AAPSE NEWSLETTER

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"It is the duty of engineers . . . . . to place their analyses and design on as rational basis as can be obtained."

--T. R. Camp

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At times it is important that we convey to others some concept of our objectives and goals in the education of environmental engineers or sanitary engineers. Such an occasion arose recently when it became evident that there was a need to describe, insofar as such a diffuse activity can be described, the process employed on most campuses for the education of sanitary engineers to top level officials of the Department of the Interior. The following statement was prepared for the purpose.

Although the Board of Directors of AAPSE does not officially endorse this statement, they considered it sufficiently accurate and appropriate to our interests to approve its release. Accordingly, the article was read and distributed substantially as published herein to a group of officials of the Federal Water Pollution Control Administration, including Mr. F. C. DiLuzio, Asst. Secretary of the Interior.

Undoubtedly some of the readers of the NEWSLETTER will take exception to parts of the statement. Some may suggest a clearer exposition. It is being published in this issue of the NEWSLETTER expressly to encourage discussion and comment. The function of the NEWSLETTER is to provide a vehicle for communication on matters pertaining to sanitary engineering education. This article should elicit some reaction and letters are invited. All letters on the subject (of reasonable length) will be published in the NEWSLETTER if addressed to the Editor.

GRADUATE CURRICULA IN WATER QUALITY ENGINEERING AND MANAGEMENT

November 1967

The profession of sanitary engineering in the United States has its origin in municipal public works organizations and in state and federal health agencies. These organizations have been staffed by civil engineers who, by virtue of their further education and experience, were accepted by their communities as competent to plan, design, operate, and regulate municipal water and wastewater treatment works. This was the situation in 1920 and it is in large measure the situation today. The American community's technical services are provided by civil engineers. Has the education of these individuals kept pace with the changing requirements of our times? Or, as has been suggested, should we recruit a new team with modern concepts of water management and the technical know-how to implement them? The second question can be easily answered in the negative. We have an enormous investment in our present institution with its civil engineering base and its performance has generally been adequate. The first

question, that of the quality of our educational preparation, cannot be answered in such a categorical manner and is the principal thrust of this analysis.

There is no purpose in attempting a detailed description of the water problems we face today except to say that they have been with us for many years and have recently reached an intensity that have brought them to the fore of our national scene. A decade ago water pollution was mostly concerned with the enteric diseases and oxygen depletion by degradable organics. Today these problems still prevail, but others, such as eutrophication, toxicity, and salt buildup, have become of increased concern and have influenced markedly our research and development work. Perhaps it is most significant that we now view wastewater treatment and water purification as a continuum and are seriously examining direct recycle systems.

What are the currently available types of educational programs through which we prepare young men for careers in water management? Almost without exception they are graduate programs in engineering and applied science in which the entering student holds a baccalaureate degree in civil or chemical engineering or perhaps mechanical engineering and occasionally in chemistry or biology. The major divisions of these water resources engineering curricula can be characterized simply as shown in the attached figure. These programs differ among our universities, both in quality and emphasis, but the general divisions of the present and probable future degree offerings are as depicted. A majority of the programs are housed in civil engineering departments, but the courses, the examination committee members, and dissertation supervision are drawn from many departments. The masters curricula are professional engineering in objective, but have an increasing input of science, mathematics and the social sciences. They represent a practical compromise between breadth and depth, between the vast amount of needed knowledge and the willingness of the student to persevere, and among the many pressures brought on our faculty by their colleagues in the purer sciences on one hand any by government contract officers on the other. The doctoral curricula focus more on the mastery of particular disciplines and on research, but also strive to develop further the student's strengths as an engineer. On the other hand, the water resources management doctorate is patterned more after programs in the social sciences and on the application of modern mathematical and economic knowledge to regional problems and the planning process. (See page 4).

