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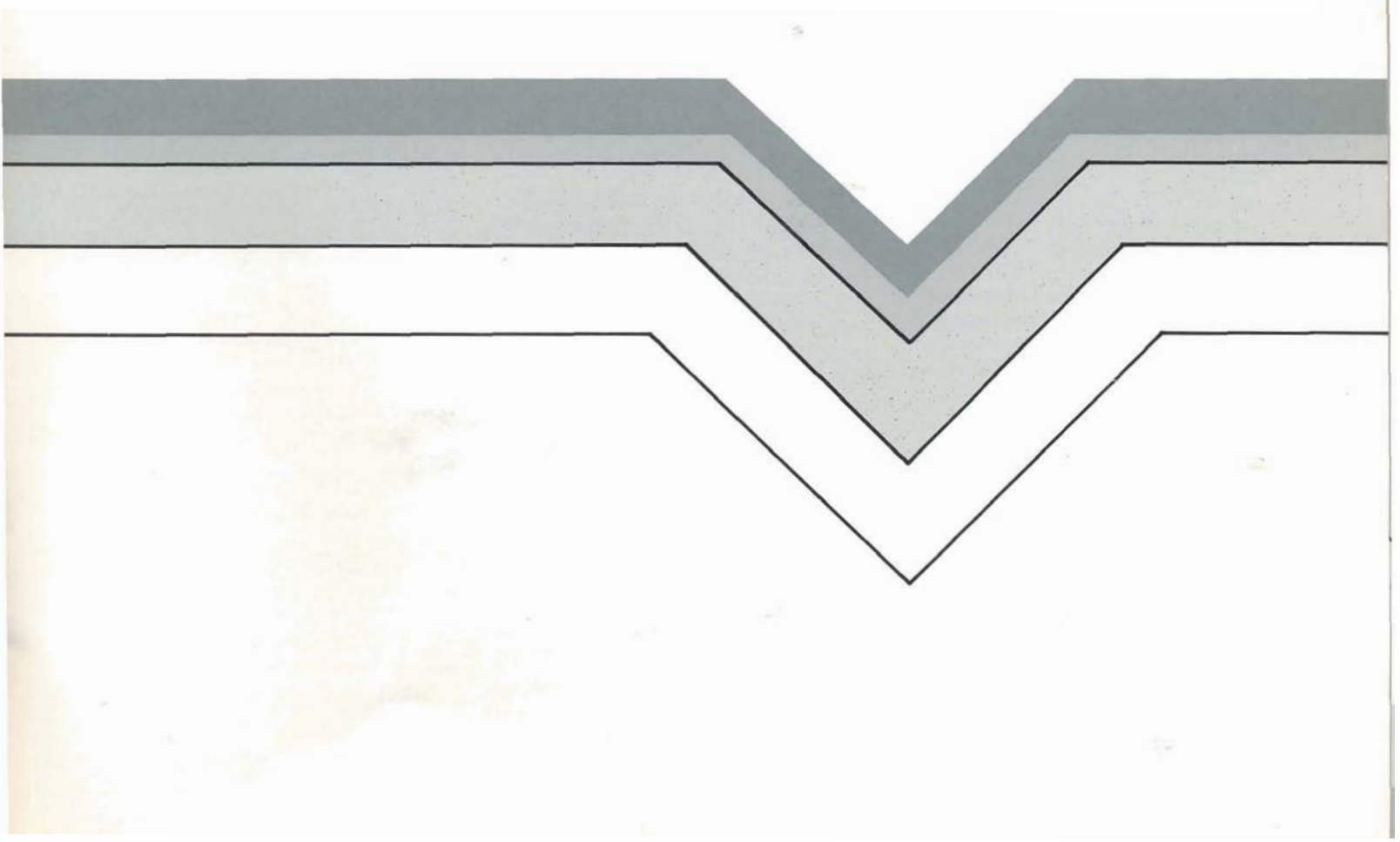
SCHOOL OF CHEMICAL ENGINEERING A... ...D MATERIALS SCIENCE THE UNIVERSIT... ...HOMA

