salvelinus namaycush) in Cayuga Lake, New York: Am. Fisheries Soc. Trans., v. 89, no. 3, p. 274-279.

Back-calculated lengths of lake trout (Salvelinus namaycush) in Cayuga Lake were compared with empirical values. The body-scale relationship was sigmoid over a range of fish lengths of 6 to 26 inches; the method of back-calculation involved preparation of a body-scale ruler adapted for use on a conventional direct proportion calculating device. When compared graphically, calculated and observed mean lengths (through age 7) were in excellent agreement. Calculated data showed a significantly lower variance than did those observed. (author)

1960b. (and Flick, W.). Results of planting kokanee salmon in two Adirondack Mountain lakes, New York: Progressive Fish-Culturist, v. 22, p. 59-63.

This article describes the results of experimental stocking of advanced kokanee salmon fry in two lakes. The purpose was to observe the possible use of this species as a forage fish for landlocked salmon. (GKS)

1961. An unusual lake of the Adirondack Mountains, New York: Limnology and Oceanography, v. 6, no. 1, p. 88-90.

Honnedaga Lake possesses many unique features: the water clarity and color of high alpine lakes, the acidity and low total alkalinity of bog lakes, and the temperature and oxygen relationships of the Finger Lake. A once-varied fish fauna has disappeared, leaving only a single indigenous species. This article discusses the lake's basin characteristics, some of its physico-chemical characteristics, and the history of attempts to establish lake trout. (GKS)

1965. Leaping rainbows of the Finger Lakes: The Conservationist, v. 19, no. 5, p. 10-13.

The annual run of rainbow trout in the Finger Lakes attracts much attention. In the spring of 1964, Cornell University biologists studied the run to determine how the rainbow trout leaps over dams and other obstructions. This article discusses the work of the investigation and describes the hydraulics of the rainbows' leap. The article gives advice on how dams and fishing should be structured to prevent loss of the rainbows' spawning grounds. (GKS)

1970. Temperatures and related factors in lakes, part 1: The Conservationist, v. 24, no. 3, p. 12-15.

The seasonal cycle of certain major events in lakes and ponds is basically controlled by water temperature and its consequences. These consequences include changes in water density, in fish distribution, in oxygen supply, and in thermal stratification. (PAV)

1973. (and Otis, M. B.). Two New York facilities for fishery research and management, fish passage and collection on Cayuga Inlet and pilot artificial spawning and circulation channel at Myers Point, Cayuga Lake: Northeast Fish and Wildlife Conf., Mount Snow, Vt. 1973, Proc., 13 p.

WEEKS, J.

1968. Diurnal migrations of plankton in Seneca Lake: Corning, N.Y., Coll. Center of the Finger Lakes (unpub.).

WELCH, P. S.

1952. Limnology: New York, McGraw-Hill Publishers, Inc., 538 p.

This book is an outgrowth of a course in general limnology given by the author at the University of Michigan from 1936-52. All forms of inland waters are included in the text. The book contains five main parts: preliminary considerations, nature of inland-water environments, biological relationships, some special types of lentic environments, and lotic environments. (GKS)

WERNER, R. G.

1972a. Bluespotted sunfish, Enneacanthus gloriosus, in the Lake Ontario drainage, New York: Copeia, v. 1972, no. 4, p. 878-879.

WERNER, R. G. (continued)

E. Gloriosus is recorded from the Jamesville Reservoir. Meristic and morphometric data based on 54 specimens are presented. Sixteen species associates are noted. The route of invasion of the reservoir may have been via the Erie Canal or the New York State Barge Canal systems from the Hudson River, but introduction from aquariums is considered more probable. The population appears to be well established. (author)

1972b. (and Ford, D.). Technical report--Fisheries: Watertown, N.Y., Rept. to St. Lawrence-Eastern Ontario Comm., 63 p.

1973. Water quality--Limnological concerns about forest fertilization: Forest Fertilization Symposium, Proc., Upper Darby, Pa., Northeast Forest Expt. Sta., p. 23-186.

1974. Fisheries resources of the Catskills, in Fish and wildlife of the Catskill region: Rept. to Temporary [N.Y.] State Comm. to Study the Catskills, p. 23-186.

WESTMAN, J. R.

1939. (and Fahy, W. E.). The carp problem of the area, in A biological survey of the Lake Ontario watershed: New York State Conserv. Dept., 29th Ann. Rept. Supp., p. 226-231.

Dense populations of carp, Cyprinus carpio, in many of New York's lakes and ponds have long been recognized as a fisheries problem. The carp competes for food and space in the water and in some situations destroys weed beds and the spawning grounds of certain game fish. Nearly all the bodies of water studied during the 1939 season appear to support heavy populations of carp. Nothing definite is known concerning the role played by Lake Ontario in relation to these populations although some movement of fish through the outlets has been noted from time to time. In Long Pond and Irondequoit Bay, carp are in such large numbers as to discourage the anglers and this fact, coupled with the recent disappearance of large weed beds in these waters, has brought up the question of seining, either commercially or otherwise, as a possible means of controlling the species. (author)

WESTON, R. F.

