



Division newsletter

American Society for Engineering Education

DIVISION: CIVIL ENGINEERING

EDITOR: FRED BEAUFAIT
DEPARTMENT OF CIVIL ENGINEERING
WEST VIRGINIA UNIVERSITY

DATE: NOVEMBER 1983

CHAIRMAN'S REMARKS

Last year, as I read the two issues of the Division Newsletter, I pondered about what comments I would make in this space. I never thought I would begin with the worn-out line, "I have some good news and some bad news for you," yet that is the case. Let's get the bad news out of the way first since in the long run, I'm certain the change proposed will maintain or even improve the already good health of the Division.

You will observe elsewhere in this Newsletter a ballot to vote on a proposed dues increase. The Civil Engineering Division Executive Committee discussed this issue at length when it met at Rochester Institute of Technology in June. Although it is always difficult to vote in favor of a dues increase, there was unanimous approval from the members present. The dues increase is needed to continue publishing the Division Journal, Civil Engineering Education. Approximately \$1,100 per issue is required to publish the journal. For a time, Vanderbilt University graciously subsidized a portion of our expense; this is no longer true. With our current dues structure, we simply cannot afford to publish two issues per year. I feel that since the quality of the journal is good and since the journal has been well-received by CE educators

worldwide, we should try to support and strengthen the journal rather than weaken it. I encourage you to mark your ballot "YES" and return it to the Editor.

I've already mentioned one item of good news. Civil Engineering Education is doing a fine job of disseminating information about topics of interest to those concerned with civil engineering education. The other good news is that the Division is addressing or at least providing a forum for discussion of some of the critical issues currently facing civil engineering education: declining enrollment, shrinking resources, and computer usage. For example, Past Chairman Jim McDonough has laid the groundwork for Division leadership in establishing a microcomputer software exchange. A report on his well-attended session at the Annual Conference in Rochester appears elsewhere in this newsletter. Another session on computer usage, with hardware available to demonstrate and copy software, is being planned for the 1984 meeting in Salt Lake City. See Roger Seals' write-up for more detailed descriptions of this and other relevant sessions being planned for Salt Lake City.

I'm sure many of you are familiar with the Architectural and Engineering Performance Information Center (AEPIC) recently established at the University of Maryland. I am pleased to report that the

Civil Engineering Division is going to have representation on the AEPIC Advisory Committee. Information in the spring newsletter will outline our involvement in more detail.

As I've tried to indicate, the Division is an active and productive one addressing a number of timely topics. If there are other areas in which we should be involved or issues which you feel we have not addressed, please call (304-293-5580) or drop me a note to let me know. We need your help in shaping the future direction of the Division. One of my main concerns is that only a small fraction of our membership is actively involved in the Division. If you have not been active, I invite your ideas and your participation. Make plans to attend the Annual Conference in Salt Lake City next June. Or, submit a paper for consideration by Civil Engineering Education or for presentation at the 1985 Conference. Regardless of how you participate, I think you'll find the experience quite rewarding and enjoyable.

Ron Eck
West Virginia University
Chairman
CE Division

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GUEST EDITORIAL

ESTABLISHING THE FOUNDATION FOR A PROFESSION Built on A Closer Relationship Between Campus and Industry

Engineering schools are finding the dilemma of equipping graduates to meet the challenge of change in an increasingly expanding world of specialization and new technologies. The breadth of the dilemma of subjects to be taught is easily appreciated as you page through the course catalogues of today and those of 30 years ago. The enormity of this dilemma is compounded as the student endeavors to select courses of study which he believes will ultimately serve his career object

tives as he perceives them. It is no wonder then that we find a significant percentage of students changing their major area of concentration as well as schools. Likewise, it is no wonder that the newly hired graduate continues to operate in some state of flux in the first few years in the business world as he tries to sort out his career. Simple arithmetic shows that five years or more might be spent in trying to determine what type of career a young person wants to follow and what courses he should take to pursue this career. This is potentially a terribly unstable and unrewarding period of time which might be more effectively utilized if engineering schools and industry would direct their attention toward reducing the number of variables and potentially improving the foundation for an engineering career.

It is unfortunate that most of the initiative to establish good relations between the campus and industry has been primarily by the engineering school seeking either research grants or development funds. The purpose of this activity, as perceived by many, is to permit the school to attract and/or maintain academic staff and to improve physical plans which enhance the position of the school in comparison with its peers. While this emphasis is important, it is also essential to address the subject of how well is the student being prepared to meet the needs of industry. The initiative in this direction most certainly should come from industry itself.