Winter 1980-81

GOOD, BETTER, BEST–
ALUMNI CONTRIBUTIONS DO THE JOB FOR CEMS

CONTENTS

Winter, 1980–81



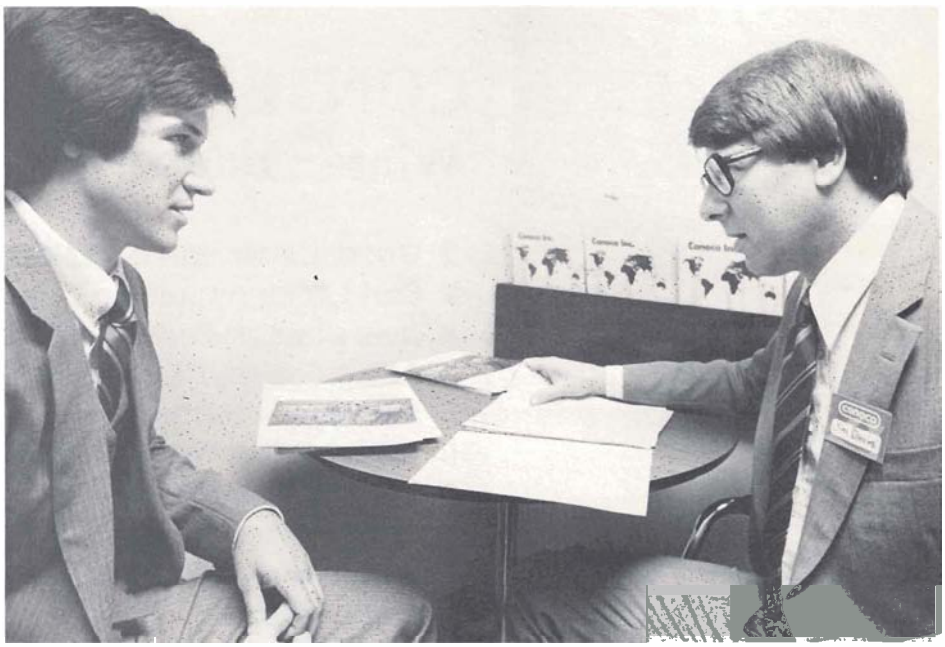
Good, Better, Best: CEMS at OU

The faculty of the School of Chemical Engineering and Materials Science has a responsibility to the citizens of Oklahoma to educate young men and women as chemical engineers and metallurgical engineers. We think that the B.S. graduate should be prepared to be a contributing member to industry. However, we fully realize that in four years it is impossible to educate each of these students fully in the many diverse jobs that they will do. Nevertheless, we strive to put students in such a position that they can understand, appreciate, and grasp industrial practice. In addition, while doing this demanding task, we must provide those undergraduate students who are interested in further academic work the necessary background to enter graduate school. These two goals are not necessarily self-exclusive and, in fact, remain the foundation of our curricula, texts, and teaching approach.

We have summarized our statement of mission in a tentative five-year plan drawn up during academic year 1979–1980. This statement says,

> The mission of the School of Chemical Engineering and Materials Science of the University of Oklahoma is in accord with the university-wide mission, namely to teach and counsel both undergraduate and graduate students, to extend knowledge through appropriate research and scholarly activities whose results are widely disseminated, and to engage in a variety of public service activities that utilize the professional competencies of its faculty. The school has a special mission of providing society with competent graduates to enter the chemical and metallurgical engineering professions and contributing to other professional curricula of the College of Engineering.

We think that our B.S. graduates in both chemical and metallurgical engineering have been readily accepted by industry throughout the United States. These students have been in high demand by industrial interviewers coming on campus. The chemical engineering graduates in the academic year 1978–79 had an average salary offer of about $22,000. The national average for chemical engineers with a bachelor's degree was approximately $18,500.



Ken Hudson, senior chemical engineering student, interviews with Jim Davis of Conoco. If Ken is a typical CEMS major, this will be just one of several interviews he will have before making a decision about a job. The placement office at OU serves a crucial function not only for CEMS majors but for all students who undergo multiple job interviews.

Over the past three to five years, our graduates have had two to three job offers per student on the average. In addition, we continue to receive information from industry that these students have been able to contribute in their jobs and are well liked.

