



Association of
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Professors

Newsletter

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PRESIDENT'S LETTER

Dear Friends and Colleagues:

A lot of things have been happening since I last addressed you on this page. Accreditation seems to be drawing the most attention at this time because of pending changes under the "Engineering Criteria 2000" program. A workshop has been scheduled for the weekend of April 19-20, 1997, to discuss procedures for reviewing and assessing outcomes of accredited Environmental Engineering programs using the new criteria. While few schools (9 graduate; 17 undergraduate) have accredited environmental engineering-related programs at this time, the deliberations of this workshop potentially will affect the way many of us view environmental engineering education (see my comments below). The workshop is a joint effort between the Academy of Environmental Engineering and AEEP. AEEP members participating in the workshop are: Robin Autenrieth (Texas A&M Univ.), Paul Bishop (Univ. of Cincinnati), Nick Clesceri (Rensselaer Univ.), James Edzwald (Univ. of Mass.), Ed Schroeder (Univ. of California, Davis), Robert Baillo (Mich. Tech. Univ.), and myself. Anyone having concerns or questions about Engineering Criteria 2000 that should be expressed at the workshop should contact me or any of the workshop participants before about April 15.

We have initiated steps to prepare for the next AEEP/AEE education conference (tentatively scheduled for 2001). At this time we need three persons to volunteer to serve on the planning committee, with one of these persons serving as co-chair. The co-chair does not have to be associated with the university or location of the conference – and at this time, no site has been selected – but proposals for sites certainly will be considered. Anyone interested in serving on this committee should contact any of the AEEP board members. I hope to be able to round out our part of this committee by May 15, 1997.

The AEEP flyer "So You Want to Be an Environmental Engineer" seems to be a bestseller. Some 2,000 copies have been distributed since August 1996 and

another printing has been scheduled. Similarly, the new Register of Undergraduate Programs in Environmental Engineering should be available in the near future. Also, the new Register of Graduate Programs is available. Purchase of these documents demonstrates both an interest and a need that we are meeting through our organization. Contact Joanne Fetzner for information on availability and cost of all of these publications.

While it is risky for me to present personal opinions in this column, I have elected to do so here to spur some thinking and response on topics of concern to our profession. One of my concerns about environmental engineering education lies with traditional engineering programs – typically Civil or Chemical Engineering – that allow specialization in environmental engineering. In many cases the "specialization" has grown so thin that only one or two courses are offered on environmental engineering topics. Additionally, much of the basic science of importance to environmental engineering – specifically microbiology and organic chemistry – seems to have been pushed out of many undergraduate programs. My perceptions about this problem were reinforced by the reports of environmental engineering emphasis in undergraduate curricula contained in the new register of undergraduate programs which should be available shortly from AEEP. Thus, BS graduates having an interest in environmental engineering often are not prepared adequately for professional practice in this field. Much of this reduction in specialization at the undergraduate level is caused by ongoing trends to reduce credit hours in baccalaureate engineering programs – in some cases to 120 semester credit hours. Other schools have allowed substitution of environmental engineering courses for traditional career-track courses – for example, structural engineering, foundations, highway design, etc. within Civil Engineering programs. In my view, either practice represents a dilution of traditional degree programs that have supplied many of our practicing environmental

engineers. These deficiencies must be made up as part of graduate programs to which these graduates may be admitted or through self-study or on-the-job training. While I realize there is no easy answer to the dilemma, we should at least consider the impact of such academic actions on graduates of our programs and make sure that they and their prospective employers know the consequences. My concern goes further because many of the graduates of traditional academic programs having only an emphasis in environmental engineering will be unprepared for taking the new professional engineering exam in environmental engineering that now is offered in most states. I realize that most graduates of engineering

programs can learn through self-study and on-the-job training, but if environmental engineering is to become a viable, self-sustaining profession, our academic programs must reflect the needs and expectations of that profession.

Your comments on the above news and views are welcomed. Please do not hesitate to contact me if you have questions, opinions, or counter-opinions on the above topics. I would appreciate your response.

Jim Young

AEEP NEWS AND ANNOUNCEMENTS

Entries Sought for '97 Awards

Entries are sought for the 1997 Outstanding Doctoral Dissertation Awards. Two awards will be given, each consisting of a plaque and a cash prize of \$1,000 for the student, and a plaque and a cash prize of \$500 for the faculty advisor. Faculty advisors wishing to compete should send three copies of the dissertation to: Gary L. Amy, Civil, Environmental, and Architectural Engineering, University of Colorado, Boulder, CO 80309-0428. The theses should be accompanied by a simple letter of transmittal stating the student's current address and indicating when the dissertation was completed. The copies will not be returned, so xerographic copies inexpensively bound are recommended. The deadline for submissions is June 15, 1997 for dissertations completed during the 1996 calendar year. Faculty advisors are urged to limit themselves to a single entry (which will be considered for each of two awards); self nominations by students will not be accepted.

