

NEWSLETTER

A·A·P·S·E·

**American
Association
of
Professors
in
Sanitary
Engineering**

**JULY 1971
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MESSAGE FROM THE PRESIDENT

As usual, there are many dedicated AAPSE members contributing their time and effort to the many important AAPSE committees. An earlier AAPSE Newsletter outlined the current committees and their chairmen. Feel free to correspond directly with committee chairmen concerning your interests and comments concerning their charge and activities.

There are three AAPSE activities that I would like to bring specifically to your attention. The first concerns the successful joint EPA-AAPSE Technology Transfer Symposium held in early June. Details on the attendance and distribution of the participants appear elsewhere in this issue. The verbal and written comments from many who were there indicated that a continuation of such Symposia would be useful. EPA officials also have indicated their interest in further participation. Additional comments from all within the profession concerning topics of interest, e.g., solid waste, air pollution, water hygiene, and training, that should receive greater emphasis at future Symposia would be welcome as the Board considers further action. We would also welcome comments on the format that should be used for future symposia.

The second item relates to the two laboratory manuals being developed by AAPSE committees. Information on the Aquatic Chemistry Manual is presented elsewhere in the Newsletter. The Unit Processes and Operations Manual has been under preparation for almost a year and is in the final stages of development. These manuals are being developed specifically to fill a gap at the laboratory level. I would encourage all to contribute their suggestions to those who are developing the manuals and to take the time to critically evaluate the experiments that are developed.

A copy of the initial draft of each manual can be made available to individuals from each institution who wish to evaluate the experiments in their 1971-72 laboratory courses. For more information on the manuals contact:

Aquatic Chemistry Manual

Dr. David Jenkins
SERL 112 RFS
1301 South 46th Street
Richmond, California 94804

Unit Operations Manual


Dr. John T. O'Connor
Civil Engineering Department
University of Illinois
Urbana, Illinois 61801

The third item relates to overall educational policy for the profession. During the summer, a highly competent Ad-Hoc AAPSE committee will be meeting to discuss current and future policy needs for environmental engineering education. In its deliberations, the committee will attempt to focus on policy needs and implementation approaches that can be utilized by the profession.

The results from this committee will be the topic of discussion at the AAPSE meeting to be held at the San Francisco WPCF meeting. Make plans to be at this meeting and participate in the discussion of the needs and methods to implement them.

As a final comment, my thanks again to the many dedicated AAPSE members who are taking their time to assist the profession through professional activities in AAPSE and other organizations.

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Raymond C. Loehr, President
American Association of Professors
in Sanitary Engineering

MINUTES OF THE AAPSE OPEN MEMBERSHIP MEETING

President Loehr called the open membership meeting to order at 8:00 p.m. on Tuesday, May 4, 1971 at the Purdue Memorial Center on the campus of Purdue University in Lafayette, Indiana. Fifty-four members and guests registered.

President Loehr reviewed the aims and objectives of AAPSE and stressed its leadership and service role in environmental education including its yearly open meetings, workshops, seminars, publications, and biennial outstanding educator award. The 1970 award, sponsored jointly by AAPSE and Engineering Science, Inc. and including a plaque and \$1000, was presented at the Industrial Waste Conference banquet to Dr. Richard Speece, Professor of Environmental Engineering, University of Texas, Austin, Texas.

The membership growth in AAPSE was reviewed since its founding in 1963. As of December 1970, a total of 124 members including 4 affiliate members representing 62 universities had chosen to be associated with AAPSE.

The president then discussed the AAPSE Newsletter, its distribution, and indicated that a new format had been recently introduced by its editor, Ben Dysart. An attempt is being made to broaden distribution of the Newsletter as a service to the profession. In addition, the AAPSE Register is being updated and information concerning format was distributed at the meeting. Additional information can be obtained from Russ Christman at the University of Washington in Seattle, Washington. The "Evaluation of Sanitary Engineering Education" prepared by Joe Middlebrooks and Warren Kaufman is available and may be obtained from Warren Kaufman at the University of California in Berkeley, California.

The International Association for Water Pollution Research was described briefly. AAPSE is a contributing organization to the USA National Committee and has been active in organizing previous conferences and the international conference in Jerusalem in June 1972. Papers for this conference are presently being solicited, and necessary information can be obtained from Pete Krenkel at Vanderbilt University in Nashville, Tennessee.

The 1971 AAPSE Workshop on "Instrumentation and Automation of Waste Treatment Plants" is scheduled for August 16-18, 1971 at Irvine, California. The 1972 Workshop has not been definitely formulated to date but is likely to be held in Toronto, Canada.

Drafts of the AAPSE laboratory manual have been prepared and sent out for review by John O'Connor. The manual is presently being completed and publication arrangements are being negotiated. Additional information may be obtained from John O'Connor at the University of Illinois, Urbana, Illinois.

The AAPSE Seminar on "Engineers and Scientists - Their Futures in Environmental Quality Control" held on Tuesday, May 4, 1971 at 8:00 a.m. was attended by thirty-three members and guests. Panelists Bob Baumann from Iowa State University, Mack McClellon from Florida Tech, and Bob Ruhl from EPA discussed the scientists' and engineers' roles in environmental quality control with particular emphasis on undergraduate programs, graduate programs, and professional opportunities.

Information on the EPA-AAPSE Technology Interchange Symposium scheduled for Washington, D.C. was discussed and distributed.

There being no further business, President Loehr introduced the guest speaker for the evening, Mr. Eugene Jensen, Asst. Commissioner of Operations, EPA, who discussed "Current Trends in Water Quality Management." After his provocative talk and a lively discussion period, the meeting was adjourned.

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NEW A.A.P.S.E. MEMBERS

Since the publication of the last membership list in December, 1970, five additional members have been accepted, bringing the total membership, as of May 1971, to 124. These new members are:

Dr. Hassan M. El-Baroudi
Associate Professor of Environmental Engineering
Rensselaer Polytechnic Institute
Troy, New York 12181

Dr. C. P. Leslie Grady, Jr.
Assistant Professor of Civil Engineering
Purdue University
Lafayette, Indiana 47907

Dr. William J. Jewell
Assistant Professor of Civil Engineering
University of Vermont
Burlington, Vermont 05401

Dr. Mark W. Tenney
Associate Professor of Civil Engineering
University of Notre Dame
Notre Dame, Indiana

Dr. Timothy Tilsworth
Assistant Professor of Environmental Health Engineering
Institute of Water Resources
University of Alaska
College, Alaska 99701

WASTEWATER TREATMENT INVESTMENTS NOT BEING USED EFFECTIVELY EXPERTS SAY

Except for a few unique treatment facilities, operated by well-qualified and dedicated professionals, most of the treatment plants in the United States "are operating far below the efficiency for which they were designed" and fail even to meet the very limited objectives set for them by the investment of relatively large sums of money, Daniel A. Okun of the University of North Carolina told the initial hearing of the Senate Subcommittee on Air and Water Pollution's Panel on Environmental Science and Technology, May 13. Two-day hearings were called to evaluate the state of the art of pollution control technology and help determine, along with other water pollution hearings this year, what might be expected from the imposition of national minimum effluent standards, according to panel chairman, Sen. Thomas F. Eagleton.

Treatment systems must encompass enough units to reach a size where they can afford good operating supervision, witnesses agreed. Quality of regulatory agencies must be upgraded and funding must be provided for operation of treatment facilities and not just for construction.

Bulk of investment over the next few years will continue to be in construction and operation of conventional facilities. Reluctance to invest in advanced waste treatment facilities, which require sophisticated operating skills, is understandable in communities and industries where even relatively simple processes are not operated adequately, Okun said.

Once the use for particular body of water is determined, then effluent standards can be related to achieving those objectives; thus effluent

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standards would vary from state to state, and within states, and should be promulgated by the states, according to Ben Sosewitz, general superintendent of the Metropolitan Sanitary District of Greater Chicago. Effluent standards will vary; and the Federal government must act as coordinator and to determine violations, he said.

Blanket regulations, despite the appeal of their simplicity, may be socially more expensive in the long run than more explicit regulations that require greater effort to set up, witnesses agreed. The blanket regulation requiring secondary treatment, for example, results in priorities for pollution abatement being determined more by ability to pay than by needs for treatment. Secondary treatment may be provided where it is not needed, because of a community's ability to obtain matching funds, while another community, requiring a high degree of treatment, would not receive Federal support.

Properly designed biological treatment plants can remove 90% or more of the polluting materials in municipal wastewater, but rigid design standards for municipal treatment plants by state regulatory bodies have prevented optimum design and "actually made it possible for incompetent engineers to enter the field," charged Roy Weston, president of Roy F. Weston, Inc. Only competent engineers would seek out design work if they were held accountable for the design, Weston said.

Existing laws act as constraints on awarding contracts on a "turn-key" basis which would increase the chances for a "least-cost" solution, Weston said. Turn-key, or single-responsibility contracting, is widely used for industrial work because of its many advantages and the Code of Federal Regulations should be revised to permit bidding by various turn-key contractors, agreed Dr. Clinton C. Kemp, president of Monsanto Biodize Systems, Inc.

The "regulated are often far more technically qualified than the regulators," resulting in considerable frustration when innovations are proposed by the consulting engineer, Okun told the panel. There is a "real shortage" in the number and qualifications of the personnel in regulatory agencies at the state and Federal levels. State regulatory agencies must be given the financial support necessary to employ qualified engineers who would be peers with the ones they are to regulate, Okun urged.