It is difficult to accumulate statistics on the metallurgical engineering students since the numbers are so much smaller than the chemical engineering graduates. However, it is noteworthy that these students from an area of the country in which there is little metals industry have no difficulty obtaining jobs in all areas of the country.

We think the high demand for and the satisfaction with the graduates of CEMS result from the quality of students and the faculty. During the last several years we have attracted to our department some of the very best high school students as based on their ACT averages and university recognition. Our ability to interest these outstanding students has been due in a large degree to our Program of Excellence.

In addition, the faculty is highly dedicated to good teaching and to the students. We collectively have made it our goal to present a difficult, rigorous education but to maintain some humanity in our contact with students in and out of class. We have attempted to improve our educational offerings by adjusting the curricula, equipping laboratories, and developing new courses.

We would like to sustain our drive for excellence. In order to do this, we need to continue to attract these outstanding students and even expand our scholarship program. The state funds provided for the operation of the department will not support the type of program the faculty would like to maintain. Therefore, additional funding from alumni contributions and grants is essential.

Students

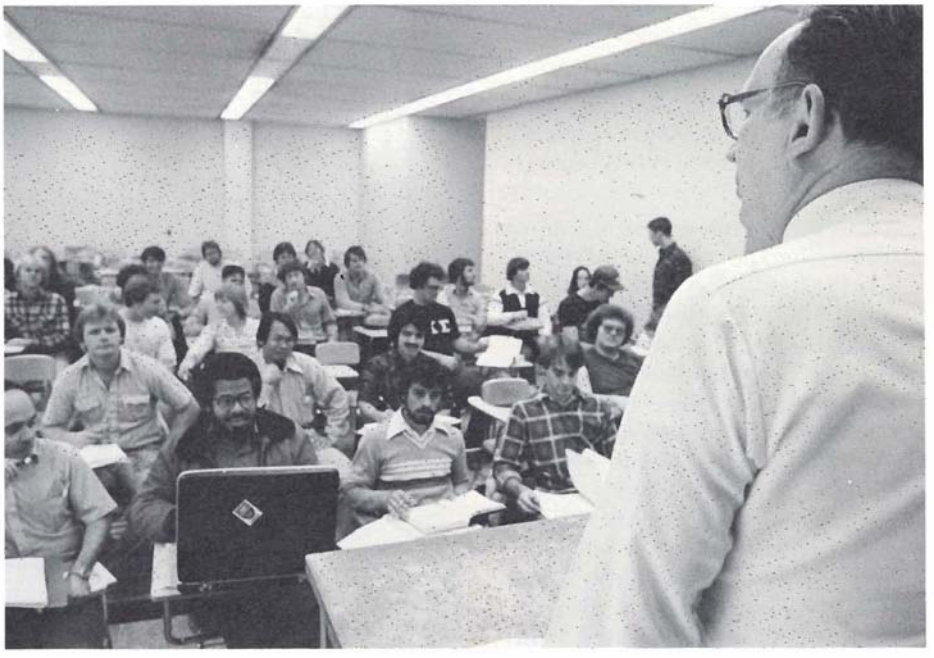
Student enrollment has made a drastic change since 1974. At that time, the enrollment in the School of Chemical Engineering and Materials Science was approximately 120 students. In the fall, 1978, enrollment was 362 undergraduates and 74 graduate students. In addition to having this large increase in total numbers, we have continued to have an increase in the quality of these students.

Testing of high school seniors has been under fire around the country recently, but our experience has been that these tests are a fair predictor of the intellectual ability of high school seniors. There are always exceptions, but in general the students who come to us with high ACT scores have the necessary intellectual capability and, in most cases, the ambition necessary to do well in the chemical engineering program.

The maximum score on the ACT is 36, and scores are provided for English, mathematics, natural science, and social science. A composite score is also given. In the fall of 1978, the average composite ACT score for CEMS freshman students was 26.8. This is compared to a 21.2 average for freshmen in the University of Oklahoma and to a 24.5 average for freshmen in the College of Engineering. This seems to indicate that we have been successful in attracting some of the best students coming into the University.