1969. Feasibility of joint treatment in a lake watershed: U.S. Environmental Protection Agency, Water Pollution Control Research Ser., 113 p.

A feasibility study to determine the practicality of joint treatment of municipal and industrial wastewater was initiated in Onondaga County. The 24 industries in both the Ley Creek and the Metropolitan sanitary districts were questioned as to their production of wastewaters and provided effluent samples as requested. A sampling and analysis program was conducted to determine the characteristics of the wastewater effluents to both plants. Results indicated that although toxicity was a potential problem, it was causing no problems currently. (PAV)

WHIPPLE, J. M.

1971. Airplanes and hydrologists--A beneficial alliance: The Conservationist, v. 26, no. 2, p. 17-19.

The U.S. Geological Survey is using airplanes to collect water-resource data. It is virtually impossible to gather complete data on New York State surface waters by ground-based personnel; through air reconnaissance, more data can be accumulated and at less cost than by conventional data-collecting methods. The airborne data-collection capability is used to map flooded areas, to detect water-circulation patterns, and to determine energy exchanges at the air-water interface of surface-water bodies. (PAV)

1972a. Remote sensing of New York lakes: U.S. Geol. Survey Jour. Research, chap. C, p. C243-C247.

Reverse flow through the outlet of Onondaga Lake and thermal activity associated with the spring mixing of Cayuga Lake were discerned on thermal-infrared imagery. Thermal radiances of natural and artificial discharges into Lake Ontario were measured, delineating the thermally pulsating nature of discharges into the open lake and thermal relationships between water masses. Quantitative imagery (radiometry) will become most useful in defining energy exchanges at the air-water interface. (author)

1972b. (and Greeson, P. E.). Aerial photography of wind streaks on Oneida Lake, New York: U.S. Geol. Survey Prof. Paper 800-D, p. D193-D197.

WHIPPLE, J. M. (continued)

Extensive wind streaks are visible on vertical aerial black and white photographs of Oneida Lake, October 23, 1967. Development and orientation of streaks appears to be related to wind direction, fetch and bottom topography. Massive streaks are separated by less well defined streaks, and streak directions change by parallel offsets of short segments. Streak spacing can be measured directly on vertical aerial photographs more effectively than at the water surface, and streak intensities can be discerned. The formation of wind streaks can be observed through use of repeated photography. (author)

WIGLEY, R. L.

1953. The life history of the sea lamprey, Petromyzon marinus linnolus, of Cayuga Lake, New York: Ithaca, N.Y., Cornell Univ., Doctoral dissert., 360 p.

The main reason for this study was the sea lamprey's invasion and rapid multiplication in the upper Great Lakes, which was coincident with the drastic decline of food fishes. This thesis discusses the materials and methods used to catch lampreys; lamprey's mensural characteristics; spawning and migration; egg development and habits of ammocoetes (young); parasitic habits; and parasites and predators of the sea lamprey. (GKS)

WILLIAMS, K. L.

1972. (and Reed, L. A.). Appraisal of stream sedimentation in the Susquehanna River basin: U.S. Geol. Survey Water-Supply Paper 1532-F, 24 p.

The Susquehanna River transports about 3.0 million tons of sediment annually (110 tons per square mile). About 1.8 million tons of this sediment enters the head of Chesapeake Bay annually because some of the sediment is trapped behind the poner dams on the lower Susquehanna. Measured annual sediment yields from subbasins in the Susquehanna range from 40 to 440 tons per square mile. The highest yields are from parts of the glaciated section of the basin and the Appalachian high plateau. There has been a downward trend of sediment discharge in recent years; however, in the future, the high sediment yields associated with urbanization may offset this trend. (author)

WILLIAMS, S. L.

1973. (Colon, E. M., Kohberger, R., and Cleseri, N. L.). Response of plankton and periphyton diatoms in Lake George to the input of nitrogen and phosphorus, in Bioassay techniques and environmental chemistry: Ann Arbor, Mich., Ann Arbor Sci. Pub., Inc., p. 441-466.

This report presents some of the results of measurements taken on unrestricted Lake George water. Specifically this involved measuring the apparent effect, through regression analysis, of both the nitrate and phosphorus that is present in the lake and that enters through precipitation. Types of measurements taken include flask-type algal assays performed in the laboratory, onsite plastic bag assay experiments, and long-term measurements of algal populations, including their environmental chemistry and zooplankton predators in unrestricted lake water. (PAV)

WILLING, PETER

1973. Development of management alternatives for the Owasco Lake watershed: Ithaca, N.Y., Cornell Univ., M.S. thesis, 143 p.

