# BILLION DOLLAR RIVER CLEAN-UP

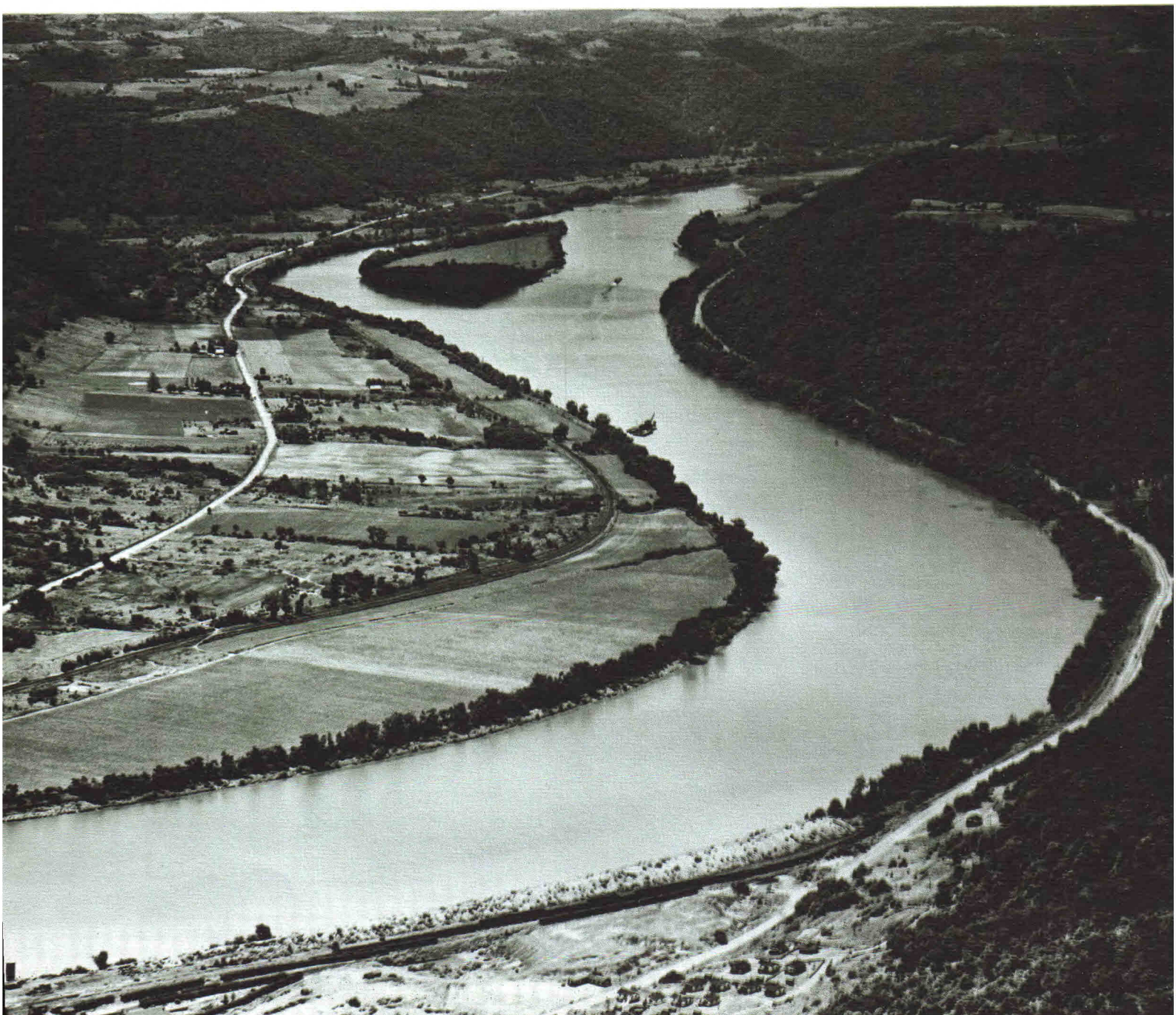
an investment report to the Governors of

ILLINOIS
INDIANA
KENTUCKY
NEW YORK
OHIO
VIRGINIA
PENNSYLVANIA
WEST VIRGINIA

OHIO RIVER VALLEY WATER SANITATION COMMISSION • 13TH ANNUAL SUMMARY 1961

# The promise of any land lies

*Ohio River Valley looking across Cresaps Bottom, West Virginia (B. & O. Railroad Co. photo)*



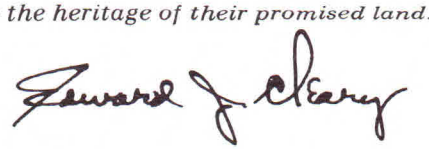
# in the streams that water it . . .

*. . . but that promise cannot be fulfilled if streams are despoiled by pollution. Eight states in the Ohio Valley subscribed to this view, and in 1948 they joined in a regional crusade for clean streams. For this purpose they created by compact the Ohio River Valley Water Sanitation Commission.*

*In pursuing their mission the states have investigated causes of pollution, promulgated regulations for its abatement, and succeeded in promoting construction of almost a billion dollars of control works.*

*But much remains to be done, particularly on tributaries to the Ohio, to insure full benefits from this huge investment. There are still many obvious evidences of pollution because of continued delinquency of some municipalities and industries, and from incompetent or careless operation of existing control facilities. In brief, the interstate program has advanced to the point where policing — expansion of inspection and river patrol coupled with prompt challenging of violators — claims priority.*

*This is the present position of the Ohio Valley states in the crusade to preserve the heritage of their promised land.*



December 1, 1961

Executive Director and Chief Engineer

OHIO RIVER VALLEY WATER SANITATION COMMISSION
Headquarters: 414 Walnut Street, Cincinnati 2, Ohio

# WHAT'S GOING ON

*There is no better criterion of what people want to know than the questions they ask. Queries relating to the Ohio River Valley Water Sanitation Commission (ORSANCO) and its work reveal a varied and detailed interest in the eight-state crusade for clean streams. They suggest that this thirteenth annual report could serve no more useful purpose than to include a cross-section of these questions and the answers to them.*

**WHAT IS THE COMMISSION'S JOB?** — The role of ORSANCO is to coordinate and supplement efforts of the eight states of the Ohio Valley in a regional water-pollution control program. In performing these functions the Commission is guided by the principle that no discharges of sewage or industrial residues originating within one state shall injuriously affect the interests of another state.

Coordination activities include assistance in enactment of legislation, conduct of technical investigations and public hearings on control requirements, promulgation of river quality standards, and promoting exchange of experiences on administration.

Supplementation of effort includes development of public support for pollution abatement, establishment of water-quality monitor and surveillance activities, sponsorship of research (notably in development of electronic detection devices) and application of legal aids when a signatory state believes it has exhausted its own remedies for securing compliance.

**WHY WAS ORSANCO ESTABLISHED?** — Prior to 1948 there was no federal legislation for dealing with pollution of interstate waters. Many streams in the Ohio Valley are interstate; they either pass through or serve as the political boundary for two or more sovereign states. Since no state has jurisdiction over practices in another state the increasing pollution of interstate streams became a problem of mutual concern.

The eight states of the Ohio Valley, looking upon the job of river clean-up as a matter of local responsibility, decided to attack the problem through an interstate treaty. With the approval of the Congress of the United States these eight states, Illinois, Indiana, Kentucky, New York, Ohio, Pennsylvania, Virginia and West Virginia, entered into a compact to cooperate in the control of future pollution and the abatement of existing pollution. In so doing they established the Ohio River Valley Water Sanitation Commission to guide and promote execution of their pledge of cooperation.

**WHO ARE THE COMMISSIONERS?** — The twenty-seven commissioners include three representatives from each state appointed by the Governor of the state, and three representatives of the federal government appointed by the President of the United States. Their names are on the inside back cover.

The commissioners are men who have distinguished themselves in the fields of public health, engineering, industrial management, fish and wildlife conservation, social and political science and the legal profession. Consequently, deliberations of the Commission enjoy the benefit of a wide variety of viewpoints.

The commissioners receive no compensation, but they are reimbursed for expenses in attending meetings in connection with their duties.

**WHAT PROFESSIONAL SERVICES ARE AVAILABLE TO THE COMMISSION?** — Administration of Commission affairs is assigned to a small professional staff.

The Commission has also fortified itself with the establishment of specialist committees. These include: An engineering committee composed of the chief engineers of state agencies together with technical experts from federal agencies; a group of six industry committees representing chemical, coal, metal-finishing, oil refining, paper and steel interests; a water-users committee composed of managers of municipal and industrial plants; and an aquatic-life group, which includes scientists and fish-management specialists. In addition, the Commission retains consultants from time to time on special assignments.

**WHERE DOES THE OPERATING MONEY COME FROM?** — There are two sources of funds — state appropriations and federal grants.

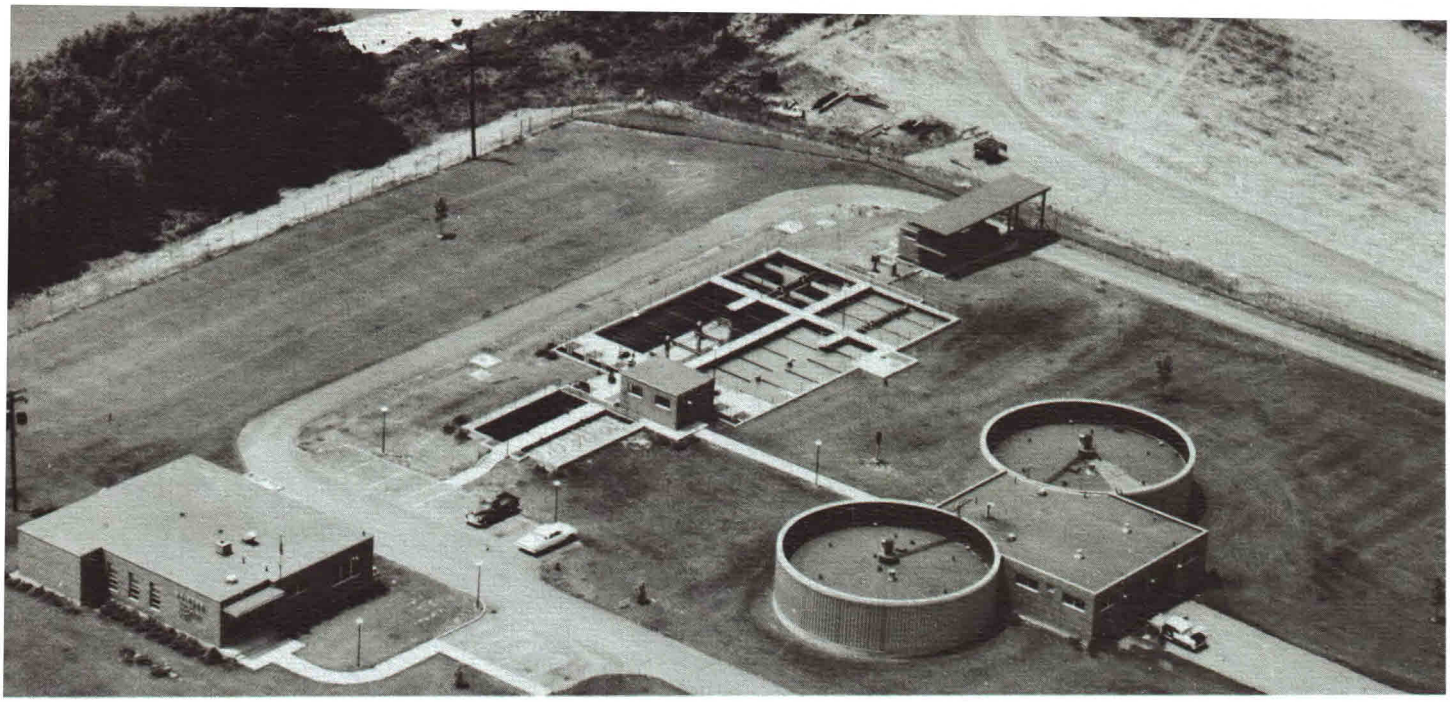
Operating funds are appropriated by the states. The annual budget is determined by the commissioners and submitted to the Governors of the signatory states for presentation to their legislatures; since 1954 it has totalled $130,000 yearly and prior to that it was $100,000 annually. The amount requested from each state is proportioned according to the weighted average of population and drainage area. Thus, New York with the smallest combination of area and population in the compact district contributes 1.10 percent of the budget; the largest share, 23.40 percent comes from Ohio. Details of the new pro rata distribution, based on the 1960 census and effective in fiscal year 1963-64, are given on page 18.