In addition, there are a few examples of students who have even more outstanding ACT scores. We now have several students who have ACT composite scores of above 30. We have even had one or two students who have come to us with mathematics scores of 36. We find ourselves competing for students of this type who have received scholarship offers from such schools as Princeton, MIT, etc.

There are indicators other than the ACT scores that are more difficult to quantify. These indicators have to do with individual faculty-member assessment and subjective judgment of student performance in the classroom. We have an intuitive feeling that students both coming into and remaining in the program have become increasingly better.



Dr. Raymond Daniels teaching one of the larger classes in CEMS

Another indicator of excellence that we have used is the increase in number of students doing research work in our laboratories. Students work in several laboratories involving biomedical research, corrosion and polymer research in which they contribute directly and in a very important way.

In addition, several papers have been given by graduate and even undergraduate students in areas around the country and the world. Students have made presentations at both regional and national technical meetings, and these paper presentations were based upon the efforts carried on in our laboratories.

We think that some of our best laboratory help has come from undergraduates, and we certainly believe that this experience broadens the education of the students. Some students work on projects and are paid for their efforts, but the majority of the students working on these projects are doing it on a volunteer basis, strictly for the educational component.

One further indicator of the high quality of students that we are attracting to the School of Chemical Engineering and Materials Science is the number in our freshman class chosen for University Scholarships and Achievement Awards. In the fall, 1979, the number of OU scholarship students was 120–150. Twenty-one of those students declared that they were interested in chemical engineering as they entered the University. There were 30 CEMS students entering in the fall, 1980, as recipients of the Achievement Award, as members of the President's Leadership Class, or as University Scholars. It is significant that the total undergraduate enrollment in CEMS is 1.5% of the University enrollment, but we have about 15% of these outstanding freshmen.

This improvement in the quality of our undergraduate students is being felt in our graduate program. Some of our fine undergraduate students are staying for graduate school, and this enhances the overall quality there. We should note that many of the students

in the graduate program are non-U.S. citizens. Many of these students are very good students, but we think that it is part of our goal to increase the number of U.S. citizens in the graduate program. In order to do this, we need to increase the number of scholarships and the amount of the stipends.

Faculty

To meet the challenge presented by these excellent students, we need to look to the quality of faculty, who must provide the necessary stimulation and information for these students to prepare them to enter industry and become contributing members of society. The CEMS faculty is relatively small but very strong.

Within this faculty of 10, there are three members who have received named professorships. We have two George Lynn Cross Research Professors, selected because of their outstanding, nationally recognized contributions to research. Professor Cedomir Sliepcevich and Professor Kenneth Starling are those two faculty members. Professor Mark Townsend is a David Ross Boyd Professor. The David Ross Boyd Professorships are given in recognition of outstanding teaching. There are about 20 George Lynn Cross Professors on the University of Oklahoma campus and approximately the same number of David Ross Boyd Professorships. We count it a distinct honor to have three on our faculty.

In addition to those on-campus honors, Professor Sliepcevich has been highly recognized by several organizations and was named to the National Academy of Engineers. He was the first such engineer within the state of Oklahoma.

The most recent honor that one of our faculty has obtained is the Baldwin Teaching Travel-Study Award which is presented by the Alumni Foundation based upon student-initiated nominations. Professor J.M. Radovich won this award in the spring, 1980. There are two such faculty over the entire University honored each year.

A few important statements can be made concerning the faculty and their involvement with students, research, and service. The faculty has a high commitment to undergraduate students' involvement with research programs. In addition, such activities as the CEMS Awards Banquet, Faculty Roast, Student Advisory Committee, AIChE activities, and informal contact require considerable amounts of faculty time.

CEMS's named professors: (left to right) Kenneth Starling, Mark Townsend, and Cedomir Sliepcevich

Every year the CEMS Awards Banquet is held to recognize outstanding students in the four classes. In addition, there is an award given to the best senior chemical engineering design student, and some awards are given to the metallurgical engineering students.

The evening preceding the banquet, a more informal but very important activity establishes contact between students and faculty. At the "Faculty Roast," students take great delight in pointing out the foibles and eccentricities of each of the faculty. The faculty have even been known to return the favor to the students.

