

OHIO RIVER VALLEY WATER SANITATION COMMISSION

**A report on the interstate
crusade for clean streams
to the Governors of:**

ILLINOIS

INDIANA

KENTUCKY

NEW YORK

OHIO

VIRGINIA

PENNSYLVANIA

WEST VIRGINIA

9th Annual Summary - 1957

NINTH ANNUAL SUMMARY-1957

OHIO RIVER VALLEY WATER

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Stream Pollution Control Board
JOSEPH L. QUINN, JR.
The Hulman Company

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M. K. MCKAY
Sanitary Water Board
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Department of Health

NEW YORK

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HERMAN E. HILLEBOE, M.D.
State Health Commissioner
JOSEPH R. SHAW
Associated Industries of
New York State, Inc.

OHIO

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Ohio Valley Improvement
Association
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KENNETH M. LLOYD
Mahoning Valley Industrial
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Division of Game and Fish

WEST VIRGINIA

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W. W. JENNINGS
State Water Commission
BERN WRIGHT
State Water Commission

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Gosnell & Fitzpatrick
CLARENCE W. KLASSEN
Chief Sanitary Engineer

VIRGINIA

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State Water Control Board
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State Water Control Board

UNITED STATES GOVERNMENT

EDWIN E. ABBOTT
Corps of Engineers
LEROY E. BURNEY, M.D.
Public Health Service
O. LLOYD MEEHEAN
Fish and Wildlife Service

SANITATION COMMISSION

*... an interstate agency representing
Illinois, Indiana, Kentucky, New York,
Ohio, Pennsylvania, Virginia and West
Virginia, each of which is pledged by
compact, approved by the Congress of
the United States, faithfully to cooperate
in the control of pollution in the
waters of the Ohio River Valley.*

OFFICERS

B. A. POOLE.....Chairman
RUSSELL E. TEAGUE, M.D.....Vice-Chairman
FRED H. WARING.....Secretary
VERNA B. BALLMAN.....Treasurer
LEONARD A. WEAKLEY.....General Counsel

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FRANCIS W. MONTANARI
Sanitary Engineer
WILLIAM L. KLEIN
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Consultant
VERNA B. BALLMAN
Office Manager

Secretaries:

RUTH BERGMAYER, ALICE COURTNEY, ESTHER GOLDFUSS,
JUNE MATTAN, GRACE ZIEGLER

HEADQUARTERS: 414 WALNUT STREET • CINCINNATI 2, OHIO

CLEAN-UP OF SEWAGE

76% OF THE PEOPLE IN THE OHIO VALLEY HAVE ALREADY MET THE CHALLENGE

What eight states and 808 of their municipalities have thus far accomplished toward safeguarding their streams from sewage pollution provides a dramatic picture of progress, as shown in the pictograph at the right.

Uniting their efforts and their resources since 1948 through the establishment of the Ohio River Valley Sanitation Commission, the people of the valley are now operating or placing into operation as fast as construction can be completed, sewage-purification facilities that will serve a population of almost 7,600,000.

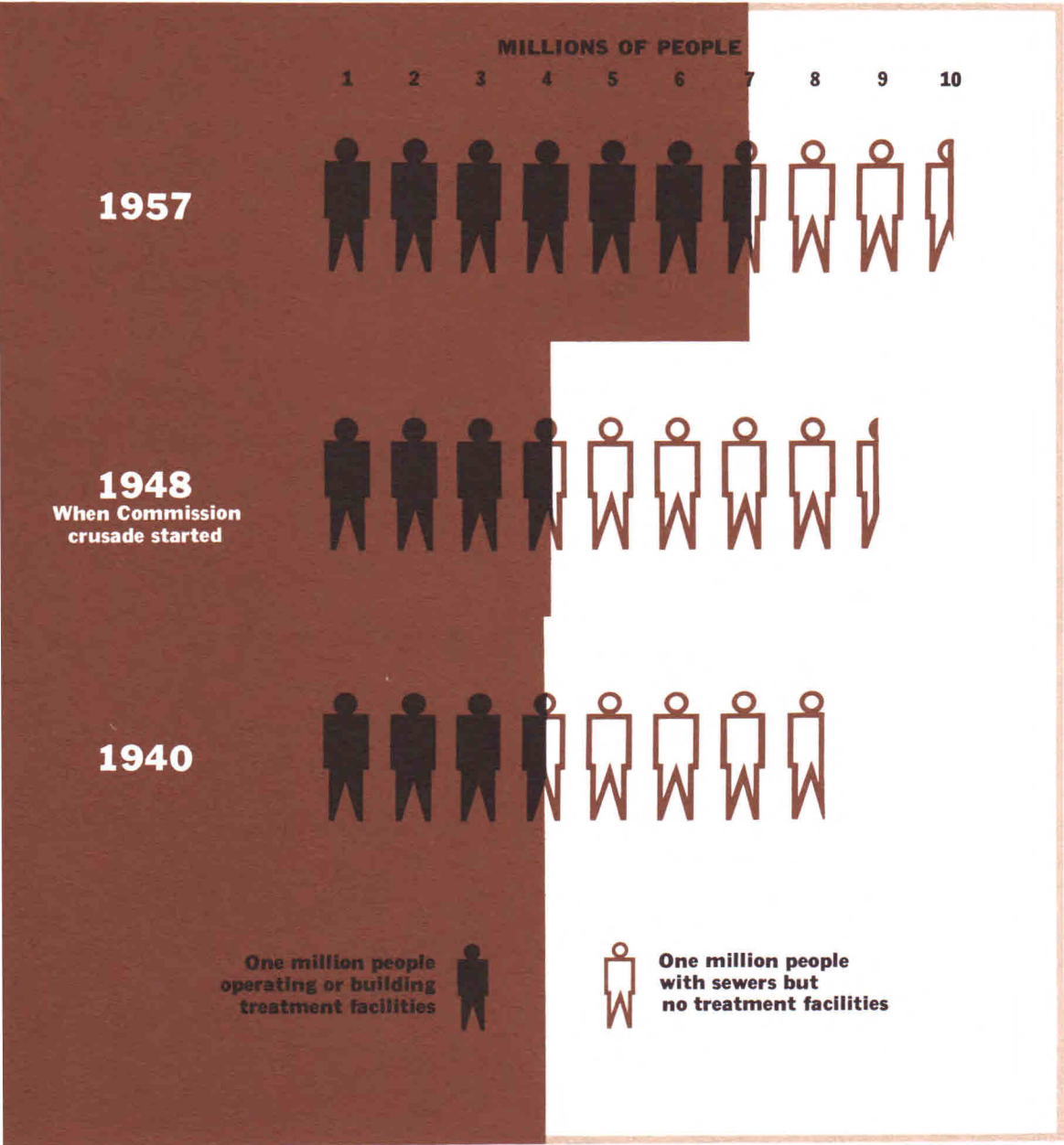
Meantime, more than two hundred additional communities with a total of 1,334,000 people have completed final designs that have been approved for a construction start.

Less than three hundred communities—mostly small towns whose population averages 2,400—have not yet advanced their planning to the stage where action is imminent on treatment plant construction.

On the main-stem of the Ohio River less than 1 per cent of the population provided sewage treatment when the Commission came into existence in 1948. Today, facilities are in operation or under construction to serve 88 per cent of the population!

This, in brief, is part of the record of nine years of interstate cooperation in controlling water pollution in the Ohio River Valley, details of which are given on page 24.

POLLUTION



CONTROL OF INDUSTRIAL

One-half of the industries now provide acceptable treatment

Accomplishments in curbing industrial-waste discharge gain significance when viewed in terms of progress during the past four years. The efforts made by the signatory states and their industries has more than doubled the number of adequate control installations — from 323 to 719; and

More than two-thirds of the industrial plants discharging effluents into streams of the valley now comply with Commission minimum requirements for pollution control. In addition, several thousands of smaller industries have been connected with municipal sewer systems so that their wastes are treated along with sewage.

The record commands respect, considering the magnitude and complexity of the industrial-waste control problem in the Ohio Valley. But this evidence of things already done suggests no basis for complacency. Rather, it provides further incentive for the states and the Commission to expedite action for the fulfillment of satisfactory control of industrial pollution.

Details on the status of industrial waste installations in each of the eight states and the totals for the district are tabulated on page 26.



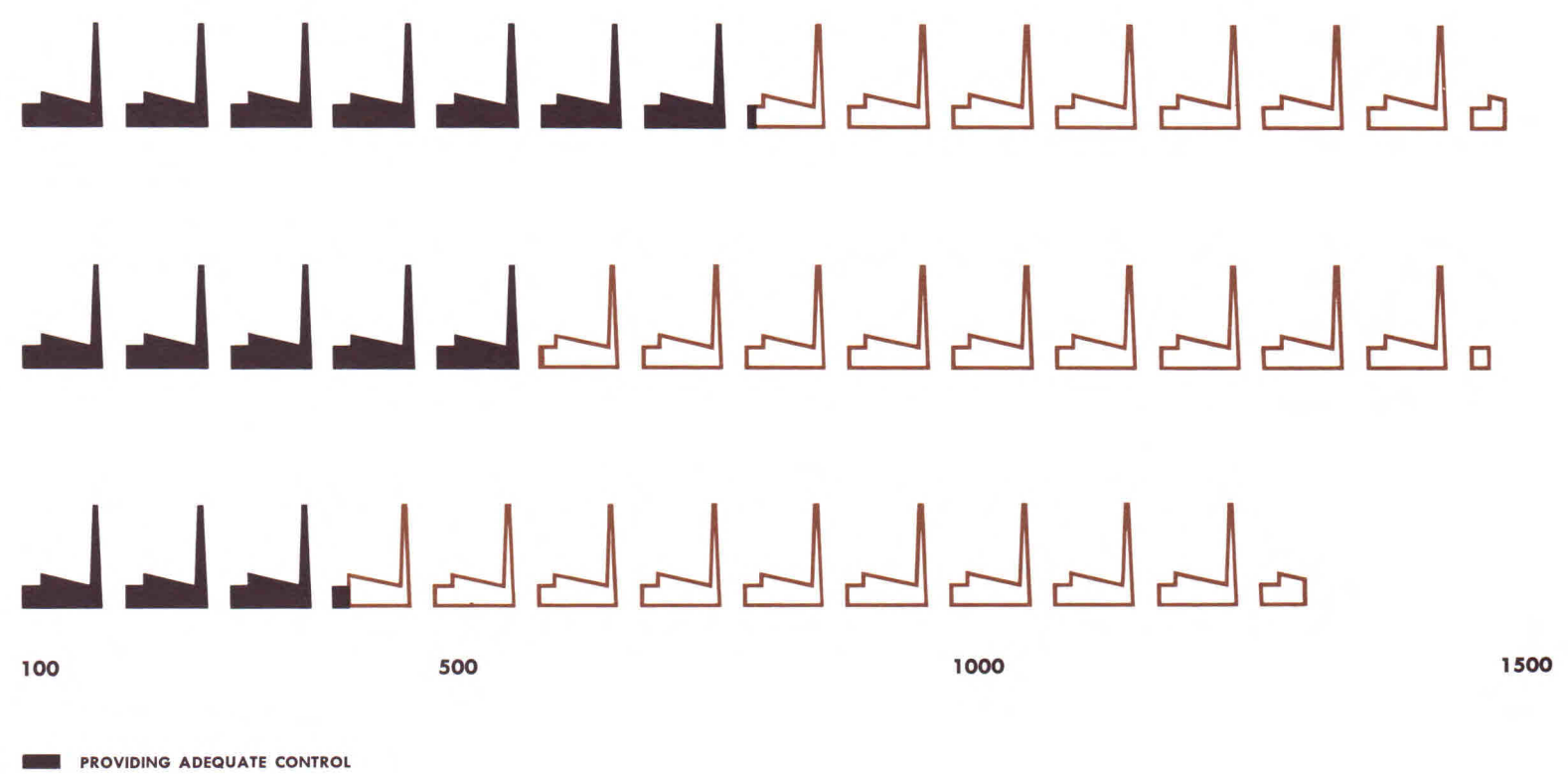
1957 1,431 industries
717 adequate control

1955 1,424 industries
508 adequate control

1953 1,247 industries
323 adequate control

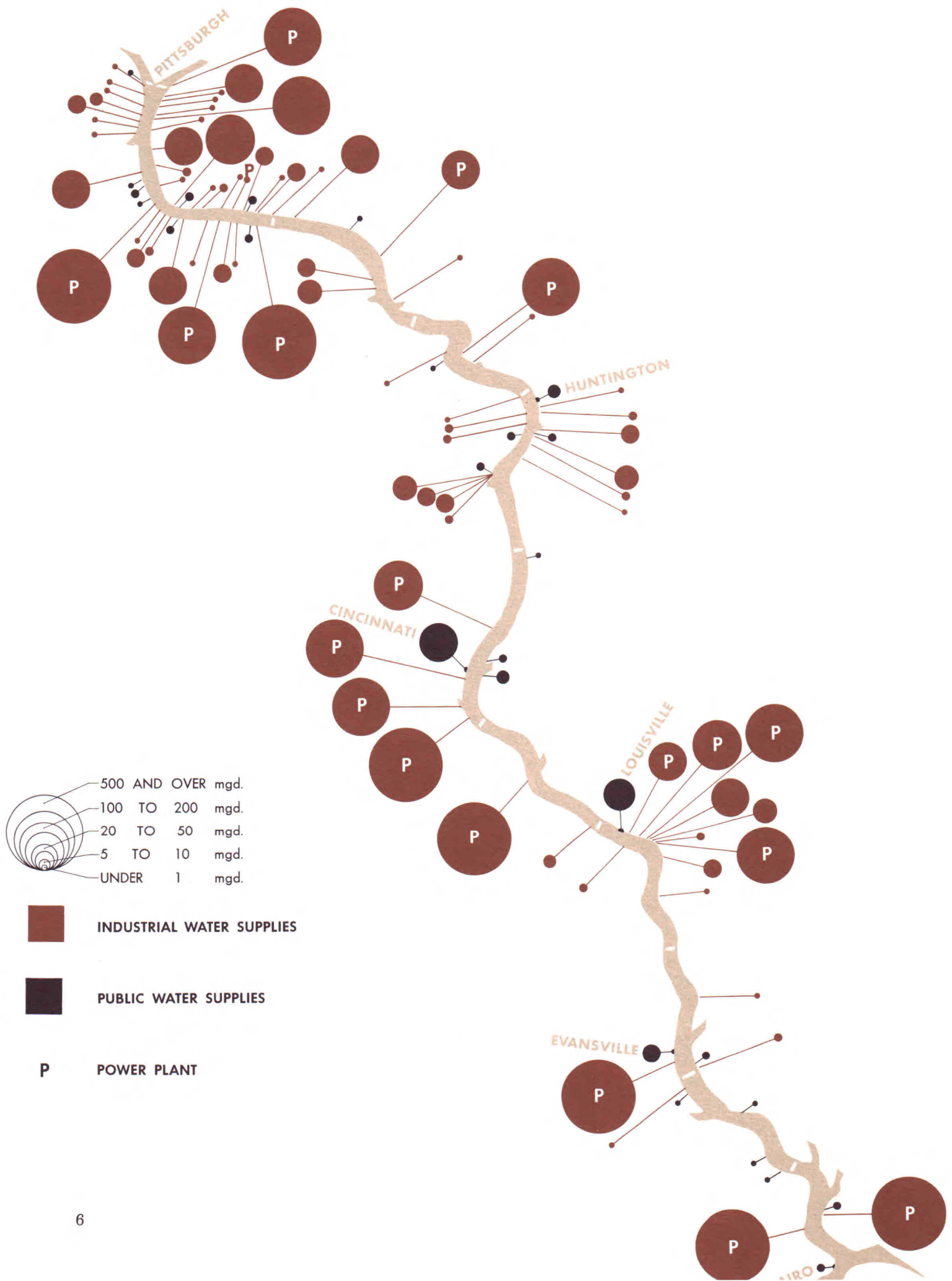


WASTE DISCHARGES



NUMBER OF INDUSTRIAL PLANTS DISCHARGING
EFFLUENTS DIRECTLY INTO STREAMS





Public and Industrial Water from the Ohio River

A 10 BILLION GALLON-PER-DAY REASON FOR SAFEGUARDING QUALITY

Where and for what purpose and magnitude the Ohio River is called upon to support municipal and industrial needs from Pittsburgh, Pa. to Cairo, Ill. is depicted on the accompanying map.