The financial support of these programs has been to a major degree from the institutions in which they reside. Since 1960 they have increased in size and quality through subvention

WATER RESOURCES ENGINEERING EDUCATION

HYDRAULIC ENGINEERING AND HYDROLOGY

1. Math. & Statistics
2. Adv. Fluid Mechanics
3. Hydraulic Structures
4. Hydrology
5. Electives & Research

WATER QUALITY ENGINEERING (i.e., SANITARY ENGINEERING)

1. Chemistry
2. Biology
3. Math. & Statistics
4. Water Pollution Assessment
5. Process Engineering
6. Electives & Research

WATER RESOURCES MANAGEMENT

1. Math & Statistics
2. Economics
3. Planning
4. Law & Institutions
5. Water Resources Eng.
6. Systems Analysis
7. Electives & Research

MASTERS (1-2 yrs)

(AREAS OF SPECIALIZATION)

PROCESS THEORY AND DEVELOPMENT

1. Formal minors (2) in chemistry or chem. eng. or biology or math.
2. Additional courses in major & qualifying exam.
3. Languages & math.
4. Dissertation

WATER POLLUTION ASSESSMENT

1. A formal minor in biology and one in chemistry or math or earth & marine sciences.
2. Additional courses in major & qualifying exam.
3. Languages & math.
4. Dissertation

WATER RESOURCES MANAGEMENT

1. Formal minors (2) in economics or math & systems analysis or city & regional planning.
2. Additional courses in hydrology & water quality & qual. exam.
3. Languages & math.
4. Dissertation

DOCTORAL (2-4 yrs)

of the Public Health Service and now principally the Federal Water Pollution Control Administration. A high proportion of the students are supported by research and training grants provided by these agencies. A majority of these programs currently have the capacity to educate more students than are presently enrolled. Others could significantly increase their output with a judicious input of support for faculty and facilities. Few new programs are needed, but many of the existing ones would benefit materially by careful self-analysis and through an established federal education policy and an appropriately related support program.

What is needed to meet the nation's requirements for manpower and research in water quality management? First and most important, it is imperative that these needs be identified in specific and realistic terms. In fact, these needs are so great that it is almost impossible to devise any rational plans over the next several years until they have been identified. Consequently, the Board of Directors of the American Association of Professors in Sanitary Engineering proposes a course of action in the form of three recommendations.

1. A study should be initiated immediately of the nature and numbers of personnel required, now and in the future, by all sectors of the water quality management industry. The study should recognize the close relationship of water quality management to municipal and regional public works development, to the responsibilities of health agencies, and to the deep and growing concern of the general public for the quality of their environment.

2. A study should be initiated to identify the nation's total educational resources in the professional field of water quality engineering and management and in the quality related applied sciences sectors of chemistry, biology, oceanology, and the earth sciences. Particular attention should be given to the engineering centered professional programs; their subject content, the adequacy of their faculties and facilities, and their related doctoral level research activities. Moreover, a serious effort should be made to investigate the potential of specialized professionally oriented water quality programs in departments of chemical engineering, chemistry, biology and certain of the social sciences, as well as to determine the role of these disciplines within civil engineering departments and in joint interdepartmental programs.

AAPSE, with the completion of its Register of Graduate Programs in Sanitary Engineering, has a considerable wealth of experience and knowledge in assessing academic programs in all areas of water quality engineering and management. Its membership in over 40 schools across the U.S. are willing to cooperate with all Federal Agencies in this important endeavor.

3. It is proposed that FWPCA make a substantial effort to

establish a national consensus as to the ten most important problems in water quality management and the research and development needed to resolve them.

In establishing this consensus, all sectors of the profession should be represented, including the researchers in government, industrial and university laboratories; the consultants in private practice; and the engineers and scientists in our public works and public health institutions. In identifying each research and development problem, particular emphasis should be placed on the general objective of the needed study, the specific objectives that should be accomplished, and the detailed nature of the work programs required to meet these objectives. Here again, we believe that AAPSE can perform a valuable service in cooperation with the engineers and scientists of the Federal Agencies concerned with water quality management.

NEW OFFICERS AND DIRECTORS FOR AAPSE

New directors for a three year term beginning in 1968 were elected by the members of AAPSE in October. The new directors are Professor E. F. Gloyna, University of Texas; Professor E. R Baumann, Iowa State University, and Professor D. J. O'Connor, Manhattan College. Professor Gloyna and Professor Baumann are continuing on the Board, both having been officers of the Association during the past year. Professor Gloyna has been President and Professor Baumann has served as Secretary-Treasurer. Professor O'Connor is a former Board member also, having served in 1964 and 1965.

In accordance with the newly revised Bylaws of the Association, a joint meeting of the 1967 Board of Directors and the new Directors was held in Washington, D. C. on November 12, 1967. Officers elected for a one-year term for 1968 included Professor Ben B. Ewing, President; Professor E. R. Baumann, Vice-President; and Professor W. W. Eckenfelder, Secretary-Treasurer. The current membership of the Board of Directors is listed on the cover of the NEWSLETTER.