Too often attention is focused on treatment rather than waste reduction, said David H. Howells, director, Water Resources Research Institute of the University of North Carolina at Raleigh. He stressed reducing wastes at their source and stabilizing sewage flow. Present municipal sewer rate structure, where unit costs decrease for increasing volumes of waste, represent a disincentive for water conservation and waste control, Howells said. [Clean Water Report]

CHANGES FOR A.A.P.S.E. MEMBERSHIP ROSTER

It would be helpful if the membership of AAPSE would send to Fred Pohland at Georgia Tech any changes in rank, addresses, phone number, etc. to be included in the new membership roster to be prepared later this year. Changes in address should also be reported to the editor of the AAPSE News-letter.

AAPSE SIXTH ANNUAL WORKSHOP

The American Association of Professors in Sanitation Engineering conducts annual workshops as part of its effort to serve all professors engaged in environmentally oriented facilities. The workshop is designed to enhance the teaching and research capabilities of professors and to serve as a means of communication with practitioners in environmental engineering. This year's conference is entitled "Instrumentation and Automation of Waste Treatment Plants" and it will be held at the Newporter Inn or at the University of California, Irvine from August 16-18, 1971.

The workshop is arranged with a series of presentations covering the main points. Important concepts are expanded through problem and laboratory sessions providing the participants with actual experience in the design aspects of waste treatment plant control systems.

Presentations will be printed prior to the sessions to form a workbook syllabus. The following two textbooks will be used as part of the instructional material:

1. D. D. Perlmutter, Introduction to Chemical Process Control, Wiley, 1965.
2. R. H. Babcock, Instrumentation and Control in Water Supply and Wastewater Disposal, The Reuben H. Donnelley Corp., 1968.

Both the syllabus and the textbooks are included in the registration fee. Registration will be limited to 60 persons. This is necessary to insure adequate time for discussion from the floor. For further information or details, contact Mrs. Edna Nemetz, Environmental & Resources Engineering, School of Engineering, University of California, Irvine, California 92664.

Following is a detailed program of the workshop.

Sunday - August 15
7:00 pm Social Hour

Monday - August 16
8:00 am Registration
8:45 am Welcome
David Jenkins, Member
AAPSE Board of Directors

SESSION I - Frederick G. Pohland, Presiding
9:00 am Introduction to Automatic Control
John F. Andrews
9:30 am Basic Control System Theory I
Allen Stubberud
10:15 am Coffee
10:30 am Basic Control System Theory II
James Meditch
12:30 pm Lunch

(continued on next page)

SESSION II - Martin P. Wanielista, Presiding

1:30 pm Automatic Control - Analog Models

Peter Holzberg and Donald Darms

2:30 pm Analog Demonstration of Stability Concepts

Donald Darms

3:15 pm Coffee

3:30 pm Problem Session A

4:30 pm Transfer Function and Their Determinations

Donald Darms and Peter Holzberg

5:15 pm Adjourn

SESSION III - Alonzo W. Lawrence, Presiding

Tuesday - August 17

8:30 am State of the Art in Telemetry

John J. Fling

9:15 am Stability of Control Systems

Allen Stubberud

10:00 am Coffee

10:15 am Review of Problem Session A

10:45 am Digital Modeling of Continuous Systems

James E. Eastman

12:00 pm Lunch

SESSION IV

Problem and laboratory session demonstrating actual control systems. Each participant attend one of the two sessions.

2:00 pm Session 1 Problems and Laboratory

5:30 pm Session 2 Problems and Laboratory

SESSION V - Thomas M. Keinath, Presiding

8:30 am Trends Towards Automated Waste Treatment Plants

Walter Garrison

9:00 am Automatic Control Devices

Russell Babcock

10:00 am Coffee

10:15 am Review of Problem Session

10:30 am Process Sensor Developments

Thomas J. Kehoe

Robert H. Jones

11:15 am Oxidation Reduction Sensors

Arnold Miller

11:45 am Computer Control of Combined Sewer Systems

James Anderson

12:15 pm Lunch

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- SESSION VI - Gerhard W. Heinke, Presiding
- 1:15 pm Operating Experience with Sensors at the Hyperion Treatment Plant, City of Los Angeles
Joe Nagano
- 1:45 pm Design and Operation of Automated Waste Treatment Systems, Los Angeles County Sanitation Districts
- 3:00 pm Coffee
- 3:15 pm Workshop Summary and Discussion
- 4:00 pm Adjourn

WATER POLLUTION CONTROL AGREEMENTS REACHED

Agreements have been reached between the Environmental Protection Agency and the cities of Detroit, Cleveland, and Atlanta which call for the spending of some \$1.2 billion to curb the pollution of Lake Erie and Georgia's Chattahoochee River, EPA Administrator William D. Ruckelshaus announced today. The agreements were reached after the EPA Administrator served the three cities 180-day notices on December 10, 1970, to halt violations of Federal-State water quality standards or face the possibility of court action.

"We hope these settlements will mark a turning point in the efforts to save Lake Erie and reverse the trend that has turned the Chattahoochee at Atlanta into an open sewer," Ruckelshaus said. Detroit and Cleveland -- Lake Erie's two largest polluters -- will engage in a \$1 billion six-year program to halt the dumping of sewage and reduce the discharges of phosphorus, which spurs the growth of algae in the lake. Ruckelshaus added that Atlanta, as a result of raising its sewage rates by approximately 50 percent, will shortly take bids for the first of two huge treatment facility plants which will cost approximately \$62 million in local and Federal funds. The EPA Administrator called the final agreement worked out with the city of Detroit "a far reaching agreement that will stop pollution from the biggest single waste discharger to Lake Erie." [Environmental News]

SOIL EROSION LARGEST CONTRIBUTOR TO WATER POLLUTION

In an effort to change all this, the Interior Department is currently engaged in a project to demonstrate new storm water erosion control methods during construction. Involved is a 200-acre watershed in a section of the "new city" of Columbia, Maryland. Some of the practices planned, which will hopefully curtail the pollution of the Little Patuxent River, are preparation of the site in stages to reduce the land area exposed at one time to erosion; grading of slopes so the water runs off slower and doesn't concentrate in one deeply gouged streambed; temporary seeding and sodding to hold soil during construction; and placing of mulch on slopes to discourage erosion. Also, the state will construct a pond to collect the storm water and a new device called a "tube settler" will be given a fullscale test in the pond. Passage of water through a series of pipes will cause the dirt that the water is carrying to settle faster. When the water is released from the pond it will contain less sediment, thereby causing less pollution. [Civil Engineering]

Dr. George P. Hanna, Jr., Chairman of the Civil Engineering Department, University of Nebraska, has been recently appointed Interim Dean of the College of Engineering and Architecture.

PRIORITY RESEARCH SUBJECTS FOR O.W.R.R. TITLE II SUPPORT

The Office of Water Resources Research has identified the following major subject areas for priority research support in the fiscal year 1973 program. OWRR will consider funding subject areas of research not included on this priority list if the research proposal provides convincing reasons that the subject area of research is of high priority, and within the purview of Title II of the Water Resources Research Act of 1964, as amended.

To allow sufficient time prior to July 1, 1972 for proposal review, contract negotiation, and transmittal to the Congress for a 60-day period as required by Title II of the Act, formal proposals must be submitted to the Office of Water Resources by January 10, 1972, in order to be eligible for fiscal year 1973 funding. Although proposals may be submitted to OWRR at any time, those received after January 10, 1972, will be held for future consideration for support.

Detailed instructions and forms for the submission of proposals for consideration for funding under the Title II provisions of the Water Resources Research Act may be obtained from the Director, Office of Water Resources Research, U. S. Department of the Interior, Washington, D.C. 20240.

Because certain important and urgent water resource problems require research involving a number of technical disciplines in the physical, life, or social sciences, law, or public administration, significant progress toward their solution may require relatively high level of effort. For that reason, OWRR is prepared, as appropriate, to consider a limited number of proposals with corresponding funding levels as determined by sound research design and prudent management.

- (1) Analysis of Planning, Managerial, Financial, Operating and Regulatory Policies of Water Resources Institutions,
- (2) Water Resources Policy and Political Institutions,
- (3) Hydrologic Systems Analysis,
- (4) Urban and Metropolitan Water Resources Problems,
- (5) Environmental Considerations in Water Resources Planning and Management,
- (6) Evaluation of Economic Importance of Various Uses of Water, Cost Allocation, Cost Sharing, Pricing and Repayment,
- (7) Analysis and Evaluation of Water Resources Projects with Special Emphasis on Identification and Evaluation of Benefits Derived,
- (8) Ground Water Management and Protection,
- (9) Protection and Rehabilitation of Estuarine Resources,
- (10) Thermal Loading Problems,
- (11) Water Demand Considerations. [U. S. Department of the Interior]

AAPSE AWARDED GRANT TO PREPARE AQUATIC CHEMISTRY LABORATORY TEXT

AAPSE recently was awarded a grant from the office of Water Programs, Environmental Protection Agency, for the purpose of preparing a laboratory text on aquatic chemistry. The proposed text will be comprised of laboratory and demonstration experiments designed both to be of use to the sanitary engineer in his professional career as well as to be illustrative of fundamental chemical principles.