This thesis uses the watershed of Owasco Lake, one of the Finger Lakes, as an example to illustrate the means for evaluating environmental health and, further, to illustrate principles that should be observed in designing a strategy to rectify perturbations in the environment. This study includes: a brief review of the different kinds of resource inventories and several ways of evaluating the environmental impact of technological and cultural forces; an examination of the physical resource base of the Owasco Lake watershed; a description of ecological processes taking place in the watershed; an analysis of existing problems; and some options for resource management. (PAV)

WILSON, F. W.

1955. Lampreys in the Lake Champlain basin: Am. Midland Naturalist, v. 54, no. 1, p. 168-173.

This article summarizes, as a background, all published information on lampreys in the Lake Champlain basin and investigates the breeding activities of lampreys in this region. (PAV)

WINDER, C. G.
1952. The stratigraphy of the Cayuga Lake region, New York--An outline: Compass, v. 29, p. 259-265.

WINKELBLECH, C. S.
1955. Farm ponds in New York: Ithaca, N.Y., Cornell Univ. Agr. Expt. Sta., Ext. Bull. 949, 32 p.

This publication is written to guide landowners in the selection of pond sites. It explains some of the principles of design and construction that are effective and economical under most conditions. (GKS)

WINKKY, R. H.
1967. Benthos of Seneca Lake with emphasis on the profundal zone: Corning, N.Y., Coll. Center of the Finger Lakes (unpub.).

WITHERSPOON, D. F.
1972. Storage in the water balance of the Lake Ontario basin, in World Water Balance, Internat. Assoc. Sci. Hydrol., World Meteorological Organization, and UNESCO, Reading Symposium, Reading, England, 1970, Proc., p. 283-288.

Using a hydrologic model based on the water balance, the annual run of storage and its extremes are studied to determine the significance of this factor in the balance of a large land basin of 27,100 square miles which contributes to the local inflow of Lake Ontario. Estimates obtained are reasonable when compared with values estimated from the physical and hydrologic characteristics of the basin. These estimates demonstrate the relative importance of storage to the month by month hydrology of the basin. The storage of the basin is approximately equivalent in volume to that available within the range of stage of Lake Ontario allowable by international agreement between Canada and the United States. (author)

WOHL, R. W.
1958. Efficiency of chicken-wire traps in New York farm ponds containing largemouth bass and bluegill sunfish: Ithaca, N.Y., Cornell Univ., M.S. thesis, 42 p.

Inch-mesh chicken-wire traps appear to be a highly effective, economical means to harvest bluegill populations in small farm ponds. In balanced ponds, by placing one or two traps in the best locations and lifting them every evening, a pond owner might expect to remove 30 percent of the bluegills over 3.8 inches long in 2 or 3 weeks. More trapping in balanced ponds could possibly reduce the population too much, which could result in a heavy reproduction of bluegills that the bass would not be able to control. Therefore, caution should be exercised when trapping in balanced ponds. (GKS)

WOLDT, ARTHUR
1970. (and Gavagan, J. R.). DDT testing of lake fishes continues: The Conservationist, v. 25, no. 1, p. 28-29.

New York lakes are being sampled in an effort to determine the DDT residue in fish. Monitoring will continue until 100 lakes in the State have been investigated. At the writing of this article, 16 lakes had been sampled. (PAV)

1971. Lunkers at large: The Conservationist, v. 25, no. 6, p. 2-3.

Public fishing at Tomhannock Reservoir in Rensselaer County is providing a new source of recreation and is furthering the multiple-use concept for resources. The U.S. Fish and Wildlife Management Act of 1957 provided the New York State Department of Environmental Conservation authority to develop and administer such recreation programs. (PAV)

WOLFRUM, W. H.
1953. An evaluation of warm water fish management in New York farm ponds: Ithaca, N.Y., Cornell Univ., M.S. thesis, 128 p.

This thesis discusses the result of several years of bass and bluegill fish stocking in New York farm ponds. The purposes of this study were: to evaluate the success of the recommended 1:10 ratio for stocking largemouth bass and bluegill; to investigate the possibility of stocking these species at other than 1:10 ratios; and to explore the possibilities for other species

WOLFRUM, W. H. (continued)
combinations. Twenty-six ponds were inspected. Ponds stocked at the 1:10 ratio and kept free of contamination were generally successful; 75 percent of these remained balanced, whereas only 35 percent of those stocked at other ratios remained in balance. The most common cause of unbalanced populations was overcrowding by bluegill or another introduced species. The thesis also summarizes other findings. (GKS)

WOOLE, W. F.
1882. Fresh-water algae. VI: Torrey Bot. Club Bull., v. 9, p. 25-30.

This is a partial list of freshwater algae collected by the author and by interested contributors during the summer of 1881. The addition to the recognized forms of the algae of the United States was not as large as that made in some previous years; nevertheless, it indicates that waters of the United States had not yet been fully explored. (GKS)

WOODCOCK, A. H.
1965. Melt patterns in ice over shallow waters: Limnology and Oceanography, v. 10, p. R290-R297.