The Federal Water Pollution Control Act of 1956 provides financial support to states and interstate agencies for expansion of their activities. From this source ORSANCO has been receiving grants averaging $102,000 annually. These funds are used primarily for the sponsorship of special investigations and contract research projects.

In addition to operations directly financed by state appropriations and federal grants, ORSANCO is the recipient of valuable services performed voluntarily and without cost by its industry and other advisory committees. Membership of these committees is listed starting on page 22.

**WHAT IS THE PROCEDURE FOR SECURING COMPLIANCE WITH REGULATIONS?** — After the Commission has promulgated a regulation or otherwise agrees upon a course of action, it then becomes the obligation of the signatory states to secure compliance. ORSANCO does not deal directly with a municipality or an industrial establishment, except under defined circumstances. For example, in cases where a state agency is handicapped in securing compliance, the Commission has been requested to intervene and employ its legal powers of enforcement granted in Article IX of the compact. Such action requires approval of a majority of the commissioners from each of not less than a majority of the states, together with the assent of a majority of the commissioners from the state in which the action is to be taken.

The Commission has formally intervened thus far in five situations: At the request of the State of Ohio in the case of Gallipolis as well as Pomeroy and Middleport; for the State of West Virginia regarding Huntington; and for the State of Indiana at Terre Haute.



*Weirton, W. Va., is doing its part in keeping the upper Ohio River clean with completion of this $1,450,000 sewage-treatment plant. Designed by Alden E. Stilson and Associates, consulting engineers of Columbus, Ohio, the plant is one element of a $6,000,000 sewerage improvement program. The treatment processes include sedimentation, sludge digestion and chlorination of effluent. W. D. Barksdale is superintendent.*

*Kucera & Associates, Inc., photo*

**WHAT DOES SEWAGE TREATMENT COST?** — In general, per-capita cost of sewage-treatment installations will vary inversely with capacity — the larger the population served the smaller is the unit cost. Construction costs in the Ohio Valley for primary plants (providing sedimentation, sludge digestion and chlorination) have averaged $22 per capita in cities over 50,000 population and up to $56 for communities under 1,000 population. To this must be added the costs of intercepting sewers and pumping stations; these vary widely, depending on topography and local development, and have ranged from $11 to $110 per capita. All costs have been adjusted for 1960 prices.

Annual operating costs for primary treatment plant vary from $1.00 to $3.50 per capita. The total annual cost per capita — which includes amortization and interest charges on treatment facilities and interceptors as well as operating costs — shows a range from $6.50 to $13. So-called "complete" treatment will cost from 30 to 50 percent more than primary facilities. Complete treatment more than doubles the purification provided by primary plants.

**WHAT PROGRESS IS BEING MADE IN BUILDING PLANTS?** — Most dramatic is the progress on the Ohio River. When the Commission was organized in 1948 sewage-treatment facilities were provided for only one of every 100 persons along its banks; today plants have been built to serve 93 of every 100; facilities under construction will soon bring this to 97. Progress on tributary streams has reached the point where plants have been constructed or are reaching completion for treating the sewered wastes of 87 of every 100 persons in the entire drainage basin. Sewage treatment installations in the Ohio Valley have far outstripped gains in population. In 1948 only 38 percent of the sewered population was provided with treatment; today it is 87 percent. This gain has been made despite an increase of 2,870,000 persons (34 percent) connected to sewer systems.

**DOES ORSANCO FINANCE CONSTRUCTION OF SEWAGE-TREATMENT WORKS?** — No; functions of the interstate agency are limited to the promulgation of regulations relating to municipal and industrial effluents and in aiding its signatory states to secure compliance with these regulations.

However, federal aid for construction of municipal sewage-treatment facilities has been available since 1956. Federal grant provisions were liberalized on July 20, 1961 with the passage of Public Law 87-88. Communities are eligible for a grant up to 30 percent of the cost of a project (but not more than $600,000); where a single treatment facility is designed to serve more than one community, each of the participating communities may qualify for separate grants but the total is limited to $2,400,000.

Application for federal grant should be made to the pollution-control agency in the state wherein the municipality is located. Names and addresses of state agencies in the Ohio Valley district are given on the back page of this report. Communities that qualified last year for federal grants are on page 15.

**WHAT DOES ORSANCO DO ABOUT FISH-KILLS AND SPILLS?** — ORSANCO headquarters acts as a clearinghouse for information related to such happenings for relay to the state or states concerned. Particularly important in this operation is the unique service established with the Cincinnati River Forecast Center of the U. S. Weather Bureau. Each day ORSANCO receives a telephoned bulletin on flow volume and velocity in various stretches of the Ohio River. This information makes possible prompt determination of dilution and time-of-travel when spills occur. To further expedite appraisal of spill hazards ORSANCO has made arrangements with its Chemical Industry Advisory Committee for access to latest information on toxicity implications of various products.

## SUMMARY OF FISH KILLS, SPILLS AND VISIBLE VIOLATIONS

Following is a summary of incidents that received attention of the Commission staff working in cooperation with the signatory-state agencies during the period July 1, 1960, to June 30, 1961. Investigations were made by state-agency personnel or Commission staff of the incidents listed. Where evidence was obtained to fix responsibility appropriate action was taken by the state agencies to prevent recurrence.

**Fish kills —** Five fish kills, two in the Ohio River and three in tributaries, were reported as follows: July 6 — Allegheny R. near Pittsburgh caused by discharge of acid from abandoned coal mines: "thousands" of dead fish observed; Aug. 4 — Scioto R. below Chillicothe, Ohio caused by industrial discharge: "thousands" of dead fish observed; Aug. 26 — Kanawha R. near Belle, W. Va. caused by loss of methanol from a barge: Kill described as "complete;" Sept. 1 — Ohio R. at Emsworth Dam caused by low dissolved-oxygen conditions: "thousands" of dead fish observed; Dec. 18 — Ohio R. near Chester, W. Va., cause unknown: "hundreds" of dead fish observed.

**Accidental spills —** Ten spills affecting the Ohio River were reported: Aug. 13 — tar-grease at Wheeling; Aug. 21 — road tar at Follansbee, W. Va.; Dec. 6 — benzene between Pittsburgh and Pt. Pleasant, W. Va.; Jan. 14 — gasoline and volatile liquids at St. Marys, W. Va.; Jan. 6 and Feb. 20 — oil at Catlettsburg, Ky.; May 16 and 24 — oil at Cincinnati; May 24 and 25 — styrene at Addyston, Ohio.

Eight spills occurred on tributaries: Aug. 2 — dye stuff on L. Kanawha R. at Parkersburg; Nov. 29 — dye stuff on Guyandot R. at Huntington; Dec. 29 — cyanide on Fourteen Mile Creek near Charlestown, Ind.; Feb. 27 — brine on Kanawha R. near Nitro, W. Va.; Feb. 28 — ethyl alcohol and ethyl chloride on Whitewater R. near Connersville, Ind.; Mar. 2 — *coke-plant waste on Mahoning R. at Warren, Ohio;* June 22 — asphalt on Miami R. at Cleves, Ohio; June 26 — asphalt on Muskingum R. near Beverly, Ohio.

**Oil pollution —** On the Ohio River fifty-six incidents of oil pollution, in addition to the spills already noted, were reported: July 6, 18 and 25 — at Portsmouth; July 21 — above Aliquippa; July 27 — at East Liverpool; Aug. 1 — ten places between Ambridge, Pa. and St. Marys, W. Va.; Aug. 4 — above Ashland; Aug. 10 — at Covington, Ky.; Aug. 11 — at Cincinnati; Aug. 12 — at Weirton; Sept. 27 — sixteen places between Ashland and Chilo, Ohio; Sept. 29 — at Moscow, Ohio; Nov. 29 — eleven places between Crown City, Ohio and Cincinnati; Dec. 15 — at Cincinnati; Jan. 19 — at Lawrenceburg, Ind.; June 6 — at Portsmouth; June 7 — at Covington, Ky.; June 13 — at Cincinnati; June 29 — at Portsmouth; June 30 — three places between Ironton and Huntington.

On tributaries there were seven incidents of oil pollution: Aug. 1 — Beaver R. at Beaver Falls, Pa.; Aug. 4 and Nov. 29 — Big Sandy R. near Catlettsburg; Aug. 6 and 11 — Licking R. near Covington, Ky.; Nov. 29 — White Oak Creek near Ashland; Dec. 7 — Licking R. at Covington, Ky.

**Abnormal color —** On the Ohio River thirty violations were noted regarding color-producing materials: July 21 — near Aliquippa, Pa.; Aug. 1 — sixteen places between Conway, Pa. and Marietta, Ohio; Aug. 3 — at South Point, Ohio; Sept. 29 — at New Richmond, Ohio; Dec. 29 — eight places *between Pomeroy, Ohio and Coal Grove, Ohio;* June 28 — at Maysville; June 29 — at Portsmouth; June 30 — at Ashland.

On tributaries twelve color violations were reported: Aug. 1 — Tuscarawas R. at Barberton, Ohio; Aug. 1 — seven places on Mahoning R. between Niles, Ohio and New Castle, Pa.; Aug. 4 — Guyandot R. at Huntington; Aug. 11 — two places on Licking R. near Covington, Ky.; Dec. 30 — Miami R. near Cleves, Ohio.