This pattern of intensive use and re-use of the river as it passes through or borders on six of the states signatory to the Ohio River Valley Water Sanitation Commission Compact, vividly portrays some of the mutual interests safeguarded by interstate action.

More than two million people in 116 communities rely on the Ohio River for their water. To satisfy municipal requirements, some 250,000,000 million gallons is pumped each day — an average of 120 gallons for every person.

But industrial plants make the biggest claim on water from the Ohio River — almost ten billion gallons a day! Presently there are 80 major industries along the river, each of whom pump an average of 122,000,000 gallons daily.

Happily, there is more than an ample quantity of water for all who seek to use the river — now and in the future. But this precious privilege of unlimited water use carries with it an obligation. And that obligation is to prevent the abuse of this resource by pollution. Eight states have pledged — and have already demonstrated — that they will not tolerate such abuse.

QUALITY AND QUANTITY

DATA FROM THE DIARY OF A DYNAMIC RIVER

The Ohio River system with a main stem 981 miles in length—and with 19 major tributaries on which there are thousands of industries and municipalities—reflects the impact of many influences. To develop a continuing record of what is happening and to be alerted on pollution potentials

Quality conditions for the period 1952-55
tabulated in terms of minimum and maximum monthly
averages as well as highest values observed.

CONSTITUENT	MONTHLY-AVERAGE VALUES		HIGHEST OBSERVED VALUE
	MIN.	MAX.	
Alkalinity as CaCO_3	2	108	142
Aluminum (Al)	0.0	0.3	0.6*
Calcium (Ca)	20	58	70*
Chloride (Cl)	6.7	126	188
Color (units)	1	29	55*
Fluoride (F)	0.0	0.8	1.0
Hardness as CaCO_3 - Total	61	271	353
Hardness as CaCO_3 - Non-carb	37	244	342
Iron (Fe)	0.0	2.4	5.0
Magnesium (Mg)	6.0	17	19*
Manganese (Mn)	0.0	1.2	2.0
Nitrate (N)	1.1	7.5	9.6*
Odor (threshold number)	1	71	200
Phenols as $\text{C}_6\text{H}_5\text{OH}$ (ppb)	1	156+	200+
Potassium (K)	1.4	4.6	5.8*
Silica (SiO_2)	3.0	11	19*
Sodium (Na)	5.0	40	45*
Solids (dissolved)	137	390	440*
Specific conductance (in micromhos)	220	600	652*
Sulfate (SO_4)	37	362*	451
Turbidity (units)	2	576	1500

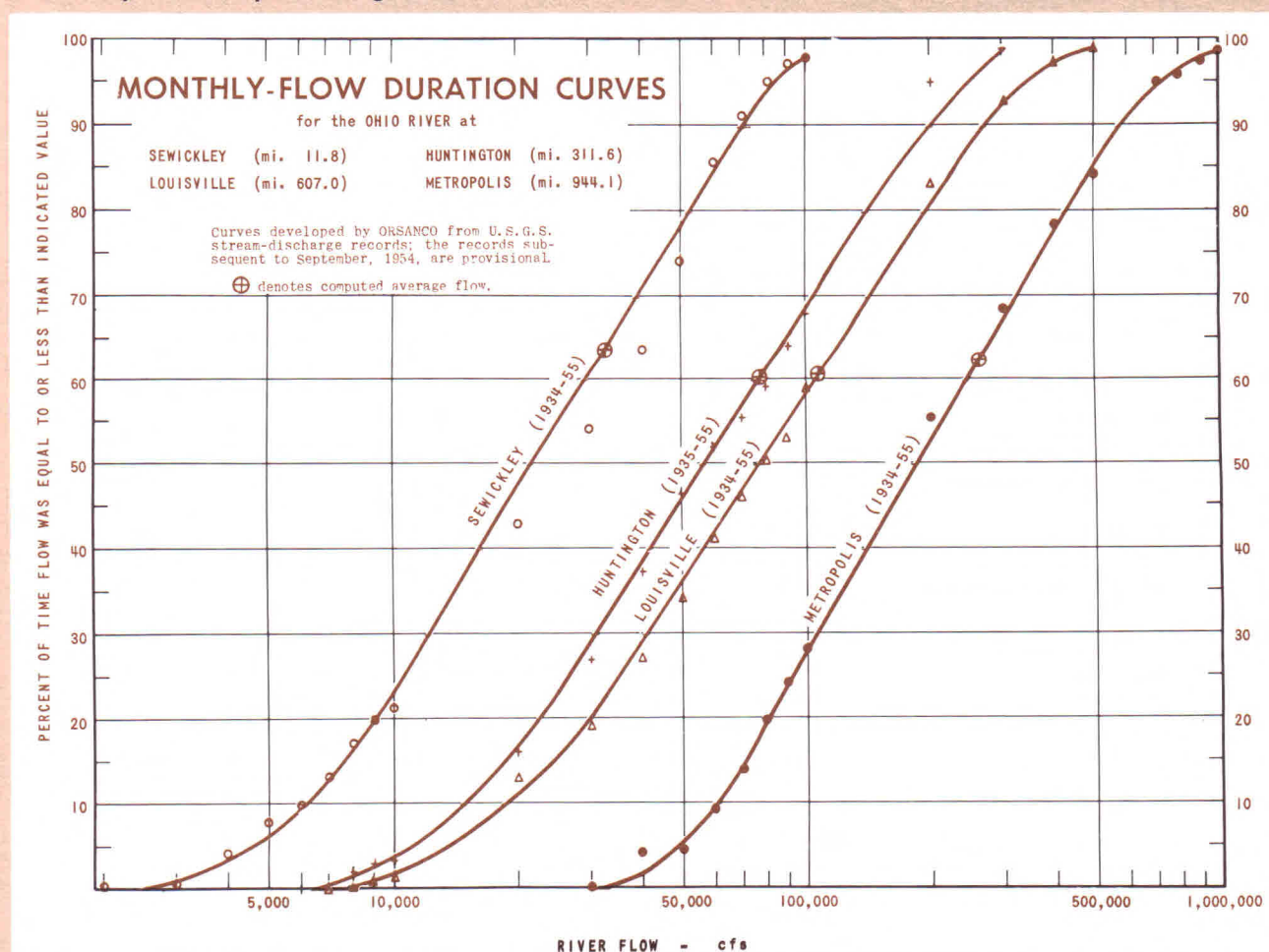
Results, except where noted, are in parts per million.
Values with * are derived from 10-day composite samples.

OF OHIO RIVER WATER

the Commission operates a network of 43 water-quality monitor stations. See page 14 for details.

Some salient facts from an assembly of the first four years (1952-55) of this basic-data record are summarized on these pages. The complete record is available in a 112-page book titled "Water Quality and Flow Variations in the Ohio River."

Flow-duration curves that were developed to provide rapid and reliable forecasts of dilution water availability at various points along the river.



The Year in Review

Nine years ago — on July 1, 1948 — the Ohio River Valley Water Sanitation Commission held its first meeting. On that day the Commission had no officers, it had no headquarters or staff, it had no funds. But it did have a task; one that was self-imposed by the eight states who established the Commission. And that task, simply stated, was to administer an interstate compact for coordinated effort in safeguarding the waters of the Ohio River Valley.

To meet this challenge, the Commission had but one resource on that first morning in July of 1948. Perhaps it could best be characterized as the will to do — to bring into reality the aspiration for clean streams that had been nurtured by men of vision for more than three decades. That resolve was spelled out in a document of faith, a compact approved by the state legislatures, authorized by the Congress of the United States, and signed only the day before by eight Governors and their 24 commissioners. Each of the signatory states pledged to each other “faithful cooperation in the control of future pollution and abatement of existing pollution from the rivers, streams and waters” of the Ohio Valley.

How this vital resource — this pooling of desire and the will to do — has been translated into tangible results is a matter of record that grows more significant with the passing of each year. Today, more than three-quarters of the ten million sewered population of the valley is served by purification facilities in operation or being readied for operation as fast as construction contractors can complete them. In addition, another 11 percent of the population has final plans approved for a start on construction. By way of contrast, it can be noted that nine years ago less than 38 percent of the population treated its sewage. The gain, percentage-wise, in curbing pollution becomes even more impressive with the knowledge that there has been an increase of 1,600,000 people in the valley.

Of the 1,432 industrial plants that discharge effluents into streams of the valley, one-half of them now provide control facilities considered adequate by the states in which they are located; and better than two-thirds of the total are meeting the minimum requirements established by the Commission. Another way of appraising progress in industrial-waste control is to refer to the situation four years ago when accurate records first became available. At that time only 323 industries in the valley provided adequate control facilities; today 719 plants are in this category. While the states share not a little satisfaction with their industries in bringing about this change, the goal — in terms of necessary accomplishment in curbing industrial waste pollution — is still a long way off.

As the eight states begin the tenth year in their regional crusade for clean streams, they do so with a message of inspiration from the President of the United States, which is reproduced on a following page. The membership of the Commission includes three federal representatives appointed by President Eisenhower.

CALENDAR OF ACTIONS

The role of the commissioners is to determine the manner by which the provisions of the compact are to be executed and to assert such powers as may be required for the enforcement of obligations. The Commission meets four times a year for this purpose. Administration of its functions is carried out by a small professional staff with headquarters in Cincinnati.

Operations of the Commission are designed to prescribe and coordinate pollution-control activities on a regional basis. Guided by the principle that no sewage or industrial-waste discharge originating within a signatory state shall injuriously affect the uses of interstate waters, the Commission makes determinations regarding control measures. Securing compliance with these measures then becomes an obligation of each state. The Commission does not deal directly with any municipality or industry regarding compliance except under such circumstances as may be found conducive to the satisfactory accomplishment of its objectives.

Not until this year has a situation arisen that warranted consideration by the Commission of use of the enforcement powers given to it by the compact. The City of Gallipolis, Ohio — through proceedings instituted in local Ohio courts — attacked the jurisdiction of the Ohio Water Pollution Control Board to invoke penalties against the city because of its lack of progress in eliminating pollution of the Ohio River. The Commission, at the request of the three commissioners from Ohio and with the unanimous support of the representatives of the other seven states, took the preliminary steps for instituting procedures to enforce compliance by Gallipolis with the sewage-treatment requirements established by the Commission.

In response to its resolution of January 24, 1957 requesting a schedule of action taken or proposed to be taken toward compliance, the Commission received from the City of Gallipolis a statement of intent to proceed with a program designed to bring the city into compliance. This report revealed that the city council had passed an emergency ordinance fixing rates for sewer-service charges in anticipation of a revenue-bond issue for treatment plant construction. The Commission thereupon withheld further enforcement action but has continued consideration of progress reports

From the **PRESIDENT OF THE UNITED STATES**

came an inspiring message as the Commission

began its tenth year in the crusade for clean waters

<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">CLASS OF SERVICE This is a fast message unless its deferred character is indicated by the proper symbol.</div>	<h2 style="margin: 0;">WESTERN UNION</h2> <h3 style="margin: 0;">TELEGRAM</h3> <p style="font-size: small; margin: 0;">W. P. MARSHALL, PRESIDENT</p>	<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">SYMBOLS DL=Day Letter NL=Night Letter LT=International Letter Telegram</div>
<p>The filing time shown in the date line on domestic telegrams is STANDARD TIME at point of origin. Time of receipt is STANDARD TIME at point of destination</p>		
<div style="display: flex; justify-content: space-between; border-top: 1px solid black; border-bottom: 1px solid black; margin: 0 10px;">CTH140 PA8461201</div> <div style="border: 1px solid black; padding: 10px; margin: 10px 10px;"><p>P WA678 LONG GOVT NL PD=THE WHITEHOUSE WASHINGTON DC 22= B A POOLE, CHAIRMAN OHIO RIVER VALLEY WATER SANITATION COMM= 1957 AUG 22 PM 10 59 414 WALNUT ST CIN=</p><p>TO THE MEMBERS AND STAFF OF THE OHIO RIVER VALLEY WATER SANITATION COMMISSION, I SEND GREETINGS.</p><p>¶ IT IS ENCOURAGING TO LEARN OF THE PROGRESS YOUR COMMISSION HAS MADE IN ALERTING THE PEOPLE OF THE OHIO VALLEY TO THEIR CONTINUING RESPONSIBILITY IN WATER POLLUTION CONTROL. THE LEADERSHIP OF YOUR COMMISSION IN COOPERATION WITH THE EIGHT VALLEY STATES HAS CONTRIBUTED SUBSTANTIALLY IN SECURING REMEDIAL MEASURES THROUGH LOCAL INITIATIVE.</p><p>¶ AS YOU BEGIN THE TENTH YEAR OF WORK IN THIS VITAL AREA OF WATER RESOURCES I WISH YOU CONTINUING SUCCESS=</p><p style="text-align: center;">DWIGHT D EISENHOWER=...</p></div>		

from the city at each meeting. In the meantime, the attack of the City of Gallipolis upon the jurisdiction of the Ohio Water Pollution Control Board, which was successful in the trial court, was defeated upon appeal.

Among the significant actions taken by the Commission at the four quarterly meetings held in the period July 1, 1956 to June 30, 1957 were the following:

July 12, 1956 Meeting

Chairman-elect Kenneth M. Lloyd was seated.

Adopted budget for 1958-59 totaling of \$130,000.

Issued statement regarding Commission views on Federal grants-in-aid to municipalities. In part, this said: "Regardless of the outcome of Congressional appropriations, the Commission and its eight states will continue aggressively in their program to secure compliance by municipalities with their sewage-treatment obligations . . . The Commission expects that no community with sufficient resources to construct a needed sewage project without federal aid will postpone that construction."

Received report on the Catlettsburg (Ky.) Water Company taste-and-odor problem from the Kentucky Water Pollution Control Board. The water company plans modernization of its treatment facilities. An industrial plant that contributes pollution to the Big Sandy River, and which is located just upstream from the water plant intake, has agreed to pay one-half of construction and equipment costs for the taste-and-odor-control facilities at the water plant. The industry will continue efforts toward reducing its waste load to the river, on which it has already expended some \$750,000.