A selection committee of three AEEP members will read and judge each dissertation on the basis of 100 points allocated as follows: scientific and technical merit of the research – 30 points; originality of research – 30 points; contribution to advancement of environmental engineering – 30 points; and, clarity of presentation – 10 points. The selections will be made by September 1, 1997 so that the recipients and their advisor can be invited to the AEEP luncheon at the WEF meeting. Our thanks to Engineering Science and CH2M-Hill for their generosity in sponsoring these awards and to members of the 1996 Doctoral Dissertation Review Panel: Michael Aitken (Chair), Gary Amy and Pratim Biswas.

REMINDER:

Deadline for
submissions for the
September 1997
AEEP Newsletter
is August 4, 1997

SEND SUBMISSIONS FOR THE SEPT. 1997 NEWSLETTER

TO:

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Moscow, ID 83844-1022
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American Society for Microbiology

The Board of Education and Training of the American Society for Microbiology offers a wide variety of resources for students, faculty, and scientists, a few of which are listed below. Please note the deadline and web site for information on each program. For a full listing, see web page <http://www.asmtusa.org/edusrc/edu1.htm> or for more information, fax your request, indicating the program you are interested in, to (202) 942-9329.

Robert D. Watkins Minority Graduate Fellowship: Encourages minority graduate students to conduct research in microbiological sciences for two years. Deadline: May 1.

<http://www.asmtusa.org/edusrc/edu2.htm>

Burroughs Wellcome Visiting Professorship: The professorships are intended to stimulate interest in the microbiological sciences and to enhance communication among scientists in Bacteriology, Biotechnology, Immunology, Microbiology, Molecular Biology, Mycology, Parasitology and Virology. Deadline: May 1.

<http://www.asmtusa.org/edusrc/edu3.htm>

ASM/NIGMS Visiting Scientist Program: This program gives minority institutions an opportunity to strengthen their research and teaching capabilities by drawing upon the experience and expertise of the outstanding scientists who are members of ASM.

<http://www.asmtusa.org/edusrc/edu3.htm>

Volunteers Sought for Student Science Day: Volunteer scientists are needed to host Secondary School students during a one-day program planned in conjunction with the '97 ASM General Meeting in Miami, Florida. If you are available to spend time speaking with a small group of students about career opportunities in the microbiological sciences and leading these students through the General Meeting Exhibits, please contact Maureen Shiflett at the Beckman Center, National Academy of Sciences, 100 Academy Dr., Irvine, CA 92612, fax (714) 721-2277, or e-mail at mshiflett@nas.edu. Please provide: name, mailing address, e-mail address, and indicate your area of expertise (e.g., clinical, industrial, or environmental science). Volunteers for Student Science Day need to be available between 10 a.m. and 2 p.m. on May 7.

Science Education Network: This Network consists of a database of scientists who have identified themselves as willing to participate in outreach activities involving pre-college students and faculty. To request a scientist or to volunteer to become part of the Network, see our homepage at <http://www.asmtusa.org/edusrc/edu3.htm>

Microbial Discovery Workshops: ASM offers summer workshops which feature curricula using

microbes to stimulate interest in science. A team consisting of a pre-college educator and an ASM member scientist apply together. Dates are June 25-29 at Delta State University in Cleveland, Mississippi, and August 6-10 at Gwynedd-Mercy College, Gwynedd Valley, Pennsylvania. Registration, meals and lodging for both team members, and travel expenses for the teacher are provided by grants from the Waksman Foundation, Pfizer Foundation, Inc., and ASM. For more information, contact Ken Anderson at (213) 343-2037, e-mail: histog17m@aol.com. Deadline: May 30.

<http://www.asmtusa.org/edusrc/edumdp.htm>

Undergraduate Microbiology Conference: The fourth ASM Undergraduate Microbiology Conference *Defining Instructional Goals for the Microbiology Laboratory: Content, Skills, and Safety* will be May 2-4 in Fort Lauderdale, Florida. Conference information and registration form are available at <http://www.asmtusa.org/edusrc/edu4c.htm>

Regional education conferences: Conferences are scheduled on March 22 in Kansas City, on April 19 in Pittsburgh, and in Germantown, Maryland.

<http://www.asmtusa.org/edusrc/edu37.htm>

ASM Faculty Fellowship Program: This Fellowship provides an opportunity for faculty to improve scientific and research capabilities in ways that will enhance and update the undergraduate microbiology courses and laboratories they teach. The program is open to faculty from under-represented groups, or those that teach at institutions with enrollments predominantly from under-served groups. Up to \$4,000 in funding is available to support the activity outlined by the applicant, which will generally involve a sustained summer experience in a formal course or relationship with a host scientist at another institution or facility.