**Miscellaneous violations —** The following eighteen additional violations on the Ohio River were noted: July 7 — abnormal acid conditions near Pittsburgh; July 21 — taste-and-odor producing substances at Portsmouth; July 22 — untreated sewage at Beaver, Pa. and Midland, Pa.; Aug. 1 — foam below Toronto, Ohio; Aug. 4 — untreated sewage below Catlettsburg; Sept. 27 — untreated sewage at Maysville; Nov. 29 — untreated sewage at Middleport, Ohio and Pomeroy, Ohio; Nov. 29 — scum below Greenup, Ky.; Dec. 2 — foam at Bromley, Ky.; Dec. 20 — taste-and-odor producing substances at Steubenville; Dec. 28 — taste-and-odor producing substances at East Liverpool, Ohio; June 28 — untreated sewage at Ripley, Ohio and Augusta, Ky.; June 28 — untreated sewage and dairy wastes at Maysville; June 30 — taste-and-odor producing substances at Huntington.

On tributaries four violations were reported: Aug. 11 — acid, untreated sewage and abattoir discharges on Licking R. near Newport, Ky.; Jan. 19 — untreated *sewage on Whitewater R. at Harrison, Ohio.*


*"River poisoned, don't drink city water" was the false alarm being broadcast when the Louisville monitor station of the ORSANCO interstate network reported that a truck carrying cyanide had overturned some fourteen miles upstream on the Indiana bank of the Ohio River. With the aid of daily river-flow records ORSANCO promptly determined that dilution was so great and flow so slow that no potential hazard existed. This was confirmed later from actual river tests made by chemists of both the Indiana and Kentucky pollution-control agencies.*

**DOES THE COMMISSION MAKE ANY CHECKS ON RIVER QUALITY?** — Eleven years ago ORSANCO pioneered the concept of maintaining a network of monitor stations for systematic testing of river quality. This program was instituted to serve two purposes: (1) Reveal the occurrence of abnormal conditions; and (2) secure data to assess adequacy of pollution-control measures.

Over the years this manually-operated surveillance program has provided valuable information. But its operation left something to be desired. Sampling and chemical testing are time-consuming procedures; and it was not feasible to maintain observations throughout a 24-hour period. These deficiencies suggested the possibility of developing an automatic electronic sentinel. Efforts of the staff resulted in design and construction of what is now called the ORSANCO ROBOT MONITOR system.

At the present time six of these sentinels have been installed at strategic points along the Ohio River and its tributaries. They maintain day and night vigilance on water-quality changes and relay this information by leased wire to the central office at Cincinnati.

**IS RADIOACTIVITY RECEIVING ATTENTION?** — ORSANCO has been concerned since its establishment in 1948 with the impact of atomic-energy developments. With the assistance of its signatory states, the Atomic Energy Commission and its contractors, and the U. S. Public Health Service, ORSANCO has been developing data on radioactivity levels in the Ohio River and its tributaries from some 70 monitor stations. In addition to this surveillance program the Commission has sponsored for several years a study of the potentialities of radioactivity build-up in the muds, biota and fishes of the Ohio River.

For evaluation of data ORSANCO retains the services of Dr. A. Krebs, professor of radiobiology at the University of Louisville. It is his conclusion that radioactivity levels in the Ohio River have remained below the permissible limits established by the National Committee on Radiation Protection. The latest summary from Dr. Krebs (dated October 18, 1961) stated:

"A decrease in activity of water samples and aquatic species, already noticed in the second half of 1959 continued during 1960 and 1961 until recently, when the Russian weapon tests brought new radioactive debris and fallout all over the globe.

"Data assembled for the ORSANCO-University of Louisville project reveal the following values of gross beta activity from measurements made on water samples from the Ohio River: (Editor's note — Values are reported in micro-micro curies per liter, which is abbreviated as mmc/1. A micro-micro curie is a millionth of a millionth of a curie; a curie is equivalent to the radioactivity of a gram of radium. The 1961 revision of the Public Health Service Drinking Water Standards proposes a limit of 1,000 mmc/l for gross beta activity when strontium 90 and alpha emitters are absent).

1958 (Fall) — up to 87 mmc/l
1959 (1st half) — 17 to 202, averaging 76
1959 (2nd half) — 9 to 81, averaging 46
1960 (1st half) — 0.8 to 12, averaging 6
1960 (2nd half) — 0.3 to 7.6, averaging 4.3
1961 (1st half) — 0 to 16.5, averaging 6.4

"A similar trend was exhibited by plankton, silt and fish samples. All these measurements compare favorably with data reported from all over the United States and also with those reported by other monitoring agencies in the Ohio Valley.

"These values are well within the limits set for drinking water by the Federal Radiation Council, the National Committee on Radiation Protection, and the International Commission on Radiological Protection," is the conclusion of Dr. Krebs.

**ARE THERE REGULATIONS REGARDING SEWAGE DISPOSAL FROM BOATS?** — Not at the present time. Priority of attention has been directed toward curbing major sources of pollution from communities and industries. But the Commission has had under scrutiny the matter of sewage discharges from towboats, pleasure craft and marinas.

Recent developments with small sewage-disposal devices point to the technical feasibility of installing such units on boats and docks. There are at least three devices now available for attachment to marine "heads" that provide maceration and disinfection of sewage solids prior to discharge. In addition, there are two toilet units — one utilizing gas and the other electricity — which are reported to completely incinerate wastes.

When regulations are promulgated provisions will have to be made for inspection and policing of thousands of boats; it is improbable that present budgets of state pollution control agencies will permit such an undertaking. There is the possibility, however, that the boat-licensing programs being adopted by some states along with the establishment of waterways patrol organizations might offer a logical means for checking compliance when sewage disposal requirements are adopted.

*Scores of marinas like this one at Huntington, W. Va., testify to the growing popularity of the Ohio River for pleasure boating. During the four-month period starting June 1 the U. S. Coast Guard issued navigation notices covering 33 regattas, racing and water-ski events; 28 of these were conducted on the Ohio River and five on tributary streams.*

*ORSANCO (Montanari) photo*

**WHO USES WATER FROM THE OHIO RIVER AND IN WHAT QUANTITY?** — Two and a quarter million people in 117 communities rely on the Ohio for their water supply. To satisfy these municipal requirements some 280 million gallons a day are pumped and treated — an average of 125 gallons per person.

Industries make the biggest claim on Ohio River water — almost 1,200 million gallons daily. However, 90 percent of this volume is simply passed in and out of power plants for cooling purposes and thus suffers no contamination.

There is more than ample water for those who wish to draw upon the Ohio River. For example, at Louisville the average river flow is 900 times greater than that utilized by the Louisville Water Company to supply present demands. In brief, the problem of water supply is not one of quantity — it is one of maintaining quality through pollution control.

**WILL THE NEW NAVIGATION DAMS AFFECT WATER-QUALITY CONDITIONS?** — The new dams will create longer and deeper "pools" in the Ohio River, as contrasted with the series of small pools that now exist throughout its 981-mile length. What effect this change in river regimen will have on quality cannot be predicted. In 1953 when plans had reached the point where federal construction of the dams was imminent the Commission requested the U. S. Public Health Service to initiate a scientific inquiry on the matter. Among other things, the Commission raised questions regarding reaeration and deoxygenation rates, stratification, sludge deposition and coliform (bacteria) densities.

A progress report from the Public Health Service in 1956 reached these tentative conclusions: If settleable sewage solids are removed from the river (as required by the interstate compact) the effect of sludge deposits with resulting oxygen depletion was not regarded as significant; the effect on reduction of coliform organisms should be beneficial; the new structures should not lessen the cleansing action of the river during high flows; further studies would be required to assess reaeration changes, as well as dispersion and stratification. These views were detailed in the 8th (1956) annual report of ORSANCO. Since then no further reports have been submitted.

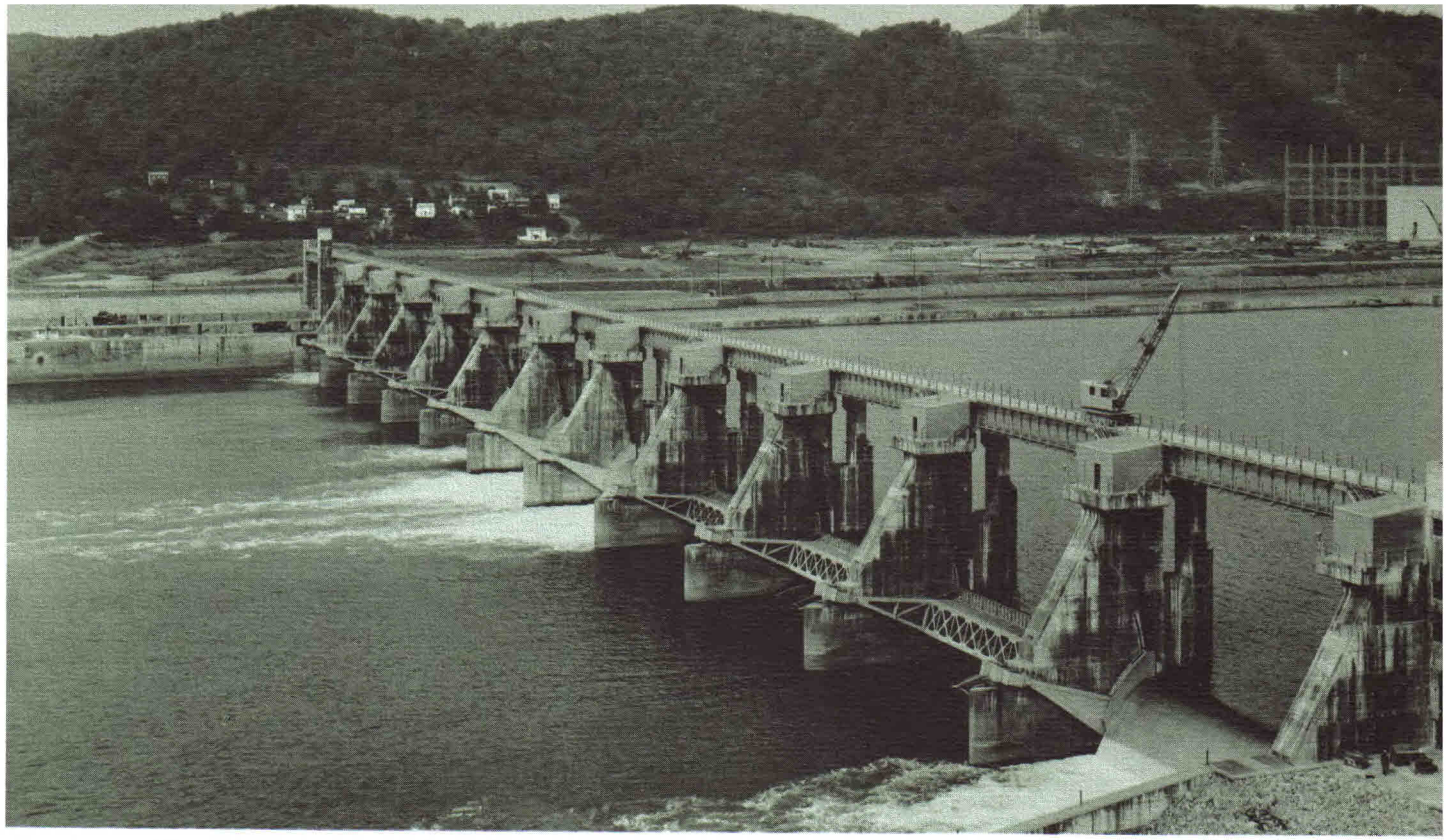
Meantime, the Commission has been routinely monitoring river-quality conditions during the past eleven years. This data matched against conditions that develop when the new dams go into operation should permit an evaluation of their effect on water quality. Two of the dams — New Cumberland and Greenup — went into operation this fall. Fortuitously, substantial progress has also been made in the construction of municipal plants to purify sewage that formerly went into the river untreated.