Evidence is presented that convection currents as well as pressure may be involved in the formation of the cell-like melt centers that are often seen in ice sheets formed over natural waters. Pressure due to the weight of snow supplies the primary force necessary to cause the flow of water producing the melting. Convective overturning of the water under the ice and the consequent differential melting of the underside of the ice are thought to influence the position at which the melt centers become established.

Temperature data are given showing the presence of convective overturning of shallow water under ice due to solar radiation absorption there. Pressure measurements are also given, indicating the change in the equilibrium water level with reference to a 25-cm thick ice cover immediately after a heavy snowfall. (author)

WOODROW, D. L.
1969. (Blackburn, T. R., and Monahan, E. C.). Geological, chemical, and physical attributes of sediments in Seneca Lake, New York: Internat. Assoc. Great Lakes Research, 12th Conf. Great Lakes Research, Proc., Ann Arbor, Mich., p. 380-396.

In Seneca Lake, coarse-grained, heterogenous sediments cover the bottom near the shoreline; fine-grained, cohesive clays occur on the lake slope; and very fine-grained, non-cohesive muds are found on the floor of the deep lake. Clays comparable to those exposed on the lake slope are overlain at the top of the slope by near-shore sediments and at the base of the slope by deep lake sediments, suggesting that the lake slope sediments are the oldest ones sampled. Values of chemical and physical parameters are plotted and contoured on maps of the lake. The contours are generally parallel to bathymetric contours. Oxygen values are highest in near-shore sediments, sulfide and chloride values are highest in deep lake sediments, and pH is near neutrality in all sediments. Densities of the sediments range from 1.85 near the shoreline to 1.05 in the deep lake. The shear strength of near-shore sediments is approximately three times that of deep lake sediments. (author)

WRIGHT, S. K.
1971. Land use and natural resources--Inventory of the Canadarago Lake watershed in Herkimer and Otsego Counties, New York State: Ithaca, N.Y., Cornell Univ. Water Resources and Marine Sci. Center, 19 p.

The Center for Aerial Photographic Studies at Cornell University has completed a Land Use and Natural Resource Inventory (LUNR) for the New York State Office of Planning Services. A large percentage of the information in the inventory was gathered from aerial photographs, as well as other sources. The information is compiled in a computer retrieval system. This report demonstrates the use of the LUNR inventory.

Two kinds of information are included in this report. The first kind provides data about the area and the different kinds of land uses. The second provides a count of: water resources, housing, and farm information.

Canadarago Lake was chosen for this pilot report because of the intensive study and action on lake eutrophication problems being done by federal, state, and local agencies, organizations, and units of government. (author)

WRIGHT, S. K. (continued)

1972. Development of a model educational program to improve environmental decision making in a lake watershed--Canadarago Lake, New York: Ithaca, N.Y., National Symposium of the Social and Economic Aspects of Water Resources Development, Proc., p. 71-75.

The background and history of Canadarago Lake pollution problems are described. A model program to improve decision making dealing with the water quality of Canadarago lake is presented. The basic philosophy of this model educational program is that a process of communication can be developed which will enable citizens and leaders to make informed decisions based on a clear understanding of alternatives; it can also assist citizens and leaders to mobilize resources to take action on environmental problems. The three stages of this educational model are discussed: audience identification and fact finding; coordination of communications; and motivation for community action. Methods of evaluating the educational model are explained. (author)

YOUNGS, W. D.

1957. The effect of the mandible ring tag on growth and condition of fish: Ithaca, N.Y., Cornell Univ., M.S. thesis, 62 p.

The effect of mandible ring tags on the length, weight, and condition of five species of fish was studied. Three methods of analysis to determine this effect are described. These methods included an analysis of variance for one age group in one environment; an analysis of variance for one age group in several environments; and a regression method of analysis for more than one age group in a single environment. Length, weight, and condition were compared in 10 instances. Length of tagged and untagged fish was significantly different in seven instances; weight was significantly different in four instances; and condition was significantly different in two instances. The effect of mandible ring tags on length, weight, and condition varied from species to species and between sexes within a species. A general trend noted in tagged fish was that they were consistently lower in length, weight, and condition than untagged fish. The results of this study indicate that mandible ring tags may alter growth; hence some modification is required if tagged fish are used for interpreting growth studies. Consideration should be given to the possible effect of reduced growth on mortality. (GKS)

1972a. An estimate of lamprey-induced mortality in a lake trout population: Ithaca, N.Y., Cornell Univ., Doctoral dissert., 147 p.