OCTOBER BUSINESS MEETING IN NEW YORK

A meeting of the membership of the Association was held in the Malmaison Suite of the Americana Hotel in New York City on the evening of October 9, 1967. The session was devoted to a report to the 50 members and guests of the activities, accomplishments, and plans of the Association. President Gloyna presided.

Secretary Baumann reported on the increase in membership during the past year from 42 members at 21 different schools to 75 members at 50 different schools. This increase reflects the interest

in the activities of the Association. The Eligibility Committee reported its recommendations for changes in the Bylaws to provide for an Associate Member grade for certain people who are interested in associating with AAPSE and who are not eligible for membership under current Bylaws.

There was discussion of the criteria for the AAPSE Excellence in Sanitary Engineering Education Award. The suggestion was made that it be used for some other purpose, and there was discussion of the age limit presently established. The general consensus of the members present was that the basis for the award should remain substantially as it is.

Professor Sylvester reported on the status of the Register of Graduate Programs in Sanitary Engineering, and plans for its updating. Professor Gotaas reported on the Education Conference held in Evanston in August. The Education Committee also reported on the visiting lecture program, the Workshop series, and the possibility of establishing a series of one-day seminars on selected subjects of interest to the membership which would be held in conjunction with various meetings and conferences during the year.

There were also brief reports on the NEWSLETTER, the Legislative Digest, and by the Membership Committee. The Nominating Committee reported its nominations for Directors for 1968 and additional nominations were made from the floor. The members approved the change in the Bylaws to provide for one-year term of office for Association officers.

AAPSE BOARD MEETS WITH FWPCA OFFICIALS

The Board of Directors of AAPSE held a two-day meeting in Washington on November 12 and 13, 1967. Highlight of the meeting was a discussion on the second day with Mr. F. C. DiLuzio and other officials of the Federal Water Pollution Control Administration. President Gloyna introduced the Board to the group of Interior Department personnel, which included Messrs. F. C. DiLuzio, Elmo Morgan, Jack Bregman, and Fred Singer, all Deputy Assistant Secretaries, and Dr. Allan Hirsch and Dr. Leon Weinburger, both of whom are Assistant Commissioners of the FWPCA. Professor Kaufman then read the statement describing graduate education in sanitary engineering which is printed in this issue of the NEWSLETTER. Professor Sylvester then described the Register of Graduate Programs which was produced jointly by the Environmental Engineering Intersociety Board and AAPSE.

Several general questions pertaining to manpower were discussed. Are graduates of these programs being used effectively in practice? How do we get people to work with other disciplines on

complex problems? Where are our products going after graduation? Dr. Weinburger discussed the emerging policies of FWPCA for training grants. He also discussed new review procedures for research grants.

The meeting of the Board on the evening of November 21 was a business meeting. The Board discussed several efforts being made to develop manpower studies which will assist in planning educational needs in sanitary and environmental engineering. Also, there was discussion of the pending activities of AAPSE, including the June 24-26 Workshop sessions on Analog Computer Applications in Sanitary Engineering to be held in Nashville. The agenda for meetings of AAPSE was planned. The next meeting will be at Purdue in May. There was further discussion of the progress on the final phase of the Educational Conference in Evanston in August. Professors Gotaas, Rohlich, Rich, and Kaufman are serving on the Editorial Committee which is preparing the final report. There was discussion also of the organization of the U.S.A. National Committee of the International Association for Water Pollution Research.

AAPSE: THE FIRST FOUR YEARS

John T. O'Connor

The expiration of the term of Earnest Gloyna as second president of AAPSE, seems an appropriate time to review the development and achievements of AAPSE in the four years since its inception. The following is a chronological review, with commentary, of some of the more notable milestones passed by AAPSE in its formative years.

The Formative Years

In October 1963, a group of sanitary engineering professors met in Seattle to formulate plans for an organization which they referred to as the "American Association of Sanitary Engineering Professors (AASEP)." This first organizational meeting led to another meeting in December 1963 in Chicago where the Association Bylaws were discussed and finalized. After the election of a Board of Directors for the new organization, Erman Pearson was elected its first president. Finally, in September 1964, the first meeting of AAPSE was held in Bal Harbour, Florida.