Authorized release for publication of a report prepared by the Chemical Industry Advisory Committee on factors to be considered in site location with particular reference to minimizing water pollution. (Published in *Industrial Wastes*, Jan.-Feb. 1957).

Adopted a resolution petitioning the Surgeon General of the Public Health Service to consider inauguration of a comprehensive program of research and development related to the prevention, reduction or control of acid-mine drainage.

Authorized publication of records of water-quality in the Ohio River and some of its tributaries that the Commission has developed as a result of a monitoring program established six years ago with its Water Users Committee and more recently supplemented under a cooperative project with the U. S. Geological Survey.

Received report on amendment to Pennsylvania law permitting industry to acquire land by right of eminent domain in connection with waste-control installations. The amendment (Pennsylvania Senate Bill 335 — Session of 1955) provides that: "Whenever the Sanitary Water Board shall direct any corporation to cease discharging industrial wastes . . . such corporation may make application to the Board for an order . . . that

the use by applicant of a specific interest in a specifically described piece of land is necessary in connection with the elimination, reduction or control of the pollution . . . such corporations are vested with the right of eminent domain which shall be exercised only upon authorization of the Board . . ." (This year the Indiana law was amended to incorporate a right-of-eminent-domain provision (Indiana House Bill 415 — 1957). West Virginia was the first of the compact states to adopt such a provision, doing so in 1953 (West Virginia House Bill 65 — 1953).

November 9, 1956 Meeting

Directed a staff investigation of the failure of the City of Gallipolis, Ohio to comply with requirements for sewage treatment and to submit a report on the basis of which a decision would be reached regarding Commission enforcement action.

Authorized the Executive Director to make application for the estimated federal grant of \$63,684 allocated to the Ohio River Valley Water Sanitation Commission under Public Law 660, and directed expenditure of such funds within the following framework of activity: \$55,000 for three projects relating to development of robot-monitoring equipment, investigation of aquatic-life resources, and for the detection and identification of taste-and-odor producing substances in the Ohio River; \$8,684 for administrative and clerical activities. (Amount of grant was subsequently increased by the Public Health Service to \$69,802.)

Adopted a resolution urging the Surgeon General of the Public Health Service to consider the merits of establishing a conference organization of state and interstate water-pollution control agencies. The purpose would be to provide a mechanism to facilitate perfection of administrative relationships among the states and the federal agency with particular reference to Public Law 660, the Federal Water Pollution Control Act.

Received report on an oil spill that occurred in August in the upper Ohio River and the steps taken by the Commission staff and the State of West Virginia to locate the source and prevent a recurrence.

Received report on development of a \$500,000 pilot plant for the treatment of acid pickle-liquor waste from steel mills. The plant is being financed by the Blaw-Knox Company and seven steel companies that are represented on the Commission's Steel Industry Action Committee. Purpose of the plant is to test the feasibility of a new process for recovery of acids that are now discharged into streams.

Welcomed members of the Ohio Valley Anti-Pollution Sub-committee of the Izaak Walton League. Mr. G. E. Condo, chairman of the group, stated that at one time the league had been doubtful of the effectiveness of the Ohio River Valley Compact because enforcement actions required the consent of commissioners from the state affected; but the action taken at this meeting regarding the Gallipolis case dispels such

doubts and gives further evidence of good faith.

Received reports from Public Health Service and the State of Ohio on radioactivity surveys. Data from a radiation survey of the Ohio River undertaken by the PHS in response to a Commission request for aid, indicates there is no actual or potential hazard to the public health at this time. The State of Ohio reported that its radioactivity monitor program, started in 1953, now provides analysis of some 500 to 600 samples per year. Streams adjacent to nuclear installations are being monitored.

January 24, 1957 Meeting

Adopted a resolution notifying the City of Gallipolis that unless the Commission receives, prior to its next meeting, a detailed outline of action proposed to be taken by the city in order to bring about compliance with established requirements for sewage treatment that the Commission will initiate action to compel the city to comply with the provisions of the Ohio River Valley Water Sanitation Compact.

Authorized publication of a technical manual on blast-furnace dust recovery prepared by the Steel Industry Action Committee.

Received a staff report on an oil spill in the Ohio River that occurred near Cincinnati on November 30, 1956. Following location of the spill state authorities took immediate action to secure assurance from the company involved that safeguards would be installed to prevent recurrence.

Heard a staff report on abnormal phenolic waste discharges in the upper Ohio River in December and in January, occurring notably over week-ends and presumably during periods of routine clean-up and adjustment of industrial operations.

Adopted a resolution declaring existence of a condition requiring the prompt cessation of any indiscriminate discharge of phenolic substances, the resolution to be transmitted by each of the signatory states to industrial plants within their areas of jurisdiction.

Heard a report from Mr. Henry F. Hebley, chairman of the Coal Industry Advisory Committee, that the opening of a new mine in the vicinity of Mt. Forest, Pa. provided the first opportunity to put into practice some theoretical principles of mine-acid control. The experiment consists of sinking bore holes at strategic locations throughout the acreage to be mined, and using these holes as a means for prompt discharge of underground drainage. Rapid removal of water is expected to minimize possibilities of acid formation.

April 4, 1957 Meeting

Heard reports from the signatory states revealing that 36 industrial plants had been contacted regarding compliance with the Commission's resolution on abnormal phenolic discharges. (At a later date 7 more companies were contacted, making the total 43.)

Received a report from the City Manager of Gallipolis, Ohio stating the city had passed, as an emer-

gency measure on March 5, 1957, an ordinance fixing rates and charges for sewer system and disposal plant service in anticipation of a revenue bond issue of \$900,000. Consideration of action by the Commission to compel compliance by the City of Gallipolis was postponed until the next regular meeting, and the city was called upon to submit to the Commission, prior to that meeting, a report of further action taken and proposed in order to bring about compliance with the sewage-treatment requirements.

Received a further report from the Commonwealth of Pennsylvania regarding waste-control requirements under consideration for the Shippingport, (Pa.) atomic energy power station.

Authorized an invitation to industry advisory committee members and other interested parties to attend the next quarterly meeting, at which an opportunity would be given for presentation of viewpoints regarding the control of chloride wastes. Copies of a staff report had been distributed on March 27 in accordance with a previous authorization.

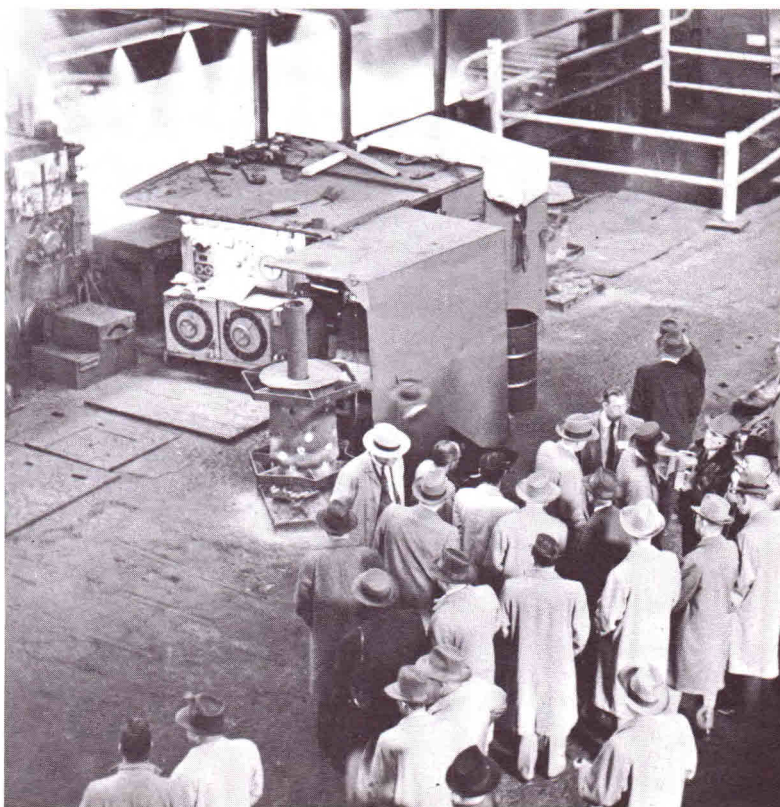
Recorded with profound sorrow the death on February 20, 1957 of former commissioner Elmer A. Holbrook, one of the original signers of the compact for the Commonwealth of Pennsylvania.

Mahoning Valley Inspection—April 3, 1957

Members of the Commission, its staff and representatives from agencies of the eight states made an all-day inspection of waste-control facilities in the Mahoning Valley, one of the most heavily industrial-

To gain a more intimate grasp of problems and progress of waste control in the steel industry, the Commission met in Youngstown, Ohio to inspect mills and facilities in the Mahoning Valley. Here the group views a water-rinse in a continuous plating operation.

Republic Steel Corp. photo



ized areas in the world. Control installations costing several millions of dollars were shown to the Commission at plants of the Republic Steel Corporation, the U. S. Steel Corporation and the Youngstown Sheet and Tube Company. The tour also included a visit to the \$500,000 pilot plant at Niles, Ohio for testing the efficacy of the Blaw-Knox-Ruthner process for the treatment of acid pickle-liquor wastes.

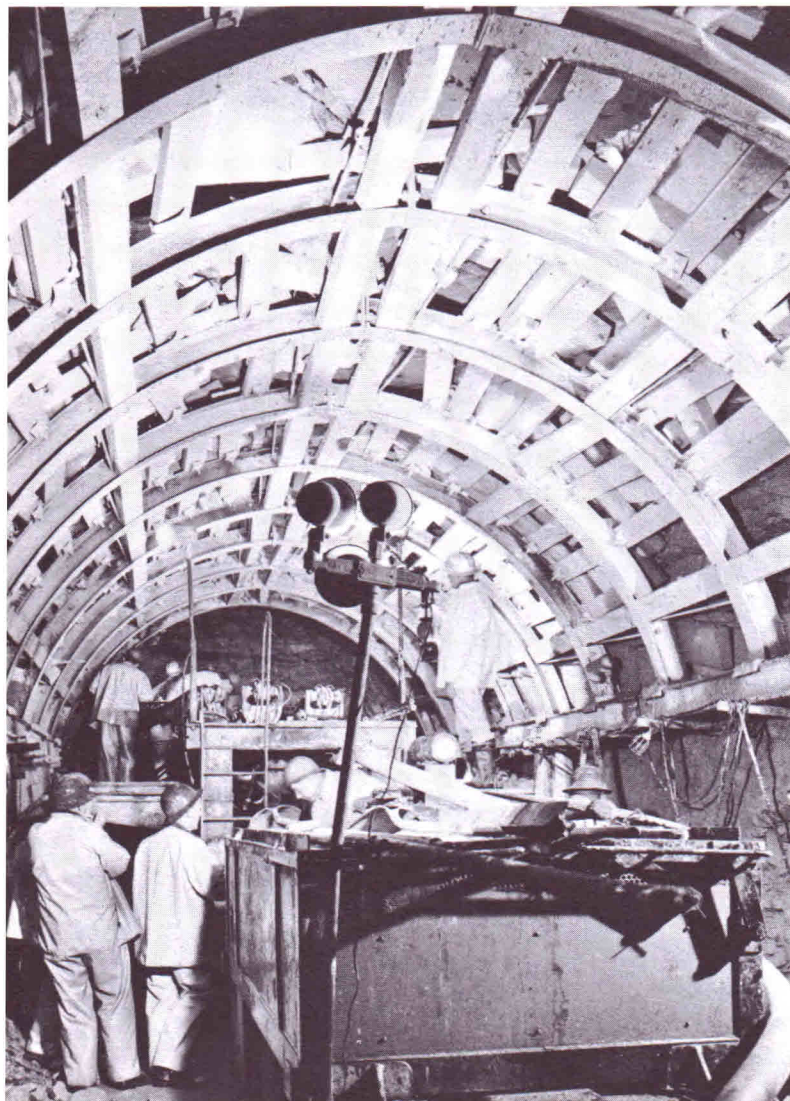
At a luncheon meeting the following day the Commission met with mayors of the principal cities in the Mahoning Valley and heard progress reports on construction of sewage works costing some \$30 million.

WATER QUALITY DATA

First installment of a "diary" that reveals the varying moods of the Ohio River in terms of water quality and flow changes was published by the Commission on March 15. It is a compilation of four years of continuous chemical and bacteriological analyses from a

Sewage from 1,400,000 people will be conveyed through this tunnel under Pittsburgh to a treatment plant and thus eliminate a major source of pollution in the Ohio River. Some 30 miles of interceptor sewer tunnels are being built as part of the Allegheny County Sanitation Authority project.

Drava Corporation photo



regional network of monitor stations. Included with the publication is a hydrographic study of the flow variability pattern of the Ohio River, particularly with regard to the occurrence of minimum flows.

This compilation of basic data is providing the facts from which the Commission can diagnose changing conditions in water quality and check compliance with clean-stream regulations. A dynamic river system like the Ohio — 981 miles long and with 19 major tributaries, on which there are thousands of industries and municipalities — reflects the impact of many influences. The monitor system was designed to provide a continuing record of what is happening in the streams and keep the Commission alerted on pollution potentials.

Starting with 11 stations in 1951, the Commission has augmented its monitor network to secure data from 43 locations on the Ohio River and many of its tributaries (see 8th Annual Report for map and details). Fifteen of the stations are operated in cooperation with public, private and industrial water purveyors whose daily business is the processing of river water; this group is organized as the Water Users Committee of the Commission. The other stations are serviced under a cooperative contract with the U. S. Geological Survey. Assistance in collecting samples at navigation-dam locations is provided by the U. S. Corps of Engineers.

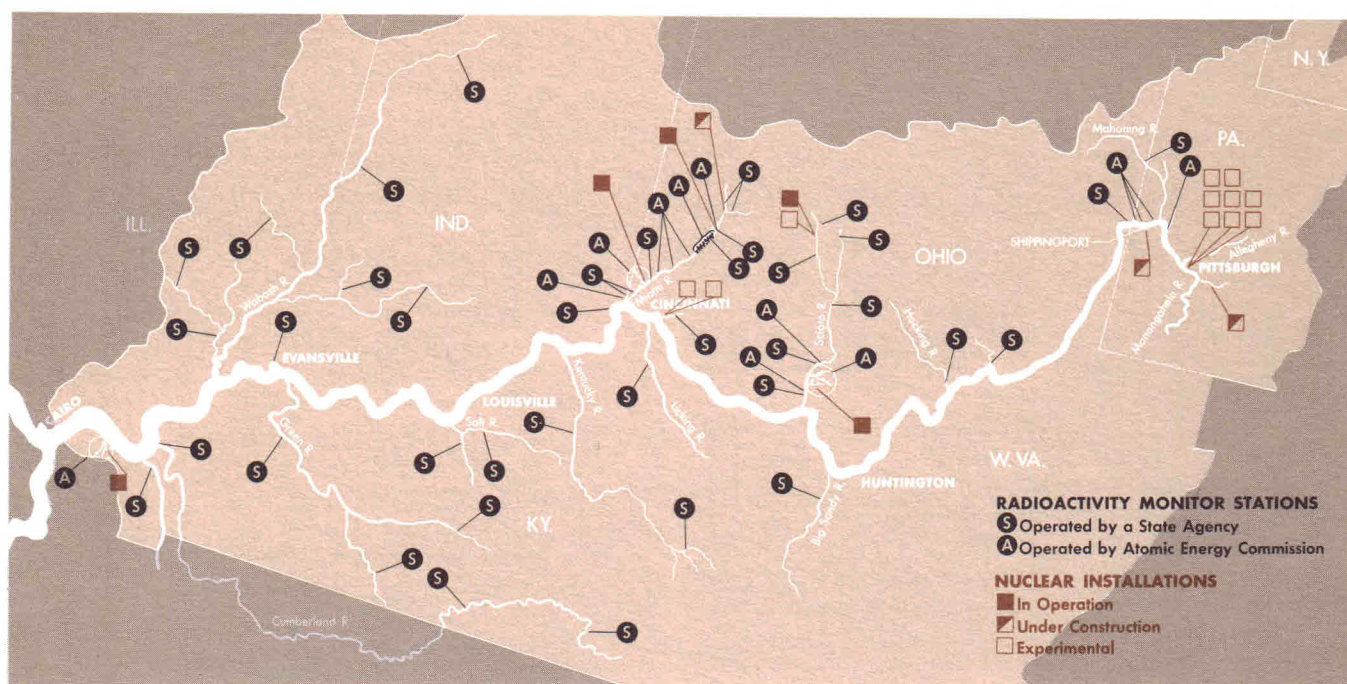
In commenting on the program, Chairman Lloyd said: "The water-quality monitor project started six years ago in the Ohio Valley is unique in its conception, its organization and in its application to water-pollution control. Because national interest is now being manifested in developing basic-data programs for other river basins, we are hopeful that publication of the results of our experiences may aid others in this important effort."