The preparation of the text will be a diversified professional effort. Requests have gone out to a number of teachers in the field for suggested laboratory experiments in aquatic chemistry. These experiments will be reviewed and from them a series of feasible and comprehensive laboratory sessions will be developed by a working group during the summer of 1971. This group will test the experiments and compile them so that they may be circulated through the AAPSE membership and other interested participants for trial in a classroom situation during the 1971-72 academic year. In

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the following summer a final version of the text will be prepared, incorporating the comments and recommendations of the participants.

The following letter recently has been sent to many AAPSE members - should you not have received one, please accept our apologies, read the letter as though it were addressed personally to you, and send your contributions to Dr. Jenkins:

Dear Professor:

Under the auspices of AAPSE the preparation of a Laboratory Manual on Aquatic Chemistry is being planned. The purpose of this manual is to provide a series of laboratory experiments in aquatic chemistry that will serve the dual purpose of illustrating physical/chemical principles and providing the MS student in Sanitary or Environmental Engineering with a knowledge of commonly-used chemical analytical techniques for water and wastewater examination. This letter is to request your assistance in this endeavor. Our plan is to solicit experiments that cover the areas of subject matter typically required for an MS course in Sanitary Engineering.

During the coming summer several of us will spend one to two months at Berkeley conducting the proposed experiments, refining and modifying them and preparing complete write-ups for a draft of the manual.

The draft will be circulated to AAPSE members and other participants for use during the 1971-72 academic year. During this time participants will be asked to test the various experiments in a classroom situation and from this experience offer suggestions for further modification of the experiments. Using these modifications the Manual Preparation Group will meet in the early summer of 1972 to finalize the preparation of the first edition of the manual.

We certainly hope that you will find it possible to help us in this cooperative endeavor--an endeavor that I feel will bring further strength to our profession.

David Jenkins
SERL 112 RFS
1301 South 46th Street
Richmond, California 94804

The working group plans to start its review and testing of experiments by August 1, 1971 so that your early response to them would be appreciated.

The granting of this award represents a high level of recognition and confidence by EPA in Dave Jenkins and the group he has organized and in the ability of AAPSE members in making the manual a success. Let us strive to make this project a success--one that reflects on all of us individually and professionally. Please provide Dave with all of your assistance. [Raymond C. Loehr, President]

UCLA TO GRANT DOCTOR OF THE ENVIRONMENT DEGREES

A new five-year doctoral program at UCLA, open to students with B.A. degrees, will train men and women to diagnose environmental ills. The program, which will grant a Master of Environmental Science and Engineering degree after the first two years, will include a third year of seminar work and two final years similar to the internship in medicine, with students working on "real life" problems in industry or government. Among the problems doctoral candidates will consider are forecasting global air pollution for 1990 and surveying litter problems in outer space. [Civil Engineering]

E.P.A. RESEARCH NEEDS

The following topics were indicated as being EPA's high-priority research needs by Frank Middleton, Director of Research at EPA's Advanced Waste Treatment Research Laboratory, at the recent WQO-AAPSE meeting. They are presented for your information.

A. Research Needs in Moving Bed Filter

- 1. Operating Experience
 - a. Costs
 - b. Size & type of media
 - c. Method of removing filter face
 - i. continuous
 - ii. intermittent
- 2. Use of Activated Carbon

B. Research Needs in Reverse Osmosis

- 1. Large Scale Operating Requirements
- 2. Evaluate and Demonstrate Hollow Fiber Systems on Dirty Water
- 3. Solve Fouling Problems
- 4. Evaluate Non-Cellulose Acetate Membranes
- 5. Improve Membranes and Hardware
- 6. Improve Water Recovery

C. Research Needs for Carbon Treatment

- 1. Relation of Adsorption to Surface Area, Functional Groups, and Pore Characteristics.
- 2. Regeneration in Place
- 3. Regeneration of Powdered Carbon
- 4. Predictive Techniques for Carbon Contact Design

D. Research Needs For Disinfection

- 1. Seek Additional Indicator Organisms
- 2. Determine Potential Toxicity of Chloro-Organics
- 3. Improve Recovery and Denitrification Techniques
- 4. Determine Role of Viruses
- 5. Find Disinfection Methods for Low Temperature Areas
- 6. Determine Disinfection Properties of Iodine, Bromine Ozone, and Ultraviolet Light

E. Research Needs for Ion Exchange

- 1. Proper Flow Regimes
- 2. Choice of Resins
- 3. Effects of Variable Feeds and Dissolved Solids
- 4. Disposal or Recovery of Regenerating Chemicals

(continued on next page)

F. Chemical Treatment Research Needs

1. System for Monitoring Dosage Needs
2. More Effective Coagulants
3. New Contacting Techniques

G. Microscreening Research Needs

1. Solutions to Clogging
 - a. Grease and slime
 - b. Slugs of biological floc
2. More Operating Data
 - a. Establish use locations
 - b. Types of solids removable

H. Filtration Research Needs

1. Design Criteria for Wastewater
2. Effect of Slime Growths
 - a. Denitrification potential
3. Mathematical Relationships to Predict
 - a. Filter
 - b. Pretreatment
4. Backwash Design Criteria
 - a. Surface wash
 - b. Air-water backwash
5. Pressure Filters

I. Research Needs for Chemical Oxidation

1. Determine Application of Ozone
2. Determine Waste Treatment Potential of Halogens, Ferrates, and Free-Radical-Generating Compounds
3. Determine Rate-Controlling Parameters, Identity of Reactants and Products

IMPACT OF PAYING FOR WATER AND AIR

The Environmental Protection Agency is conducting a comprehensive analysis of the economic impact of cleaning up the environment. The trend most likely to affect U. S. industry and hence consumer prices is a change in the national habit of omitting air and water from price considerations. This "free resource" attitude is said to have produced a high market incentive to pollute. Reform may work particular hardships upon those industries already hard pressed by lower priced foreign imports. Some of these imports may be from countries not insisting on tough resource guardian laws at this time. Requests for additional information concerning the proposed EPA analysis should be addressed to the Environmental Protection Agency, Office of Public Affairs, Room 005, 1626 K. Street, N.W., Washington, D.C. 20460. [Water Newsletter]

Dr. Earnest F. Gloyna, dean of the College of Engineering, University of Texas, has been named to the Joe J. King Professorship in Engineering. Dr. Gloyna is an expert in environmental health engineering and water resources.

EPA/AAPSE INTERCHANGE SYMPOSIUM

The EPA/AAPSE Technology Interchange Symposium held the first week of June went over well. Ninety-two people registered and there were a few other walk-ins. This represented 46 colleges and universities, 30 states, and 61 professors. About 31 EPA personnel also attended. Mr. Allen Cywin, Acting Chief of Water Quality Research of EPA helped in organizing the EPA part of the program and arranged for the EPA speakers.

The AAPSE Board would like feedback from you on the above and future interchanges with government agencies. For the above symposium indicate what you considered the strong and weak points, what should have had more time for discussion, where was more depth needed, what future interchanges would be useful to you with which governmental agency (EPA, CORPS, Interior, etc.), and any other useful comments. Please send your comments to Fred Pohland as soon as possible.

I.A.W.P.R. VIENNA WORKSHOP

The International Association on Water Pollution Research will hold a workshop on "Design - Operation Interactions at Large Treatment Plants," September 20-24, 1971, Vienna, Austria. The purpose of the workshop is to provide an opportunity for the exchange of design and operating experiences on an international basis.

The Annual Conference of the British Institute of Water Pollution Control is being held in Brighton, England during the week (13-17 September) prior to the IAWPR Workshop and a possible group travel arrangement for attending this conference and the IAWPR Workshop is being explored. Contact Professor John F. Andrews, Environmental Systems Engineering, Clemson University, Clemson, South Carolina 29631 for more information including travel arrangements.

TENNESSEE-TOMBIGBEE PROCEEDS OVER E.P.A OBJECTIONS

Presidential ground breaking ceremonies for the \$387-million canal project linking the Tennessee River in Tennessee and Alabama's Tombigbee River, were carried out despite the Environmental Protection Agency's strong objections to the scheme. Engineering News Record reports that EPA complained that the Corps of Engineers had given "insufficient acknowledgement to the adverse effect that the project will have on the future ecological and water quality values of the rivers." According to the magazine, the agency's comments were attached to a draft copy of the environmental impact statement required for all federally funded public works programs. The area where most of the construction will take place is "one of the most picturesque and unspoiled areas in Mississippi." Environmentalists, heartened by their successful participation in the effort to have President Nixon stop the Cross-Florida Barge Canal, had hopes that earthly rather than political considerations would prevail to prevent construction of the Tennessee-Tombigbee scheme. However, the President's participation in the dedication appears to make construction a certainty. [Water Newsletter]

The state of South Australia is going to buy the town of Adelaide Hills and tear it down because its septic tanks are polluting a reservoir. A sewage system for the 36-home community would cost as much as the town. [Water Resources Newsletter]

CONFLICTS IN WATER RESOURCES PLANNING

The fifth volume in the CRWR Water Resources Symposia Series, *Conflicts in Water Resources Planning*, will be published in August 1971 instead of June, as previously announced. Edited by Dr. Earnest F. Gloyna, Director of the Center for Research in Water Resources, and Dr. William S. Butcher, former Associate Director of CRWR, the volume will contain the proceedings of a conference held November 19-20, 1970, on The University of Texas at Austin campus.