In addition, there has been an increase in the amount of water available for dilution during low-flow summer periods. This augmented flow is provided from multiple-purpose storage reservoirs built in the headwaters of the Ohio Valley by the U. S. Corps of Engineers. Reservoirs built or under construction now have capacity of adding some 3,800 cfs during the low-flow season (as measured at Cincinnati, which is the mid-point of the Ohio). This represents three times the amount of low-flow augmentation that was assured in 1949.

The Corps of Engineers comprehensive program calls for 88 reservoirs in the Ohio Valley. Thus far 38 already are in operation and 12 more are under construction; storage capacity for providing low-flow augmentation is included in 13 of these fifty reservoirs.

**SINCE POLLUTION CONTROL IS AFFECTED BY DILUTION DO YOU HAVE ANY WAY OF FORECASTING RIVER FLOWS?** — ORSANCO enlisted the services of the U. S. Weather Bureau three years ago in exploring possibilities of forecasting river flow. Such information was sought as a means of perfecting an interstate control proposal for proportioned discharge of salt wastes.

The Weather Bureau office in Cincinnati has developed techniques where not only does it provide the Commission with a daily forecast but also pre-



*The New Cumberland dam on the upper Ohio River at Stratton, Ohio, which was dedicated on September 28, 1961. This is the first of a series of fixed, high-lift structures to improve navigation; it replaced three wicket-type dams and thereby creates a deeper and longer pool.*

*U. S. Corps of Engineers photo*

dicts flows three days in advance for the Ohio River and some of its tributaries. This unique service makes it possible for the Commission to proceed with greater confidence in developing control regulations to conform with the proportioned-discharge concept. It offers a practical new "tool" for water-quality management.

**WHAT IS BEING DONE ABOUT OIL POLLUTION?** — After declaring in 1958 that no one shall cause or permit oil or oily substances to be deposited in the waters of the Ohio Valley district, the Commission went a step further and in 1959 adopted recommended practices to be observed on boats, at terminals and other installations where oil is used, transferred or stored. These practices represent the accumulated experience of ORSANCO's Oil Refining Industry Action Committee and a pollution-abatement subcommittee of the American Waterways Operators' Association.

Securing compliance with these pronouncements and practices is one of the most challenging tasks that face the state regulatory agencies. As an aid in promoting greater awareness of the oil pollution problem and means for coping with it, the Commission has produced an educational film titled "Oil on the River."

With 16,000,000 tons of oil products transported yearly on the Ohio River alone, and with the ever-present risk of accidental discharges, it is apparent that constant vigilance will be required to deal with oil pollution. From periodic aerial and boat reconnaissance undertaken by the Commission staff and from complaints made by marinas and sportsmen a sizeable number of oil pollution incidents have been investigated.

**DOES RIVER TRANSPORT OF CHEMICALS CONSTITUTE A POLLUTION HAZARD?** — This matter was the subject of a detailed inquiry made by ORSANCO in 1959. It was concluded that loss of cargo from damage to barges in transit, as well as accidental sinking of barges, could introduce contamination risks. More than 3,000,000 tons of chemical cargo are now being moved annually on the Ohio River, and some of the products are classified as toxic.

*Greatest challenge in the Ohio Valley is the curbing of industrial pollution. The good work accomplished by a majority of progressive industries is overshadowed, however, by some unhappy examples of callous disregard of the public interest, as evidenced by this recent scene on the Kanawha River.* *ORSANCO (Jones) photo*

The inquiry suggested possibilities for establishing preventive measures (see *12th Annual Report* for details). These ranged from promoting awareness among maritime interests that accidents involving loss of cargo might jeopardize the welfare of an entire community, to further development of the ORSANCO monitor and alert system to expedite relay of information. Progress in implementing these recommendations is reflected in the following developments:

The U. S. Coast Guard is now considering promulgation of additional regulations dealing with notification procedures when vessels or tows experience a loss of cargo.

The U. S. Corps of Engineers will amplify designation on all its Ohio River navigation charts, as they come up for revision, the location of municipal and industrial water intakes so that pilots will be aware of the proximity of such intakes if accidents occur.

The American Waterways Operators' Association has requested its members to impress upon navigation officers and crew the necessity for prompt reporting of accidental discharges, and for strict compliance with Coast Guard regulation No. 146.06-12, which requires that shipping manifest papers carry the true name of the cargo and that the manifest must accompany and remain with the shipment until final delivery.

**CAN ANYTHING BE DONE ABOUT ACID DRAINAGE FROM COAL MINES?** — Guided by demonstration of possibilities for ameliorating the pollutional aspects of acid mine-drainage, notably in the states of Pennsylvania and Indiana, the Commission adopted control measures last year. This action reflects a basic change in viewpoint as contrasted with the situation existing in 1955. At that time mine-drainage was specifically exempted from controls "until such time as practical means are available."

The ORSANCO measures were developed following discussions with its Coal Industry Advisory Committee, which represents a cross-section of mine operators in the Ohio Valley. They call for: (1) Reducing water flow into the mines; (2) minimizing contact time of water with the acid-forming materials in a mine; (3) disposal of gob and other refuse materials in such fashion to minimize exposure to water and weathering; (4) releasing drainage from

a mine continuously throughout a 24-hour period instead of discharging intermittent "slugs" of acid water; and (5) installing adequate closures on mine openings immediately following termination of mining activities.

To expedite compliance with these measures ORSANCO has sponsored field clinics to acquaint state-agency personnel with the application of controls. The Coal Industry Advisory Committee is planning similar activities with operators of mines. Meantime, a Commission-sponsored project at Ohio State University has resulted in a report outlining areas of research that may be productive in devising more effective methods of control.

**WHAT IS THE STATUS OF INDUSTRIAL CONTROL?** — There are 1,710 industrial establishments in the Ohio Valley whose effluents are discharged directly into streams. A total of 1,286 have installed control facilities rated acceptable by state agencies; another 280 have provided some control but performance is not yet rated as adequate.

There are 260 establishments that have not yet complied with the minimum control requirements established by ORSANCO in 1955. This accounts for situations throughout the valley where the discharge of sludges, color-producing or floating materials reveal continuing evidences of pollution. Furthermore, accidental spills and carelessness, notably with regard to handling oil and chemical products, create conditions from time to time that are unsatisfactory.

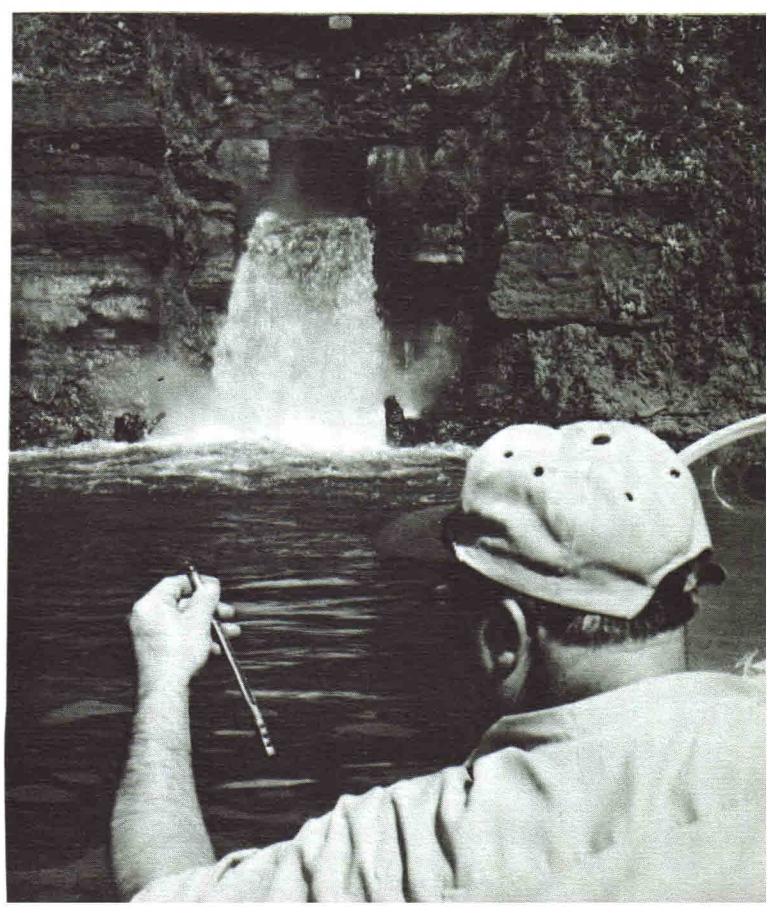
**ARE DETERGENTS PRESENT IN RIVER WATER?** — The ORSANCO monitor program includes measurement of detergent concentrations at five places on the Ohio River and at 15 additional stations on tributaries. This testing is performed under cooperative-contract arrangements with the U. S. Geological Survey.

Detergent concentrations have averaged 0.1 parts per million (ppm) at the Ohio River stations measured by the U.S.G.S.; the highest monthly value thus far has been 0.3 ppm. On the tributaries the average is 0.1 ppm; the highest monthly average occurred on the Mahoning River — a value of 1.4 ppm.

Acting on the invitation of the Commission, the ORSANCO Chemical Industry Committee established a detergents subcommittee, one of whose activities includes tests on the Ohio River. Since 1954 weekly samples from a point below Cincinnati have been analyzed. The findings from a total of 832 samples show that detergent concentration averages 0.16 ppm; the highest value was 0.59 and the lowest was 0.01.

A second testing station was established by the detergents subcommittee in the upper Ohio River at Willow Island in 1957. From a total of 121 weekly samples analyzed thus far the average detergent concentration is 0.16 ppm, with a high of 0.31 and a low of 0.08.

For comparative purposes it might be noted that the detergent content in the Ohio River averages less than one-third of the recommended limit (0.50 ppm) set forth in the recently adopted Federal Drinking Water Standards.