Finally, we have an advisory committee that meets with the director periodically about more serious concerns that the students have in their perception of the curriculum and classes offered by the faculty.

Fund Raising

It is very important to consider the ability and track record of the School of Chemical Engineering and Materials Science in raising funds from outside sources. We have for the past 10 to 15 years regularly been obtaining donations from our alumni to support the activities of OkChE. Those funds were $3,000–5,000 per year until 1976, when one alumnus, Charles Perry, issued a challenge whereby he would match each dollar donated up to $10,000. Each of the three subsequent years the challenge has been given, we have obtained very close to the $10,000. Our giving has jumped from around $5,000 to $20,000 per year, and this has certainly helped our laboratory fund and our scholarship fund.

We have begun contacting other foundations and other companies in order to increase the giving to the programs of the department. In addi-

Dr. Cedomir Sliepcevich interacting with students before class

tion, we have a recent commitment from the University to match funds on a dollar-for-dollar basis with outside giving up to approximately $100,000.

There is also a point to be made for the ability to achieve money for one special purpose as done by Professor Radovich with the Unit Operations Lab. He was able to obtain money from NSF which the University matched dollar for dollar. He obtained a grant from Shell Oil Foundation and also received support from OkChE to equip the lab for a total of about a $74,000 expenditure. In addition to utilizing this money, he was able to revitalize an area that was sadly deficient in our curriculum.

Goals and Funding Needs of the Department

During the summer of 1979, the faculty drew up a tentative draft of a five-year plan for 1979–80 to 1984–85. These goals have helped to define the plans of the faculty of the School of Chemical Engineering and Materials Science as we strive for excellence. These goals, listed in no special order,are:

1. To maintain a level of faculty quality identified among the top ten chemical engineering departments in the United States.
2. To continue to attract the best undergraduate students in the region and to increase the number of high-quality graduate students.
3. To provide the best undergraduate program in the country.
4. To maintain peaks of excellence in a few select research areas while maintaining a background of adequate research in the broad areas of the School's disciplines.
5. To administer the School competently while requiring all faculty (to the extent possible) to be involved in administrative activities.
6. To improve the physical facilities, particularly laboratories and equipment,and to increase the sources and level of financial support through increased state funding and external support for special programs.

In order to maintain a top-quality faculty, we must do some specific things about faculty salaries and faculty workload to encourage excellence in every activity. We desire to achieve recognition of excellence in teaching among one-third or more of the School's faculty and achieve recognition of excellence in research among another third of the School's faculty.

We would like to have at least one faculty member involved in a major career development activity each year, such as a sabbatical leave or a leave for work in government or industry. Current and future faculty positions must be filled by individuals of the highest quality. In addition, we want to have one or more visiting faculty members each year helping us achieve the best possible faculty.

We have a need for special assistance to the faculty for a number of developmental activities. Some faculty need travel funds to attend conferences and seminars. Some need subsidies for sabbatical leave. Some may need seed money for special educational projects. New funding could provide for those services and other items of a similar nature. Such funding would be available to the School to be expended in a discretionary manner to individual faculty members.

We also want to continue to attract highly qualified and motivated students at the graduate and undergraduate levels. In order to do that, we must engage in active recruiting. Specifically, we must maintain updated brochures and posters describing the graduate and undergraduate programs. We think we are already getting the best undergraduate students in Oklahoma, and we must extend that to obtaining the best students in the Southwest.

We would like to maintain the undergraduate enrollment at a level of about 40 students per class. Presently we are somewhat above that number. The graduate enrollment should be adjusted so that we have about 50 per cent U.S. citizens. This adjustment will require active participation by all faculty in recruiting plus the ability to offer several substantial fellowships and graduate teaching assistantships.

We would like to increase the level of support for Program of Excellence Scholars on a scaled basis. Presently we are offering $500 per year. We would like to increase that to $600 to keep pace with tuition and book costs. We would like to support about 25 students per class in the Program of Excellence.

OkChE funds have been used over the past few years to support student travel to regional, national, and international conferences to present papers. New funds would continue that practice. In addition, we would like to

offer and award Summer Undergraduate Research Grants (SURG) to four students that are prime candidates for graduate school. These grants would be $1,000 for the summer. The students would work on research projects with faculty and graduate students and thereby receive both encouragement to attend graduate school and good research experience.