A year later, in September 1965, Volume 1, Number 1, of the AAPSE NEWSLETTER, edited by Ben Ewing, made its appearance. The NEWSLETTER was to be sent to "all those interested in sanitary engineering education." Membership in AAPSE was not a prerequisite. (Requests for the NEWSLETTER increased until now the mailing list includes 285 names.)

The second Annual Open Meeting of AAPSE was held in October 1965 in Atlantic City, New Jersey. The earliest AAPSE meetings were held as open meetings so that all those who wished to participate in discussions of sanitary engineering education could do so. Of the eighty who attended the Atlantic City meeting, about two-thirds were non-members. At the meeting of the AAPSE board following the 1965 Atlantic City meeting, Earnest Gloyna was elected second president of AAPSE.

Growth and Development

In May 1966, President Gloyna presided at the AAPSE meeting in Purdue. He announced committee assignments which harnessed the energies of virtually every AAPSE member. The committees included:

Audit: To keep AAPSE in the black.

Eligibility: To consider who are eligible for membership.

Awards: To set up criteria for and administer awards.

Education Resources: To produce the register of graduate programs.

Education: To promote continuing education among sanitary engineering educators, in part through its subcommittees on (a) Visiting Lecturers and (b) Workshops. The workshop subcommittee provided AAPSE with one of its most important assets, the Summer Workshop.

Inter-Society Cooperation: To mesh the efforts of AAPSE with other organizations in the profession.

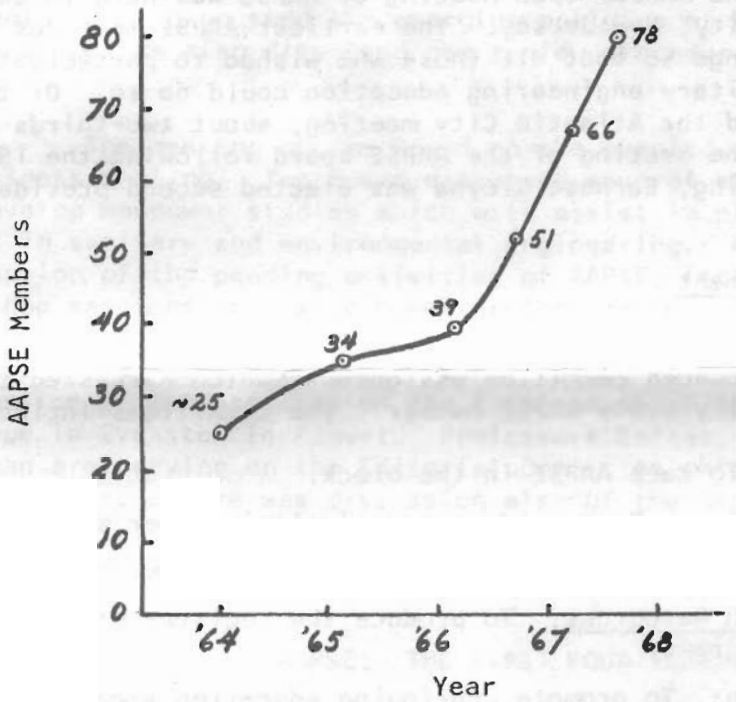
Legislative Analysis: To review legislative acts and events of interest to members of the sanitary engineering profession.

Newsletter: To provide an avenue of communication among AAPSE members.

Nominating: To search for nominees for AAPSE offices.

Catalog of Research Funds: To assemble information on the availability and dissemination of research funds.

Membership: To stimulate membership.



AAPSE MEMBERSHIP HAS INCREASED STEADILY

Under Gloyna's leadership, the accomplishments of AAPSE must have seemed impressive, even to the outsider. Following the May 1966 meeting in Bal Harbour, AAPSE held its first Summer Workshop at Lake Travis near Austin, Texas. The subject: Biological Waste Treatment. By September 1966, at the time of the meeting in Kansas City, AAPSE membership had grown to 51. In October 1966, the Board of Directors decided on substantial dues reductions to accomodate younger professors. November 1966 saw the distribution of the "Register of Graduate Programs in the Field of Sanitary Engineering Education," the single most significant achievement of AAPSE to date. In December of 1966, the AAPSE Board met with the Secretary of the Interior and his staff in Washington, D. C., to discuss the "role of water quality management in the conservation of our nation's water resources." More particularly the AAPSE representatives were interested in matters of accreditation and the effect of government funding on sanitary engineering education and research.