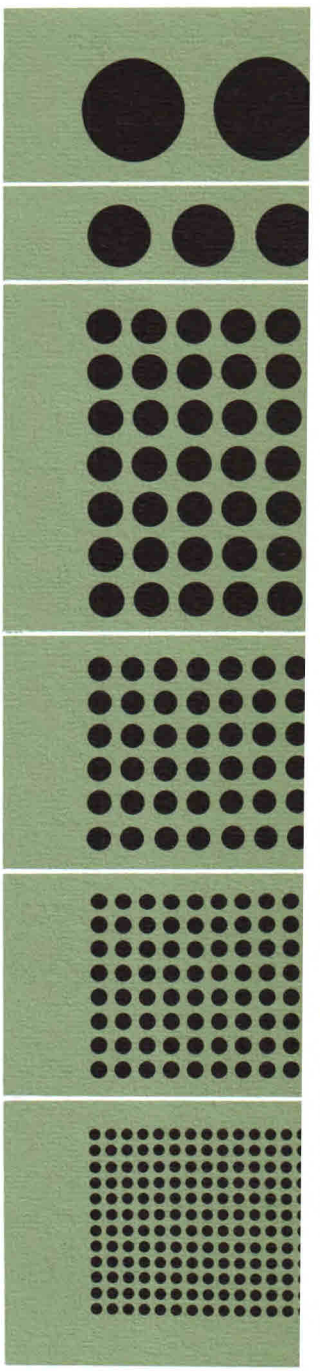


*Progress in the construction of pollution-control facilities focuses attention on the next step in keeping streams clean — the establishment of inspection and river patrol service to insure compliance with regulations. A wide-awake man in a fast boat makes a happy combination for this important task.*

*ORSANCO (Jones) photo*

# THE BILLION DOLL

## A tale of 1660 cities



Almost a billion dollars has been invested by cities and villages in the Ohio Valley for pollution-abatement facilities. This means that nearly nine-tenths of the municipal program has been completed. With the investment of another $150 million — to be shared among 600 small communities — the regional crusade for clean streams will have reached one major goal.

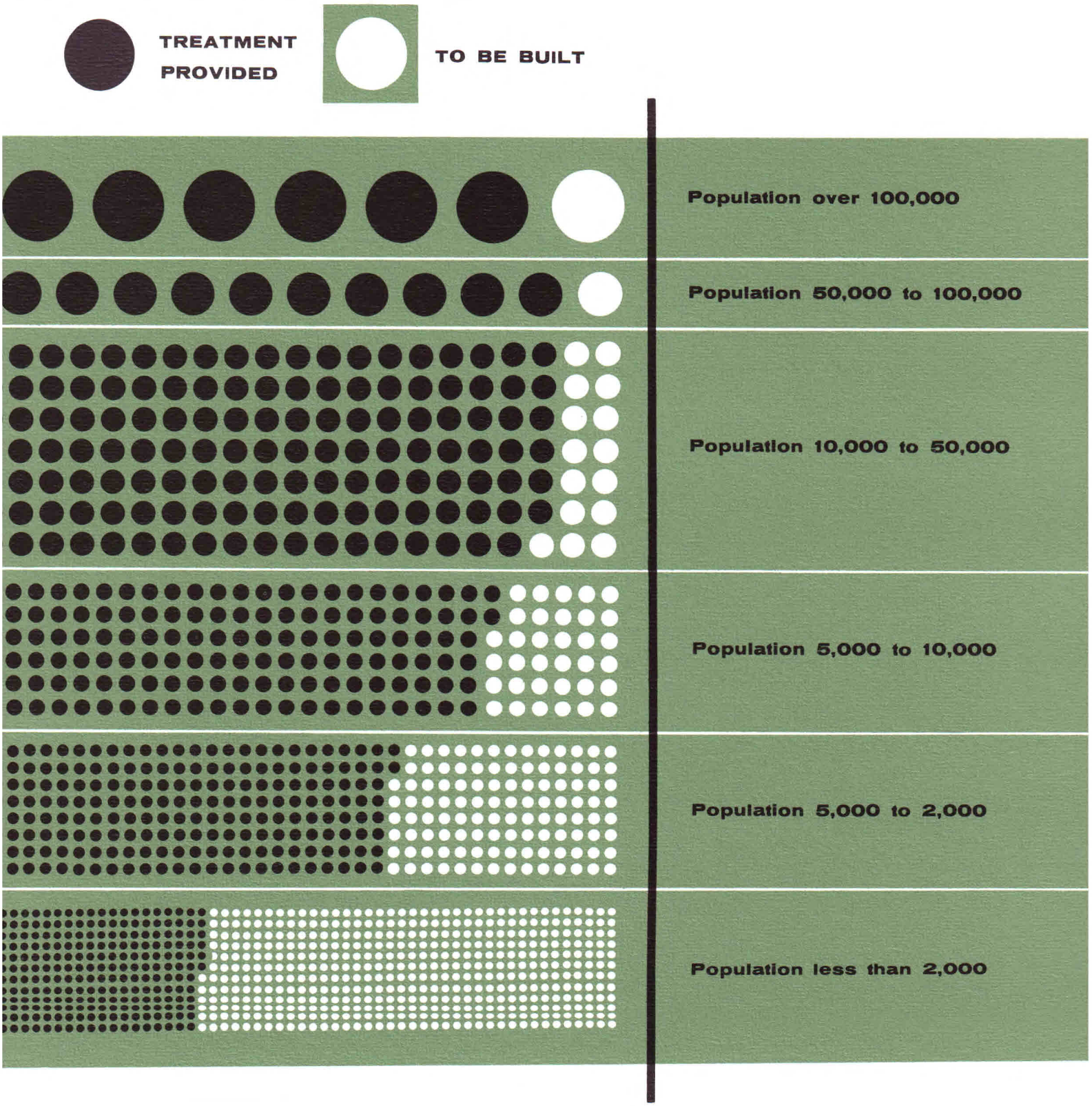
Such is the story that unfolds from the eight-state effort in promoting citizen support for water-pollution control. In the drainage basin of the Ohio valley there are 1,660 communities with sewer systems. These sewers discharge waterborne wastes from 11,200,000 people. Had steps not been taken to curb this flood of pollution the streams of the valley would now be sorely burdened.

But steps were taken, among them the establishment of the Ohio River Valley Water Sanitation Commission to coordinate state endeavors. And gratifying progress has been made by the states, as measured by the installation of sewage-treatment facilities. The record shows that 1,049 cities and villages have constructed treatment plants. These facilities serve 87 percent of the population.

The accompanying chart portrays the situation. Here each circle represents a community; those in solid color have already made their investment in clean streams; those in white have not yet started construction. With the communities grouped according to size, this chart reveals how much has been accomplished in relation to what remains to be done.

The pattern revealed by the chart reflects a policy pursued by the states, namely: Securing compliance from the larger communities first because they contributed the greatest amount of pollution. The way has now been cleared for aggressive efforts in dealing with the remaining sources.

# ıR RIVER CLEAN-UP



# TALLY FOR THE VALLEY

Each year a scoreboard is compiled and published to provide data for a factual evaluation of progress in pollution control. This inventory is based on information supplied by each of the eight signatory states. From the accompanying tabulations these are the highlights:

Community sewage-treatment installations have been constructed or are being completed to serve 9,746,400 persons; this is 87 percent of the total sewered population. Plants already operating serve 82 percent. By comparison, it might be noted that in 1948 only 38 percent of the population was provided with treatment facilities.

During the year construction starts were made on new facilities to serve 46 communities whose population totaled 202,000. Improvements to existing facilities were started by 21 communities with a combined population of 742,000.

Meantime, construction of new facilities to serve 911,000 people was completed by 58 communities.

## INDUSTRIAL-POLLUTION CONTROL FACILITIES — JULY 1, 1961

For industries discharging effluents directly into streams

| STATUS | ILL. | IND. | KY. | N. Y. | OHIO | PA. | VA. | W. VA. | TOTAL | % of TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| Control currently acceptable | 9 | 177 | 129 | 19 | 276 | 452 | 31 | 193 | 1,286 | 75.2 |
| Control provided, but not adequate | 7 | 32 | 42 | 10 | 79 | 44 | 2 | 18 | 234 | 13.7 |
| Control facilities inadequate, improvements in progress | 1 | 0 | 7 | 0 | 13 | 2 | 0 | 2 | 25 | 1.5 |
| New control facilities under construction | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 7 | 12 | 0.7 |
| Planning treatment facilities or preparing to connect to municipal sewers | 0 | 1 | 0 | 6 | 17 | 87 | 2 | 18 | 131 | 7.6 |
| No action by company | 0 | 1 | 0 | 10 | 0 | 6 | 1 | 4 | 22 | 1.3 |
| Total number of industries | 17 | 214 | 178 | 45 | 385 | 593 | 36 | 242 | 1,710 | 100.0 |
| Compling with ORSANCO minimum requirements | 17 | 190 | 144 | 19 | 358 | 490 | 33 | 196 | 1,447 | 84.5 |

## MUNICIPAL AND INDUSTRIAL SEWAGE-TREATMENT FACILITIES — JULY 1, 1961

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

| STATUS | ILL. | IND. | KY. | N. Y. | OHIO | PA. | VA. | W. VA. | TOTAL | % of TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| Treatment adequate | 44 | 137 | 134 | 8 | 256 | 196 | 28 | 41 | 844 | 50.9 |
| | 289,029 | 1,082,665 | 1,033,309 | 75,305 | 3,024,550 | 2,064,724 | 86,921 | 358,216 | 8,014,719 | 71.6 |
| Treatment provided (improvement needed) | 3 | 18 | 14 | 6 | 23 | 14 | 25 | 12 | 115 | 7.0 |
| | 15,897 | 103,480 | 54,663 | 22,754 | 122,465 | 68,844 | 30,537 | 32,516 | 451,156 | 4.0 |
| Treatment provided (improvements under construction) | 2 | 2 | 3 | 0 | 9 | 2 | 0 | 1 | 19 | 1.1 |
| | 5,439 | 514,112 | 70,969 | 0 | 109,124 | 17,732 | 0 | 15,103 | 732,479 | 6.5 |
| New treatment works under construction | 7 | 6 | 6 | 0 | 11 | 28 | 2 | 11 | 71 | 4.2 |
| | 13,812 | 18,525 | 24,080 | 0 | 79,341 | 202,980 | 7,048 | 202,234 | 548,020 | 4.9 |
| No treatment, construction not started | 7 | 114 | 47 | 8 | 137 | 153 | 33 | 112 | 611 | 36.8 |
| | 20,909 | 210,344 | 100,264 | 14,787 | 350,943 | 529,225 | 55,659 | 174,851 | 1,456,982 | 13.0 |
| TOTAL | 63 | 277 | 204 | 22 | 436 | 393 | 88 | 177 | 1,660 | 100.0 |
| | 345,086 | 1,929,126 | 1,283,285 | 112,846 | 3,686,423 | 2,883,505 | 180,165 | 782,920 | 11,203,356 | 100.0 |

Improvements were completed at another eleven places serving 134,000.

**Industrial Picture** — There are 1,710 industrial establishments in the valley whose effluents are discharged directly into streams; 1,286 of these (75 percent) are now rated by the states as providing "acceptable" control measures. This may be contrasted with the situation five years ago when only 46 percent were rated in this category.

Minimum requirements established by ORSANCO in 1955 to be complied with by all industries as a first step in pollution control have been met by 85 percent of the industries. Five years ago it was 67 percent.