Copies of the 112-page report, titled "Water Quality and Flow Variations in the Ohio River — 1951-55," are available from Commission headquarters at \$2.00 each.

RADIATION AND THE RIVER

Measurement of radioactivity at various locations in the Ohio Valley has been conducted for several years by the Atomic Energy Commission and its contractors. More recently, routine monitor procedures have been established by several of the states, among them Ohio, Indiana, Illinois and Kentucky.

In 1956 at the request of the Commission the Public Health Service, through its Taft Sanitary Engineering Center at Cincinnati, secured "background" radiation counts in the Ohio River and at the mouth of certain tributaries. Some 34 locations were assayed for gross radioactivity. In commenting on the results, as reported in our 8th Annual Report, the Public Health Service stated that the water samples indicated no actual or potential hazard to the public health. Further reports



RADIOACTIVITY MONITOR STATIONS
S Operated by a State Agency
A Operated by Atomic Energy Commission

NUCLEAR INSTALLATIONS
 ■ In Operation
 ▨ Under Construction
 □ Experimental

TRIBUTARY STATIONS

	Mile Point	Operated by
Mahoning R. at Lowellville, O.	32.0	Ohio
Muskingum R. at Marietta, O.	1.0	Ohio
Hocking R. at Coolville, O.	5.4	Ohio
Big Sandy R. at Paintsville, Ky.	65.9	Ky.
Scioto R. at Lucasville, O.	15.0	Ohio
Scioto R. near Wakefield, O.	23	AEC
Scioto (Salt Creek) R. at Wakefield, O.	24	AEC
Scioto (Salt Creek) R. near Wakefield, O.	27	AEC
Scioto (Stream 1) R. near Wakefield, O.	-	AEC
Scioto (Stream 2) R. near Wakefield, O.	-	AEC
Scioto (Beaver) R. near Sargents, O.	27	AEC
Scioto (Beaver) R. near Sargents, O.	28	AEC
Scioto (Beaver) R. near Sargents, O.	29	AEC
Scioto (L. Beaver) R. near Sargents, O.	28.5	AEC
Scioto (L. Beaver) R. near Sargents, O.	28.7	AEC
Scioto (L. Beaver) R. near Sargents, O.	30.0	AEC
Scioto R. near Sargents, O.	29.0	AEC
Scioto R. at Piketon, O.	34.0	AEC
Scioto R. at Piketon, O.	34.0	Ohio
Scioto R. at Shadeville, O.	123.0	Ohio
Scioto (Darby) R. near W. Jefferson, O.	138.0	Ohio
Scioto (Darby) R. near W. Jefferson, O.	140.5	Ohio
Scioto R. at Columbus, O.	140.5	Ohio
Little Miami R. at Newtown, O.	8.5	Ohio
Licking R. at Butler, Ky.	35.0	Ky.
Miami R. at Cleves, O.	7.5	Ohio
Miami R. at Miamitown, O.	14.3	Ohio
Miami R. at Miamitown, O.	15.3	AEC
Miami R. at New Baltimore, O.	21.3	AEC
Miami (Paddy's Run) R. at Fernald, O.	23.2	AEC
Miami (Paddy's Run) R. at Fernald, O.	23.3	AEC
Miami (Paddy's Run) R. at Fernald, O.	25.3	AEC
Miami R. at Venice, O.	24.8	AEC
Miami R. at Venice, O.	24.8	Ohio
Miami R., below Franklin (5 stations)	0 - 56.5	AEC
Miami R. below Miamisburg, O. (14 stas.)	56.5 - 67.5	AEC
Miami R. at Franklin, O.	63.1	Ohio
Miami R. near Miamisburg, O.	68.0	AEC
Miami R. at Miamisburg, O.	68.7	Ohio
Miami (Mad) R. at Dayton, O.	91.6	Ohio
Miami R. at Taylorsville, O.	96.6	Ohio
Kentucky R. at Frankfort, Ky.	65.8	Ky.
Kentucky R. near Beattyville, Ky.	255.0	Ky.
Salt R. at Shepherdsville, Ky.	24.0	Ky.
Salt (Rolling) R. near Boston, Ky.	24.0	Ky.

TRIBUTARY STATIONS (Continued)

	Mile Point	Operated by
Green R. near Calhoun, Ky.	63.4	Ky.
Green (Barren) R. at Bowling Green, Ky.	176.0	Ky.
Green R. at Munfordville, Ky.	213.0	Ky.
Wabash (L. Wabash) R. at Carmi, Ill.	42.7	Ill.
Wabash (L. Wabash) R. at Wayne City, Ill.	83.7	Ill.
Wabash (W. Fork, White) R. near Washington, Ind.	161.3	Ind.
Wabash (E. Fork, White) R. near Bedford, Ind.	241.3	Ind.
Wabash (Embarrass) R. at St. Marie, Ill.	178.0	Ill.
Wabash R. at Terre Haute, Ind.	215.0	Ind.
Wabash R. near Lafayette, Ind.	312.0	Ind.
Cumberland R. at Smithland, Ky.	2.8	Ky.
Cumberland R. at Burkesville, Ky.	427.0	Ky.
Cumberland R. at Cumberland Park, Ky.	565.0	Ky.
Tennessee R. near Gilbertsville, Ky.	21.6	Ky.
L. Bayou near Paducah, Ky.	3.0	AEC
B. Bayou near Paducah, Ky.	2.0	AEC
B. Bayou near Paducah, Ky.	5.0	AEC

OHIO RIVER STATIONS

	Mile Point	Operated by
Phillips, Pa.	15.2	AEC
Montgomery Dam, near Industry, Pa.	31.7	AEC
Midland, Pa.	35.9	AEC
Dam 7, Midland, Pa.	36.5	AEC
E. Liverpool, O.	42.4	Ohio
Aurora, Ind.	496.7	Ind.
Evansville, Ind.	792.5	Ind.
Paducah, Ky.	943.2	AEC

NUCLEAR INSTALLATIONS

Research Reactors	Power Reactor
W. Jefferson, O.	Shippingport, Pa.
Waltz Mill, Pa.	
Dayton, O.	
Experimental	Nuclear Facilities
Pittsburgh, Pa. (8)	Fernald, O.
Evendale, O. (2)	Miamisburg, O.
W. Jefferson, O.	Portsmouth, O.
	Paducah, Ky.

AEC = Atomic Energy Commission

Ill. = State Water Survey

Ky. = Water Pollution Control Comm.

Ind. = State Board of Health

Ohio = State Department of Health

on analyses of river mud and biota samples have not yet become available.

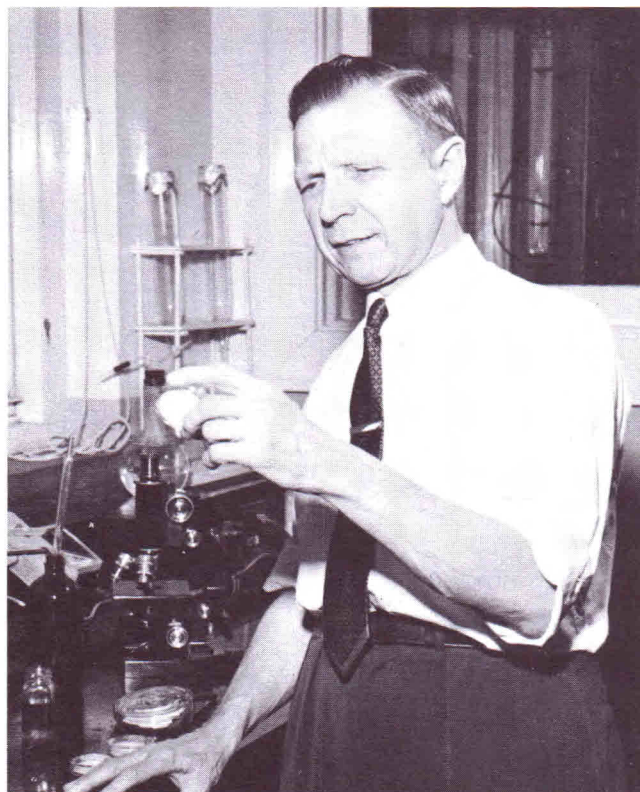
Meantime, a "pre-operational monitoring program" in the vicinity of the atomic energy power station on the Ohio River at Shippingport, Pa. has been underway since 1956 by the Atomic Energy Commission. A cooperative arrangement exists between the AEC and the Public Health Service whereby some river water and algae samples are exchanged for duplicate analysis. When the reactor goes in operation, perhaps late this year, the Duquesne Light Company will continue monitoring of the river as well as all cooling water and waste discharges.

Discussions have been initiated by ORSANCO with the U. S. Geological Survey and with a university laboratory looking toward the establishment of stations on the Ohio River for continuous and routine monitoring of radioactivity.

The location of nuclear facilities in the Ohio Valley and the monitor stations now in operation by the states and the Atomic Energy Commission are shown on the accompanying map. Tabulation of the AEC installations was accomplished with the aid of Dr. Joseph Lieberman, sanitary engineer of the Atomic Energy

Employing the new membrane-filter technique, Chemist H. F. Kurk of the Louisville Water Company makes a bacteriological test on Ohio River water. Similar tests at seven other water plants along the river is providing data for a Commission-sponsored evaluation of a rapid procedure for testing water-quality.

Louisville Times photo



Commission, whose efforts are gratefully acknowledged.

MEMBRANE FILTER EVALUATION

A comparative evaluation of the membrane-filter technique for enumerating coliform bacteria in water has been underway for the past nine months with tests being conducted at eight water-treatment plants. This Commission-sponsored study is being made in cooperation with members of the Water Users Committee who first received training in the technique at the Taft Sanitary Engineering Center.

The membrane-filter (MF) procedure is distinguished from the orthodox fermentation-tube method in that the test requires only 18 hours to complete, and the results provide a direct count of coliform density in water. The fermentation method involves a time requirement of 48 hours or more; and the results are a statistical estimate expressed as the most probable number (MPN) of coliform density. The MPN is an indirect count and is subject to large inherent errors of quantitative interpretation. Interest of the Commission in the new procedure is to determine its adaptability to bacteriological examinations under conditions encountered in the water-quality monitoring program.

Assembly of comparative data from the MPN and MF methods was begun November, 1956. Tests are made daily for five days each week on identical samples of raw river water. Participating laboratories and the men responsible for this operation are: Wilkensburg-Penn Joint Water Authority, R. B. Adams; South Pittsburgh Water Company, F. R. Perrin; Weirton Water Treatment Plant, F. J. De Franco; Wheeling Water Treatment Plant, C. E. Shroyer; Portsmouth Water Treatment Plant, H. C. Growdon; Cincinnati Water Treatment Plant, Dan Enright; Louisville Water Company, W. L. Williams; Evansville Water Treatment Plant, Phil Barning, Jr. The generous interest of these men has made possible the conduct of this valuable study at small cost. Materials and supplies furnished to date by the Commission have totalled \$3,000.

Results thus far have been variable among the different laboratories; they range from 66 to 100 percent agreement at five of the stations, as measured by individual results, to much poorer agreement at the remaining three stations. Remarkably high agreement is shown at Wilkensburg and Portsmouth, with 82 and 100 percent overall, respectively. Although there are inconsistencies at some plants, the MF counts tended to run lower than the MPN's; this tendency has also been observed at other places.

The statistical test of agreement is whether the MF count falls within a range of 30 to 300 percent of the corresponding MPN; this range defines the 95 percent confidence limits of the MPN count. While this repre-

sents a wide range of allowable error, it is considered valid by several authorities. The assumed counting error of the MF count is plus or minus 20 percent, which is much narrower range than for the MPN estimate.

Although non-familiarity with a new technique may be a source of error, the poor agreement at some plants part of the time — and at other plants nearly all of the time — suggests that more significant sources of error are present. Factors that have not yet been fully evaluated and which may lead to error in the MF technique are: Effects of turbidity and algae, chemical-quality characteristics of the water sampled; location of sampling point with respect to source of bacterial pollution; growth characteristics of a nutrient media and the ease with which the media permits identification of coliform bacteria. With respect to this last factor a modified Hajna-Damon (HD) media is used in the ORSANCO study to take advantage of simplicity afforded by this single-step procedure over the two-step procedure involving separate enrichment and differential medias.

To sum up, thus far the results have been encouraging; but there is still too much variation among the different laboratories to warrant serious consideration at this writing of substituting the MF procedure for the MPN method. The precision of the MF count is much higher than that of the MPN count. Therefore, the MF counts, even where not showing good agreement with the MPN's, might give a more reliable index of the sanitary condition of the river water than the MPN, especially where MF counts are fairly consistent among themselves.

In view of the fundamental need for a more precise test for coliform bacteria, and of the practical advantages of the MF procedure, the Commission has authorized continuation of this study. Future effort will be centered on improving the skill of those performing the test and in seeking modifications in technique to secure more consistent results.

TASTE AND ODOR STUDY

Commanding high priority are matters relating to the discharge of substances that affect the taste and odor of public water supplies. Investigations with regard to one of the substances — phenolic wastes — have been underway for several years.

The work has now been broadened to develop routine examination of samples of river water from various ORSANCO monitoring stations with a view toward determining more precisely the nature, characteristics and the amount of substances that may contribute to taste and odor problems. In addition, the investigation is designed to perfect application of methods now available for these determinations and to encourage development of new techniques for detection and identification.

A contract to carry out this project of monitoring and development has been negotiated with The Kettering Laboratory of the University of Cincinnati. Mr. J. Cholak, associate professor of industrial health is the principal investigator; analytical work is being done by Mr. E. S. Parkinson, research associate and Dr. L. Ertl, chemist. For the first year the Commission authorized an expenditure of \$25,000; the funds became available from a federal grant for research under the provisions of Public Law 660.