<http://www.asmtusa.org/edusrc/edu23f.htm>

ASM Travel Grants: ASM offers travel grants of \$400 to: 1) pre-college teachers making presentations at the ASM General Meeting, an ASM Branch Meeting, or the National Association of Biology Teachers Convention. The purpose of the grant is to increase the number of biology teachers using microbial-based science activities in their curriculum. Deadline: June 1 (NABT).

<http://www.asmtusa.org/edusrc/edu23j.htm>

2) undergraduate faculty who are early career instructors and will be presenting an education talk or poster at the ASM General Meeting or the Undergraduate Microbiology Conference.

<http://www.asmtusa.org/edusrc/edu23i.htm>

EMPLOYMENT OPPORTUNITIES

Tulane University

The Department of Civil and Environmental Engineering at Tulane University is inviting applications for a faculty position in environmental engineering starting in Fall, 1997. This invitation is for a tenure-track position at the Assistant Professor level. Current research in the department includes projects on bioremediation, water quality, recycling of industrial wastes, trenchless pipeline rehabilitation and wastewater treatment. The department currently offers B.S., masters and doctoral degree programs in civil and environmental engineering and has 34 graduate students. Tulane has two federally funded research centers: the Center for Bioenvironmental Research and the National Institute for Global Environmental Changes. Located in the lower Mississippi River Valley, Tulane environmental researchers have the challenge to solve our regional environmental problems. The position will be filled by a candidate specializing in a major area of environmental engineering. Candidates must possess a Bachelors degree in Engineering and an earned doctorate in Civil or Environmental Engineering for this new position. Applicants should send their resume, statement of teaching and research interests, transcripts and names, addresses and phone numbers of at least five references to: Chair, Environmental Search Committee, Department of Civil and Environmental Engineering, Tulane University, New Orleans, LA 70118. Applications will be accepted until the position is filled. *Tulane University is an equal opportunity/affirmative action employer.*

Rensselaer Polytechnic Institute

The Department of Environmental and Energy Engineering at Rensselaer Polytechnic Institute invites applications for a tenure-track position in Environmental Engineering with a starting date within the time frame of July-August, 1997. The position has been approved at the Assistant Professor level with salary commensurate with qualifications and experience. An earned Ph.D. in Environmental Engineering or a closely related field, and the ability to be professionally licensed are required. As the first program to offer both an ABET accredited B.S. in Environmental Engineering and a Ph.D. in Environmental Engineering, Rensselaer maintains a commitment to excellence in teaching and research. In particular, we seek an individual with expertise in contaminant fate and transport modeling, and a demonstrated understanding of the chemical and biological mechanisms responsible for pollutant immobilization, facilitated transport and/or transformation. Candidates must show evidence of

research accomplishment, ability to attract substantial external support, and plans for a productive research program together with a sustained commitment to undergraduate and graduate teaching.

Applicants should send a resume, the names of four references, and a statement of research and teaching interests and capabilities to:

Professor Don Steiner, Chairman
Environmental and Energy Engineering
Rensselaer Polytechnic Institute
110 8th Street
Troy, NY 12180-3590

Applications will be accepted until the position is filled. *Rensselaer Polytechnic Institute, an equal opportunity-affirmative action employer, particularly encourages applications from women and minority candidates.*

University of Washington

The Department of Civil Engineering at the University of Washington invites applications for a tenure-track position in its Environmental Engineering and Science Program effective Autumn Quarter, 1997. The position to be filled focuses on quantifying the effects of human activities on natural aquatic systems including lakes, wetlands, estuaries, and streams. The candidate will be expected to contribute significantly to the Department's undergraduate and graduate teaching mission. The Program expects the new faculty hire to carry out research and teaching activities related to biological processes in natural aquatic systems, especially the responses of organisms to changing land use and the discharge of water and contaminants to those systems. This should include field applications and the design and implementation of restoration and protection strategies. The appointment is expected to be at the level of Assistant Professor, and a Ph.D. is required.