## FEDERAL-AID PROGRAM

Grants-in-aid to municipalities for the construction of sewage-treatment facilities became available in 1956 under the provisions of Public Law 660, the Federal Water Pollution Control Act.

In the Ohio Valley district during 1960-61 federal grants were awarded for the construction of 46 projects serving 268,700 people. Details are shown in the accompanying tabulation.

A summary of the federal-grant allocations for the entire five years of the program follows:

| Year | No. of Projects | Pop. served (1960 census) | Estimated cost of Projects | Federal Grants |
|---|---|---|---|---|
| 1956-57 | 30 | 1,588,400 | $13,846,400 | $3,616,200 |
| 1957-58 | 51 | 863,300 | 27,421,300 | 5,907,900 |
| 1958-59 | 47 | 577,700 | 29,298,300 | 6,564,300 |
| 1959-60 | 46 | 351,000 | 24,464,100 | 5,557,400 |
| 1960-61 | 46 | 268,700 | 21,733,300 | 4,787,500 |
| Total | 220 | 3,649,100 | $116,763,400 | $26,433,300 |

The five-year summary is based on data in the June 30, 1961 *Project Register* of the U. S. Public Health Service. Figures for 1956-57 include the Pittsburgh project; however only $325,400 of the $100 million total cost of that project was eligible for grant, which amounted to $97,600.

A listing of communities receiving federal grants in fiscal 1960 and 1961 is shown at the right.

## MUNICIPALITIES IN THE OHIO VALLEY RECEIVING GRANTS-IN-AID UNDER THE WATER POLLUTION CONTROL ACT

### July 1, 1960, through June 30, 1961

(T indicates treatment facilities only; S is sewers only; T-S denotes both)

| Municipality | Pop. 1960 | Type | Est. Cost Dollars | Fed. Grant |
|---|---|---|---|---|
| Georgetown, Ill. | 3,500 | T | $ 260,200 | $ 75,200 |
| Golconda, Ill. | 900 | T-S | 62,300 | 18,000 |
| Lawrenceville, Ill. | 5,500 | T-S | 509,100 | 152,700 |
| Louisville, Ill. | 900 | T | 48,700 | 14,600 |
| Mounds, Ill. | 1,800 | T | 55,600 | 16,000 |
| Wayne City, Ill. | 900 | T-S | 250,000 | 14,100 |
| Andrews, Ind. | 1,100 | T-S | 112,900 | 33,900 |
| Fortville, Ind. | 2,200 | T-S | 310,500 | 93,200 |
| Marion, Ind. | 37,900 | T | 1,619,500 | 190,500 |
| Nashville, Ind. | 500 | T-S | 285,000 | 33,800 |
| Yorktown, Ind. | 1,100 | T-S | 240,200 | 72,100 |
| Zionsville, Ind. | 1,800 | T-S | 359,600 | 107,900 |
| Campbellsville, Ky. | 7,000 | T | 180,000 | 54,000 |
| Franklin, Ky. | 5,300 | T | 71,300 | 21,400 |
| Greensburg, Ky. | 2,300 | T-S | 224,500 | 67,400 |
| Lakeside Park, Ky. | 2,200 | T-S | 172,200 | 51,600 |
| Lawrenceburg, Ky. | 2,500 | T-S | 124,000 | 37,200 |
| Liberty, Ky. | 1,600 | T-S | 167,200 | 50,200 |
| McCracken Co. S. D. No. 1, Ky. | --- | T-S | 111,900 | 33,600 |
| Okolona Sanitation Dist., Ky. | 4,000 | T-S | 638,600 | 205,100 |
| Owingsville, Ky. | 1,000 | T-S | 176,000 | 39,600 |
| Prestonburg, Ky. | 3,100 | T-S | 486,800 | 146,000 |
| Scottsville, Ky. | 3,300 | T | 177,800 | 53,400 |
| West Point, Ky. | 2,000 | T-S | 92,400 | 27,700 |
| Bradford, Ohio | 2,100 | T-S | 382,300 | 114,700 |
| Centerburg, Ohio | 1,000 | T | 134,100 | 40,200 |
| Girard, Ohio | 13,000 | T-S | 935,100 | 250,000 |
| Hamilton Co. S.D.No. 1, Ohio | 5,000 | T-S | 505,300 | 151,600 |
| Loudonville, Ohio | 2,600 | T-S | 320,400 | 96,100 |
| McArthur, Ohio | 1,500 | T | 158,600 | 47,600 |
| New Waterford, Ohio | 700 | T-S | 97,400 | 29,200 |
| Seville, Ohio | 1,200 | T-S | 124,400 | 37,300 |
| Truro Sewer Dist. No. 1 (Franklin Co.), Ohio | 2,000 | T-S | 221,500 | 66,500 |
| Yellow Springs, Ohio | 4,200 | T-S | 417,000 | 125,100 |
| Allegheny Valley Joint Sewage Authority, Pa. | 14,000 | T-S | 2,702,600 | 250,000 |
| Connellsville, Pa. | 12,000 | T-S | 864,600 | 250,000 |
| Oakmont, Pa. | 7,500 | T-S | 1,520,900 | 250,000 |
| Upper Allegheny Joint Sanitary Authority, Pa. | 32,500 | T-S | 2,118,600 | 250,000 |
| West Mifflin, Pa. | 27,300 | T-S | 783,000 | 234,900 |
| Marion, Va. | 8,400 | T-S | $ 512,400 | $ 142,600 |
| Benwood, W. Va. | 2,900 | T-S | 625,000 | 187,500 |
| Glasgow, W. Va. | 900 | T-S | 127,600 | 38,300 |
| Hurricane, W. Va. | 2,000 | T-S | 183,500 | 46,500 |
| Rivesville, W. Va. | 1,200 | T-S | 233,800 | 70,200 |
| St. Albans, W. Va. | 15,100 | T-S | 945,000 | 250,000 |
| South Charleston, W. Va. | 19,200 | S | 1,083,900 | 250,000 |
| Total 46 | 268,700 | | $21,733,300 | $4,787,500 |

*Retiring chairman Ross H. Walker of Virginia passes the gavel to his successor, Dr. Charles L. Wilbar, Jr.*

# ADMINISTRATIVE AFFAIRS

During the year covered by this report Mr. Ross H. Walker of Virginia served as chairman. Elected to take office on July 1, 1961, were: Dr. Charles L. Wilbar, Jr. of Pennsylvania as chairman, and Mr. Bern Wright of West Virginia as vice-chairman.

Chairman-elect Wilbar has been a commissioner of ORSANCO since November 1957 when he was appointed Secretary of Health for the Commonwealth of Pennsylvania. He is also chairman of the Pennsylvania Sanitary Water Board.

A specialist in public-health administration, Dr. Wilbar served for ten years as President of the Board of Health in Hawaii prior to coming to Pennsylvania. He is a past president of the Conference of State and Provincial Health Authorities of North America. During World War II he was in the Medical Corps of the U. S. Army. He is a graduate of the college (1928) and the medical school (1932) of the University of Pennsylvania.

**Membership changes** — Dr. Franklin D. Yoder, Director of Public Health, State of Illinois, was appointed to the Commission on September 1, 1961, by Governor Kerner to succeed Dr. L. L. Fatherree (resigned); Mr. Lyle W. Hornbeck, attorney with the law firm of Bond, Schoeneck and King of Syracuse, N. Y., was appointed to the Commission on March 10, 1961, by Governor Rockefeller of New York. He succeeds Mr. Earl Devendorf, deceased; on June 30, 1961, Governor DiSalle of Ohio appointed Mr. Barton Holl to succeed Mr. Kenneth M. Lloyd. Mr. Holl is a long-time member of the Ohio Water Pollution Control Board. On May 22, 1961, Dr. Luther L. Terry, Surgeon General of the Public Health Service, was appointed by President Kennedy to succeed Dr. Leroy Burney.

**Staff changes** — David A. Robertson, Jr., Engineer-hydrologist, resigned on Dec. 31, 1960, after five years of distinguished service. David A. Dunsmore joined the staff on March 1, 1961, to participate in river-quality evaluation studies.

**Appropriations** — A financial statement for the fiscal year of this report appears on page 21. This shows in detail the disbursement of monies received both from the signatory states and the federal government.

In accordance with provisions of Article X of the compact, which calls for revision in proportionate shares of the budget based on population changes as revealed by the Federal census, a new schedule has been promulgated. The new appropriation schedule will become effective during fiscal year 1963-64. Present appropriations are based on the original schedule. Both the old and new schedules are shown on page 18.

**Public-Affairs Activities** — A substantial part of staff effort is devoted to developing means for supplying information on various aspects of the eight-state program. This action recognizes that an informed citizenry is the strongest ally in promoting the crusade for clean waters.

Most recently the emphasis has been placed on production of a series of documentary films dealing with pollution problems yet unsolved as well as with progress being made. These films are tailored so that regional aspects of the interstate program are interspersed with segments devoted specifically to situations in the state where the film is to be shown. Thus each of the eight states is supplied with a version of the film highlighting local affairs in relation to what is going on in neighboring states of the compact district.

Already available are three documentary films in color and with sound. They may be borrowed for group showings by addressing the state agencies listed on the back cover of this report, or by request to Commission headquarters. Following are the titles and a thumbnail sketch of content:

**Good Riddance** — a 29-minute film that depicts the progress made and the job that still remains in curbing pollution in the Ohio Valley.

**Beargrass Creek** — a 20-minute film showing what can happen to a stream when the people along its banks disregard their obligation to prevent pollution. One of the highlights of this film is the picturization of what the microscope shows when focussed on drops of clean and polluted water.

**Oil on the River** — a 20-minute story that takes you back to the discovery of oil in the Ohio Valley, and then shows the unhappy consequences of carelessness today in the handling, transportation and storage of oil products.

In addition to the development of documentary films, the public-affairs project is designed to take advantage of free time offered as a public service by radio and television stations. To this end, transcribed "action-oriented" messages dealing with the

*An assembly of the executive committee: (seated clockwise) Past-chairman Ross H. Walker; William H. Singleton, Virginia; Blucher A. Poole, Indiana; Edward J. Cleary, executive director; Chairman Charles L. Wilbar, Jr.; Leonard A. Weakley, legal counsel; Vice-chairman Bern Wright; Hudson Biery, Ohio; Minor Clark, Kentucky; (Standing) Karl M. Mason, Pennsylvania; Lyle W. Hornbeck, New York; Dr. O. Lloyd Meehan, Federal Government; (Not present was Clarence W. Klassen, Illinois)*

anti-pollution efforts of the state agencies are supplied to some 60 television and 400 radio stations in the ORSANCO area. These recorded messages and the film strips to accompany them — generally a set of ten one-minute "spots" — are changed every thirteen weeks. In addition to supplying these transcriptions the ORSANCO staff aids station managers in developing discussion programs and other special features utilizing state agency and local personalities.

**Robot Monitor Workshop** — The staff "adventure in imagineering," which has resulted in the development of a versatile electronic sentinel for checking river water quality, reached the point this year where units are being installed for each of the signatory states. These form part of a regional robot-monitor system with central interrogation and receiving apparatus located in the Cincinnati headquarters of ORSANCO.