Studies on Cincinnati tap water were started on May 1. Routine sampling of river water at Cincinnati, one of the monitor stations, was then undertaken.

Initial procedures include the use of charcoal filters for absorption of organic materials from water samples. About 5,000 gallons of river water are passed through a filter each week. A similar volume of tap water is passed through another filter during the period of a month. Organic material absorbed is removed by treating the charcoal with chloroform. The chloroform extract is then concentrated so that weighable quantities of the organic material may be isolated for identification.

Analytical procedures include infra-red and ultra-violet absorption patterns, and determination of phenols by the conventional 4-amino-anti-pyrene method. Other types of analyses are being added as new equipment becomes available.

Data being recorded includes total chloroform-soluble organic matter and the acid, basic and neutral fractions of this matter. Each of the major fractions receives further examination. For example, the neutral substances are separated into aromatic, aliphatic and oxy compounds, and these sub-fractions are then studied separately for identification of specific compounds.

Taste and odor observations on raw and finished water, which are made by water-plant personnel, will be correlated with the chemical analyses.

One of the findings reported thus far relates to the procedure for concentrating chloroform extracts. It has been learned that volatile phenols may be lost when the solutions are evaporated at temperatures developed by a hot plate or steam bath. It was also found that molecular-structure alterations may occur at these temperatures under ordinary atmospheric conditions. To eliminate this source of error a technique for concentrating the extracts was developed that includes partial evaporation of the solvent in a still, with final concentration conducted at a maximum temperature of 61.5 deg. C. in the presence of a stream of inert nitrogen gas.

Difficulties resulting from the clogging of raw-water filters by silt, algae and other suspended matter have been eliminated by the installation of a sand-filter device ahead of the charcoal filter. The equipment incorporates an alternate-direction flow mechanism for back-washing both the charcoal and the sand filter.

Results suggest the need of additional analytical

tools that will permit more specific identification and quantitative evaluation of compounds. To this end, work is in progress with paper and gas chromatography. These techniques, together with infra-red patterns of narrower fractions, may satisfy the need.

ROBOT MONITOR STATIONS

Looking to the future possibility of securing more intimate surveillance of river quality variations, the Commission has for some time entertained ideas on what it has been pleased to call a "robot monitor station" project. Using a portion of a federal grant made available this year under Public Law 660, detailed work on this project was begun in January.

The goal, broadly stated, is to investigate the engineering and economic feasibility of adapting analytical instruments for the continuous recording and automatic transmission of river quality data and the development of a self-operating monitor station for this purpose. Serving part-time, as special investigator on this project, is Mr. David Eye, professor of sanitary engineering at the University of Cincinnati.

Initial efforts have been directed toward determining the availability and applicability of analytical recording equipment. Some 50 instrument companies were contacted to learn what they might have to offer and their possible interest in working with the Commission on development of equipment not now available. Relatively little is available in the form of easily adaptable equipment; and only a few companies were in a position to consider developmental work at this time. But several promising possibilities have been uncovered.

For example, Beckman Instruments, Inc. of California has loaned to the Commission for field testing purposes an experimental model of a chloride-analysis device that is under development for the U. S. Navy. Experiences with this instrument at several locations indicate that it might be modified to perform as a river-monitoring instrument. On a much more difficult problem — automatic analysis for trace concentrations of phenolic substances — the Commission has enjoyed the

support of the Manufacturers Engineering and Equipment Corporation of Hatboro, Pa. The company has constructed a machine which is now undergoing shop tests and may be readied for field tests at one of the Commission's river-monitor stations late this year. Meantime, attention is being centered on automatic equipment for the analysis of alkalinity, hardness, fluorides and certain organic constituents.

Another aspect of the robot-monitor project is an evaluation of the economic feasibility of such installations. To aid in this phase of the work detailed records have been maintained for the past six years on the cost of developing quality data from stations operated by the Commission under a variety of conditions.

MINE-ACID CONTROL

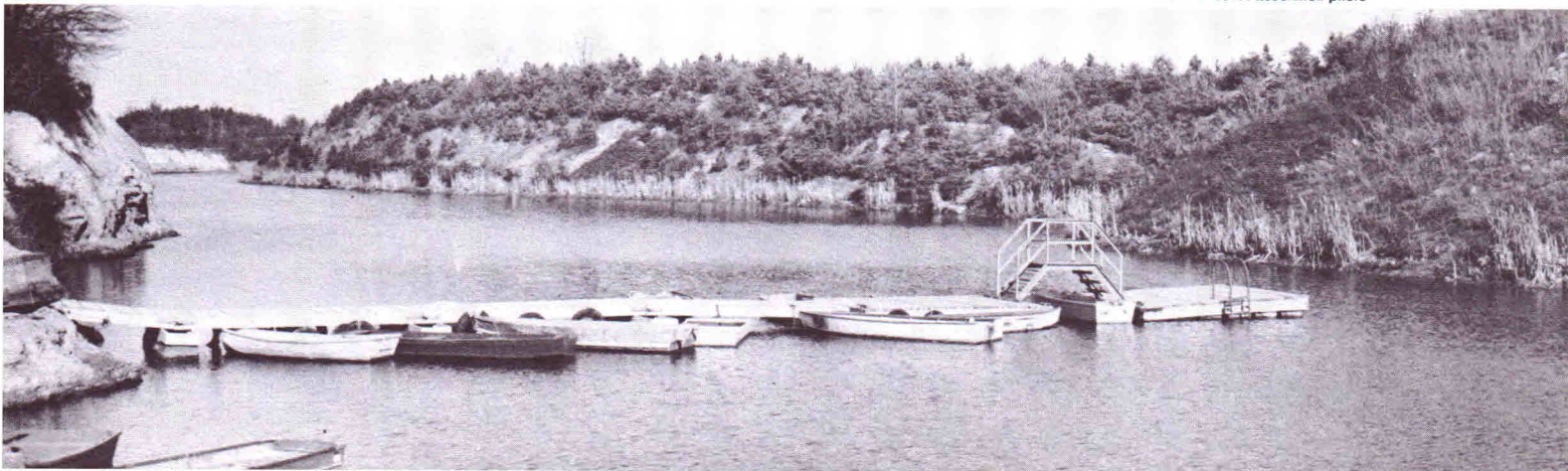
Adjustment of staff activities has permitted intensification of effort relating to the problem of acid discharge from active and abandoned coal mines. This has resulted primarily in an exploration with the U. S. Bureau of Mines as to how the services of that agency might be enlisted in a cooperative program. Toward this end, the bureau is now preparing a research proposal. Although the bureau is not presently in a position to finance any endeavor, the proposal may offer some basis for the Commission and perhaps some of the signatory states to provide enough funds for a start.

In particular, the Commission seeks an assessment of possible measures for curbing acid discharges based on a more aggressive effort by the coal industry to apply findings from previous research, and notably from experiences already gained in the field. There is reason to believe that a wider application of such practical measures as mine sealing, controlled discharge of drainage and the prevention of seepage would result in demonstrable reduction of acid in streams. It is within this area of appraisal, in addition to possible sponsorship of basic research, that the Commission hopes to stimulate action.

Optimistic support for the view that where there is a will there is probably a way to minimize acid discharges is evidenced by the joint program of the Indi-

This is a pollution-control project—and it does even more than save a stream! By bulding a dam at one end of a worked-out strip-mine the pit is submerged to prevent oxidation and resultant formation of mine acid. The Indiana Coal Association working with the Indiana Stream Pollution Control Board has assisted its operator-members in curbing acid dischaes and at the same time provide fishing lakes.

Indiana Coal Association photo



ana Coal Association and the Indiana Stream Pollution Control Board, notably in the development of strip-mine lakes, and by similar programs in Pennsylvania and Ohio. Regarding the situation in Ohio, a most heartening report was presented to the American Mining Congress in May, 1957 by Mr. Larry Cook, executive vice-president of the Ohio Reclamation Association and member of the ORSANCO Coal Industry Advisory Committee. Mr. Cook outlined a number of practical ways by which the surface-mine operators serviced by his association had succeeded in minimizing, if not completely eliminating pollution problems. And, he asserted, "By applying certain principles experimentally in the field we are finding means for combatting the situation (acid formation). These efforts are directed at prevention rather than cure."

AQUATIC-LIFE RESOURCES STUDY

Development of a long-planned inventory and evaluation of the aquatic-life resources of the Ohio River became a reality on March 29, 1957, when the Commission entered into a contract with the biology department of the University of Louisville. The broad objective is an appraisal of the suitability of the river for the maintenance of aquatic-life and for the production of a harvestable fish crop. More specifically, it is designed to include a review of past conditions, a determination of present conditions and recommendations for realization of the aquatic-life resources potential of the Ohio River; the latter will be referenced to pollution control as well as the effects of the high-dam navigation improvement programs now under construction.

In sponsoring the project the Commission received enthusiastic offers of support from the conservation agencies of the six states bordering the Ohio River and from the U. S. Corps of Engineers. The Commonwealth of Kentucky, which has a special interest in the project by virtue of its ownership of some 700 miles of the river, is intimately participating in the project. Invaluable aid in planning the work has been provided by Mr. Minor Clark, assistant commissioner of the Kentucky Department of Fish and Wildlife Resources, by Federal Commissioner O. Lloyd Meehan, assistant to the director of the U. S. Fish and Wildlife Service and by the Commission's Aquatic-Life Advisory Committee. The project is being financed with part of a federal grant made available under the provisions of Public Law 660.

Prospect activities are under the direction of Dr. William M. Clay, head of the biology department of the University of Louisville. Dr. Louis A. Krumholz is acting as field investigator. Mr. Bernard Carter of the Kentucky Conservation Department serves as liaison officer.

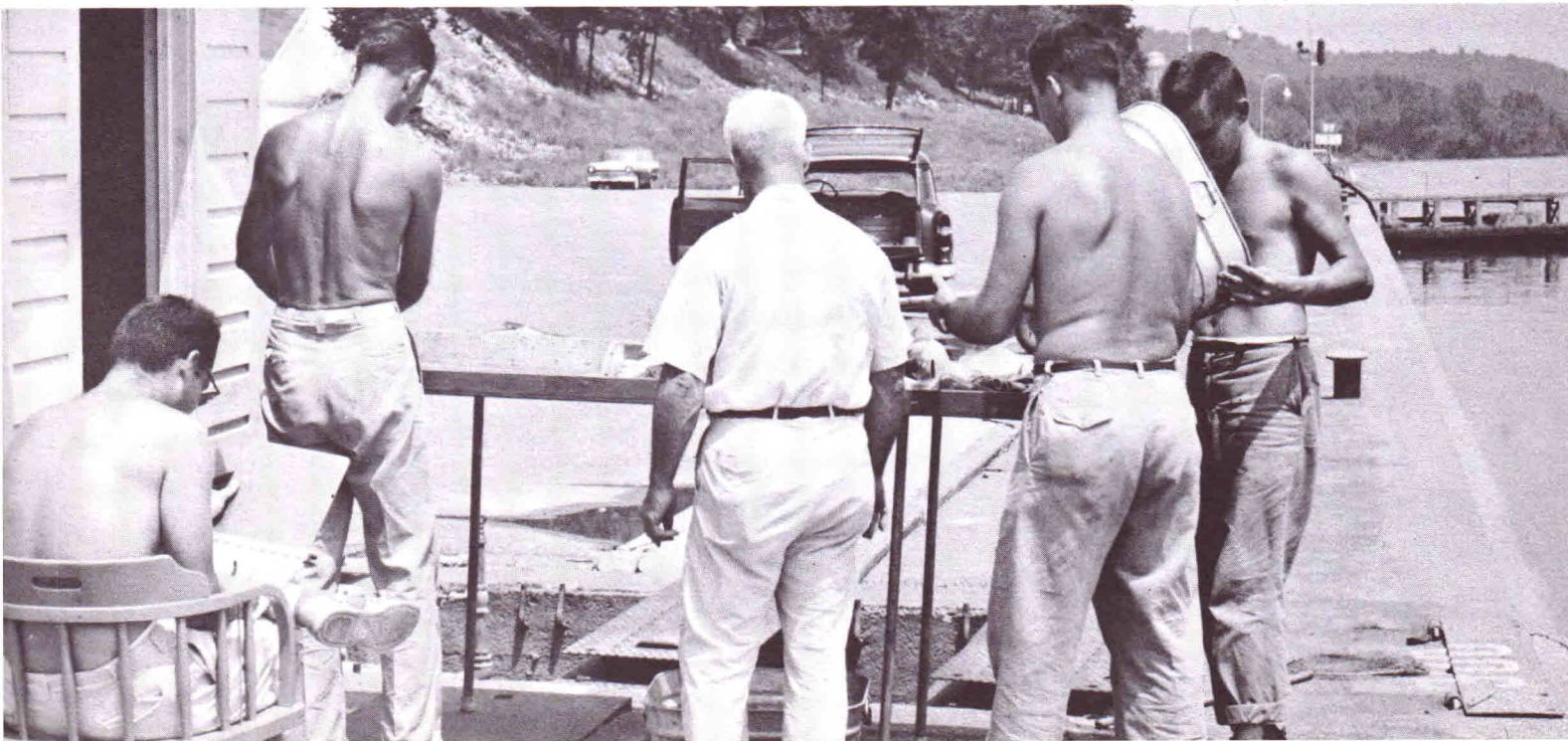
During the first three months of the project ending June 30, these were the principal activities and results:

Creel Census — Field officers of the Kentucky Department of Conservation were instructed to obtain data on catches of individual fishermen. Such records include: Number and kinds of fishes caught; amount of time spent on fishing per trip; number of fishing trips during the year; and the approximate expenditures for such trips. It is expected that this effort will yield several thousand individual records for 1957.

Similar arrangements were made with fishery officials in the Commonwealth of Pennsylvania to obtain

Sorting, measuring and weighing fish captured in an Ohio River lock-chamber. This inventory operation forms part of a Commission-sponsored project to get the facts on aquatic-life conditions with relation to pollution-control measures. The work is being done under contract with the University of Louisville.

University of Louisville (Clay) photo



data for that portion of the Ohio River in Pennsylvania as well as two principal tributaries of the Ohio — the Monongahela and the Allegheny.

Commercial Fishing—Arrangements were made with reliable commercial fishermen in each of the counties of Kentucky that border on the Ohio River to maintain accurate records of the fish taken. There is no commercial fishing in Pennsylvania.

Fish Inventory—Special aid is being provided by the Ohio River Division, U. S. Corps of Engineers, whereby various lock chambers in the Ohio River are permitted to be used as study areas by project field crews whenever such activity does not interfere with navigation. Two crews have been assigned to this study which forms part of a comprehensive fish inventory. The work involves closing the lock, capturing all the fish by applying rotenone and then identifying, weighing and measuring the fish. Studies have been made at Locks 30, 32, 37, 39, 46, 47, 48, 49, 50 and 52.

From eleven studies a total of 52 species of fish have been taken, although that number was never taken at any one station. The greatest variety of species taken at any one station was 25. The total weights of fishes taken from the various lock chambers ranged from 57 pounds at Lock 30 on May 30, to 2,894 pounds from Lock 47 on June 20.

The most abundant species, in terms of numbers, is the gizzard shad. However, that species is of very limited commercial value and is not utilized as food. On the basis of data thus far the most abundant food fish is the channel cat, and this species is closely followed by the fresh water drum. These preliminary conclusions are subject to confirmation following net surveys that will be made later.