The Environmental Engineering and Science Program is strongly interdisciplinary. The successful candidate would have the opportunity to interact with other faculty in the Program with interests in water and air quality, hydrology, environmental fluid mechanics, and water resources systems analysis, and with faculty across the campus. The successful candidate will be expected to demonstrate high quality classroom teaching at the undergraduate and graduate levels, to develop a strong research program, and to supervise Masters and Doctoral students. Additional information describing the Department of Civil Engineering at the University of Washington is available at the web site <http://www.ce.washington.edu>. Applications will be considered beginning March 15, 1997 and will be accepted until the position is filled. Applicants should

send a cover letter, a detailed resume, and the names, addresses, and phone numbers of at least three references to Professor H. David Stensel, Search Committee Chair, University of Washington, Department of Civil Engineering, Box 352700, Seattle, WA 98195-2700. *The University of Washington is building a culturally diverse faculty and strongly encourages applications from female and minority candidates. The University of Washington is an Equal Opportunity/Affirmative Action Employer.*

Bucknell University

ENVIRONMENTAL ENGINEERING. The Department of Civil Engineering at Bucknell University solicits applications for a faculty position in the area of environmental engineering beginning with the Fall semester, 1997. This position is currently authorized for the 1997-98 academic year; a contract extension for 1998-1999 is possible. The successful applicant will be expected to teach environmental courses for both engineering and non-engineering students and environmental-related Civil Engineering undergraduate courses. The candidate's interests may be in any area of environmental engineering. Applicants should have an earned doctorate in civil engineering and an undergraduate civil engineering degree from an ABET-accredited institution. Professional registration, industrial experience, and previous teaching and research experience are desirable. Applicants should send **curriculum vitae**, statement of teaching and research interests, and names, addresses, and telephone numbers of references to Professor Jai B. Kim, Chairman, Department of Civil Engineering, Bucknell University, Lewisburg, PA 17837. *Bucknell University encourages applications from women and members of minority groups (EEO/AA).*

University of Arizona

Chemical and Environmental Engineering at the University of Arizona is seeking applicants for a tenure-track faculty position at the assistant or associate professor level, effective the Fall 1997 semester. A Ph.D. in chemical engineering, environmental engineering, or related field is required. Applicants with research and teaching interests relevant to core and interdisciplinary problems in chemical and environmental engineering are particularly encouraged to apply. The department offers the B.S. in Chemical Engineering and the M.S. and Ph.D. in both Chemical Engineering and Environmental Engineering. Annual research expenditures exceed \$2 million, and the department is home to the new NSF/SRC Environmentally Benign Semiconductor Manufacturing Engineering Research Center, with a \$10 million research budget over the next five years. The review of applications will begin March 1 and will continue until the position is filled. Applications should be sent to the:

Faculty Search Committee

Department of Chemical and Environmental Engineering
University of Arizona
Tucson, AZ 85721

The UA is an EEO/AA employer. Women and under-represented minorities are encouraged to apply.

Rutgers - The State University of New Jersey

The Department of Environmental Sciences, Rutgers - The State University of New Jersey, invites applications for two positions in the areas of environmental chemistry and hydrology. The appointment level for each position is open although only one senior appointment will be made.

Environmental Chemistry: The Department seeks an individual who works at the interface between chemistry and biology with emphasis on organic chemicals in aquatic and/or terrestrial ecosystems (especially bioaccumulation, food web transfer and dynamics, bioavailability). The ideal candidate has an earned Ph.D. and experience in the fields of environmental chemistry or biology, ecotoxicology or related disciplines.

Environmental Hydrology: The Department seeks an engineer/scientist who works in the fundamental and applied aspects of surface, groundwater hydrology and/or physical treatment processes. The ideal candidate has an earned Ph.D. in environmental engineering/sciences or related disciplines.

These appointments carry the responsibility to teach at both the undergraduate and graduate level and develop a well-funded and nationally-known research program. The appointees will have a strong record of teaching and research, and the senior appointee will be expected to have an exceptional record of research and mentoring. Applications should include a statement of research and teaching interests, a detailed CV, and names, addresses (including electronic), and telephone numbers of five references to:

Prof. Roni Avissar, Chair of Search Committee
Department of Environmental Sciences, Cook College
Rutgers University
PO Box 231

New Brunswick, NJ 08903

Review of applications will begin March 1, 1997 and continue until the positions are filled. *Rutgers University is an Equal Employment Opportunity/Affirmative Action Employer.*

Drexel University

The Department of Civil & Architectural Engineering (C&AE) of Drexel University seeks nominations and applications for a tenure-track faculty position at the Assistant/Associate Professor level to begin in September 1997. The area of expertise desired is

in hydraulics, fluid mechanics and/or surface water hydrology (flow and transport). Preference will be given applicants with interests in the areas of urban hydrology, wetlands hydrology, stochastic hydrology and/or watershed modeling. The individual will be expected to develop research programs and teach undergraduate and graduate courses in her/his area of expertise. It is expected that the individual will interact with faculty of the newly established School of Environmental Engineering, Science and Policy. Candidates must have a doctorate in engineering or a closely related field, with a record of professional and research contributions. She/he should be eligible to be licensed as a professional engineer. Rank and salary are dependent upon qualifications and experience.

The C&AE Department offers B.S. degrees in both civil engineering and architectural engineering, and the M.S. and Ph.D. in civil engineering.