In order to familiarize state personnel and others with the equipment design and operating features of this novel system of instrumentation a "workshop" was conducted on June 21-22. Municipal, federal and industrial representatives were also invited because of the great interest that has been evidenced in this unique development. At the two-day session components of a robot monitor were displayed and their functions described. This was followed by instruction on installation, calibration and maintenance of the unit. At central headquarters the group then took part in operating the telemeter and data-logging equipment.

## DISTRIBUTION OF ANNUAL SHARES OF BUDGET BY STATES

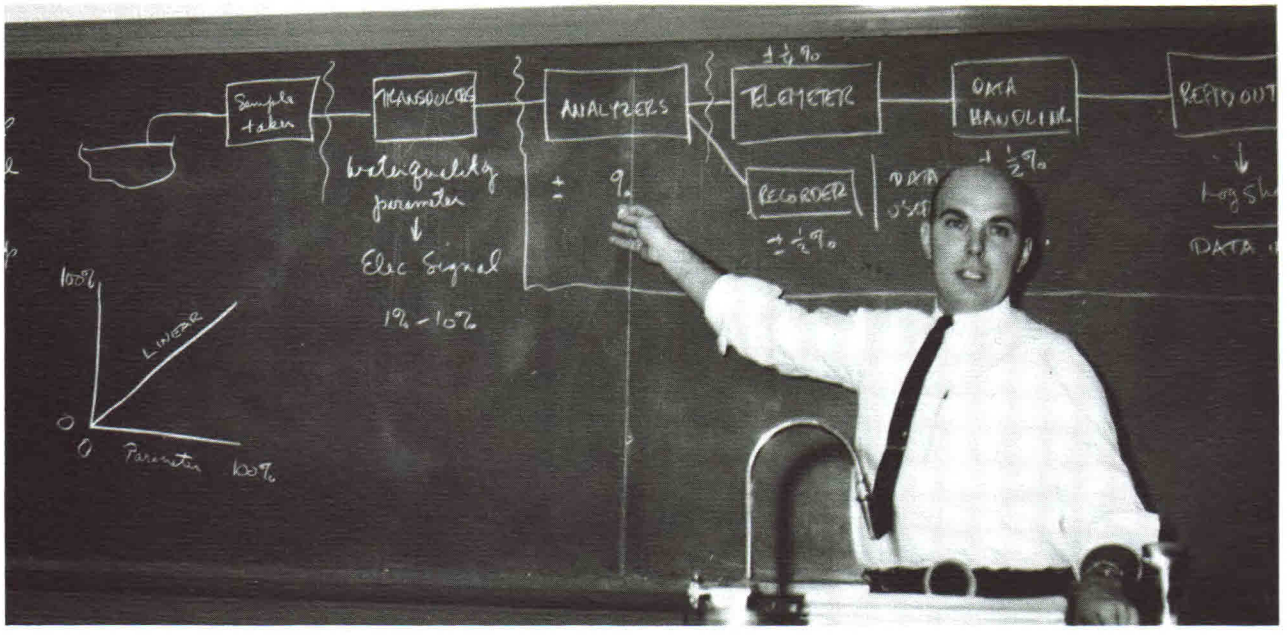
**1950 CENSUS FIGURES USED AS BASIS FOR DETERMINING ANNUAL SHARES OF BUDGET FOR FISCAL YEARS JULY 1, 1953, THROUGH JUNE 30, 1963**

(Shares for fiscal 1953-54, not shown, were based on operating budget of $100,000)

| State | Area within Ohio River Drainage Basin | | Population (1950) within Ohio River Drainage Basin | | Weighted Average of Percentages of Area and Population | Annual Share of Budget (for total budget of $130,000) |
|---|---|---|---|---|---|---|
| | Square Miles | Percent of Total | Population | Percent of Total | | |
| Illinois | 10,745 | 7.0% | 569,801 | 3.3% | 5.15% | $ 6,695 |
| Indiana | 29,135 | 18.9 | 2,803,864 | 16.4 | 17.65 | 22,945 |
| Kentucky | 39,375 | 25.5 | 2,883,277 | 16.9 | 21.20 | 27,560 |
| New York | 1,955 | 1.3 | 161,463 | 0.9 | 1.10 | 1,430 |
| Ohio | 29,570 | 19.2 | 4,722,830 | 27.6 | 23.40 | 30,420 |
| Pennsylvania | 15,620 | 10.1 | 3,581,509 | 21.0 | 15.55 | 20,215 |
| Virginia | 7,175 | 4.6 | 492,850 | 2.9 | 3.75 | 4,875 |
| West Virginia | 20,610 | 13.4 | 1,884,700 | 11.0 | 12.20 | 15,860 |
| TOTALS | 154,185 | 100.0% | 17,100,294 | 100.0% | 100.0% | $130,000 |

**1960 CENSUS FIGURES USED AS BASIS FOR DETERMINING ANNUAL SHARES OF BUDGET FOR FISCAL YEARS STARTING JULY 1, 1963, WITH AMOUNT OF STATE SHARES FOR FISCAL 1963-64 BASED ON $130,000 BUDGET**

| State | Area within Ohio River Drainage Basin | | Population (1960) within Ohio River Drainage Basin | | Weighted Average of Percentages of Area and Population | Annual Share of Budget (for total budget of $130,000) |
|---|---|---|---|---|---|---|
| | Square Miles | Percent of Total | Population | Percent of Total | | |
| Illinois | 10,745 | 7.0% | 591,109 | 3.2% | 5.10% | $ 6,630 |
| Indiana | 29,135 | 18.9 | 3,227,072 | 17.3 | 18.10 | 23,530 |
| Kentucky | 39,375 | 25.5 | 2,981,670 | 16.0 | 20.75 | 26,975 |
| New York | 1,955 | 1.3 | 168,365 | 0.9 | 1.10 | 1,430 |
| Ohio | 29,570 | 19.2 | 5,702,592 | 30.6 | 24.90 | 32,370 |
| Pennsylvania | 15,620 | 10.1 | 3,783,796 | 20.3 | 15.20 | 19,760 |
| Virginia | 7,175 | 4.6 | 457,312 | 2.4 | 3.50 | 4,550 |
| West Virginia | 20,610 | 13.4 | 1,738,006 | 9.3 | 11.35 | 14,755 |
| TOTALS | 154,185 | 100.0% | 18,649,922 | 100.0% | 100.0% | $130,000 |




*Blackboard "talk" on the operation of the ORSANCO Robot Monitor system, was presented by Carl Schneider, electronics consultant, on the eve of installation of additional units along the Ohio River. This lecture formed part of a clinic conducted by the staff for state personnel, federal agency and industry representatives on application of this unique device for automatic testing of river conditions.*

*ORSANCO (Montanari) photo*

The workshop served as a prelude to the installation of additional field units. Six monitors have now been placed. Three are located on the Ohio River — at Huntington, W. Va., at East Liverpool, Ohio, and at Cincinnati. Installations have also been made at Beaver Falls on the Beaver River; at Winfield, W. Va., on the Kanawha River; and at Beverly, Ohio, on the Muskingum River.

**Mine-Drainage Clinics** — Another staff activity aimed at coordinating state efforts has been the conduct of "curbstone" clinics on acid mine-drainage control. The purpose is to promote exchange of experiences and to observe field demonstrations of practice. Two clinics have been held thus far — one in West Virginia and the other in Pennsylvania. They were attended by state personnel who are or will be assigned to this phase of pollution control, as well as by representatives of the federal government and the Interstate Commission on the Potomac. A third clinic is now being scheduled.

What takes place at a clinic is revealed by this excerpt from the log of June 8, 1960 activities: "A number of good examples of adequate backfilling were visited; also viewed was an operating strip mine demonstrating good practices. Of particular interest were: (a) An adequately backfilled fissured area adjacent to an area with sink holes that had not been properly backfilled; (b) an abandoned strip that had been mined-out prior to the existence of the control law, which was a source of continuing acid pollution; (c) collection, retention and pumping of acid mine-drainage into another watershed in order to protect a water supply source; and (d) the bad effect of scattering sulfuric refuse throughout the backfill during a stripping operation with consequent production of acid following abandonment. In the evening the group reviewed a draft of a proposed handbook on practices and principles of control."

**Advisory Committees** — One of the most exacting assignments for the staff is to provide liaison services between the Commission and its varied advisory committees. Representing the largest aggregation of talent and versatility are the ORSANCO industry committees. The six industry groups have a total membership of 200. Among other things they have produced handbooks of practice that are considered classics in their field. Member companies have supported research projects and a variety of investigations relating to matters of specific interest to the interstate program.

A major contribution from the Water Users committee is chemical and bacteriological testing of water-quality at key points along the Ohio River. In addition, committee members assist the staff in the conduct of special investigations.

Aquatic-Life Resources committee has guided the Commission in assessing water-quality with regard to its suitability for fish. These recommendations are incorporated in three major reports.

# CONTRACT PROJECTS

Investigations and projects that lay claim for the application of special skills, facilities and personnel are sponsored by the Commission through contractual arrangements. Guided by recommendations made by the signatory states, the commissioners of ORSANCO have authorized the following work to further their efforts in the mutual task of advancing interstate pollution control. All these contracts, with the exception of the cooperative program with the U. S. Geological Survey, are financed with grants received under terms of P. L. 660.

### AQUATIC-LIFE RESOURCES

**University of Louisville, Biology Department** (March 1959)

*Objective:* To develop an inventory of the aquatic-life resources of the Ohio River expressed in terms of the suitability of the river for the production of a harvestable fish crop. *Status:* Three years of field work completed and final report now in preparation. ($30,000) ($82,000 altogether)

### PROTOTYPE ROBOT MONITOR

**Engineering Specialties, Madeira, Ohio** (June 1959)

*Objective:* To design, fabricate and perform tests on instruments for automatic measurement of water quality, including transmitting and receiving units. *Status:* Prototype delivered and placed in operation September 12, 1960. ($9,200)

### MOBILE MONITOR

**Engineering Specialties, Madeira, Ohio** (March 1960)

*Objective:* To design, fabricate and perform tests on a portable measurement and recording instrument that can be used from a boat to check river quality and investigate sources of pollution. *Status:* Unit completed but not released by manufacturer pending field-testing. ($2,500)

### AQUATIC-LIFE SURVEILLANCE

**University of Louisville, Potamological Institute** (June 1960)

*Objective:* To continue investigation, in conjunction with the Aquatic-Life Resources Project, of the composition of fish fauna in specific areas of the Ohio River; to make "spot" analyses of river conditions below points of waste discharges; to investigate fish kills and otherwise cooperate with signatory states in establishing causes of fish kills. *Status:* Field work completed, final report in preparation. ($10,800)

### PHYTOPLANKTON DETERMINATION

**University of Louisville, Potamological Institute** (June 1960)

*Objective:* To ascertain the composition of phytoplankton (floating plant life) in a stretch of the Ohio River and the effect of these organisms on water-quality conditions. In addition, to evaluate factors affecting phytoplankton blooms and their relationship to taste-and-odor occurrences. *Status:* Final reports received. ($7,000)