Many engineering schools have endeavored to develop more meaningful and applicable curricula through the establishment of industry advisory committees either to each engineering department or to the school. These committees can provide valuable insights to the changing demands of, and for, engineering graduates. It is important that industry takes this role seriously and discharges its responsibility in a manner which will help close the gap between the developer and the recipient of engineering talent. Without this attitude, industry could be faced with the enormous task of training

and educating a substantial portion of the graduates and suffering significant attrition in its staff of young engineers in the future as our industrial sector changes to meet the challenge of the world's changing economy.

To further enhance the course material and to help provide an insight into the application of theoretical material, adjunct professorships to engage industry professionals to teach select courses could be instituted. Establishment of an adjunct professorship has not always succeeded since both the school and industry have found reasons not to pursue this vigorously. It should be encouraged since the benefits for the student and the future employee are quite apparent and significant. As an alternate, establishment of a "speaker" bureau from industry to present seminars on campus has been found to be effective in assisting the students to gain an appreciation of where the courses they are taking may lead them. The Student Branches of many engineering societies have encouraged this; however, the schools themselves should take advantage of this opportunity as it may directly relate to course material.

Another program to which industry should devote its time is the "intern" program. This type of program can take on various approaches but essentially involves hiring students in the summer or for a semester after completing their sophomore and/or junior years with the purpose of providing the students insights with respect to how the engineering profession functions in various areas of application and industry. This experience is invaluable to the student in selection of courses and ultimately considering the career which he might seek upon graduation. The profession should encourage this internship and give recognition to these programs at the engineering school and at the professional society level. Industry working with the school and the society should be responsible for development of this program and must take the initiative in approaching the engineering schools. The professional society, however, may act as a clearinghouse for documentation of materials of how these intern

programs are conducted at various schools and with different companies, and what has proven to be successful. This could be an important function of the educational division of each engineering society. None of these suggestions are unique. We all know of applications and successes of each one. The primary concern is that the apparent attention each program received at any given time or place is dependent upon individual emphasis of a particular institution, company, person, etc. The "technology gap" which everyone discusses at one time or another cannot be closed if an effort is not made to improve the marriage between development of engineering talent and its application. We cannot afford the waste of time and resources required for the break-in period of the engineering graduate. Providing the means by which a firmer foundation can be established in the formative years of a person's professional career is imperative. We must have greater synergism between, and commitment by, campus and industry if this is to be accomplished.

Art Lotz

Editor's Note: Mr. Arthur W. Lotz is Group Vice-President--Engineering for EBASCO, whose corporate offices are in New York City. Art earned his bachelor's degree and his master's degree from the Polytechnic Institute of Brooklyn in mechanical engineering. He started with EBASCO Services in 1948 as a mechanical engineer. During his employment with the corporation, he has worked his way up the corporate ladder, holding the positions of Consultant Engineer, Director of Far East Operations (Japan), Manager of Projects, Vice-President--Atlanta Office, Senior Vice President--Engineering and Construction, and now Group Vice President--Engineering. Art is an honor member of Pi Tau Sigma.

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CE DIVISION BUSINESS MEETING

Tuesday, June 21, 1983
1983 Annual ASEE Meeting

Thirty-eight members of the CE Division met for lunch on Tuesday during the 1983 Annual ASEE meeting at Rochester Institute of Technology, and to conduct the business of the division. Jim McDonough called the meeting to order and introduced the officers of the division in attendance. The officers for this year are:

Chairman - Ron Eck
West Virginia University
Vice Chairman - Roger Seals
Louisiana State University
Sec./Treasurer - Fred Beaufait
West Virginia University
Editor, Civil Engineering Education -
Peter Hoadley
Vanderbilt University
Directors - (1984) Colby Ardis
University of Toledo
(1985) Gerald Seeley
Tri-State University
(1986) Greg Mager
U. S. Coast Guard

The Annual Report for the Division, which was prepared by Jim McDonough, was distributed and accepted by the members present.

Ron Eck, Program Chairman for the 1983 Annual Meeting, was called on to review the CE Division program; the division sponsored six sessions along with four special events. The division was a co-sponsor of one of the Mini-Plenary sessions and took an active part in planning the program. Efforts are being made to get the division actively involved in the 1984 Civil Engineering Education Conference which is now being planned.