Drexel is a private, urban university offering excellent opportunities for collaboration with government and industry. Undergraduate degrees are offered in five year cooperative education programs. The new Drexel Engineering Curriculum has an innovative computer and laboratory-based engineering core with integrated mathematics, science, humanities and design instruction. C&AE research and instructional laboratories are being upgraded as part of a \$4.2 million NSF-assisted renovation.

The deadline for applications is April 30, 1997. Applicants should forward 5 copies of: 1) their resume, 2) a statement of research and teaching interests, and 3) the names, addresses and phone numbers of at least three professional references to:

Dr. J. Richard Weggel, Chairman
Hydraulics and Hydrology Faculty Search Committee
Department of Civil & Architectural Engineering
Drexel University
32nd & Chestnut Streets
Philadelphia, PA 19104

Drexel University is an Equal Opportunity/Affirmative Action Employer and strongly encourages applications from qualified women, minorities and individuals with disabilities.

University Of Southern California

Environmental Engineering: Department of Civil Engineering at the University of Southern California invites applications for a tenure-track faculty position. A Ph.D. degree in environmental engineering or a closely related field is required. Duties of the position include teaching at the graduate and undergraduate levels and active participation in scholarly research within the field of environmental engineering and science such as air pollution engineering or general area of environmental bioremediation processes. The successful candidate is expected to demonstrate high quality teaching capabilities, to develop a strong externally funded research program, and to supervise M.S. and Ph.D. students. Review of applicants will begin February 1, 1997 and will continue until the position is filled. Additional information describing the Department of Civil Engineering at the University of Southern California is available at http://www.usc.edu/dept/civil_eng/dept/. To apply please send a detailed resume, and description of teaching and research interest, and the names, addresses and telephone numbers of at least three references to:

Professor Massoud (Mike) Pirbazari
Search Committee Chair
Department of Civil Engineering
University of Southern California
KAP 260
Los Angeles, CA 90089-2531
e-mail: pirbazar@mizar.usc.edu

University of Southern California is an Affirmative Action/Equal Opportunity Employer.

Note: View the AEEP web site at
<http://bigmac.civil.mtu.edu/aEEP/jobs.html>
for additional job listings

AEEP Discounts on *Purdue*

Ann Arbor Press is pleased to offer a new low price for AEEP members on the *Proceedings of the Purdue Industrial Waste Conference*. Long recognized as a standard reference in the field, *Purdue* is now in its 51st Edition.

AEEP members can start a standing order of *Purdue* for 50% off (\$45.00 plus \$3.50 shipping) for the first volume. Your standing order will come every year thereafter at 20% off -- \$71.96, plus \$3.50 shipping.

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BOOK REVIEWS

***THIS SACRED EARTH: RELIGION, NATURE, ENVIRONMENT*, edited by Roger S. Gottlieb, Routledge, New York, 1996**

The choice is always ours. Then, let me choose
The longest art, the hard Promethean way
Cherishingly to tend and feed and fan
That inward fire, whose small precarious flame,
Kindled or quenched, creates
The noble or the ignoble men we are,
The worlds we live in and the very fates,
Our bright or muddy star.

Aldous Huxley

The choice is always ours. This simple idea carries with it, to us environmental engineers and scientists, tremendous weight. The choice is indeed ours in many ways, for preserving, sustaining and nurturing the bright or muddy planet Earth.

In our everyday hurried, reductionist, single-minded professional world we often forget what it is we

are *really* supposed to be doing. We need to be reminded that we are educating the future leaders of the environmental profession. What we teach them will be multiplied thousand-fold during their careers. We hope they leave our universities not only with technical skills, but with a keen sense of their responsibility toward correcting environmental ills.

But many of us in the environmental engineering professorate are uneasy and uncomfortable with the idea of environmental morality. First, most of us have little idea what morality and ethics are, and tend to shy away from them, insisting they are "not engineering." If we do have some interest or training in philosophy, we soon discover that environmental morality has no parallel with classical ethics, and that most of our colleagues in the philosophy department will marginalize environmental ethics. Finally, and worst of all, it is becoming increasingly evident that environmental morality is based on spirituality.

By spirituality I don't mean that environmental morality has religious roots, for most of the world religions have been desperately trying to catch up with the dawning of environmental awareness. I mean that

environmental morality has a sense of respect for the non-human that can only be explained by "it's just the right thing to do."