Perhaps the most significant reason for studying the Cayuga Lake system is to predict the effects that removal of the lamprey population will have on the lake trout population. If lamprey-induced mortality is a major component of total mortality in the lake trout population, it may prove necessary to adjust the stocking levels for lake trout. An increase in the lake trout population could cause a decline or collapse in the alewife population. Reduction of the alewife population would be reflected by a slower growth in lake trout. However, slower growth rates in lake trout would be apparent only after a time lag of several years. The overall effect, therefore, of lamprey removal might be undesirable. (author)

1972b. (and Oglesby, R. T.). Cayuga Lake--Effects of exploitation and introductions on the salmonoid community: Fisheries Research Board Canada Jour., v. 29, no. 1, p. 787-794.

Cayuga Lake, a glacially formed, warm monomictic lake, has an area of 172.1 km^2 and a mean depth of 54.5 m. It now exhibits qualitative signs of eutrophication in phytoplankton composition and aquatic vegetation. However, hypolimnetic oxygen depletion has not changed to any great extent over the last fifty years.

Early commercial fisheries were for nonsalmonoid species. Whitefish have apparently never been common in the lake, though cisco have at times been abundant. In recent times lake and rainbow trout have provided an appreciable sport fishery. The lake trout population is maintained by annual stocking at a level that provides good sport fishing. Natural reproduction is not successful for lake trout, presumably due to siltation of spawning areas. Introduced species appear to have caused changes in the native fish community. (author)

1972c. (Gutenmann, W. H., and Lisk, D. J.). Residues of DDT in lake trout as a function of age: Environmental Sci. and Technology, v. 6, no. 5, p. 451-452.

In lake trout of accurately known age, residues of DDE, DDD, and DDT increased progressively with age from about 1 ppm at 1 year to concentrations of about 14 ppm or higher at 12 years. The correlation between total residues (DDE, DDD, and DDT) in fish and their age was highly significant. (author)

1974. Estimation of the fraction of anglers returning tags: Am. Fisheries Soc. Trans., v. 103, no. 3, p. 616-618.

ZAHORCAK, C. L.

1974. Formulation of a numbers-biomass model for simulating the dynamics of aquatic insect populations: Troy, N.Y., Rensselaer Polytech. Inst., Fresh Water Inst., Rept. 74-13, 41 p.

A mathematical model for benthic insects, particularly Chironomids, has been developed by coupling a number balance differential equation to a widely used biomass balance differential equation. The general numbers-biomass algorithm which is developed is suitable for modeling other organisms such as zooplankton and fish. The numbers equation was formulated by grouping those process terms from the biomass equation which involve the loss of discrete numbers of organisms. The mean weight of population can be calculated with the addition of this equation and can then be incorporated as a variable in this calculation of process terms such as consumption and respiration. The population has been divided into size classes to make mean weight a more accurate and representative variable; each class has a numbers and a biomass equation from which its mean weight is calculated. (author)

ZILLIOX, R. G.

1958. (and Youngs, W. D.). Further studies on the smelt of Lake Champlain: New York Fish and Game Jour., v. 5, no. 2, p. 164-174.

Studies were conducted during February and March in 1948 and 1950 to determine the status of the smelt fishery in Lake Champlain. Data were available for comparative purposes from a detailed study conducted during a similar period in 1929.

Two major races of smelt inhabit Lake Champlain and are referred to as the small race and the large race. The small race was found to be less numerous in the 1948 and 1950 samples than in the 1929 sample. Growth data are compared for samples of the large race collected in 1929 and 1950. The growth of males and females, in the 1950 sample, showed no significant difference between mean lengths for three of the five age classes tested. (author)

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Greene, C. W., 1931.

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BENZ POND
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McVaugh, R. S., 1937.

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Faigenbaum, H. M., 1930.
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Greene, C. W., 1931.
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Greene, C. W., 1933.

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Faigenbaum, H. M., 1930, 1931.
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Burdick, G. E., 1939.
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Claasen, R. T., 1939.
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Greene, C. W., 1933.

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Greene, C. W., 1931.
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Hunter, G. W., III, 1936.

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Faigenbaum, H. M., 1929.
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LeFler, V. M., 1934.

CRYSTAL LAKE
Embody, G. C., 1928.
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Faigenbaum, H. M., 1932.
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Faigenbaum, H. M., 1931, 1939.
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Goodwin, R. H., 1943.
Muenscher, W. C., 1938.

DEERFLY POND
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Heady, H. F., 1942.
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Greeley, J. R., 1934.
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Martin, R. O., 1966.
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Faigenbaum, H. M., 1937.
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Greeley, J. R., 1935.

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Diment, W. H., 1969.
Stewart, K. M., 1969, 1971, 1974.

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Sibley, C. K., 1930.
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Greene, C. W., 1931.

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Faigenbaum, H. M., 1932.

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Greene, C. W., 1931.

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Greene, C. W., 1931.
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Mason, C. P., 1961.

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Struthers, P. H., 1931.

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Faigenbaum, H. M., 1931.
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Forney, J. L., 1964c.
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Odell, T. T., 1930.
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DUCK LAKE
Bishop, S. C., 1933.
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Greene, C. W., 1932.