Peter Hoadley reported on his activities for the past year as editor of Civil Engineering Education which is in its fifth year of publication. Some twenty (20) papers were submitted for review for publication. Pete indicated that the quality of the papers is continually improving and, unfortunately,

that the costs associated with publishing the journal were on the increase, like everything else. Colby Ardis reported on an evaluation of the division journal that he conducted at a recent meeting of the North Central Section CE Department Heads that was published in the spring, 1983, issue of this newsletter. All agreed that the journal was an important activity of the division and expressed their appreciation to Pete for the fine job he was doing.

Marvin Creswell brought the members up to date on the efforts that were under way to establish one or more major division award(s). Much remains to be accomplished before the division will be in a position to support an award; Marvin and his committee are continuing to work.

Fred Beaufait reported that the division had a balance of some \$4,200 in its BASS account as of June 1, but that the projected expenditures over the next several years far exceed the project income. If the division is to continue the publication of the journal, Civil Engineering Education, and wants to institute any new activities, there must be an increase in income.

A motion was offered and seconded that the dues for the division be increased to \$5.00 per year. The motion passed unanimously. The proposition will be put to the general membership in the fall edition of the Newsletter. (Please read the article, CE Division to Vote on New Dues and use the ballot at the end of the newsletter to vote).

The meeting was adjourned so that all could attend the next CE event.

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SUMMARY OF CE EVENTS AT
1983 ANNUAL MEETING

Communications Education for the Engineer: This session dealt with several programs designed to improve the communications skills of engineers, both undergraduate and graduate. All of the papers appear in the Annual Conference Proceedings.

Dave VanHorn of Lehigh University led off with a review of the Accreditation Board for Engineering and Technology (ABET) criteria for evaluating communications training in engineering programs. He said that the criteria are good ones, but they have not, as yet, been given the emphasis they should by ABET visitors.

Frank Griggs described an innovative communications program that integrates communication training throughout the Civil Engineering curriculum at Union College. The instructional part of the program includes two half courses in effective written and oral technical presentation, and a half course on the concepts of ethics and professionalism. Communications skills are emphasized in the introductory computer course through man-machine communications, and development and documentation of computer software packages. Oral exams are administered in every civil engineering course. Oral and written reports for design projects are required in most courses. Students are provided ample opportunity to present material in the consultant-client environment.

Paulette Pellani described a corporate program for communication training. She helps supervise a program for EBASCO Services Incorporated which includes written programs and workshops, oral presentation programs, an effective reading program, and a cooperative effort with Pace University to meet the communications needs of employees who speak English as a second language.

EBASCO also operates a career management program that facilitates scheduling of communications courses in accordance with employee development plans.

William McMahill, of the University of Missouri-Columbia, reported on his work with participation training as a method of teaching communications skills to engineers. Students practice the behavioral concepts of working together to solve problems. They take turns at assuming the different roles of leader, recorder of facts, observer, and group members. In so doing, they both communicate with each other, and observe others' communication techniques.

Communication of ethical concepts of engineering professionalism from engineering educators to students was the subject explored by Heinz Luegenbiehl, of Rose-Hulman Institute of Technology. He described goals of teaching ethics in the engineering curriculum and the necessary theory and definition of ethics. Codes of Ethics, their obligations and various groups, and their relationship to teaching ethics were presented. He emphasized the importance of distributing the exposure to ethics throughout the curriculum, especially in design courses, where questions of ethics quite naturally arise.

Tom Jewell
Union College

External Support for Civil Engineering Education: The session began at 2:00 p.m. on Wednesday, June 22, 1983 (the last day of the meeting) with 22 individuals in attendance in addition to the moderator and two speakers. Dr. Glen Martin CH2M Hill, and Mr. Robert Gilbert, Bechtel, Inc., each prepared and delivered a 25-minute presentation centering on the session topic. Both speakers presented the information on how the prospective companies presently support engineering education and why a minimum of additional support can be expected.

Following their presentations, Dr. Gene Nordby, Chancellor of the University of Colorado at Denver, provided several impromptu comments relating to his experience in fund raising. His suggestions centered around alumni development. After extensive discussion, the session adjourned at 3:40 p.m. with 20 individuals in attendance in addition to the moderator and speakers.

Considering the problems encountered in organizing the program, the session was reasonably successful, since an excellent discussion period resulted with little audience attrition. The session was weak, however, in presenting new or innovative ideas in fund raising from the consulting sector.

Steve Abt
Colorado State University

Microcomputers in CE Education:

Despite the confusion in the program as printed, the session on microcomputers was very well attended (40-50). Drs. Lubkin, McDonough, and Rehak presented their papers, and Moderator McDonough also presented Dr. Gould's paper. The papers by Gould, Lubkin, and Rehak are printed in the newsletter.