Gottlieb's anthology is a major work in collecting some of the best writings on the spiritual side of environmental ethics. Gottlieb is a professor of philosophy and an avid environmentalist, and so many of the readings reflect a tone of "we must do this or that," an annoying commandment when absent from any reasons for having to do "this or that." But much of the readings are uplifting and enlightening. Here are some of the people represented in the book: Henry David Thoreau, Rachel Carson, Ralph Waldo Emerson, John Muir, Aldo Leopold, Lynn White, Roderick Nash, Edna St. Vincent Millay, Albert Schweitzer, Thomas Berry, and many others. One of the best pieces is by David Spangler on the development of the Gaia hypothesis -- a factual yet moving description of how the hypothesis could become a starting point for the development of a holistic world environmental morality.

This book is much too fat (673 pages) and much too expensive (\$90 paperback) to use as a text. But consider it as a reader on reserve in the library. Point it out to the students and let them explore. The choice will, of course, be theirs, but perhaps this book will help kindle that flame that makes us noble.

***CIVIL AND ENVIRONMENTAL SYSTEMS ENGINEERING*, by Charles S. ReVelle, E. Earl Whitlatch Jr, and Jeff R. Wright, Prentice Hall, 1997**

Talk about a winning team! Chuck ReVelle of Johns Hopkins is one of the leaders in the field of systems analysis in water management. Earl Whitlatch teaches a popular engineering systems course at Ohio State. Jeff Wright is the editor-in-chief of the *Journal of Infrastructure Systems* and has taught systems and economics for many years at Purdue. If these guys cannot put together a good book on civil engineering systems, then it cannot be done.

Fortunately, it is done. The book is an excellent textbook for engineers interested in systems analysis. As Walter Lynn writes in the Foreword: "The authors bring to this volume the expertise and experience of superb model builders and extraordinary skill as teachers."

The authors admit that their treatment of linear programming and other forms of optimization is pragmatic. "We prove no theorems but do, however, provide a description of how and why linear programming works. If we did not, we would be handing the student a 'black box' and telling the student to 'believe'. Instead of theory, we offer application in large quantities to motivate the student to learn the methodologies."

What impresses me most about this book is the authors' secondary focus: engineering economics. The text provides the background to enable students to learn to make management decisions concerning time value of money, cash flow analysis, and selection of economic alternatives. It seems that a systems engineering course is, after all, the proper place in the undergraduate curriculum to introduce engineering economics.

The outline of the book includes chapters on explaining systems analysis; solving linear programs graphically, the simplex algorithm, linear programs with multiple objectives; integer programming and network problems, scheduling models and the critical path method, decision theory, statistics of prediction, multigoal problems, transportation systems; dynamic programming, interest and equivalence, choosing alternatives on the basis of economics, and a potpourri of engineering economics topics on depreciation, taxes, inflation and personal financial planning.

We have used this book in our undergraduate systems course at Duke University and the student reaction has been quite favorable. I cannot think of a much better recommendation.

***ENVIRONMENTAL ENGINEERING*, by Gerard Kiely, McGraw-Hill, 1997**

For the past twenty years we have had a lot of books published with the title "Environmental Engineering." Most of them have been for upper-level undergraduates (the classical junior/senior-level environmental engineering course) and most of them have looked pretty much alike. It is with pleasure, therefore, that I report that "Environmental Engineering" by Gerard Kiely is different, and different in a very positive way.

Kiely's book is really two books. The first 10 chapters should be entitled "Environmental Science" and the last 11 would then be the engineering. He, along with some of his colleagues from University College Cork (UK) who wrote some of the chapters, do a very thorough job of covering the essentials of environmental science, including ecological concepts and natural resources; chemistry and microbiology; hydrology; perturbation of ecological systems; ecological perspectives on water pollution; water quality in rivers and lakes; air pollution; noise pollution; and agricultural pollution. The first part of the book (500 pages) would make for a fine one-semester course. The second half of the book is much more the classical environmental engineering text and includes water treatment; wastewater treatment; sludge treatment; solid wastes; hazardous wastes; air pollution control; agricultural pollution control; (an excellent chapter on) waste minimization; environmental impact; environmental impact of transportation; and environmental modeling.

The first chapter is excellent and lays out the historical context of environmental engineering starting with the "poor laws" in England. Kiely then spends considerable time reviewing the history and present state of environmental laws in the European Union, as well as the United States. The inclusion of the European Union information, in my opinion, enhances the text and does not detract. In the international atmosphere of present-day engineering, I consider it a positive step to describe how our neighbors across the big pond have approached environmental problems.

Possibly the most interesting part of this book is the chapter on environmental modeling. Kiely has chosen to place most of the heavy modeling stuff in this chapter, including diffusion and advection, modeling of rivers, modeling of estuaries and watershed, modeling of lakes and reservoirs, groundwater modeling, activated sludge modeling, fugacity modeling, and air quality modeling. I can understand why Kiely chose to arrange the text in this way. If the course is for a less accomplished audience, the last chapter can be ignored. If, on the other hand, the audience is more sophisticated, the instructor can jump to various parts of the last chapter to fill in the more rigorous parts of topics such as Monod kinetics. It is, I believe, an effective and inspired organization for this textbook.