Testing of the flavor of the fishes from the Ohio River has begun in a limited way. These tests will be greatly expanded when adequate freezing facilities have been obtained.

Museum Collections—Inasmuch as a major aim of the project is to obtain information on the biology of the fishes of the Ohio River, adequate samples are being retained for both contemporaneous and future studies.

TOXICITY EVALUATION

Assembly and critical evaluation of information on the physiological aspects of water quality has been sponsored by the Commission since 1951 through a contract with The Kettering Laboratory of the College of Medicine, University of Cincinnati. (See 8th Annual Report for details on the scope, procedure and progress of this project).

This past year the Commission received interim reports from The Kettering Laboratory on 16 substances, making a total of 41 reports that have thus far been filed since the inauguration of the work. The reports

submitted this year dealt with: Cadmium, chromium, cobalt, copper, cyanide-thiocyanate, fluoride, lead, naphthalene, pyridine, zinc, manganese, tin, ammonium, nickel, sulfur and iron. Because of the interim nature of the reports they are not yet available for general distribution.

Renewal of the contract for 1957 was authorized but had not been executed at the end of the fiscal year. The reason for the delay is that Dr. Robert A. Kehoe, director of The Kettering Laboratory, and the executive director of the Commission believe that certain developments may make it desirable to re-orient the scope of the investigations. In part these developments relate to the possibility of formation of a national committee on toxicity potentials of substances in water. Dr. Kehoe, who has been invited to participate in these discussions on a national level, feels that the pioneering efforts of ORSANCO in sponsoring such an evaluation has been a factor in promoting national attention to the matter.

Meantime, the Steel Industry Action Committee of the Commission has recommended to the American Iron and Steel Institute that it renew its grant to The Kettering Laboratory for continuation of studies constituting part of the ORSANCO evaluation program. Previously the Institute made a \$42,000 grant for a two-year study on certain substances that are of as much concern to the steel industry as they are to the Commission.

MONONGHELA RIVER STUDY

Assembly of data on water uses, waste loads from municipal and industrial sources and stream quality conditions on the Monongehela River is underway in cooperation with Pennsylvania and West Virginia. This is preparatory to a staff evaluation of pollution and development of recommendations for control measures.

The Monongehela is one of the most important interstate tributaries in terms of its effects on the Ohio River; it drains parts of West Virginia and Pennsylvania and many industries are concentrated in the lower stretch.

Among the matters that claim special attention in connection with conditions in the river is an assessment of the amount and effects of mine-acid drainage.

HIGH-DAM INVESTIGATION

No further developments were reported this year on the high-dam investigation launched by the Public Health Service following a request of the Commission in its resolution of April 29, 1953. Tentative conclusions on the possible effects of the higher dams — which form part of navigation improvements that will create pools of almost double the depth and three times the length of those that now exist in the Ohio River — were set forth in a report from the Public

Health Service to the Commission and published in the 8th Annual Report last year.

The Commission was prompted originally in suggesting this scientific inquiry in order to be guided in forecasting future possible influences on self-purification and water quality because of the anticipated change in river regimen.

Construction of several high dams is now underway by the Corps of Engineers. Meantime, basic data collected by the Commission during the past six years in connection with its river monitoring programs will provide important background information for evaluating conditions when the new pools are created. The monitor stations encompass the various areas that will be affected.

PHENOLIC WASTES

Staff evaluation of data relating to phenolic discharges and taste contamination of water supplies continued during the year. And the Steel Industry Action Committee continued its conduct of investigations on the Mahoning River and also at the Mellon Institute relating to phenolic substances in water. The Chemical Industry Advisory Committee undertook a detailed review of data being assembled by both the Commission staff and the steel industry committee.

Meantime, the Commission took cognizance of what was believed to be indiscriminate discharge of abnormal amounts of phenolic substances in the Ohio River and its tributaries occurring notably over week-ends and presumably during periods of routine clean-up and adjustment of industrial operations. Taking into account certain findings of the Steel Industry Action Committee (that had previously been made available to the staff and to the Commission's Engineering Committee) pointing to the relationship of "slug" (abnormal) discharges to the taste and odor control difficulties experienced at water treatment plants, the Commission adopted the following resolution on January 24, 1957:

"Pending the completion of comprehensive investigations relating to the adoption of a phenol-control program, the Ohio River Valley Water Sanitation Commission declares the existence of a condition requiring the prompt cessation of indiscriminate discharge of abnormal quantities of phenolic substances in accordance with the intent of basic industrial-waste control requirements adopted on April 6, 1955."

The resolution further called upon the states signatory to the compact to: (1) "Transmit copies of this resolution to all industrial companies known to be discharging phenolic substances to the Ohio River and its tributaries; (2) take such action as they (the states) deem appropriate to insure compliance with this resolution; and (3) request all companies to notify promptly the state agencies of accidental leaks, spills or other discharges of an abnormal nature so that this informa-

tion may be relayed to the Commission and thus provide opportunity for warning downstream water users to make such preparations as they can to cope with the situation."

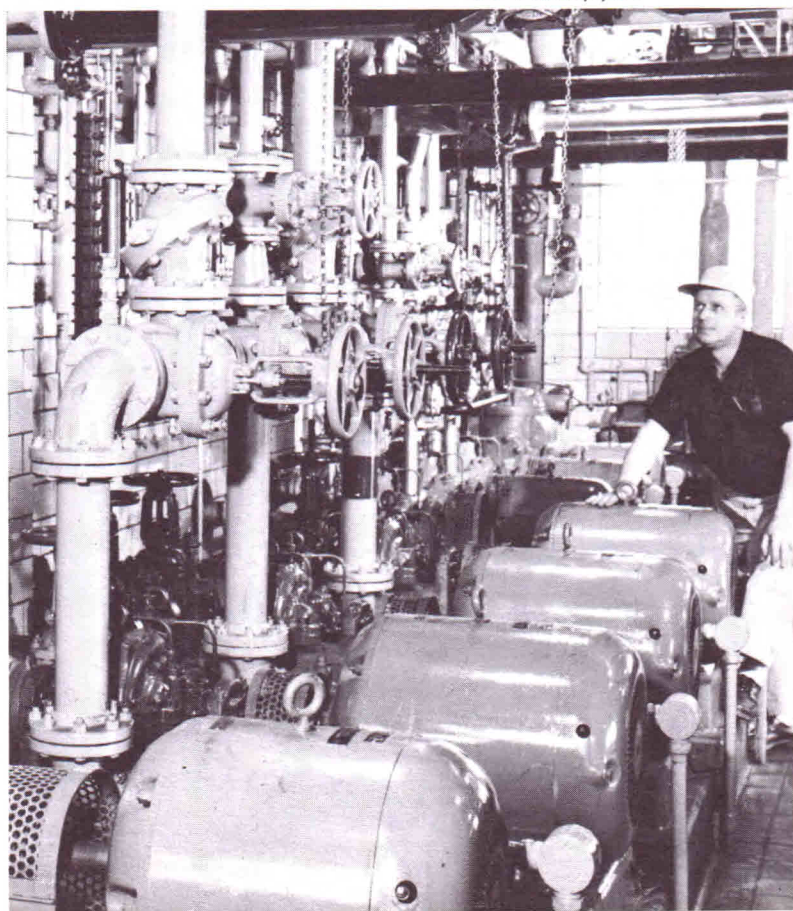
In response to this resolution, the states have brought this matter to the attention of 17 companies on the Ohio River and 26 companies located on tributaries to the main stem. These 43 companies have a total normal daily discharge of 12,578 pounds of phenolic materials.

CHLORIDE CONTROL CONSIDERATIONS

The Commission authorized distribution to industry advisory committees and other interested parties for discussion purposes a staff report on chloride control considerations for the Ohio River. This report, which included a statement of review by the Engineering Committee of the Commission, deals with (1) Effect of chloride concentrations on various water uses; (2) an appraisal of chloride conditions in the Ohio River; and (3) proposals for the execution of a chloride-control program. The latter proposes a unique method of coordinated proportionate discharge coupled with a balancing of drainage basin areas; it was developed to offer a rational method for promoting equity among

Big industry requires big installations to aid in the crusade for clean streams. This is part of a dephenolizing plant placed in operation in May, 1957 by the Weirton (W. Va.) Steel Company. The plant is designed to extract 98 percent of the phenol from 200,000 gallons of weak ammonia liquor produced daily in the gasification of 7,200 tons of coking coal.

Weirton Steel Corp photo



the signatory states as well as the affected industries in the apportionment of assimilative capacity of streams.

Staff and Engineering Committee discussions of the chloride problem have been carried on with various industry committees over a period of some two years. Formal presentation of staff findings and the viewpoints of industry-advisory committees on regulation of chloride discharges were received by the Commission at the July 10, 1957 quarterly meeting. The evidence was referred for recommendations to an ad hoc committee of commissioners.

One of the reasons why the Commission is concerned over chloride waste is that at times of low flow in the upper stretch of the Ohio River abnormal amounts of salt are detected. Although the quantities observed do not represent any hazard to public health they do constitute what might result in an unjustified impairment of water quality. Another reason for concern — one that dates back almost to the establishment of the Commission — is the increasing number of requests made by industries for permission to discharge chloride-bearing wastes.

ADVISORY COMMITTEE ACTIVITIES

Participation of industry committees and other advisory groups in the development of certain aspects of the Commission program was intensified more than ever before. Committees active during the year and their chairmen (as of June 30, 1957) are:

Aquatic Life — Dr. L. L. Smith, Jr., department of entomology and economic zoology, University of Minnesota, Minneapolis, Minn.

Chemical Industry — Richard S. Rhodes, assistant to the president, Koppers Company, Inc., Pittsburgh, Pa.

Coal Industry — Henry F. Hebley, research director, Consolidation Coal Company, Pittsburgh, Pa.

Metal-Finishing — L. J. Hibbert, assistant director of research, National Cash Register Company, Dayton, Ohio.

Oil-Refining — M. W. Nicholas, staff manager, refinery department, The Ohio Oil Company, Findlay, Ohio.

Pulp and Paper — Virgil A. Minch, research laboratories, Mead Corporation, Chillicothe, Ohio.

Steel Industry — G. A. Howell, assistant to chief engineer, U. S. Steel Corporation, Pittsburgh, Pa.

Water Users — H. C. Growdon, director, Water Treatment Plant, Portsmouth, Ohio.

The following summarizes activities of the advisory groups:

Industry Committees — A review of staff findings and proposals relating to chloride control commanded special attention, notably by the Chemical Industry Committee. On June 17, 1957, the committee submitted a report to the Commission summarizing its position. All industry committees were represented at a joint meeting with the Commission in July, 1957, at which

time the viewpoints of interested parties were heard.

Ranking with the chloride-control proposals in terms of committee activity was the matter of phenolic wastes. The Steel Committee submitted an interim evaluation of several years of data that had been collected jointly by that committee, the Water Users Committee and the ORSANCO staff. Investigations on phenols are being continued by the steel committee, notably in the Mahoning River area and through work sponsored at the Mellon Institute. Meantime, the chemical committee reviewed the data of the steel committee and then drafted a report, which was submitted to the Commission on July 12, 1957.

Subcommittees of the steel, chemical and oil-refining committees are engaged in developing improved analytical procedures for certain types of waste. To advance mutual interests the Commission has recommended the following course of action: Whenever an industry committee wishes to advance a new or modified procedure it is to be referred to the Commission for screening by laboratories of the signatory states; if found to be satisfactory by the states the Commission will submit the procedure to the Joint Editorial Committee of Standard Methods with request for decision on acceptance, modification or rejection. This system was designed to expedite recognition of new methods, to eliminate criticism that regional industry groups or states might be party to use of methods that add confusion in analytical interpretations and to promote through the recognized national authority development of improved analytical techniques.

The Steel Committee submitted to the Commission the draft of a manual titled "Dust Recovery Practice at Blast Furnaces." This incorporates an evaluation of the formation and recovery of settleable solids from mills operating in the Ohio Valley and contains suggested procedures for defining the performance of waste-water clarifiers. The Commission has authorized issuance of the manual as one of its series of reference-data publications.

During the year the Steel Committee inaugurated through the American Iron and Steel Institute research work at Mellon Institute on recovery of mill-scale and the effects of scale on downstream water uses. The committee is now undertaking a comprehensive inquiry into quality requirements of water used by steel mills.

Operation of a pilot plant at Niles, Ohio, for evaluation of the Blaw-Knox-Ruthner process for recovery of pickle liquor was started late in 1956. It is expected that experimental work will be completed in the fall of 1957, at which time a report on findings will be prepared. The studies at Niles are being financed by seven steel companies, who are members of the Steel Committee, and the Blaw-Knox Company.

Two reports prepared by the Chemical Committee were published during the year. The first of these, "Site Selection for Chemical Industry Plants" — with particular reference to the treatment and disposal of

water-borne wastes, was published in the January-February, 1957, issue of *Industrial Wastes* magazine. The second, titled "Current Practices in Municipal Treatment of Industrial Wastes," was published in the June, 1957, issue of the *Journal of Sewage and Industrial Wastes*.

Other matters to which the Chemical Committee devoted attention included an appraisal of water hardness and the effect of synthetic detergents on water quality conditions. Member companies of the committee have been sponsoring through the Association of American Soap and Glycerine Producers several research projects regarding effects of detergents and analytical procedures.

The Oil Refining Committee submitted to the Commission a report titled "Foul Condensate Treatment and Disposal." It is anticipated that the Commission will authorize release of this report for publication in a technical journal. The committee is now studying the effects of refinery effluents on taste and odor in water supplies.

The Coal Industry Committee is sponsoring some research and field work on the mine-acid drainage

problem through a fellowship at Mellon Institute.

The Metal Finishing Committee is reviewing the possibility of revising its reference-data manuals previously issued as Commission publications.

Aquatic-Life Committee—Three reports were prepared dealing with phenolic-compounds criterion for aquatic life, with maximum permissible concentrations of cyanide in waters of the Ohio Valley, and with iron and manganese criteria. The committee is drafting recommendations regarding criteria for the following substances: Sodium, potassium, calcium, magnesium, iron, manganese, phosphates and synthetic detergents. The committee reviewed plans for the aquatic-life resources project that is now being conducted under contract with the University of Louisville.

Water Users Committee—Evaluation of the membrane-filter technique for bacteriological examination of water was undertaken. Data developed by the committee during the first five years of monitoring activity was included as part of the Commission publication "Water Quality and Flow Variations in the Ohio River."

Bruce McDill, engineer-in-charge of industrial-waste control for the State of Ohio, is welcomed to a meeting of the Commission's Oil Refining Industry Action Committee by M. W. Nicholas. Mr. Nicholas, staff manager of the refining department of the Ohio Oil Company, is serving as committee chairman this year. The oil-refining group, which was organized in 1952, is one of seven industry advisory committees enlisted by the Commission in the eight-state crusade for clean streams.