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Faigenbaum, H. M., 1930.
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Faigenbaum, H. M., 1934.
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Greene, C. W., 1933.
Pate, V. S., 1933.

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Embody, G. C., 1928.

EAST FRENCH POND
Faigenbaum, H. M., 1931.

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Greene, C. W., 1931.

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EAST POND
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Stewart, Ronald, 1972.

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Greene, C. W., 1934.

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Faigenbaum, H. M., 1931.

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Helmrich, William, 1960.

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Jackson, D. F., 1961.
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Taylor, B. F., 1897.

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Stewart, Ronald, 1968a, 1968b, 1972.
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Fuhs, G. W., 1974.
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Coon, R. F., 1960.
Fairchild, H. L, 1899b.
Hasser, E. G., 1954.
Karrow, P. F., 1961.
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Muenscher, W. C., 1932.

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Schumacher, G. J., 1969.

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Markle, M. S., 1950.
Ries, H., 1893.

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Greene, C. W., 1931.

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Faigenbaum, H. M., 1932.
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Greene, C. W., 1931.

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Needham, J. G., 1901.

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Faigenbaum, H. M., 1930.
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Greene, C. W., 1931.

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Needham, J. G., 1901.
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Schofield, C. L., Jr., 1962.
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Greene, C. W., 1931.
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Greene, C. W., 1931.

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Scavia, Donald, 1972.
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Pierce, M. E., 1958, 1959, 1960a, 1960b, 1961a, 1961b, 1962, 1963.

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Carpenter, K. E., 1929.

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Smith, B. L., 1937.

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Hazzard, A. S., 1929.

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Faigenbaum, H. M., 1931.

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Faigenbaum, H. M., 1933.

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Greeley, J. R., 1930.
Hazzard, A. S., 1930.
Hulbert, D., 1972.
Hunter, G. W., III, 1930, 1931.
Martin, R. O., 1966.

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Myer, G. E., 1973a.
Trembley, F. J., 1930.

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Tressler, W. L., 1936.

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Odell, T. T., 1936.

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Greene, C. W., 1933.

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Faigenbaum, H. M., 1932.
Greeley, J. R., 1932.

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Faigenbaum, H. M., 1939.
Senning, W. C., 1938.

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Faigenbaum, H. M., 1936.

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Hazzard, A. S., 1930.

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Faigenbaum, H. M., 1931.

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Faigenbaum, H. M., 1936.
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Odell, T. T., 1936.

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Greene, C. W., 1931.

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Greene, C. W., 1931.

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Faigenbaum, H. M., 1930.
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Faigenbaum, H. M., 1930.

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Martin, R. O., 1966.

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Reynolds, N. B., 1974.

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Faigenbaum, H. M., 1933.
Greeley, J. R., 1933.
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Faigenbaum, H. M., 1931.

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Greeley, J. R., 1932.
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Greene, C. W., 1931.
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Greeley, J. R., 1930.

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Faigenbaum, H. M., 1939.

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Hatch, R. W., 1961.
Schofield, C. L., Jr., 1971b.

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Hall, D. J., 1968.
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Faigenbaum, H. M., 1936.
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Faigenbaum, H. M., 1930, 1931, 1938.
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Faigenbaum, H. M., 1938.

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Blum, J. L., 1953.

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Burkholder, P. R., 1929, 1931b.
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LeFler, V. M., 1934.

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Rowlee, W. W., 1918.

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Martin, R. O., 1966.

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Faigenbaum, H. M., 1930.
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Faigenbaum, H. M., 1935.
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Pate, V. S., 1932.

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Faigenbaum, H. M., 1935.
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Faigenbaum, H. M., 1933.
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Senning, W. C., 1938.

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Claasen, R. T., 1939.

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Faigenbaum, H. M., 1932.
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Greene, C. W., 1931.

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Green, C. W., 1931.
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Brian, Michael, 1969.
Harman, W. N., 1974a.
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Claasen, R. T., 1939.
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Needham, J. G., 1901.

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Faigenbaum, H. M., 1931.
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Greene, C. W., 1931.

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Claasen, R. T., 1939.
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Senning, W. C., 1939.

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Greeley, J. R., 1939.
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Scavia, Donald, 1972.

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Faigenbaum, H. M., 1932, 1935.
Greeley, J. R., 1932, 1935.
Greene, C. W., 1931, 1932.

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Faigenbaum, H. M., 1936.
Muenscher, W. C., 1936.
Smith, G. M., 1924.

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Berg, C. O., 1966.
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Greene, C. W., 1931, 1932, 1933.
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Faigenbaum, H. M., 1934.

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Cook, A. H., 1952.
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Transeau, E. N., 1943.

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Lee, J. A., 1951.

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Faigenbaum, H. M., 1937.
McVaugh, R. S., 1937.
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Brunskill, G. J., 1967, 1969a.
Diment, W. H., 1967.
Eggleton, F. E., 1956.
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Muenscher, W. C., 1931.