Fifteen papers by prominent authorities on water resources planning problems will be arranged in three sections on "Water, Land, and People," "Government's Role in Water Resources Planning" and "Ecology as a Planning Parameter."

The price of the volume has been set at fifteen dollars (\$15.00), and Texas residents must add state sales tax to the total amount of their orders. Copies may be ordered from: Center for Research in Water Resources, The University of Texas at Austin, Route 4, Box 189, Austin, Texas 78757.



fisherman's information bureau

**YOU'RE THE SOLUTION
TO WATER POLLUTION**

M'gawd, Fred... what are they dumping in the river, now?

FORD FOUNDATION GRANTS

The Ford Foundation recently announced several grants aimed at environmental improvement. They are: \$285,000 to the Environmental Defense Fund; \$310,000 to the Natural Resources Defense Council; \$262,000 to the University of California's International Center for Biological Control (of insects); \$240,000 to the University of Miami and \$100,000 to the Conservation Foundation to advance environmental knowledge and management in Florida. [Catalyst]

MULTIPLE OBJECTIVES OPPOSED BY O.M.B.

A major controversy has erupted over the Water Resources Council's proposed new water resources project evaluation guidelines. The Office of Management and Budget has raised strong objections to the Council's recommendation that all projects be evaluated on the basis of four objectives: economic efficiency, environmental enhancement, regional development, and social well-being. While the new criteria were contained in the Rivers and Harbors Act of 1970 as "the intent of Congress," the O.M.B. is maintaining that economic efficiency must continue to be the single deciding factor in the approval and funding of all projects. [Water Resources Newsletter]

SIXTH I.A.W.P.R. INTERNATIONAL CONFERENCE ON WATER POLLUTION RESEARCH

The Conference will be held in Jerusalem, June 18 - 24, 1972. The scientific program is planned to be of interest to the widest possible range of practicing engineers, administrators and research scientists and will feature: Problems of Water Pollution Control in Developing Countries & Arid Zones, Wastewater Re-use and Reclamation, Low-Cost Wastewater Treatment Systems, and Tertiary and Advanced Treatment Methods.

Included as well will be sessions on water quality management; wastewater treatment; marine disposal; lake and river pollution; industrial wastes; sludge handling and disposal; disinfection; control of pathogenic bacteria and viruses; odor and insect nuisance control; pond systems; analytical methods and monitoring techniques; automation and water quality criteria and the administration and management of water pollution control programs.

Authors are invited to submit completed papers in English, not exceeding 5,000 words by October 14, 1971. Papers should be submitted to the appropriate Governing Board member of IAWPR for each country or to Dr. S.H. Jenkins, IAWPR, Newhall Street, Birmingham 3, England.

General information concerning the Conference may be obtained from the Israel Host Committee, P.O.B. 16271, Tel-Aviv, Israel.

NEW PROGRAM AT M.I.T.

A new training program entitled "Water Quality Systems Modeling and Management" has been announced by the Water Resources and Hydrodynamics Division, Department of Civil Engineering, Massachusetts Institute of Technology. Designed as a Masters program with student support by the Water Quality Office, Environmental Protection Agency, it will provide a flexible curriculum based on existing strengths within the Department of Civil Engineering at MIT in systems analysis, mathematical models, economics, statistics, computer systems, social and legal aspects of environmental quality, public policy, water quality control and management, physical system modeling and ecologic systems modeling. Additional supporting courses are available elsewhere at MIT and at Harvard. Individual student programs can range from physical system and ecologic system modeling through policy and social issue in water quality. Principal faculty are Professor Donald R. F. Harleman, Project Director; Professor David H. Marks, Water Quality Management; and Professor Steven Moore, Ecologic Systems Modeling. For further information concerning the program please write Professor Donald R. F. Harleman, Room 48-335, Ralph M. Parsons Laboratory for Water Resources and Hydrodynamics, Massachusetts Institute of Technology, Cambridge, Massachusetts 02139.

LIVESTOCK WASTE MANAGEMENT AND POLLUTION ABATEMENT

The management of livestock wastes in conformance with ever-more-stringent environmental quality requirements is a world-wide problem. The Proceedings of the International Symposium on Livestock Wastes -- LIVESTOCK WASTE MANAGEMENT AND POLLUTION ABATEMENT -- reports the deliberations of scientists, engineers, educators, public officials, and industry representatives who met recently to discuss current technology and research developments.

The wide variety of topics covered in the 104 papers includes waste disposal systems, beef feedlot runoff, wastes characteristics, hydraulic transport, composting, drying, aerobic and anaerobic treatment, land disposal, storage, refeeding, solid-liquid separation, systems economics. The ISLW Proceedings is highlighted by general perspective papers that describe roles and responsibilities of educators, public officials, professional societies, and systems designers in converting research results into practice.

This Proceedings is a valuable reference for anyone concerned with the problem of managing and disposing of livestock wastes. Its applicability throughout the world is reflected by the geographical distribution of the speakers, who came from 30 states and nine foreign countries. The Proceedings is available in hardback binding at a prepublication price of \$18. After August 1 the price is \$20.00. Shipment will be in September 1971. The Proceedings is being published by American Society of Agricultural Engineers -- orders are being accepted at ASAE Headquarters, 2950 Niles Road, St. Joseph, Michigan 49085.

ENVIRONMENTALISTS SEEK TO INTERVENE IN NUCLEAR PLANT LICENSING

Three environmental groups have filed a petition to intervene with the Atomic Energy Commission in order to assure that the second unit of the Point Beach Nuclear Plant, located on Lake Michigan north of Manitowoc, Wisconsin, is equipped with a cooling pond and radiological safeguard systems to protect the environment. The plant, recently constructed by Wisconsin Electric Power Company and Wisconsin Michigan Power Company, is nearing completion and is almost ready to receive an operating license from the AEC.

The intervenors seek to ensure that a closed-cycle cooling system is installed at both units of the Point Beach plant in order to prevent further thermal pollution of Lake Michigan. The intervenors indicated that they would consider withdrawing their intervention if the utility is willing to sign an agreement that would legally require installation of such a system.

Consumers Power Company recently signed a similar agreement with five conservation groups that intervened last June in the AEC hearing on the Palisades Plant at South Haven, Michigan. The 84-page Palisades agreement binds Consumers Power to the installation both of cooling towers and an essentially-zero-release radioactive waste system. A previous intervention last fall produced an agreement by the utility to install an essentially-zero-release radioactive waste system at both units of Point Beach. [Clean Air and Water News]

Dr. Harry P. Kramer, director of the Office of Manpower Development, Office of Air Pollution Control, Environmental Protection Agency, has assumed the presidency of the American Academy of Environmental Engineers. Wesley Gilbertson was named president-elect. Past president Dr. Daniel A. Okum continues as an officer of the academy.

WATER POLLUTION CONTROL SHORT COURSES AT AUSTIN

The College of Engineering in cooperation with the Division of Extension at The University of Texas at Austin will sponsor two one week short courses on Advanced Water Pollution Control. The first one, Biological Waste Treatment, is scheduled for the week of September 20 - 24, 1971. The Physical-Chemical Waste Treatment and Sludge Handling course will be held the week of October 25 - 29, 1971. For further information, please contact: Joseph F. Malina, Jr., Director, Environmental Health Engineering, The University of Texas at Austin, College of Engineering, Austin, Texas 78712.

NEW DRAFT OF OPERATIONS AND PROCESSES MANUAL ISSUED

A new draft of "Sanitary Engineering Unit Operations and Unit Processes Laboratory Manual" has been issued. AAPSE members and other interested persons are urged to use this manual for instruction and to offer comments for improvement to the Manual Committee.

E.P.A. ISSUES REPORT ON AUTO EMISSION CONTROLS

The Environmental Protection Agency said today that controls to meet both 1975 and 1976 automobile emission standards have not yet been developed, but that the agency is "moderately optimistic that the 1975 standards can be attained."

The agency's comments came in its first annual report to the Congress on the development of systems to reduce auto exhaust emissions. The report is required by the Clean Air Act.

The Act requires that 1975-model cars achieve a 90 per cent reduction in emissions of hydrocarbons and carbon monoxides from 1970 levels and that 1976-model cars achieve a 90 per cent reduction in emissions of oxides of nitrogen compared with uncontrolled 1971-model cars.

EPA said its hopes for meeting the 1975 standards hinged in part on the expectation that unleaded gasoline would be generally available by 1975. Unleaded gasoline is needed for the operation of some proposed devices to control emissions of hydrocarbons and carbon monoxide.

The agency said the achievement of the 1976 standard would require a technological breakthrough beyond the present state of the art. EPA said it is "hopeful" that such a breakthrough would occur. [Environmental News]

DR. HERSHEY NAMED U.S. CHAIRMAN FOR IHD

Dr. H. Garland Hershey has been appointed to a three-year term as Chairman of the U.S. National Committee for the International Hydrological Decade. The Director of Interior's Office of Water Resources Research, Dr. Hershey succeeds Dr. Dean F. Peterson, Dean of the College of Engineering at Utah State University, who continues as a member of the Committee.