The area of microcomputers and their utilization in CE education is of great interest, and will be expanded in what we hope will be exciting ways at next year's conference. The session contained excellent information of a general nature in what Rehak and Gould are doing in their research, and of specific interest as demonstrated by Lubkin with his very interesting structural design program.

Jim McDonough
University of Cincinnati

Professional Education for the Future: This session at the RIT meeting was a panel presentation on the current status of civil engineering graduates' capabilities for entrance into practice, and the educational needs for civil engineers in the future. The session was moderated by Prof. Donn E. Hancher of Purdue University, with presentations by Kenneth Gible, Besier, Gible, and Quirin, Old Saybrook, Connecticut (consulting engineers); James Glenn, retired from the DuPont Company, Wilmington (manufacturing industry); and Wendell Holmes, Gilbane Building Company, Providence, Rhode Island (construction industry). Listed below are summary comments made by the panel on these two topics of concern to civil engineering educators.

Current Graduates' Deficiencies

Today's civil engineering graduates are reasonably well prepared for entry level positions in practice, considering the inherent limits of a four-year education. However, there are several deficiencies in these graduates which can and should be addressed by civil engineering educators:

- Students are trained to design parts, not total systems.
- They lack practical knowledge of real world terms and practices.
- They cannot read engineering drawings and have a bad attitude about the necessity of good drafting skills for practice.
- They are uncomfortable with "unstructured" problems; most of the real world problems are the messy kind and this disturbs them.
- They lack the ability to write letters and reports effectively.
- They are poorly lacking in verbal communication skills.
- They are very naive about the world of business and management.

Future Educational Needs

- There is a definite need for better training in "communication skills," both written and verbal.
- More emphasis is needed for COOP or summer work programs to give students a better understanding of engineering practice.
- It is ESSENTIAL to introduce students to computer utilization for design and management.
- Capstone design courses should be required for seniors, with practitioners actively involved in these courses.
- Engineering management should be introduced to undergraduates.
- Students need much better introduction to codes, specifications, contracts, and engineering drawings.
- More awareness of mechanical/electrical systems is needed by civil engineers today for life cycle cost evaluations.
- Engineering schools must take a more active role in continuing education; education is a lifelong process!

Donn Hancher
Purdue University

Influence of the Accreditation Program: Accreditation as we know it today is a self-policing operation that consumes a significant number of man-hours and a not insignificant amount of our very scarce dollars each year. Because of this alone, it is appropriate for us to question accreditation--the process and its influence. Does accreditation really make a difference?

There are those in our profession that not believe that we need to bother with accreditation. Of those that support the idea of accreditation, there are some who

feel that accreditation should simply be involved in establishing minimum standards for an engineering program, and there are others who advocate a more aggressive picture for the accrediting process by specifying guidelines for resource allocation.

What is the role of accreditation? What do we expect to accomplish? Is it effective? Does it really have a positive impact on engineering education?

When we talk about student/faculty ratios, teaching loads, faculty credentials, conditions of facilities and equipment, number of hours of humanities and social sciences, and the list goes on, have we really identified the correct parameters?

No doubt a long list of questions can be put together that should be asked and answered. Unfortunately, there was not enough time in the session to address them all and none of us expected to find the final answer to this ageless debate.

Our featured speaker, Dr. John Breazeale, Vice President for Academic Affairs and Dean of Faculties at Wichita State University, was asked to address just one of the many questions that might be raised: "What is wrong with professional accreditation of academic programs?" It was hoped that by raising this particular question, the discussion among those attending would generate some new ideas that might find their way back to our accrediting agency, i.e. ABET.

In his address, Dr. Breazeale made the point that accreditation was costly, redundant, self-serving, and intrudes on an institution's own value system. While the purposes of accreditation might be to protect and strengthen the profession and to provide consumer protection for students and for employers of our graduates, its exclusive focus on what is good for the discipline is good for the university is at the core of what is wrong with accreditation.

It was pointed out that the vision of the university should be greater than the task of ensuring the entry-level competence into the profession for practice. The principle of good education should not be compromised to promote the advancement of a profession.

Needless to say, Dr. Breazeale's comments did exactly what was hoped--they led to a very lively discussion among the audience. Let me encourage you to read the paper that Dr. Breazeale prepared, appearing in the Proceedings of the meeting.