Progress continued apace in 1967. At the AAPSE meeting at Purdue in May, Perry McCarty received the first award ($1000.) for "Excellence in Sanitary Engineering Education." June 1967 was a frantic month since AAPSE scheduled a meeting in Atlantic City in direct conflict with its own Second Workshop on Chromatography in Boulder, Colorado.

In August 1967, AAPSE co-sponsored with EEIB the Second National Conference on Environmental and Sanitary Engineering Graduate Education, hosted by Northwestern University. This Conference will have to be regarded as the most significant event of the year in sanitary engineering education.

The Torch is Passed

Following the October 1967 meeting in New York City, new Board members were selected. With the expiration of Earnest Gloyna's two year term as president, the new Board selected Ben Ewing to become the third president of AAPSE.

So, for only the second time in the history of AAPSE, the leadership has changed hands. Earnest Gloyna has earned the gratitude of all AAPSE members. His efforts and accomplishments are only partially revealed in this chronicle, but even those mentioned indicate outstanding success.

We know that Ben is anxious to maintain the momentum built up by his predecessors. Only the continued support of all AAPSE members will enable him to do so.

THIRD ANNUAL AAPSE WORKSHOP PLANNED

Applications of Analog Computations in Sanitary Engineering is the topic of the Third Annual AAPSE Workshop, which will be held in Nashville, Tennessee on June 24, 25, and 26, 1968. The first one and one-half days will be devoted to fundamentals for those with no prior knowledge of analog computation. Applications covered in the second one and one-half days will be in the fields of fluid mechanics, dissolved oxygen relations in streams, biological processes, and chemical kinetics. Programs and application forms will be mailed in March. If you are interested in receiving a copy of the program and applications, please contact:

Dr. John F. Andrews
Professor and Director
Environmental Systems Engineering
Clemson University
Clemson, South Carolina 29631

Professor Andrews is making the program arrangements, and Professor E. L. Thackston of Vanderbilt University is in cnarge of the local arrangements.

CALL FOR ABSTRACTS FOR WPCF RESEARCH SYMPOSIUM

The Program Committee for the 1968 meeting of the Water Pollution Control Federation in Chicago is anxious to schedule another fine program for the series of Research Symposium Sessions. A special subcommittee chaired by Professor Peter A. Krenkel is working on this

program. He has called for abstracts of papers to be considered for these sessions. The abstract should be a 200 to 400-word description of the paper and should be submitted to Dr. P. A. Krenkel, Department of Sanitary and Water Resources Engineering, Vanderbilt University, Nashville, Tennessee, 37203, before April 1, 1968.

During the month of April, the Subcommittee will select the papers to be included on the program and will assign them to the appropriate sessions. Authors will be notified shortly after May 1, 1968 as to the acceptance of their abstracts.

A limited number of research papers will also be considered for the Industrial Waste session and the Plant Operation session. NEWSLETTER readers are also reminded that Dr. Harry Kramer is working on a program for a special session on Water Quality Analysis. Abstracts for papers to be considered for this session should be forwarded directly to Dr. Kramer.

SANITARY ENGINEERING EDUCATORS SOUGHT IN ASIA

Positions for a sanitary engineer and a sanitary microbiologist have been announced as available in June for a period of two years with the Asian Institute of Technology (formerly the SEATO Graduate School of Engineering) in Bangkok, Thailand. For information contact:

Professor Maurice L. Albertson
Office of International Programs
Colorado State University
Fort Collins, Colorado 80521

NEWS OF SANITARY ENGINEERING EDUCATORS

Professor Dan A. Okun, University of North Carolina, is the new chairman of the Sanitary Engineering Division of the American Society of Civil Engineers. Professor Okun is Professor of Sanitary Engineering at North Carolina.

Dr. John E. Edinger has recently joined the Vanderbilt University Engineering School faculty from Johns Hopkins University. Dr. Edinger received his doctorate at Johns Hopkins University and has been working there for the past three years as Principal Research Scientist on a nationwide study of thermal pollution conducted for the Edison Electric Institute. He is well known for his engineering activities in the power industry and joins Vanderbilt University as an Assistant Professor in the Department of Sanitary and Water Resources Engineering.

Dr. Clifford W. Randall has been appointed an Assistant Professor of Sanitary Engineering at Virginia Polytechnic Institute effective February 1, 1968. Dr. Randall received his Ph.D. from the University of Texas at Austin in January 1966 and has been an Assistant Professor of Civil Engineering at the University of Texas at Arlington since September 1965.