Six new members appointed to the Committee are: Harvey O. Banks, H.O. Banks Consulting Engineer, Inc.; James J. Geraghty, Miller and Geraghty, Inc.; Ray E. Isaacson, Atlantic Richfield Corp.; Dr. Martin L. Johnson, Commissioner of Water Resources, Vermont; Prof. George B. Maxey, Director of Hydrological Research, D.R.I., University of Nevada; Dwight F. Metzler, Department of Environmental Conservation, New York. [Water in the News]

RUCKELSHAUS SERVES 180-DAY NOTICE ON BOGALUSA, LOUISIANA

William D. Ruckelshaus, Administrator of the Environmental Protection Agency, on July 24, 1971 served a 180-day notice on the City of Bogalusa, Louisiana, for discharging inadequately treated municipal wastes into the Bogue Lusa Creek and the Pearl River in violation of Federal-State water standards for Louisiana and Mississippi.

Under provisions of the Federal Water Pollution Control Act, 180-day notices are issued directly to waste dischargers who cause or contribute to violations of water quality standards. These notices provide an opportunity to negotiate voluntary compliance. However, if the violator refuses to take action within that time period, the matter can be referred to the Justice Department for court action.

Bogalusa's failure to meet the Federally approved construction deadline of December 1970 necessitated the serving of the 180-day notice, the EPA Administrator said. The action marks the 15th time the Administrator has served a 180-day notice upon companies or cities for violating of applicable water quality standards. [Environmental News]

IT'S IN THE BAG - OR BOTTLE, OR CARTON

This fall a group of students at the University of Illinois at Urbana-Champaign will be wrapping up twelve weeks of summer research on a serious environmental problem: the effect of food and beverage packaging on household wastes. The project is unique in two respects. It is a totally interdisciplinary effort being carried out by fourteen students from eight different areas of study, and it is supported by the first grant to the U of I under the new National Science Foundation student-originated research program. Participating students will receive a stipend, and the University's facilities will be available to them for the summer.

Emphasis is on student research, with faculty members acting in an advisory capacity. Project directors are Dale Jurich, a senior in electrical engineering and computer science, and Richard Frederick, an undergraduate biology student. Faculty advisors are Professor John T. Pfeffer of the Department of Civil Engineering and Professor William R. Boggess, Head of the Department of Forestry.

The project proposal, entitled "An Investigation of the Long Term Effects on Society of Alternative Methods of Packaging Food and Beverages for Household Consumption, and of the Associated Packaging Usage Patterns," grew out of an interdisciplinary honors course in which students are studying problems of technology and the environment. Objectives are to develop information to evaluate packaging and, through interdisciplinary research, find methods for handling solid-waste environmental problems.

Using the American household as a base, the students plan to investigate the feasibility of alternatives to present packaging methods. They will canvass housewives for opinions about packaging and will use the University's computer facilities to analyze answers. Recycling of materials - as is being done in some places with glass, metal, and paper - is among the waste-reducing methods to be studied.

It is hoped that the project will provide information for use by communities considering legislation to reduce the quantity of solid waste generated. On a broader scale, the project should make a major contribution toward wiser use of national resources and help relieve the housewife of that "boxed-in" feeling. [Engineering Outlook]

IMPACT STATEMENTS AVAILABLE

The Department of Commerce has announced that the environmental impact statements of all government agencies will be available from a single source beginning July 1, 1971.

The service will be from the department's National Technical Information Service (NTIS), through its semimonthly Announcement Series No. 68, "Environmental Pollution and Control."

A subscription is available from NTIS, U. S. Department of Commerce, Springfield, Virginia 22151 for \$5.00 per year. Individual copies of impact statements may be obtained in paper (\$3.00) or microfiche (\$0.95) form.

FACULTY POSITIONS AT MONTANA STATE

Bob Sanks reports that Montana State University is strengthening its program in Environmental Engineering and initiating a new program in Environmental Health Engineering. Needed are two new academic staff members. The first position is for an experienced man to teach environmental health engineering. A minimum of 10 years experience in public health including public health administration or a combination of the former with teaching experience. Ph.D. is desirable. Duties include teaching and research, and he will be directly responsible for the new program in environmental health engineering.

The second position is for an assistant professor to teach Environmental Engineering and some Environmental Health Engineering and to do research in these fields. While he need not have public health service experience, it would nevertheless be desirable. A Ph.D. is required. His coursework should reflect a wide variety of subject material hopefully including solid waste management, air pollution control, and rather extensive coursework or research in biological treatment processes. Some experience is desirable but not necessary. He should be aggressive, able, and of the type to attract graduate and undergraduate students into Environmental Engineering. Duties include both teaching and research.

NATIONAL ENVIRONMENTAL LABORATORY ACT

Thirty Senators have co-sponsored legislation to establish a National Environmental Laboratory. The NEL would be charged with finding out what technology is doing and what its effects will be on the national environment, hopefully before they occur.

The NEL would conduct basic research and analyze human activities affecting the environment. Its work would include data collection and dissemination, development of methods and devices, training and education and objective analysis of various environmental policy alternatives.

The legislation also provides that, where appropriate, the lab could invent, test and demonstrate alternative solutions to existing and probable environmental insults. The lab cannot, under the legislation, make specific policy recommendations but it can present alternatives and describe the probable results of each alternative policy.

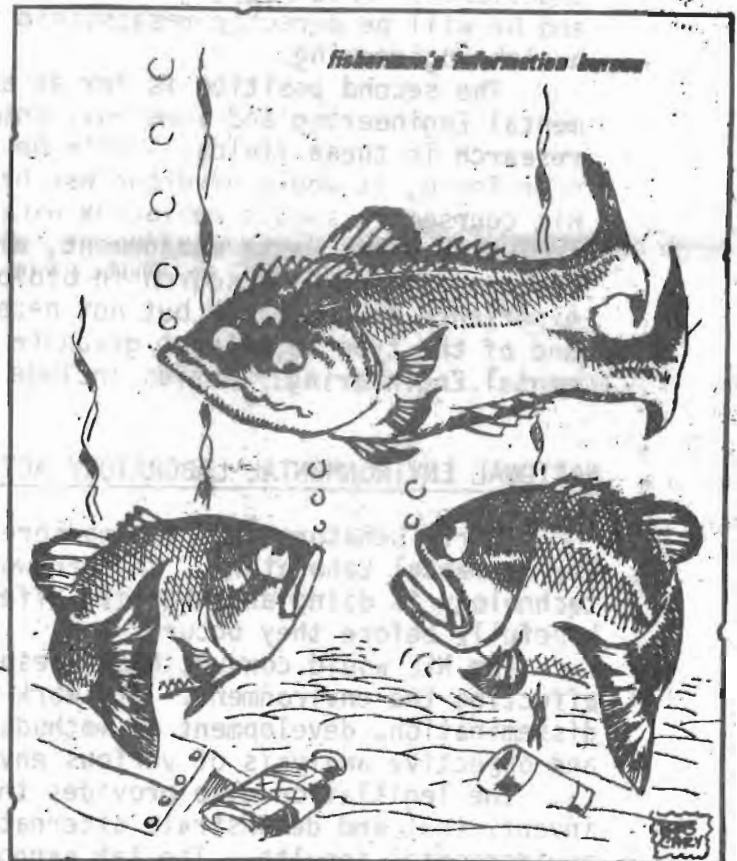
S.1113 establishes a Washington, D.C. Laboratory and a governing Board of Trustees. It also provides for four regional labs to be established around the country to carry on the lab's work. [Conservation News]

After expending millions of dollars to convince Americans the good life could be found only at the bottom of a throw-away can or bottle, and then making it difficult to buy returnable containers, it was almost easy to keep a straight face when insisting the public "demanded" throw-aways.

WATERBORNE LITTERBUGS FACE \$5,000 FINE UNDER NEW CANADIAN SHIPPING ACT REGULATION

Fine of up to \$5,000 may be assessed against persons found guilty of dumping garbage into Canadian waters under new "garbage pollution prevention regulations" added to the Canada Shipping Act. To assure that no misunderstanding about the rules can arise, terms of the regulation, which states that "no persons shall discharge or permit the discharge of garbage from a vessel into Canadian waters," are clearly defined. A vessel is said to be "any ship or boat or any other description of vessel used or designed to be used in navigation," and garbage is listed as "solid galley waste, paper, rags, glass, plastics, metal, bottles, crockery, junk or similar refuse."

In another move to stop water pollution, an amendment to Oil Pollution Prevention Regulations of the shipping act clarifies legal definition of oil and oily mixture, whose discharge is forbidden. Oil is described as "petroleum, fuel oil, sludge, oil refuse and oil mixed with wastes other than dredged spoil" and oily mixture as "mixture with any oil content" and "a mixture with an oil content of 100 parts or more in 1,000,000 parts of the mixture." Maximum fines of \$5,000 are also allowed for violation of oil discharge regulations. During 1970, 51 court convictions netted \$71,530. [Clean Water Report]



"I'd like you to meet my cousin Fred from down back of the nuclear power plant."

FACULTY POSITION AT NEW MEXICO STATE

A position is open on The New Mexico State University Department of Civil Engineering staff for an assistant professor in the area of sanitary engineering. Desired is an individual with a strong biological background who has minor areas of interest in general sanitary engineering or hydraulics/hydrology. For further details, contact: Samuel P. Maggard, Professor and Head, Department of Civil Engineering, New Mexico State University, Box 3CE, Las Cruces, New Mexico 88001.