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Faigenbaum, H. M., 1929, 1930, 1932.
Greeley, J. R., 1930.
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Trembley, F. J., 1930.

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Goodwin, R. H., 1943.

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Faigenbaum, H. M., 1935.
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Faigenbaum, H. M., 1937.
Fairchild, H. L., 1896.
Martin, R. O., 1966.
Odell, T. T., 1937.
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Cowell, B. C., 1963.

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Greene, C. W., 1931.
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Claasen, R. T., 1939.
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Barbehenn, K. R., 1952.
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Wohl, R. W., 1958.

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Fetter, C. W., Jr., 1974.

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Faigenbaum, H. M., 1930.
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Greeley, J. R., 1930.
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Hohn, M. H., 1951.
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Faigenbaum, H. M., 1934.
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Burkholder, P. R., 1931b.

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Saila, S. B., 1950.

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Fliegel, M. H., 1973.
Foote, C. W., 1877.
Fox, W. I., 1932.
Gage, S. H., 1893, 1927a, 1927b.
Gates, C. D., 1968.
Gerace, D. T., 1967.
Greeley, J. R., 1927b.
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Royce, W. F., 1943.
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Kramek W. C., 1972.

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Pate, V. S., 1933.

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Embody, G. C., 1928.

SIX BERRY LAKE
Greene, C. W., 1931.
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SIXTH LAKE
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Greene, C. W., 1931.

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Hatch, R. W., 1956, 1957a, 1957b.
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Rayner, H. J., 1941.
Reckahn, J. A., 1961.
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Stone, U. B., 1957.
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Embody, G. C., 1928.

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N.Y. State Dept. Health, 1956.

SLENDER POND
Greene, C. W., 1931.

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Muenscher, W. C., 1938.

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Embody, G. C., 1928.
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Greene, C. W., 1931.
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Greene, C. W., 1931.
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Greene, C. W., 1931.
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Greene, C. W., 1934.

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Faigenbaum, H. M., 1935.
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Faigenbaum, H. M., 1931.
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Faigenbaum, H. M., 1933.
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Greene, C. W., 1931, 1933.
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Burkholder, P. R., 1931b.
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Burkholder, P. R., 1929.

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Greene, C. W., 1933.

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Greene, C. W., 1931.

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Greeley, J. R., 1930.
Hazzard, A. S., 1930.
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Fairchild, H. L., 1896.

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Greene, C. W., 1931.
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Smith, G. M., 1924.

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Martin, R. O., 1966.

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Bath, D. W., 1973b.
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Embody, G. C., 1928.

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Faigenbaum, H. M., 1931.
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Muenscher, W. C., 1934.
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Faigenbaum, H. M., 1933.
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Faigenbaum, H. M., 1931.
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Greene, C. W., 1931.

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Schumacher, G. J., 1969.

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Martin, R. O., 1966.
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Muenscher, W. C., 1932.

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Odell, T. T., 1936.

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Faigenbaum, H. M., 1933.
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Faigenbaum, H. M., 1932.

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Greene, C. W., 1933.

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Faigenbaum, H. M., 1936.
Martin, R. O., 1966.
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Muenscher, W. C., 1930a, 1930b, 1931.
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Faigenbaum, H. M., 1935.
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Faigenbaum, H. M., 1934.

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Greene, C. W., 1933.

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Greene, C. W., 1934.
La Rock, P. A., 1969.

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Faigenbaum, H. M., 1934.
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Greene, C. W., 1931.

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Faigenbaum, H. M., 1935.
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Faigenbaum, H. M., 1930.
Moon, F. F., 1921.
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Faigenbaum, H. M., 1934.
Greene, C. W., 1934.

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Faigenbaum, H. M., 1939.
Senning, W. C., 1939.

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LeFler, V. M. 1934.

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Faigenbaum, H. M., 1936.

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Faigenbaum, H. M., 1929, 1930, 1932, 1934.
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Greene, C. W., 1934.
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Dudley, W. R., 1886.
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Kingsbury, J. M., 1968.
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Muller, E. H., 1964.
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Faigenbaum, H. M., 1935.

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Bishop, S. C., 1933.
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Faigenbaum, H. M., 1933.
Greeley, J. R., 1933.
Hall, D. J., 1968.
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Faigenbaum, H. M., 1929.
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Faigenbaum, H. M., 1931.

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Faigenbaum, H. M., 1931.
Greene, C. W., 1931.
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Faigenbaum, H. M., 1931.
Greene, C. W., 1931.
Muenscher, W. C., 1931.
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Odell, T. T., 1931.
Sibley, C. K., 1931.

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Saila, S. B., 1952.

UNION SPRINGS POND
Burkholder, P. R., 1929, 1931b.
LeFler, V. M., 1934.

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Hazzard, A. S., 1929.

UPPER BLACK BROOK POND
Faigenbaum, H. M., 1932.
Greene, C. W., 1932.