If you are going to teach a two-semester course in environmental engineering (even though the first will be mostly science), this is the book for you. It is well written, effectively organized, and clearly presented. It's a winner.

P. Aarne Vesilind

INTRODUCTION TO ENVIRONMENTAL ENGINEERING, by P. Aarne Vesilind, PWS Publishing Company, Boston, Massachusetts, 1997

The number and diversity of introductory environmental engineering textbooks have enriched our resources in recent years. Aarne Vesilind, in his new book, has broken the mold of such offerings in a number of ways. For a first course in environmental engineering, this book will make a superb textbook. There are deeper aspects to this book that would also make the long-practicing professional ponder.

Mathematically, only a basic knowledge of calculus (derivatives and integrals) is assumed, so this is suited for early use in an undergraduate curriculum. The presentation is divided into two parts. The first part

emphasizes unifying fundamentals (decision making, calculations, material balances and separation calculations, reactions and reactors, energy balances and flows, and ecosystems). Part two covers many key applications that must be in a first course (water, wastewater, air, solid and hazardous waste, and noise). The presentation of fundamentals allows a unifying thread to be presented when applications are considered – a mass balance is a mass balance, after all. Structurally, there are a great deal of example (worked) problems and many problems for solution. This book can therefore be used in a problem-solving oriented teaching approach, and also in other delivery methods. Each chapter has a separate listing of nomenclature.

What differentiates this book from the other offerings is the initial philosophical discussion on how decisions are made, with well-integrated (throughout the rest of the book) musings (we all know that Aarne does muse) on the ethical, moral and philosophical bases for decisions that real environmental engineers face. Many of these examples could also form the basis for a separate seminar to undergraduates in environmental engineering ethics. Who else, after all, in presenting a problem on disinfection, would pose the question: "We routinely kill microorganisms and think nothing of it. But do microorganisms have the same right to exist as larger organisms, such as whales, for example?"

While I would recommend this book for adoption, there are some areas where a conscientious instructor might need to supplement with outside materials. The discussion on water treatment contains nothing on alkalinity calculations and softening. Analysis of sedimentation column data, or computation of Stokes settling rates is missing, as are computations for head loss in rapid sand filters. Discussion of disinfection byproducts and the surface water treatment rule is also nonexistent. However, the chapters on wastewater treatment, solid waste, and air pollution are well done. Vesilind here has (appropriately) taken a middle ground between a purely qualitative treatment, and such a highly quantitative approach that there is nothing left to include in an upper division undergraduate course.

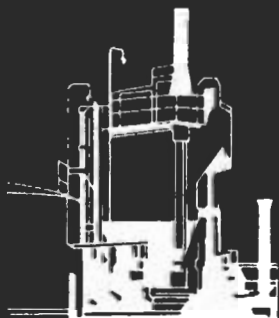
I would be inclined to personally use this book and supplement it with other materials. The book is well written and assembled, and there are often wry twists to the presentation and problems that students and instructors would appreciate. And there is lots to stimulate class discussion. Kudos, Aarne, for another contribution.

Charles N. Haas

40th Annual Conference on Great Lakes Research (IAGLR 97) Buffalo State College Buffalo, New York June 1-5, 1997

The 40th Annual Conference on Great Lakes Research will be held to exchange information on all aspects of research applicable to the understanding of large lakes around the world and to the human societies surrounding them. Among the planned activities is a public forum on "Great Lakes Fish and Fishing," sponsored by New York Sea Grant and the US Fish and Wildlife Service, among others. For further information, contact: Stephen Brandt, Great Lakes Center, Buffalo State College, (716) 878-4329, e-mail: iaglr@glc.snybuf.edu, or Joseph DePinto, (716) 645-2088, depinto@eng.buffalo.edu.

TWENTY-NINTH Mid-Atlantic Industrial and Hazardous Waste Conference



JULY 13-16, 1997

Join us at the historic Hotel Roanoke and Conference Center in beautiful southwest Virginia. This year's conference is hosted by Civil Engineering's Environmental Engineering Program and the Division of Continuing Education of Virginia Tech. The theme is *Treatment vs. Economics and Risk—Achieving an Acceptable Balance*.

For more information, contact:

Dr. Gregory D. Boardman
Virginia Tech's
Dept. of Civil Engineering
Phone: 540-231-6020
Fax: 540-231-7916
E-mail: gboard@vt.edu



VIRGINIA POLYTECHNIC INSTITUTE
AND STATE UNIVERSITY

The De Lange ♦ Woodlands Conference Sustainable Development: Managing the Transition Rice University, Houston, Texas

The De Lange ♦ Woodlands Conference on "Sustainable Development: Managing the Transition," held at Rice University March 3-5, provided a forum for over 500 participants from North and South America, Europe and Africa. Prominent leaders from business, science, government, academia and non-government organizations discussed the role of sustainable development as a practical solution to an ever-growing world population with increasing demands for resources, and presented their perspectives on managing the transition from sustainable development theory to action.