Ohio Fuel Gas Co. (Clark) photo



The Scoreboard on

STATUS OF MUNICIPAL AND INSTITUTIONAL SEWAGE-TREATMENT FACILITIES—JULY 1, 1957

Number of communities (top number) and population served (bottom number)

STATUS	ILL.	IND.	KY.	N. Y.	OHIO	PA.	VA.	W. VA.	TOTAL	% OF TOTAL
Adequate treatment	39	106	109	4	168 (d)	69	26	20	541	36.5
	238,361	740,624 (e)	421,989	27,080	1,246,057	330,867	68,286	85,614	3,158,878	31.7
Treatment provided, not adequate	5	23 (b)	16	8	29	14	25	10	130	8.8
	18,948	141,235	88,425	23,478	283,048	57,604	29,995	29,341	672,074	6.8
Treatment provided, not adequate; improvements under construction	0	1	1	1	22 (e)	2	0	4	31	2.1
	0	427,173	11,132	43,354	484,844	2,257	0	14,594	983,354	9.9
New treatment works under construction	1	2	4	1	26	69	1	9	113	7.6
	647	12,695	447,524	1,000	754,488	1,279,583	560	229,410	2,725,907	27.4
Final plans approved	4	28	12	1	24	105	14	20	208	14.0
	11,769	177,369	36,705	1,492	127,778	624,926	21,319	125,396	1,126,754	11.3
Final plans in preparation	0	2	4	0	14	12	2	8	42	2.8
	0	69,862 (c)	8,874	0	248,439	37,943	10,421	106,549	482,088	4.8
Preliminary plans in preparation	0	13	8	3	29	28	9	31	121	8.2
	0	19,739	46,311	10,795	96,190	101,934	28,475	72,556	376,000	3.8
Treatment program under discussion	0	17	7	2	0	5	1	25	57	3.8
	0	26,584	21,765	2,083	0	9,396	1,568	44,316	105,712	1.1
Order, or recommendation issued by state	1	2	0	0	0	4	2	7	16	1.1
	3,196	2,780	0	0	0	16,867	2,163	6,980	31,986	0.3
Discharge of minor significance	4	71	24	3	37	0	4	11	154	10.4
	7,587	58,460	35,307	2,402	34,068	0	3,788	11,108	152,720	1.5
No tangible progress	4	8	5	0	0	13	11	29	70	4.7
	21,737	19,923	10,265	0	0	43,672	8,173	35,056	138,826	1.4
TOTAL	58	273	190	23	349	321	95	174	1,483	100.0
	302,245	1,696,444	1,128,297	111,684	3,274,912	2,505,049	174,748	760,920	9,954,299	100.0
(a) Includes West Side Evansville serving 88,636 (b) Evansville counted in this category (c) Includes East Side Evansville serving 30,000 (d) Includes Little Miami plant serving 161,361 and 7 communities (e) Cincinnati counted in this category (f) Includes Mill Creek plant serving 610,720 and 17 communities (g) Includes Muddy Creek plant serving 33,051 and 1 community										

Pollution-Control Installations

Highlights of progress on the installation of sewage-treatment works and industrial-waste control facilities are set forth on pages 3 to 5. For record and reference purposes the details of what was accomplished are presented in this section.

On the page opposite is an assembly of the status of municipal and institutional sewage-treatment facilities. This is arranged to show the status by states as well as that for the entire area of 155,000 square miles of the Ohio River Valley Water Sanitation Compact drainage district. A similar tabulation relating to industrial-waste control facilities is given on the following page, as is a classification of industries by type and number.

At the bottom of this page is a comparative analysis of progress this year and last with regard to municipal and institutional facilities. It will be noted that new plants and the additions to serve population increases that were placed in operation have continued at the satisfying rate of about a half-million persons yearly.

However, in the category of construction starts on new and expanded facilities, and discounting the abnormal situation created last year when the huge Allegheny County Sanitary Authority project was started, activity was not on a par with either last year or preceding years. In part this reflects the fact that the major projects — serving 76 percent of the population of the district — are already in operation

or under construction. But it might also be recognized that in some places construction starts have been delayed pending establishment of eligibility claims for funds under the new federal grant program, and also because of the higher rates of interest this past year in municipal borrowings.

Significant developments in the Ohio Valley district for the year ending June 30, 1957, may be summarized as follows:

23 municipalities, four institutions (pop. 296,259) placed new treatment facilities in operation.

23 municipalities, three institutions (pop. 191,962) placed in operation additions to treatment works.

Nine municipalities, one institution (pop. 143,264) placed treatment facilities under construction.

16 municipalities (pop. 87,240) placed under construction additions to treatment works.

Communities that placed new treatment plants in operation this year include:

PLACE	POPULATION	WATERSHED
Derry, Pa.	3,752	Allegheny
Conway, Pa.	1,570	Ohio
Breman, Ohio	1,187	Hocking
Pleasant Hill, Ohio	940	Miami
Sidney, Ohio	11,491	Miami
Dover Ohio	9,852	Muskingum

(Continued on page 27)

COMPARATIVE DATA ON MUNICIPAL SEWAGE-TREATMENT INSTALLATIONS

	LAST YEAR	THIS YEAR
PLACED IN OPERATION		
New treatment plants for	16 municipalities and 3 institutions serving 151,000	23 municipalities and 4 institutions serving 296,300
Additional facilities for	10 municipalities and 1 institution serving 329,000	23 municipalities and 3 institutions serving 191,900
	30 480,000	53 488,200
PLACED UNDER CONSTRUCTION		
New treatment plants for	95 municipalities and 2 institutions serving 1,960,000*	9 municipalities and 1 institution serving 143,300
Additional facilities for	19 municipalities and 3 institutions serving 163,000	16 municipalities that are serving 87,200
	119 2,123,000	26 230,500

*This reflects construction on Allegheny County Sanitary Authority project which includes 68 communities with a combined population of 1,271,000.

STATUS OF INDUSTRIAL WASTE-CONTROL FACILITIES—JULY 1, 1957
for industries discharging effluents directly into streams

STATUS	ILL.	IND.	KY.	N. Y.	OHIO	PA.	VA.	W. VA.	TOTAL	% OF TOTAL
Adequate control facilities	6	160	112	7	219	88	22	103	717	50.1
Control provided, not adequate	9	47	61	19	165	49	14	46	410	28.7
Control facilities inadequate, improvements under construction	0	0	3	0	26	2	0	4	35	2.4
New control facilities under construction	0	1	0	1	0	15	0	23	40	2.8
Plans for facilities completed or in preparation	0	3	0	7	1	51	0	45	107	7.5
No action by company	0	5	0	16	0	24	6	71	122	8.5
TOTAL NUMBER OF INDUSTRIES	15	216	176	50	411	229	42	292	1,431	100.0
Complying with ORSANCO IW-1	15	168	134	7	337	211	32	85	989	69.1

CLASSIFICATION OF INDUSTRIES BY TYPE AND NUMBER
discharging effluents directly into streams—July 1, 1957

CLASSIFICATION	ILL.	IND.	KY.	N. Y.	OHIO	PA.	VA.	W. VA.	TOTAL
Brewery	0	1	0	0	1	1	0	0	3
Cannery	3	61	0	1	21	1	1	0	88
Chemicals	1	21	24	0	44	24	7	25	146
Coal Mining	5	11	81	0	24	1	11	201	334
Coke	0	1	0	0	11	2	0	2	16
Dairy Products	1	21	9	17	49	8	2	2	109
Distillery	0	4	34	0	1	4	0	0	43
Meat Packing	0	24	5	0	31	7	2	3	72
Metal-Finishing	0	22	7	17	48	76	0	14	184
Oil Fields	0	10	0	3	0	0	0	0	13
Oil Refinery	2	4	3	0	5	19	0	2	35
Paper and Pulp	0	12	0	0	32	2	0	1	47
Steel Works	0	2	2	1	77 *	26	0	10	118
Tannery	0	1	1	0	1	3	1	3	10
Textile	1	1	2	1	3	1	4	1	14
Miscellaneous	1	16	8	10	41	51	14	18	159
Power Plants	1	4	0	0	22	3	0	10	40
TOTAL	15	216	176	50	411	229	42	292	1,431

* Ohio issues separate permits for each waste discharge (acid-iron, scale and blast furnace dust) emanating from a single steel plant. Thus, the 76 operations represent the total conducted at 17 plants.

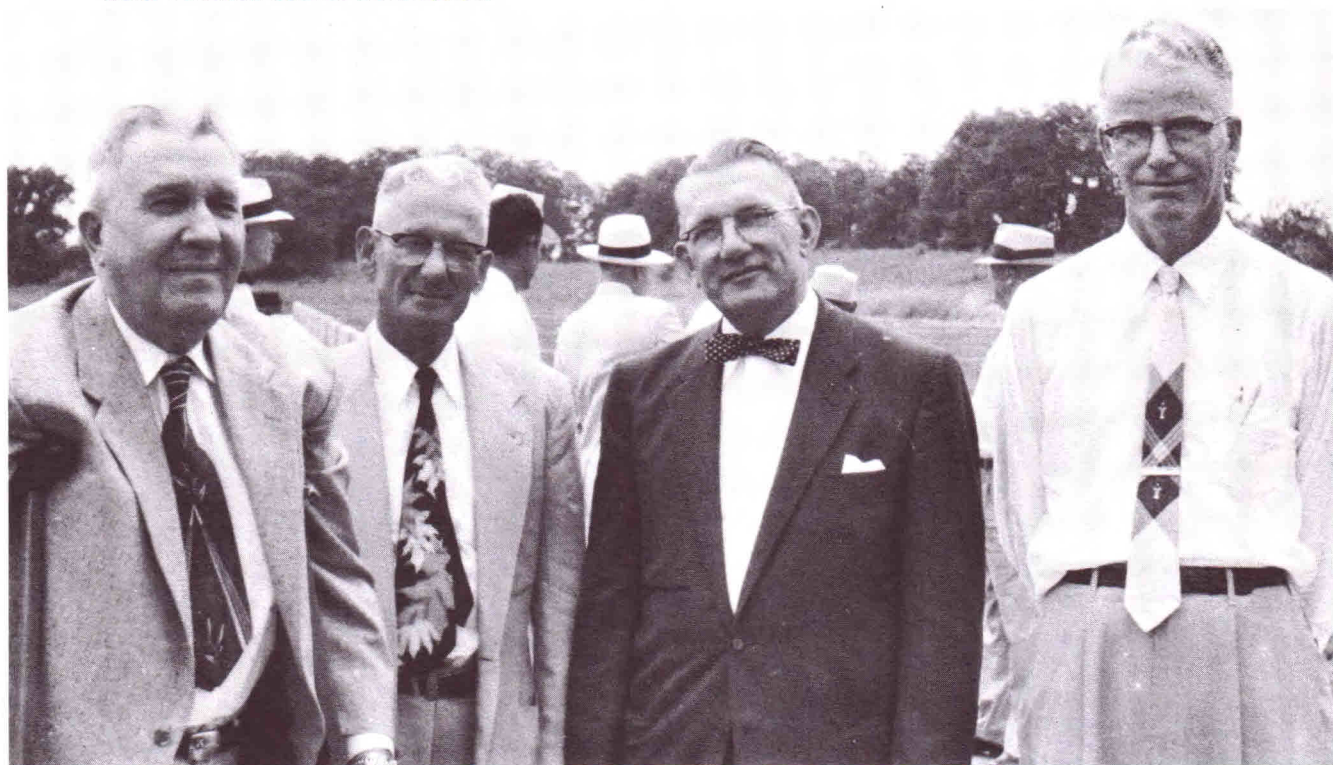
New Richmond, Ohio	1,960	Ohio
Portsmouth, Ohio	36,798	Ohio
Steubenville, Ohio	35,872	Ohio
Kenton, Ohio	8,475	Scioto
Champaign County Hospital, Ohio	50	Miami
Tuscarawas Valley Hospital, Ohio	40	Muskingum
Parkersburg, W. Va.	29,684	Ohio
Whitesburg, Ky.	1,393	Kentucky
Cynthiana, Ky.	4,847	Licking
Connersville, Ind.	15,550	Miami
Aurora, Ind.	4,780	Ohio
Mt. Vernon, Ind.	6,150	Ohio
Tell City, Ind.	5,735	Ohio
West Evansville, Ind.	98,636	Ohio
Charleston, Ind.	4,785	Ohio (trib.)
Lincoln State Park, Ind.	(500)	Ohio (trib.)
Cagles Mill Forest, Cloverdale, Ind.	(200)	Ohio
Dunkirk, Ind.	3,048	Ohio
New Whiteland, Ind.	(900)	Ohio
Portland, Ind.	7,064	Ohio
Gate City School, Va.	(1,000)	Tennessee

Communities that placed in operation plant additions or improvements this year include:

PLACE	POPULATION	WATERSHED
Conneaut Lake Park, Pa.	500	Allegheny
Edinboro, Pa.	1,567	Allegheny
Polk State Hospital, Pa.	3,500	Allegheny
Cortland, Ohio	1,259	Beaver
Jamestown, Ohio	1,345	Little Miami
Covington, Ohio	2,172	Miami
Jackson Center, Ohio	698	Miami
New Carlisle, Ohio	1,640	Miami
Trotwood, Ohio	1,066	Miami
Urbana, Ohio	9,335	Miami
Glendale, Ohio	2,402	Ohio (trib.)
Salem, Ohio	12,754	Ohio (trib.)
Greenfield, Ohio	4,862	Scioto
Marysville, Ohio	4,256	Scioto
Mount Gilead, Ohio	2,351	Scioto
Waverly, Ohio	1,679	Scioto
Mahoning County Hospital, Ohio	340	Beaver
Campbellsville, Ky.	3,477	Green
Leavenworth, Ind.	358	Ohio
Salem, Ind.	3,271	Ohio (trib.)

(Continued on page 28)

Three mayors and the city engineer of Henderson, Kentucky who supplemented each other's efforts over a period of years to contribute their part toward a clean Ohio River. Dedication of the Henderson sewage-treatment works in July of 1956 was a proud day for former Mayor Otis A. Benton, former Mayor Robert B. Posey, Mayor Hecht S. Lackey and Engineer Newton W. Neel. Mr. Neel is also a member of the Kentucky Water Pollution Control Commission.



Frankfort, Ind.	15,028	Wabash
Bloomington, Ind.	28,163	Wabash
Muncie, Ind.	58,479	Wabash
Madison, Ind.	7,506	Ohio
Robinson, Ill.	6,407	Wabash
Mattoon, Ill.	17,547	Wabash

Construction of sewage-disposal plants was started this year at the following communities:

PLACE	POPULATION	WATERSHED
Titusville, Pa.	8,923	Allegheny
Campbell, Ohio	12,882	Beaver
Hamilton, Ohio	57,951	Miami
So. Zanesville, Ohio	1,477	Muskingum
New Boston, Ohio	4,754	Ohio
Yorkville, Ohio	1,854	Ohio
Buckeye Lake, Ohio	(6,000)	Muskingum
Moundsville, W. Va.	14,772	Ohio
Owensboro, Ky.	33,651	Ohio
St. Bonaventure Univ. Allegheny, N. Y.	1,000	Allegheny

Additions or improvements placed under construction this year include:

PLACE	POPULATION	WATERSHED
Lebanon, Ohio	4,618	Little Miami
Eaton, Ohio	4,242	Miami
Piqua, Ohio	17,447	Miami
Gahanna, Ohio	596	Scioto
Reynoldsburg, Ohio	724	Scioto
Sunbury, Ohio	936	Scioto
Canfield No. 6, Ohio	1,465	Beaver
Brookfield No. 1, Ohio	(1,500)	Beaver
Brookfield No. 2, Ohio	(1,500)	Beaver
Beaver Creek, Ohio	(15,800)	Little Miami
Moraine S.D., Ohio	(10,300)	Miami
Wayne, W. Va.	1,257	Ohio (trib.)
Hopkinsville, Ky.	12,526	Cumberland
Madisonville, Ky.	11,132	Green
Jeffersontown, Ky.	1,246	Salt
Lawrence, Ind.	1,951	Wabash

FEDERAL-AID PROGRAM

The new Federal Water Pollution Control Act (Public Law 660 — 84th Congress), which was signed by the President on July 9, 1956, authorizes federal grants-in-aid to municipalities. For the fiscal year ending

June 30, 1957, the Congress appropriated \$50 million to be distributed among the states pro-rated according to population and per-capita income.