### ACID MINE-DRAINAGE

**Ohio State University, Engineering Experiment Station** (July 1, 1960)

*Objective:* To recommend research possibilities for developing new methods for control of acid mine-drainage. *Status:* Final report received. ($7,000)

### ROBOT MONITOR UNITS

**Engineering Specialties, Madeira, Ohio** (July 1960)

*Objective:* To construct ten monitor units similar to the ORSANCO prototype, which will be made available to the signatory states for location at strategic points along the Ohio River and its tributaries. *Status:* As of December 1, 1961, three units are in operation and three additional units have been installed and will be connected to the telemetering system by January, 1962. ($53,000)

### WATER QUALITY MONITORING

**United States Geological Survey** (July 1961)

*Objective:* To collect and analyze water samples from seventeen locations on the Ohio River and major tributaries. Project was initiated in 1950 and has been continued by yearly contracts since that time. Funds provided by Commission are matched dollar-for-dollar by the U.S.G.S. *Status:* Program extended through September 30, 1962. ($10,000)

### RADIOACTIVITY INVESTIGATIONS

**University of Louisville, Potamological Institute** (September 1961)

*Objective:* To develop information on the accumulation of radio-materials by fish, aquatic organisms and in river sediments at selected stations along the Ohio River. In addition, to secure expert evaluation on radioactivity levels revealed from monitoring data. This is a continuation of investigations initiated February 26, 1959. Amount of funds expended to June 30, 1961, is $28,500. *Status:* Project extended through June 30, 1962. ($11,500)

### PUBLIC AFFAIRS PROGRAM

**Stuart Finley, Falls Church, Va.** (October 1961)

*Objective:* To produce documentary films and a series of television and radio messages relating to the conduct of the eight-state crusade for clean streams. *Status:* Since April, 1960, three films and five sets of spot announcements have been produced at a cost of $36,000. The current contract, which will terminate June 30, 1962, calls for production of two twenty-minute films and thirty-two television and thirty-two radio messages to be made available to stations in the Ohio Valley. ($36,000)

### SERVICING OF ROBOT EQUIPMENT

**Engineering Specialties, Madeira, Ohio** (Nov. 1961)

*Objective:* To maintain and improve central station and field units of the electronic water-quality monitor system. *Status:* Current contract, which will terminate on June 30, 1962, provides reimbursement for travel expenses and $7.50 per hour for service. (Estimated expenditure $6,000)

# FINANCIAL REPORT

*The following information relative to revenues collected and expenses paid, and statement of resources, was taken from the Audit Report of Wm. H. Mers and Co., Certified Public Accountants, for the year ended June 30, 1961.*

## STATEMENT OF REVENUES COLLECTED AND EXPENSES PAID

| | | |
|---|---|---|
| Revenues collected: | | |
| From signatory states (For detail see Schedule A) | | $130,000.00 |
| From U. S. Department of Health, Education and Welfare (Grant under Public Law 660) | | 107,645.00 |
| Sale and handling of publications | | 283.50 |
| Interest earned on bank deposit | | 3,220.43 |
| Total revenues collected | | $241,148.93 |
| Expenses paid: | | |
| From state funds (For detail see Schedule B) | $134,463.10 | |
| From federal funds — Note A (For detail see Schedule C) | 141,106.50 | |
| Total expenses paid | | $275,569.60 |
| Excess of expenses paid over revenues collected | | $ 34,420.67 |

*Note A* — $43,200 of this expenditure was made from monies received in fiscal 1959-60 and encumbered for disbursement in fiscal 1960-61.

* * * *

## STATEMENT OF RESOURCES

| | State Funds | Federal Funds | Total |
|---|---|---|---|
| Available resources for period to June 30, 1960 | $ 53,557.75 | $ 75,558.31 | $129,116.06 |
| Add: Revenues collected: | | | |
| Annual budget — July 1, 1960 to June 30, 1961 | 130,000.00 | | 130,000.00 |
| U. S. Department of Health, Education and Welfare | | 107,645.00 | 107,645.00 |
| Sale and handling of publications | 283.50 | | 283.50 |
| Interest earned on bank deposit | 3,220.43 | | 3,220.43 |
| | $187,061.68 | $183,203.31 | $370,264.99 |
| Less: Expenses paid: July 1, 1960 to June 30, 1961 | $134,463.10 | $141,106.50 | $275,569.60 |
| Available resources for period to June 30, 1961 before encumbrances | 52,598.58 | 42,096.81 | 94,695.39 |
| Encumbered resources at June 30, 1961 — Note B | | 41,562.00 | 41,562.00 |
| Available resources at June 30, 1961 after encumbrances | $ 52,598.58 | $ 534.81 | $ 53,133.39 |

The above amount of $94,695.39 is comprised as follows:

| | | |
|---|---|---|
| Cash on deposit with the Central Trust Company — Note B | | $ 92,770.59 |
| Cash on deposit with American Airlines, Inc. | | 425.00 |
| Cash on deposit with Ohio Bureau of Workmen's Compensation | | 89.20 |
| Petty cash on hand | | 200.00 |
| Accounts receivable: | | |
| Advances for employees: | | |
| Employees' pension trust | 1,066.60 | |
| Hospitalization | 144.00 | |
| | | 1,210.60 |
| | | $ 94,695.39 |

*Note B*: Of the $92,770.59 on deposit with The Central Trust Company at June 30, 1961, $41,562.00 is encumbered for contractual obligations for equipment for the Robot Monitor Project.

### Schedule A — REVENUES COLLECTED FROM SIGNATORY STATES

| | |
|---|---|
| State of Illinois | $ 6,695.00 |
| State of Indiana | 22,945.00 |
| Commonwealth of Kentucky | 27,560.00 |
| State of New York | 1,430.00 |
| State of Ohio | 30,420.00 |
| Commonwealth of Pennsylvania | 20,215.00 |
| Commonwealth of Virginia | 4,875.00 |
| State of West Virginia | 15,860.00 |
| TOTAL | $130,000.00 |

* * * *

### Schedule B — EXPENSES PAID FROM STATE FUNDS

| | |
|---|---|
| Auditing | $ 600.00 |
| Commission representation | 977.26 |
| Electricity and water | 736.81 |
| Employees' pension trust | 13,148.10 |
| Insurance | 797.28 |
| Legal services | 3,600.00 |
| Maintenance and repairs | 1,261.00 |
| Meetings | 1,113.45 |
| Miscellaneous | 619.82 |
| Office equipment and furnishings | 819.94 |
| Office rent | 6,576.00 |
| Office supplies | 1,549.67 |
| Postage | 1,000.62 |
| Printing | 2,143.35 |
| Salaries | 57,968.85 |
| Service fees and subscriptions | 513.46 |
| Social security tax | 1,318.14 |
| Telephone and telegraph | 3,133.38 |
| Travel: | |
| Aquatic-Life Advisory Committee | 683.45 |
| Commissioners | 4,855.73 |
| Engineering Committee | 708.05 |
| Staff | 3,902.49 |
| Water Users Committee | 1,239.89 |
| U. S. Geological Survey (cooperative water quality investigation) | 25,000.00 |
| Workmens' compensation | 196.36 |
| TOTAL | $134,463.10 |

* * * *

### Schedule C — EXPENSES PAID FROM FEDERAL FUNDS

| | | |
|---|---|---|
| Administrative expense | | $ 36,042.41 |
| Acid Mine-Drainage Project | | 130.00 |
| Compliance Status Inspections Project | | 1,433.71 |
| Public Affairs Project | | 18,000.00 |
| River Surveillance Project | | 8,979.22 |
| Robot Monitor Project | | 38,238.52 |
| Expenses paid from $44,700 encumbered at June 30, 1960 | | |
| Acid mine-drainage project | $ 7,000.00 | |
| Public Affairs Project | 8,000.00 | |
| Radioactivity Evaluation Project | 15,000.00 | |
| Robot Monitor Project— Datex digital recording system | 12,200.00 | |
| Mobile monitor | 1,000.00 | 43,200.00 |
| | | $146,023.86 |
| *Less:* Funds returned unused from University of Louisville on projects under contracts terminating June 30, 1960: | | |
| Aquatic-Life Resources Project | 707.95 | |
| Radioactivity Investigations | 4,209.41 | 4,917.36 |
| TOTAL | | $141,106.50 |

# INDUSTRY AND ADVISORY COMMITTEES

*In listing the names of the members of its industry and advisory committees the Commission wishes to re-affirm its appreciation and high regard for the many useful services that have been contributed and continue to be rendered by these men and the companies, cities and universities they represent.*

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University of Minnesota
*(Chairman)*

DR. BERTIL G. ANDERSON
Pennsylvania State University

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University of Florida

DR. EDWARD SCHNEBERGER
Wisconsin Conservation Commission

DR. WILLIAM A. SPOOR
University of Cincinnati

DR. CLARENCE M. TARZWELL
U. S. Public Health Service

DR. O. LLOYD MEEHEAN
U. S. Fish & Wildlife Service
*(Commission Liaison Member)*

WILLIAM L. KLEIN
*Staff Liaison Member*

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C. D. Ervin

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G. M. Neas

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R. A. Farrow

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P. J. Weaver

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**Clarence W. Klassen,** Chief Sanitary Engineer
**Franklin D. Yoder, M.D.,** Director of Public Health

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**B. A. Poole,** Stream Pollution Control Board
**Joseph L. Quinn, Jr.,** The Hulman Company

### KENTUCKY

**Minor Clark,** Department of Fish and Wildlife Resources
**J. O. Matlick,** Commissioner of Conservation
**Russell E. Teague, M.D.,** State Health Commissioner

### NEW YORK

**Herman E. Hilleboe, M.D.,** State Health Commissioner
**Lyle W. Hornbeck,** Bond, Schoeneck and King
**Joseph R. Shaw,** Associated Industries of New York State, Inc.

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**Barton Holl,** Logan Clay Products Company
**Ralph E. Dwork, M.D.,** Director of Health

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**Charles L. Wilbar, Jr., M.D.,** Secretary of Health

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**Luther L. Terry, M.D.,** Public Health Service

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**William L. Klein,** Chemist-Biologist
**David A. Dunsmore,** Engineering Assistant
**Verna B. Ballman,** Office Manager

Secretaries: Ruth C. Bergmeyer, Alice F. Courtney, Jane W. Renaldo, Grace B. Ziegler

* *as of December 1, 1961*

# REGULATORY AGENCIES OF THE SIGNATORY STATES

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

A compendium of interstate rules, regulations and standards that have been promulgated by the Ohio River Valley Water Sanitation Commission is available upon request.

**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 and Chief Engineer
Kentucky Water Pollution Control Commission
275 East Main Street
Frankfort, Kentucky

**NEW YORK**

Director
Bureau of Water Resource Services
Division of Environmental Health Services
New York State Department of Health
84 Holland Avenue
Albany 8, New York

**OHIO**

Chief Sanitary Engineer
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 Resources Board
1709 Washington Street, East
Charleston 1, West Virginia