While the conference agenda focused primarily on economic and environmental concerns of the developed nations, it also included topics such as ethics, spirituality, and stakeholder involvement. Conference sessions included: "Sustainable Development: Defining our 21st Century Challenges"; "Achieving Ethical and Equitable Leadership"; "Scientific Issues and Uncertainty in Decision-Making"; "Market Tools: Trade, Pricing and Signals"; "Stakeholder Empowerment and Dispute Resolution"; and "Charting the Roadmap: Institutions, Leadership and Policies." Keynote speakers included Nobel laureate economist Robert Solow of MIT, John Dixon of The World Bank, Bruce Alberts of the National Academy of Science, Fred Krupp of the Environmental Defense Fund, Malcolm Gillis of Rice University, and Timothy Wirth, Undersecretary of State for Global Affairs. Other highlights included a Poster Session and Reception on Monday evening, March 3, and an awards dinner on Tuesday evening, March 4, where the \$100,000 George and Cynthia Mitchell International Prize for Sustainable Development was awarded to Dr. Marcelo C. de Andrade of Brazil.

The conference was organized by the Energy and Environmental Systems Institute at Rice University and the Center for Global Studies at the Houston Advanced Research Center at The Woodlands, in partnership with the National Academy of Sciences and the James A. Baker III Institute for Public Policy at Rice University. Videotapes and Conference Proceedings are available. For more information, please call Judy Howell at EESi, (713) 737-5674, or e-mail jmhowell@rice.edu.

Proposals Solicited for 1999 AEEP Research Needs Conference

Proposals are being solicited for the 1999 AEEP Research Needs Conference. Proposals of those individuals interested in organizing and sponsoring this conference should address three basic criteria: 1) Theme; 2) Location; and 3) Budget. Proposals should explain the overall conference theme and provide a list of tentative session topics. The advantages of a particular conference location should be discussed, including a description of the facilities, capacity, accessibility, transportation needs, cost, etc. An estimate of the budget for the conference will be an important component in evaluating proposals.

Proposals should be submitted by September 15, 1997, to Kimberly A. Gray, Dept. of Civil Engineering, Northwestern University, 2145 Sheridan Road, Evanston, IL 60208-3109; k-gray@nwu.edu. Proposals will be reviewed at the Fall AEEP Board Meeting.

Did You Know . . . ?

More than 100 artificial reefs were built off New Jersey's shore last year.

More than 4,000 landfills have closed nationwide since 1988.

According to EPA, more than \$135 billion will be needed for capital investments in U.S. municipal wastewater treatment systems over the next seven years.

When alone with their pets, 34% of Americans talk to them all of the time; 39% most of the time; and 24% occasionally.

California's salmon and steelhead population has fallen by an estimated 80%.

A mosquito is like a kid. When he stops making noise, he's on to something.

In the next 14 years, the number of cars in China could increase 20-fold.

[Editor's Note: Please take just a few minutes and let us know what you think about your newsletter. What do you like? Dislike? Are there things you'd like to see? Are there things you'd like us to omit? Would you appreciate more regular columns? For example, there are many relatively new faculty members in growing environmental engineering programs in the U.S. and elsewhere. Would a mentoring column written by senior environmental engineering faculty be helpful? With increasing interest in teaching and learning methods, would a column on this topic be of value? Are there other issues you'd like to see addressed? Please email me or send me a note to let me know what you think. In the meantime, perhaps you'll find the following quote interesting – and maybe a little surprising. See you in September.]

It is not enough to teach a man a specialty. Through it he may become a kind of useful machine, but not a harmoniously developed personality. It is essential that the student acquire an understanding of and a lively feeling for values. He must acquire a vivid sense of the beautiful and of the morally good. Otherwise, he – with his specialized knowledge – more closely resembles a trained dog than a harmoniously developed person. He must learn to understand the motives of human beings, their illusions, and their sufferings in order to acquire a proper relationship to individual fellow men and to the community.

These precious things are conveyed to the younger generation through personal contact with those who teach, not – or at least in the main – through textbooks. It is this that primarily constitutes and preserves culture. This is what I have in mind when I recommend the "humanities" as important, not just dry specialized knowledge in the fields of history and philosophy.

Overemphasis on the competitive system and premature specialization on the ground of immediate usefulness kill the spirit on which all cultural life depends, specialized knowledge included.

Albert Einstein
The New York Times
October 5, 1952

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