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Bishop, S. C., 1933.
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Greene, C. W., 1933.

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Faigenbaum, H. M., 1933.

UPPER CHASE LAKE
Faigenbaum, H. M., 1931.
Greene, C. W., 1931.

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Faigenbaum, H. M., 1930.
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UPPER COHASSET POND
Odell, T. T., 1936.

UPPER COUNTY LINE POND
Faigenbaum, H. M., 1933.
Greene, C. W., 1933.

UPPER DUG MOUNTAIN POND
Faigenbaum, H. M., 1932.
Greeley, J. R., 1932.

UPPER ESOPUS LAKE
Faigenbaum, H. M., 1936.

UPPER GOOSE POND
Hazzard, A. S., 1930.

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Faigenbaum, H. M., 1931.

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Burkholder, P. R., 1932.
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Greeley, J. R., 1932.
Greene, C. W., 1932.
Muenscher, W. C., 1932.
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Pate, V. S., 1932.

UPPER KANAWAUKE LAKE
Smith, G. M., 1924.

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Odell, T. T., 1936.

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Greene, C. W., 1931.

UPPER LAKE COHASSET
N.Y. State Dept. Health, 1953b.

UPPER LAKE KANAWAUKE
Faigenbaum, H. M., 1936.
N.Y. State Dept. Health, 1953b.

UPPER LOOMIS POND
Faigenbaum, H. M., 1932.
Greene, C. W., 1932.

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Greene, C. W., 1931.

UPPER ONEIDA RESERVOIR
Embody, G. C., 1927b.

UPPER PRESTON POND
Mack, G. L., 1964.

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N.Y. State Dept. Health, 1960b.

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UPPER ST. REGIS LAKE
Greeley, J. R., 1929, 1930.
Hazzard, A. S., 1930.
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Odell, T. T., 1930.
Sibley, C. K., 1930.
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Burdick, G. E., 1964.

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Faigenbaum, H. M., 1929.
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Faigenbaum, H. M., 1933.
Greene, C. W., 1933.

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Greene, C. W., 1931.

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Greene, C. W., 1932.

UPPER SISTER LAKE
Greene, C. W., 1931.
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Faigenbaum, H. M., 1939.

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Hatch, R. W., 1961.

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Bishop, S. C., 1933.
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Faigenbaum, H. M., 1932.

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Bennett, H. C., 1897.

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Kingsbury, J. M., 1968.

VANDEMARK POND
LeFler, V. M., 1934.

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N.Y. State Dept. Health, 1957.

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Greene, C. W., 1932.

VANN POND
Saila, S. B., 1952.

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Muenscher, W. C., 1932.

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Faigenbaum, H. M., 1939.
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VESA POND
Wohl, R. W., 1958.

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Faigenbaum, H. M., 1938.
Senning, W. C., 1938.

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Faigenbaum, H. M., 1939.
Senning, W. C., 1938.

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Senning, W. C., 1939.

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Faigenbaum, H. M., 1936.
Hunter, G. W., III, 1936.
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Faigenbaum, H. M., 1934.
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Coon, R. F., 1960.
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Egelston, J. R., 1962.
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Hatch, R. W., 1961.
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Odell, T. T., 1931, 1932, 1934a, 1935, 1936, 1937.
Oglesby, R. T., 1969, 1970, 1973a, 1973b, 1974a, 1974b.
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Stross, R. G., 1973, 1974a, 1974b.
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La Row, E. J., 1972.
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Forney, J. L., 1961b, 1961c, 1962, 1963b, 1963c, 1964b, 1964d, 1965a, 1965b, 1965c, 1966a, 1966c, 1967a, 1967b, 1974.
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Burn, B. S., 1960.
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Chawla, V. K., 1971.
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Cowan, J. H., Jr., 1969.
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Forney, J. L., 1957b.
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Eaton, S. W., 1971, 1973.
Ferris, J. J., 1974e.
Forney, J. L., 1965c.
Hall, D. J., 1967a, 1967b, 1968, 1970.
Hennick, D. G., 1973a, 1973b.
Houde, E. D., 1966, 1967, 1968, 1969a.
Hutchinson, B. P., 1968, 1971.
Hutchinson, G. E., 1967.
Jackson, D. F., 1958, 1964.
Johannsen, O. A., 1915.
Kardos, L. P., 1972.
Lane, P. A., 1971.
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Larsen, A. A., 1956.

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Noble, R. L., 1972b, 1973.
O'Brien, W. J., 1968.
O'Leary, K., 1967.
Park, R. A., 1971a.
Peterson, B. J., 1971.
Plant, Richard, 1973.
Ralton, J., 1970.
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Stewart, K. M., 1969.
Stross, R. G., 1969, 1973.
Taylor, W. G, III, 1960.
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☆U.S. GOVERNMENT PRINTING OFFICE: 1976-618-559/179-76(2-11)