ADDRESS BY

DR. STANLEY M. GREENFIELD
ASSISTANT ADMINISTRATOR FOR
RESEARCH AND MONITORING

ENVIRONMENTAL PROTECTION AGENCY

Science and technology are under fire today, in America and throughout the world. Human population is increasing because medical and public health advances have cut the death rate without a corresponding reduction in the birth rate. The environment is visibly worsening, and technology is held to blame: 1. for our per capita use of materials and energy, and 2. for the production of goods and services without regard to byproduct wastes and side effects.

More and more people are questioning the values implied in modern technology. Are some scientists just fiddling (at the public expense) while Rome burns? Are science and engineering relevant, indeed, to the affluent in the suburbs when the amenities they worked to achieve seem to crumble away into unexpected kinds of congestion, inconvenience, and ugliness?

As President Nixon put it in his message to Congress last year: "Never have Americans seemed to have had more and enjoyed it less."

There is no doubt that technology has helped us to double the nation's gross national product since 1960, from 500 billion dollars to nearly a trillion. But how much of this 500 billion dollar increase represents environmental degradation: over-powered automobiles, traffic-clogged highways, electric power, paper, plastics, chemicals, and all the rest?

We were not generally concerned with the environment twenty years ago, probably because we were producing only half as much as we are today. According to one recent estimate, the nation's real output of goods and services has grown as much in the last twenty years as it did from the time of the first white settlers to 1950.

We seem to be caught in a dizzy spiral of technology, growth, and pollution that is clearly bound to be self-destructive. Ironically, our word for this whole process is "development." We speak of "developed" and "undeveloped" nations.

We call a salt marsh or a virgin forest undeveloped, though each has a diverse collection of plant and animal life existing in equilibrium with its chemical and physical environment. When men drain and fill the marsh, build oil tanks, piers, pipelines, and sewer outfalls, we say the marsh has been developed. When the virgin forest is cut and replanted to a single timber species, or when trails are cut and slopes graded for a ski resort, that's another kind of development.

Now it is simplistic to condemn all such "development" out-of-hand, and retreat to a commune and grow our own organically fertilized vegetables. Man is a species too. Oil tanks, ski resorts, automobiles, airports, and shopping centers are part of our habitat.

The problem is not just simple greed and lack of planning, although these failings are evident. The problem is that we haven't been greedy enough; we have coveted immediate gains for ourselves rather than long-term

gains for our species. We have planned carefully to make this tank farm or this ski area efficient and productive without considering the effects on other areas downstream or downwind.

Above all, we have failed to weigh the broad, complex effects on the environment as a whole, which means the whole earth, our global spaceship with its limited resources of air, water, fertile land, minerals, and living space. The collective total impact of man's technology on the environment has become so great that there is real danger of exceeding nature's power of self-purification.

What, then, is the relevance of science and technology to our environmental problems? How can we achieve a rational, viable system of control for the technological juggernaut?

The great achievements of science in the past have resulted from breaking problems down into smaller and smaller parts: from physics and chemistry on the macro scale to molecules, atoms, and then nuclear particles. And we found, of course, that the universe does not exist in discrete, unrelated parts. It functions as an intricate interlocking whole.

The poets sensed this great truth before the scientists confirmed it. John Donne said: "No man is an island...The bell tolls for thee." John Muir, the naturalist, in his book, *My First Summer in the Sierra*, wrote "When we try to pick out anything by itself, we find it hitched to everything else in the universe. One fancies a heart like ours beating in every crystal and cell..." (Notice that Muir, writing in the 1890's, mentions a crystal as a quasi-living thing long before scientists posited that crystalline forms were probably precursors of living matter.)

We have been taking the universe apart scientifically, analyzing, limiting our field or view. Now it is time to put it back together, to synthesize, to integrate our disparate knowledge and to create a technology for controlling enormously complex systems.

For understanding and managing man's relations with his environment, it will be necessary to do research in four different areas:

1. In ecology - The basic interactions among modern man's activities; the available resources of air, water, minerals, energy; and other animal and plant systems.
2. In monitoring of environmental quality - We do not yet have reliable baseline data on what are the natural or desirable conditions in our environment.
3. In technology - Better methods for reducing waste and pollution and for mitigating their effects.
4. In modeling and prediction - We need to be able to predict the effects of new technology--and new scales of operation--on the environment before they reach the danger point, to delineate problems before they occur.

All of these research needs are important. All are necessary to provide the public with sound information on which to base political decisions. Most environmental problems are not purely technological; they involve strong interplay with social and economic factors, and so must be resolved by political processes.

Environmental research must operate under some important constraints. It differs considerably from the type of research to which many of us have become accustomed in the past. We are not facing a stable set of understandable problems, but a dynamic set of new problems--emerging problems which may change as we work on them, and problems which involve not so much the basic laws of nature but more the subtle interplay of rates and processes as expressed by these laws.

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Moreover, we are forced to work under a great sense of urgency. In the past we have been inclined to leave to the experts the details or research, say, in the areas of health, or defense, or space exploration, limiting public involvement to major directions and major expenditures.

When it comes to the environment, everybody is an expert! And why shouldn't they be? They live in it. Furthermore, most of us can remember clean air and clean water. We are impatient to get back to them. It is not a matter of tackling an age-old problem like poverty. The environmental crisis was created in modern times, and we feel instinctively that it can be solved.

Environmental research is more prone to political pressure than other types of research, even on details. Because of this sensitivity, we are not allowed the freedom of programming that we give such agencies as Defense, NASA, or NIH, where the over-all objectives only are publicly set and the timetables and subsidiary goals left to the experts.

Another aspect of this urgency is that political and economic decisions must often be made without waiting for the results of research and without regard to optimum research and development timetables. As a public agency we have an obligation to contribute to such decisions the best knowledge available, although that knowledge may be incomplete or even erroneous.

We have, therefore, a set of interconnected problems of great urgency that have long been neglected, ignored, or unrealized. Among them are many which we know a little about; that is, some knowledge exists, some techniques of correction have been developed. These problems constitute a backlog which must be tackled first, and vigorously, with admittedly imperfect techniques.

This is not a very happy situation for the scientist or engineer who wants to break new trails. But, as Jimmy Durante used to say: "Dem's da conditions dat prevail."

We are operating also under strong counterpressures to the results of research, development, and demonstration. Take, for example, municipal pollution control. Here we deal not with the profit making industry anxious to gather up the fruit of research in the search for new markets, but with one of the more conservative elements of our society which already sorely pressed for funds, is reluctant to commit tax monies to any investment which does not have a very high degree of assurance of performance. Many of our environmental problems involve solutions which conflict directly with vested interests. Therefore, we find strong economic and political pressures resistance to our research.

Often we find there is no ideal solution and we are faced with trade-offs, or balancing of technical factors against social and economic factors. We cannot use the traditional scientific method of analyzing a problem, breaking it down into discrete, manageable, and interesting chunks. We find that decisions must be based on empirical rather than deductive reasoning.

The question facing us today is how we can work together and meet these complexities. Let me describe the role of the newly formed environmental protection agency.

There were several reasons for the reorganization to form EPA. In the past, the Federal government's efforts to deal with pollution suffered from two obvious problems. First, for many particular kinds of pollution, a number of different Federal agencies had overlapping or closely related responsibilities. For example, three Federal departments, agriculture, HEW, and interior were directly involved in regulating pesticides. And similarly, a number of agencies had some responsibilities for radiation

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problems. Second, the organizational basis for controlling pollution was not consistent or adequate. The two largest agencies, the Federal Water Quality Administration and the National Air Pollution Control Administration, were organized on the basis of the medium through which the pollutants traveled. On the other hand, the other pollution control programs were organized on the basis of particular pollutants pesticides, radioactive materials, and solid wastes. Confusion resulted over the extent to which air and water pollution control agencies were responsible for radioactive materials and pesticides when these materials appeared in air or water.

The programs dealing with pesticides and radiation were developed in part because these two kinds of pollutants did not fit neatly into the categories of air and water pollution. Pesticides and radiation are found both in air and water and on the land. We cannot expect that pollution control problems of the future will be increasingly of this kind. They will involve toxic chemicals and metals which are found in all media and which run counter to the previous type of organization of air and water pollution control in the government.

Some pollution problems remained unrecognized because of gaps in agency jurisdiction or because no one agency had clear lead responsibility. The Environmental Protection Agency will not have this handicap because its responsibility is wide and includes the total environment.

Another problem of past Federal organizations was an agency's conflicting responsibility for regulating an activity it was also required to promote. Two clear examples were the Department of Agriculture's regulation of pesticides and the Atomic Energy Commission's regulation of radiation levels. Regardless of how good a job these agencies did, the public was increasingly questioning the assignment of promotional and regulatory powers in the same agency. I believe the common analogy is "assigning the goat to guard the cabbage patch." The Environmental Protection Agency, in Bill Ruckelshaus' words, "Is not obligated to promote anything but a better environment."

The existence of a unified Pollution Control Agency will clarify the Federal government's relations with state and local governments and with private industry. More than half the states in many localities already have a single agency responsible for all forms of pollution. A number of others are considering establishing such an agency. In the cases where a unified agency exists, the differing Federal requirements have caused perplexing problems for the state.

The reorganization was effected by an executive order of the President. EPA functions under the same enabling legislation which applied to its constituent parts. However, the new agency will function more effectively and will be able to undertake new activities not easily accomplished under the previous structure.