Each state determines the eligibility of communities within its jurisdiction for an allotment from these funds; this eligibility is subject further to approval by the Surgeon-General of the U.S. Public Health Service. The grant to a community for a sewage-treatment facility is limited to 30 percent of the reasonable cost, with a maximum amount not to exceed \$250,000.

A summary of the federal-grant program in the eight-state district encompassed by the Ohio River Valley Water Sanitation Commission for the first year ending June 30, 1957, is shown in the accompanying tabulation.

PROJECTS APPROVED FOR FEDERAL GRANTS IN THE OHIO VALLEY DISTRICT — JUNE 30, 1957

Municipality	Pop. 1950	* Type	Est. cost dollars	Fed. grant
Charleston, Ill.	9, 160	S	415, 000	124, 500
Danville, Ill.	37, 860	T	1, 259, 000	250, 000
Effingham, Ill.	6, 890	T	456, 948	137, 085
Alexandria, Ind.	5, 150	S	668, 160	200, 448
Winchester, Ind.	5, 470	T	102, 580	30, 774
Fairmount, Ind.	2, 650	T	349, 260	104, 778
Huntington, Ind.	4, 060	S	419, 000	125, 700
Jonesboro, Ind.	1, 970	S	376, 520	112, 956
Monon, Ind.	1, 440	T	117, 056	35, 116
Morristown, Ind.	680	S	34, 566	10, 370
Tipton, Ind.	5, 630	S	157, 605	47, 282
Greenville, Ky.	2, 660	T	185, 845	55, 543
Eminence, Ky.	2, 760	T	120, 010	33, 978
Hopkinsville, Ky.	12, 530	S	750, 904	135, 301
Jeffersontown, Ky.	1, 250	T	426, 282	103, 823
Owensboro, Ky.	33, 650	S	2, 649, 545	250, 000
Madisonville, Ky.	11, 130	T	990, 665	139, 118
Morehead, Ky.	3, 100	T	442, 500	132, 750
Murray, Ky.	6, 040	T	109, 000	32, 700
Mayville, N. Y.	1, 490	T	278, 000	83, 400
E. Liverpool, O.	24, 220	S	809, 107	242, 732
Gahanna, O.	600	T	150, 949	45, 285
Reynoldsburg, O.	720	T	199, 598	59, 879
S. Zanesville, O.	1, 480	S	137, 400	41, 220
Yorkville, O.	1, 850	S	332, 100	96, 630
Elizabeth, Pa.	2, 620	T	620, 000	184, 800
Oil City, Pa.	19, 580	T	1, 241, 000	250, 000
Penn Township, Pa.	25, 280	T	994, 750	250, 000
Pittsburgh, Pa.	1, 245, 380	T	656, 500	196, 950
Warren, Pa.	14, 850	T	1, 493, 300	250, 000
30	1, 492, 150		16, 943, 150	3, 763, 118

* S= sewers

T= treatment



Chairman Blucher A. Poole of Indiana and vice-chairman Russell E. Teague, M.D. of Kentucky.

Keller Studio photo

Commission Administrative Affairs

Execution of the provisions of the Ohio River Valley Water Sanitation Compact is the responsibility of 27 commissioners. Each of the eight states is represented by three commissioners appointed by the Governor of the state. The federal government has three representatives appointed by the President of the United States. Commissioners serve without compensation but are reimbursed for expenses incurred in connection with their duties.

Operating funds are provided by the eight signatory states, the specific amounts from each state being prorated according to the area and population of the state within the compact district. For the first year the states appropriated on the basis of a total budget of \$40,000; in each of the succeeding five years the allotment was \$100,000. During the past three years the budget request has been \$130,000 annually.

Under Public Law 845, the Federal Water Pollution Control Act of 1948, the Commission received grants of \$29,000 in 1949; \$24,538 in 1950 and \$22,084 in 1951. Under Public Law 660, the Federal Water Pollution Control Act of 1956, the Commission received a grant of \$69,802 in 1956.

A financial statement for the fiscal year of this report is given on a following page.

New Officers—During the year summarized in this report Mr. Kenneth M. Lloyd of Ohio served as chair-

man. Elected to take office on July 1, 1957, was Mr. Blucher A. Poole of Indiana as chairman and Dr. Russell E. Teague of Kentucky as vice-chairman.

Chairman-elect Poole has been a commissioner since 1948 and prior to that was a member of the negotiating committee that formulated the eight-state compact. For five years he was chairman of the Commission's Engineering Committee. He is regarded as one of the nation's outstanding sanitary-engineer administrators. His background, acquired during 26 years service with the Indiana State Health Department, includes participation on a host of public and professional committees and boards concerned with water-resources management. Most recently he acted as expert advisor in sanitary engineering to the U. S. A. delegation at the 1957 World Health Organization meeting in Geneva.

Following graduation from Purdue University in 1931, Mr. Poole joined the Indiana State Health Department where he was appointed chief engineer in 1935. Taking leave in 1942 to serve in the Army, he was assigned to the office of the Chief of Engineers as chief of the water and sewage section. Mr. Poole returned to Indiana in 1945 where, in addition to his duties as chief engineer, he became director of the division of environmental sanitation and secretary to the Indiana Stream Pollution Control Board. He is also a member of the Indiana Flood Control and Water Resources Commission.

In professional circles, Mr. Poole has acted as chairman of the sanitary engineering division of the American Society of Civil Engineers, chairman of the subcommittee on educational qualifications of sanitary engineers of the American Public Health Association, chairman of the Indiana Section of the American Water Works Association and president of the Central States Sewage Works Association. Currently he is a member of the State Officials Advisory Committee on Radiation Hazards of the Atomic Energy Commission and the committee on sanitary engineering and environment of the National Research Council.

A roster of the commissioners, the officers and the staff is given on the front cover of this report.

Membership Changes — Dr. Leroy E. Burney, Surgeon General of the U. S. Public Health Service, was appointed by President Eisenhower in December, 1956 to fill the vacancy created by the resignation of Dr.

Leonard A. Scheele in June of last year. Dr. Burney is no stranger to the affairs of the Commission. He served as a commissioner from 1948 to 1955, representing the State of Indiana, and was one of the original signers of the interstate compact for Indiana.

For the State of West Virginia Mr. Bern Wright, acting executive secretary of the State Water Commission, was appointed by Governor Cecil H. Underwood to succeed Commissioner John W. Lester on August 15, 1957.

Staff changes included the addition of Mr. Francis W. Montanari, sanitary engineer, in December, 1956; the addition of Mr. William L. Klein, chemist-biologist in June, 1957; and the resignation of Mr. W. G. Hamlin, sanitary engineer, in February, 1957.

Commission Committees — Committees and their membership, for the year ending June 30, 1958 are shown in the accompanying tabulation.

COMMITTEE ASSIGNMENTS

(for year ending June 30, 1958)

Engineering
A. H. PAESSLER, *Chairman*
LOUIS F. BIRKEL
EARL DEVENDORF
CLARENCE W. KLASSEN
WILLIAM BREWER
BERN WRIGHT
O. LLOYD MEEHEAN
H. E. MOSES
B. A. POOLE
W. W. TOWNE
F. H. WARING

Executive Committee
Chairman BLUCHER A. POOLE
Vice-Chairman RUSSELL E. TEAGUE
Illinois CLARENCE W. KLASSEN
Indiana JOSEPH L. QUINN, JR.
Kentucky EARL WALLACE
New York EARL DEVENDORF
Ohio RALPH E. DWORK
Pennsylvania H. E. MOSES
Virginia ROSS H. WALKER
West Virginia W. W. JENNINGS
Federal LEROY E. BURNAY

Audit
BERWYN F. MATTISON, *Chairman*
KENNETH M. LLOYD
JOSEPH L. QUINN, JR.

Finance
ROSS WALKER, *Chairman*
M. E. GOSNELL
W. W. JENNINGS

Pension Trustees
ROSS H. WALKER, *Chairman*
CLARENCE W. KLASSEN
ROBERT K. HORTON

By-Laws
HUDSON BIERY, *Chairman*
T. BRADY SAUNDERS
LABAN P. JACKSON

Financial Report

For Year Ended June 30, 1957

STATEMENT OF RECEIPTS AND DISBURSEMENTS

RECEIPTS:

From signatory states.....	\$155,090.00
(For detail see schedule)	
From U.S. Department of Health, Education and Welfare.....	69,802.00
(Grant from Public Law 660)	
Sale and handling of publications.....	697.49
Interest:	
Bank deposit.....	274.97
U.S. Treasury Bills.....	1,451.34
Total receipts.....	\$227,315.80

DISBURSEMENTS:

From state funds:	
Auditing	\$ 525.00
Consulting services.....	4,900.00
Contractual services	829.65
Electricity and water.....	631.56
Employees' pension trust.....	4,726.53
General office equipment and furnishings	1,655.17
Insurance	247.79
Legal services.....	3,600.00
Maintenance and repairs.....	1,017.42
Meetings	1,451.82
Membrane Filter Study.....	2,338.39
Miscellaneous	721.21
Office rent.....	7,019.00
Office supplies	1,893.35
Postage	788.06
Printing	5,900.53
Salaries	62,385.94
Service fees and subscriptions	436.79
Social security tax.....	893.61
Telephone and telegraph.....	2,022.68
Travel:	
Advisory committee	2,588.31
Commissioners	5,231.33
Staff	4,468.55
U. S. Geological Survey.....	20,000.00
	\$136,272.69
From federal funds:	
Administrative expense	7,353.07
Aquatic-Life Resources Project	27,065.92
Taste and Odor Detection and Identification Project	25,000.00
Robot Monitoring Station Project.....	1,971.50
	\$ 61,390.49
Total disbursements	\$197,663.18
Excess of receipts over disbursements.....	\$ 29,652.62

NOTE: The total receipts of \$227,315.80 shown above includes an amount of \$300.00 received from the Commonwealth of Kentucky during the fiscal year ended June 30, 1954, which has been applied to their contribution for the twelve months ended June 30, 1957.

STATEMENT OF RESOURCES—June 30, 1957

	STATE FUNDS	FEDERAL FUNDS	TOTAL
Available resources to			
June 30, 1956.....	\$ 66,278.79	None	\$ 66,278.79
Add: Annual budget—July 1, 1956 to June 30, 1957.....	130,000.00		130,000.00
U. S. Department of Health, Education and Welfare..		\$69,802.00	69,802.00
Sale and handling of publications	697.49		697.49
Interest: Bank deposit.....	274.97		274.97
U.S. Treasury Bills	1,451.34		1,451.34
	198,702.59	69,802.00	268,504.59
Less: Disbursements July 1, 1956 to June 30, 1957.....	136,272.69	61,390.49	197,663.18
Available resources to June 30, 1957.....	\$ 62,429.90	\$ 8,411.51	\$ 70,841.41
The above amount of \$70,841.41 is comprised as follows:			
Cash on deposit with Central Trust Company.....		\$ 44,090.74	
Cash on deposit with American Airlines, Inc.....		425.00	
Petty cash on hand.....		200.00	
U.S. Treasury Bills, face value \$25,000.00 at cost.....		24,786.75	
(Dated June 6, 1957, and redeemable at face value September 5, 1957).			
Accounts receivable:			
State of Illinois:			645.00
Advances for employees:			
Travel advances	\$ 180.00		
Employees pension trust.....	386.52		
Hospitalization	127.40		
(Hospitalization expense and employee pension trust contributions are advanced by the commission and repaid by the employees through monthly payroll deductions.)			
			693.92
			\$ 70,841.41

SCHEDULE OF ACCOUNTS RECEIVABLE—June 30, 1957

	BALANCE JUNE 30, 1956	ANNUAL BUDGET JULY 1, 1956 TO JUNE 30, 1957	RECEIPTS JULY 1, 1956 TO JUNE 30, 1957	BALANCE JUNE 30, 1957
Illinois	\$ 645.00	\$ 6,695.00	\$ 6,695.00	\$645.00
Indiana		22,945.00	22,945.00	
Kentucky		27,560.00	27,560.00	
New York.....		1,430.00	1,430.00	
Ohio		30,420.00	30,420.00	
Pennsylvania	20,215.00	20,215.00	40,430.00	
Virginia	4,875.00	4,875.00	9,750.00	
West Virginia		15,860.00	15,860.00	
TOTALS.....	\$25,735.00	\$130,000.00	\$155,090.00	\$645.00

In our opinion, the accompanying statement of receipts and disbursements, statement of resources and schedule of accounts receivable present fairly the operations of the Ohio River Valley Water Sanitation Commission on a receipts and disbursements basis for the fiscal year ended June 30, 1957, and its financial condition on June 30, 1957.

Wm. H. Mers & Co., Certified Public Accountants

REGULATORY AGENCIES OF THE SIGNATORY STATES

Operations of the Ohio River Valley Water Sanitation Commission are designed to promote and coordinate pollution control on a regional basis. Guided by the principle that no sewage or industrial-waste discharge originating within a signatory state shall injuriously affect the uses of interstate waters, the Commission makes determinations regarding control measures.

Securing compliance with these measures then becomes an obligation of each state. The Commission does not deal directly with any municipality or industry regarding compliance. Whenever, however, in the

opinion of the Commission, satisfactory compliance is not being or cannot be obtained through the effort of state agencies, enforcement procedures prescribed in Article IX of the compact may be employed.

Listed on this page are the names and addresses of the regulatory agencies in the signatory states. Questions concerning compliance with water-pollution control requirements should be addressed to the agency in the state in which a municipality or industrial plant is located. The state agency will arrange for such contact or consultation with the Commission as may be necessary or requested.

ILLINOIS	Technical Secretary State Sanitary Water Board Springfield, Illinois
INDIANA	Technical Secretary Indiana Stream Pollution Control Board 1330 West Michigan Street Indianapolis 7, Indiana
KENTUCKY	Executive Director Kentucky Water Pollution Control Commission 620 South Third Street Louisville 1, Kentucky
NEW YORK	Executive Secretary New York State Water Pollution Control Board New York State Dept. of Health Albany 1, New York
OHIO	Engineer in Charge Sewage and Industrial Wastes Unit Division of Sanitary Engineering Ohio Department of Health Columbus 15, Ohio
PENNSYLVANIA	Sanitary Water Board Box No. 90 Harrisburg, Pennsylvania
VIRGINIA	Executive Secretary State Water Control Board 415 West Franklin Street Richmond 20, Virginia
WEST VIRGINIA	Executive Secretary State Water Commission 1709 Washington Street, East Charleston, West Virginia

*Written and
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