Fred Beaufait
West Virginia University

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REPORT OF THE NOMINATING COMMITTEE

The Nominating Committee, consisting of the three past chairmen of the division, Gordon Batson, Marvin Criswell, and Jim McDonough, have submitted the following nominations to the division for the offices to be filled in 1984:

Chairman: Roger Seals
Louisiana State University

Vice Chairman: Colby Ardis,
University of Toledo
Norm Boylea,
University of Lowell

Director: Tom Jewell,
Union College
Paul King,
University of Arizona

NOMINATIONS FOR ASEE AWARDS

As Dizzy Dean once said, "It ain't braggin' if you done it."

And it ain't braggin' if one is awarded the prestigious _____ Award for _____. But it is something--as past awardees know--that:

- Gives a lift that will last a long time;
- Brings deserved recognition for efforts and achievements in engineering or technology education;
- Puts the awardee on a new plateau in the profession.

We hope, therefore, that you will look over the nomination booklet which you received from headquarters to see what the ASEE Awards program is all about and encourage you to submit a nomination for someone you know who deserves to be considered.

We cannot, of course, promise that your nominee will be selected. But we can guarantee that he/she will not be considered if you do not submit the nomination. For this reason, we look forward to hearing from you about any one of the 33 awards listed in the booklet.

Don't delay. The deadline is February 1, 1984.

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CALL FOR PAPERS

Civil Engineering Education: You are invited to submit an article or paper to Civil Engineering Education. The next deadline for receipt of these is February 1, 1984. Papers should be typewritten and double-spaced. Five copies are required. Titles should not exceed 60 characters, including spaces. Maximum length of the article is 3,000 words; however, in special cases, this maximum will be waived. Illustrations should be submitted as black and white glossy photos or ink lined drawings. Keep in mind that illustrations may be reduced at least one-half. Footnotes and extensive bibliographic references are not generally desired. Articles on any and all aspects of Civil Engineering Education are most desired. Mail articles and address inquiries to:

Peter G. Hoadley, Editor
Civil Engineering Education
Department of Civil and
Environmental Engineering
Box 1602; Station B
Vanderbilt University
Nashville, TN 37235
Telephone (615) 322-3396

Computer Use in Civil Engineering Education: The Ad Hoc Committee on computer use of the Civil Engineering Division of ASEE is soliciting papers for presentation at the ASEE Annual Conference to be held in Salt Lake City, June 24-28, 1984. The theme of the session is "Computers in CE Education." Topics include, but are not limited to, computers as a faculty tool, numerical methods, CAD, CAI, developing computer literacy, and integrating computers into the CE educational process. Papers may also be submitted for consideration for presentation at a poster session.

Accepted papers will be included in the conference proceedings. Prospective authors should submit a 25-word abstract November 15, 1983 to:

Dr. A. Farah
School of Engineering
Laurentian University
Sudbury, Ontario Canada P3E 2C6
Telephone No. (705) 675-1151 Ext. 697

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CE DIVISION TO VOTE ON NEW DUES

Inflation has hit everyone and everything and the CE Division is no exception. At present, the Division dues are \$2 per year. With 739 members, the Division receives \$1,480 in dues each year. When the Division first voted to assess each member the \$2 it was to support the publication of the Civil Engineering Education journal twice a year.

Because the publication cost for each issue was near \$600 for the first few years and because Vanderbilt University underwrote the publication of several issues, the Division was able to accumulate funds in its account. Today, the cost of publishing one issue almost equals the total income of the Division from dues. Hence, unless the Division increases the income to at least match the expected Division expenditures, we will either have to reduce the publication of our journal to once a year or simply discontinue it.

The journal has provided the Division with an effective means to serve the members and provide for communication among the members. Almost everyone agrees that the journal is important to the Division and that it should be supported. Hence, the request for an increase in dues.

The motion before the Division for your vote is: The annual dues for membership in the Civil Engineering Division of ASEE be increased to \$5 in order to provide the necessary support for the continued publication of the journal, Civil Engineering Education. Please use the ballot attached to this newsletter to vote on this issue.

Your vote is important to the future of the Division.

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ASEE-CE DIV. NEWSLETTER
Civil Engineering Department
West Virginia University
P. O. Box 6101
Morgantown, WV 26506-6101

Non-Profit Organization
U. S. Postage
PAID
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Permit No. 34

BALLOT

Motion: The Annual dues for membership in the Civil Engineering Division of
ASEE be increased to \$5.00.

Check One:

YES

NO

Return by January 15, 1984, to

Fred Beaufait
College of Engineering
West Virginia University
P. O. Box 6101
Morgantown, WV 26506-6101