The key functions in pollution control are standards setting and enforcement. Standards provide the goals of the control program, the basis for enforcement actions, and the measure of the program's progress. Standards should be based upon the total amount of a given pollutant to which humans or some element of the environment are exposed even though the standards apply to a particular medium. Lead, for example, may reach humans through the air or the water but the key question is how much comes from all sources together. The organization of EPA will permit standard setting for pollutants which cut across media lines.

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The enforcement function will be improved in several respects. We will be able to examine the path of a pollutant through the total environment and determine at what point control measures can be most effectively and efficiently applied. For example, it may be that in some cases a pollutant can best be controlled by limiting its entry to the environment, as has been done with pesticides.

Research will be similarly strengthened. Research on the health effects of pollution will be able to take into account the exposure to a given pollutant from all sources. Research on ecological effects must consider the interrelated parts of the environment since ecology is to a great extent the study of such interrelationships. It will be far easier to conduct ecological studies in an agency which is not limited to one particular medium or pollutant. Likewise, waste treatment research may now consider integrated systems to control air and water pollution and the ultimate disposal of solid wastes.

Two points in EPA's role deserve strong emphasis. First, EPA is a regulatory agency with a primary mission of controlling the quality of the environment in this country in a way that meets the desires of our citizens. Secondly, it is generally recognized that research, development and demonstration will play a strong role in meeting this need. Thus, our research program will primarily support the regulatory activities of EPA.

My office has been given the problem of putting together an integrated, multimedia research program, and also of operating a diverse array of on-going programs aimed at different problems and often using different operational methods. We have attempted to make a smooth transition from these prior programs without seriously impeding their momentum, while simultaneously restructuring a new, more flexible, and more comprehensive total environmental research program.

To do this I have structured my office with three Deputy Assistant Administrators. The line functions will be conducted by a Deputy Assistant Administrator for research and environmental assessment, Dr. Leland Attaway, and his counterpart for monitoring, Mr. Willis Foster. These offices will set the overall objectives, timetables and resources to be used in meeting EPA's need. They will be supported by the Deputy Assistant Administrator for research operations, Mr. Albert Trakowski, who will provide the system for marshalling resources to meet these overall objectives and for making the fruits of research available to those who need them.

To reorganize a program of this complexity is no easy task and will not be accomplished in a matter of months. We hope by the end of the summer the outlines will be clear. I think it can be said quite clearly, however, that the fiscal '72 budget will represent very much the priorities we have seen over the past few years and that the new Office of Research and Monitoring will have initial impact on the fiscal '73 budget cycle.

What, then, of our relationships with the academic community? For one thing, by the integration of all environmental activities into EPA we will be in a much better position to set and operate on the basis of longer-term priorities. We intend to maintain much closer liaison with the universities in terms of communicating our research needs. I hope gatherings such as we are having today will help serve this purpose. We hope such exchanges can be expanded in the future to include not only water quality problems but all the environmental problems.

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I will seek additional funding for fundamental research in order to lay a stable basis for meeting longer-term problems and predicting problems before they are thrust upon us. In the past, the major share of our resources has been devoted to "putting out fires."

How can the academic community respond to these needs? Traditionally, universities have performed two functions: training of professionals and performance of research. I think it is time to re-examine the basic structure of our curricula for these two functions and to reconsider the standards by which these programs are judged. The traditional analytical method of science no longer provides what we need. The solution we seek often involves work which may not be of the greatest interest academically, or which may not necessarily produce the publications required for a good tenure position.

There is need these days for physicians of the environment, a new type of professional who is not just scientifically competent, but solution oriented: one who can deal with wide ranging problems involving social and economical factors in qualitative as well as quantitative concept; one who is oriented more towards the health of the patient than the beauty of the system used to treat him.

Perhaps we should examine some of the other training programs that have been traditionally used, and especially their clinical experiences to see how these may be applied in training the environmental scientist. To paraphrase Carl York of the Office of Science and Technology, we must work together, develop programs, and provide training and techniques for synthesizing practical solutions to real problems.

The agenda prepared for our discussions today and tomorrow contains many of these new, real problems, which I would guess, are covered in only a very few university environmental programs throughout the nation. It is my sincere hope that during the symposium we can provide you with the most up-to-date information on our research activities and needs, and that you, in return, will provide us with a thoughtful critique of our various programs.

OIL POLLUTION

The British parliament has endorsed legislation giving its government the power to seize or sink any oil tanker within or without British territorial waters, that threatens to pollute Britain's shores.

The authority was added as an emergency amendment and approved by both the House of Commons and House of Lords on April 8. It came on the heels of four oil spills in the English Channel, all outside Britain's territorial waters but affecting her coasts.

The legislation may have been prompted also by the 1967 Torrey Canyon disaster. The British Navy bombed that tanker in an attempt to burn its cargo after it had gone aground outside of British waters but within easy polluting reach of British beaches. The emergency legislation provides legal support for similar future action. [Conservation News]

UNIVERSITY OF COLORADO ACTIVITIES

Dr. Roger Jordan, Assistant Professor of Civil and Environmental Engineering, University of Colorado, directed the 1970 AAWA Academic Achievement award winning thesis written by Lasse Vrale. Mr. Vrale's masters thesis was entitled "The Effect of Rapid Mixing upon Destabilization-Aggregation".

Dr. Edwin Bennett has been promoted to Associate Professor of Civil and Environmental Engineering, as of September 1st, 1971.

A.A.P.S.E. MEETING AT SAN FRANCISCO

AAPSE has scheduled a meeting to be held during the San Francisco WPCF meeting. The time and place of the meeting will be in the WPCF program and will be posted at the WPCF meeting.

RESEARCH ASSOCIATE POSITION AVAILABLE

This individual will have primary responsibility for laboratory and pilot scale research dealing with the aerobic treatment of agricultural wastewaters to obtain varying degrees of organic removal or with the removal of nitrogen from these wastewaters by nitrification-denitrification processes. The objective of this research is to develop kinetic relationships during the above research and to demonstrate the application of the relationships on both the laboratory and pilot plant scale. Two to three research personnel will work under his direction.

Requirements for this position include a Ph.D. in sanitary or chemical engineering with research experience and interests in biological waste treatment, ability to work with minimum guidance and to direct the activities of scientific personnel, and ability to interpret analytical results in terms of microbial and chemical fundamentals and to work with the project director in interpreting the engineering application of the data.

Interested individuals should contact Dr. Raymond C. Loehr, Agriculture Waste Management Program, 207 Riley Robb, Cornell University, Ithaca, New York 14850.

PHOSPHORUS IN FRESH WATER AND THE MARINE ENVIRONMENT

A regional conference will be sponsored jointly by University College, London, and the International Association on Water Pollution Research. It will be held in the Botany Lecture Theatre, University College, Gower Street, London W.C.1. on April 11-13, 1972.

Although it is expected that some of the papers will be given by invited speakers, authors who wish to offer papers on any pertinent subjects or short research papers are invited to submit the titles and a brief abstract as soon as possible to Professor K. J. Ives, Department of Civil & Municipal Engineering, University College London, Gower Street, London W.C.1.

ENVIRONMENTAL POLICY BIBLIOGRAPHY PUBLISHED

The *Natural Resources Journal* of the University of New Mexico Law School has recently published "A Selected Bibliography on Public Environmental Policy and Administration," compiled by Daniel H. Henning. The bibliography lists books, articles, and government reports dealing with the subject.

Copies of the 15-page pamphlet may be obtained for one dollar (\$1.00) from the *Natural Resources Journal*, University of New Mexico School of Law, 1117 Stanford NE, Albuquerque, New Mexico 87106.

STEAM AUTOMOBILE

One question we've been wondering about ever since Calvin and Charles Williams of Ambler, Pennsylvania brought their home-made steam auto to Washington and drove some Senators around the nation's capital - "If it's technologically feasible for the Williams brothers to build and drive a non-polluting steam car that works, why can't the largest, richest industry in the world build one?" [Conservation News]

SYMPOSIUM ON ENVIRONMENTAL ASSESSMENT AT SACRAMENTO STATE

The Institute for Technology and Society at Sacramento State College held a Symposium on the preparation of Environmental Assessment Statements on June 14 and 15, 1971. The National Environmental Policy Act of 1969 and the California Environmental Quality Act of 1970 both require that the environmental impact of major governmental actions be analyzed and considered before public funding of projects is approved.

To comply with this requirement for Environmental Assessment Statements, agencies must determine the scope and depth of the statement. Questions confronting agencies include what is the impact of a project on water quality, runoff, wildlife, air quality, noise levels, waste disposal practices, land use, urbanization, agriculture, health, well-being, employment, and the economy of a region. The symposium was conceived to provide an opportunity for interested persons, agencies, and educational institutions to meet and express their concepts of what should be contained in and accomplished by Environmental Assessment Statements.

Individuals from governmental agencies, conservation organizations, and academicians expressed their views on the evaluation of the impact of resource development projects on hydrology, water quality, soils, land use, botany, aquatic life, wildlife, archaeology, history, and culture of a region. Concluding statements outlined current research programs and future needs.

Copies of Proceedings may be obtained by writing Dr. Hubert McCormick, Dean of Educational Services, Sacramento State College, 6000 Jay Street, Sacramento, California 95819. Price \$6.00 (Californians add 5% sales tax). Please make checks payable to Sacramento State College.

AMERICAN WATER RESOURCES ASSOCIATION

The Seventh American Water Resources Conference will be held on October 25-29, 1971. The main purpose of this annual conference is to review and give a comprehensive picture of water resources in the United States, including research, planning, development, management, technology, education, and information systems. The Conference includes both invited and contributed papers, discussion sessions, a gallery of exhibits by publishers, industry, and government, and local field trips. Conference members are from government, universities, industry, and consulting engineers and legal firms and represent many professional disciplines. The Conference is open to all registrants. For additional information, please contact Dr. F. E. McJunkin, General Chairman, Associate Professor, Department of Environmental Sciences and Engineering, University of North Carolina, Chapel Hill, North Carolina 27514.

PENN STATE PROFESSOR DIES

R. Rupert Kountz, Professor of Sanitary Engineering at Penn State University for the past 26 years, died May 17, 1971. Although he was not a member of the Association his continuing research and teaching in the field of Sanitary Engineering certainly exemplified the very best of those qualities we would wish to attribute to those in our profession. In honoring his memory we are indeed honoring the profession.

Professor Kountz's colleagues are establishing a memorial fund. Those wishing to contribute to the Kountz Memorial Fund should contact Archie J. McDonnell, Associate Professor of Civil Engineering, The Pennsylvania State University, 212 Sackett Building, University Park, Pennsylvania 16802.

WATER POLLUTION RESEARCH FUNDS

The following editorial by Charles C. Johnson appeared in the April, 1971 issue of *The Nation's Health*. Mr. Johnson is the Associate Executive Director of the American Public Health Association. This is passed along for your consideration.

"The Congress is currently considering proposals that will amend and extend the Federal Water Pollution Control Act which expires on June 30 of this year. The action on the part of the Administration and members of Congress to broaden and strengthen the Act and to provide for substantially larger authorizations in construction grants is applauded. The development of strong legislation to protect the water environment can be an important tool in the arsenal required for furthering the protection and enhancement of the public's health and well being.

"In our opinion the most significant aspect of these proposals is the requirement for the establishment of water quality criteria and standards. They emphasize that such standards shall have the purpose of protecting and improving the public's health and welfare, and enhancing the quality of the nation's water for the benefit and enjoyment of future generations. They also specifically require that in the establishment of these standards consideration be given to the value of water for public water supplies, propagation of fish and wildlife, recreational, agricultural, industrial, navigational and other legitimate purposes.

"Thus it was most disappointing to find that authorization for research funds associated with standards development were omitted entirely in one proposal and extended for only one year in the other. For those on the firing line, it is an accepted fact that our scientific basis for assessing need, establishing standards, and operating a surveillance and monitoring system for evaluating success or failure of our efforts is grossly inadequate.

"We ask then, what is the basis for the establishment of water quality standards? How do we determine what degree of efficiency to assign to the sewage treatment plant or what treatment requirements can reasonably or economically be left for the water treatment plants? How do we know what standards are satisfactory for swimming and other recreational purposes? How does an administrator evaluate the effectiveness of a state or agency plan in terms of health and well being, or determine the most serious pollution problems in setting priorities, or establish regulations providing specifications for effluent standards, or many other requirements contained in the proposals, in the absence of essential knowledge associated with today's situations and one which is surely to be worsened by continuing technological and industrial "progress?" Must we be left to a shotgun approach and a hope that these efforts and results will be worth the costs?

"We believe that the expenditure of such large sums of money (12 to 25 billions of dollars) demands specific provision for continued research that makes it possible to systematically and scientifically establish priorities of need, water quality standards, efficiency of actions, and effectiveness of results. We do not suggest that nothing can or should be done until all answers to these problems are found. We must move ahead on the best scientific knowledge that is available, recognizing that such knowledge is insufficient at best, and must be amplified and modified in the light of new findings that result from continued research."

MIDDLEBROOKS ON ASSIGNMENT WITH E.P.A.

Joe Middlebrooks, acting in his capacity as Chairman, AAPSE Manpower Needs Committee is assisting Robert G. Snider, Chief, Training Grants Branch and Morton S. Ettlestein, Manpower Planning Officer, both with the Office of Water Programs, Environmental Protection Agency, in preparing a report to Congress on the present utilization and future manpower needs in the environmental field. His efforts will be concentrated on professional manpower. Normally, Joe is associated with Utah State University as Professor of Civil Engineering in the Water Quality Engineering Program. He was awarded the first Service Fellowship granted by the Environmental Protection Agency. These fellowships are instituted for the purpose of assisting both the Environmental Protection Agency and the individual having a coincident project, in their respective achievement of mutually beneficial goals.

BUSCH APPOINTED TO PRESIDENTIAL AIR BOARD

The Air Quality Advisory Board, composed of 15 members appointed by the President, met on July 8-9 in Washington, D.C. Meeting with the Board for the first time was Professor Arthur W. Busch, appointed to the Board by President Nixon on June 21, 1971. Mr. Busch is currently Professor and Chairman of the Environmental Science and Engineering Program, Rice University, Houston, Texas.

The Board was established under provisions of the Clean Air Act to "advise and consult with the Administrator on matters of policy relating to the activities and functions of the Administrator under this Act and make such recommendations as it deems necessary to the President."

[Environmental News]

LITTER CLEANUP COSTLY TO U.S.

Cleaning up litter in the United States costs as much each year as it would to build 12,500 new classrooms for 375,000 pupils, says Keep America Beautiful, Inc. Almost one-half billion dollars must be spent annually to spruce up highways, parks, beaches and other public places, according to the anti-litter group. [UPI]

ARMSTRONG JOINS TEXAS FACULTY

Dr. Neal Armstrong will join the Environmental Health Engineering faculty at The University of Texas at Austin in the area of Ocean Engineering. Dr. Armstrong has spent the last three years with Engineering-Science, Inc. and worked on projects such as San Juan Bay, Puerto Rico; San Francisco Bay-Delta Water Quality Control Program; San Francisco Bay, Oil Refinery; Patuxent River, Maryland; Spring Creek Auxiliary Water Pollution Control Project; Oahu Water Quality Program, Hawaii; Occoquan Reservoir, Virginia; Puerto Rico Oceanographic Study; and Bull Run Treatment Plants Evaluation. Dr. Armstrong's educational background combines zoology, applied mathematics, and environmental health engineering. He will join The University of Texas faculty officially on September 1, 1971.



WATER RESOURCES RESEARCH LEGISLATION

The Office of Management and Budget and Department of Interior have reported favorably on HR 1400 and related bills to expand the authorization for annual allotments to Water Resources Research Institutes. A hearing on the bills was held on June 29 by the House Subcommittee on Irrigation and Reclamation of the Committee on Interior and Insular Affairs. Subcommittee Chairman Harold T. Johnson of California presided. Committee Chairman Wayne Aspinall of Colorado was also present. No opposition was expressed and favorable reporting is expected. Since the Senate passed similar legislation in the last Congress early enactment is anticipated. H. R. 1400 also includes provision for a technology transfer program to increase the flow of research findings into practice.

EPA EXPLAINS POSITION ON PUBLICATION OF DETERGENT LISTS

Dr. Stanley M. Greenfield, Assistant Administrator for Research and Monitoring of the Environmental Protection Agency, explained on July 2, 1971 the Agency's position on the publication of lists of phosphate contents of laundry detergents. "We have received many requests for updated lists and questions as to why we have not published additional lists," he said, "and feel our position should be publicly clarified."

Dr. Greenfield noted that the Federal Water Quality Administration, the functions of which are now administered by the Environmental Protection Agency, had published lists of the phosphate content of a number of common brand-name detergents in 1970. "I am pleased," he stated, "that the publicity given to this matter by these lists and by the interest and concern of environmentally-conscious consumers across the Nation has led to broadened efforts to develop phosphate-free and low-phosphate detergents, but the Agency has also become increasingly concerned that these new formulations must be thoroughly evaluated for acceptability, from the standpoints of environmental quality, public health, and hazard to the consumer.

"The rate of introduction of new products and reformulation of old products has become so rapid," he noted, "that it is essentially impossible to prepare a list which doesn't become obsolete almost as soon as it is published. This, coupled with the fact that some manufacturers now apparently market products of differing composition for different geographical areas, has led us to decide to refrain from publishing any further lists at this time and to urge consumers to be aware that list previously published by the Federal Water Quality Administration can no longer be considered as a reliable basis for comparison of products on today's market.

"From an environmental standpoint," he added, "attention should be directed to all constituents of detergents, and not limited to phosphates. Detergents are unique among consumer products in that over five billion pounds are produced annually, and essentially all of these products used go down the drain, adding directly to the burden on waste treatment plants and the Nation's waters." [Environmental News]

RETRO - REGIONAL ENVIRONMENTAL TRAINING AND RESEARCH ORGANIZATION

Florida Technological University, Orlando, has received two grants from MDTA funds. The first provides funding for a 10 weeks summer 1971 short course in Environmental Control Technology. It is being attended by 26 displaced aerospace BS engineer and science graduates. A second grant supports 20 selected graduates, again aerospace lay-offs, for one calendar year to obtain a Master of Science in Environmental Systems Management. The latter is a combination of environmental and industrial engineering courses. Both programs are aimed at giving aerospace personnel marketable expertise in the environmental area and are currently underway.