In order to upgrade the undergraduate program in light of our goal to have the best undergraduate program in the country, we must take a number of specific actions. (1) We must continue to upgrade the undergraduate laboratories. There are several experiments that should be added to the Unit Operations Laboratory, and we must have increases in the operating budget to maintain the equipment adequately. We must have a graduate assistantship for the laboratory to provide the necessary day-to-day operating support and supervision.
(2) We must continue to evaluate and revise the curriculum. As one example, we would like to add a course in process control and add other elective courses on an alternating basis.
(3) We would like to increase student exposure to real engineering problems. This may be accomplished through assignments in the regular courses, requiring additional effort and time from the faculty to make contact with industrial people. Engineers from industry might be invited to provide representative problems to the classes. Local industry could be contacted to set up a program of short-term industrial projects involving faculty, students, and industrial personnel.

In the graduate programs, we would like to increase the number of post-doctoral students to one-half the number of faculty members. We may, in addition, need to reevaluate the qualifying procedures for the Ph.D. program. We want to offer at least ten graduate stipends per year at a level of $8,000 per year. Some of this support may be graduate teaching assistantships and some may be fellowships. The number of each might vary as the School's needs change and as students are available.

There are some support staff improvements that should be made to maintain faculty involvement at a high level. We need an additional secretarial position in order to assist our faculty in their research and educational programs. The graduate teaching assistantships could also be considered staff help for the faculty. There are several teaching innovations that could be instituted by the faculty if sufficient help were provided to them. These appointments would not only support the graduate program but would allow faculty to develop innovative approaches to teaching since they would have sufficient help to relieve them of some of their more routine duties.

Funding for graders would also be of great assistance. These are not presently provided for in the normal operating budget. Although we have used graduate students as graders in the past, we feel that they can be put to better use in more stimulating tasks. Grading is somewhat a misuse of graduate students' time, but exceptional undergraduate students could work as graders to keep the flow of homework and quizzes moving to and from students.

There are miscellaneous activities that also require new funds. Such things as the OkChE board meetings and contact with members during the year are examples. The OkChE magazine is another example of an invaluable communication tool that must be continued. All of these items are necessary to keep in touch with our alumni and friends, and all require annual funding.

The School of Chemical Engineering and Materials Science has developed impressively in the last several years, but we haven't reached our peak yet. Our students, faculty, and goals are of the highest quality. With sufficient funding, there is no stopping our quest for greater achievement in excellence.

First-Year Budget

Students		
Program of Excellence Scholarships 100 @ $600	$60,000	
Graduate Fellowships/GTAs 10 @ $7200	80,000	
Travel/Research Grants	5,000	
Total Budget for Students		145,000
Faculty		
Faculty Development Fund	15,000	
Total Budget for Faculty		15,000
Staff		
Secretarial Position	12,000	
Laboratory Assistant	10,000	
Work/Study Help—2 Students	7,000	
Total Budget for Staff		29,000
Laboratory Development Fund		
New and Updated Experimental Equipment	6,000	
Total for Laboratory		6,000
Alumni Relations		
OkChE Magazine—2 Issues per Year	10,000	
Miscellaneous Activities	1,000	
Total Alumni Relations		11,000
Total Budget		$206,000

Carl Locke Appointed Director of CEMS

Carl E. Locke, a seven-year faculty member at the University of Oklahoma, became director of OU's School of Chemical Engineering and Materials Science for a four-year term beginning Sept. 1. He replaces Sam Sofer, who had been director of the school since September, 1975.

"I am very proud to follow Sam Sofer as director of this fine department," Locke said. "The faculty is probably one of the best in the University and we have excellent students. I believe many of the things that have put the school into such a strong academic position are the result of Sofer's efforts. Specifically, the support of our alumni has increased significantly in the last five years, and we have attracted some of the university's best students. In fact, though the school's enrollment is only about 1.5 percent of the total enrollment, approximately 15 percent of those incoming freshmen recognized for high academic achievement are enrolled in our program.

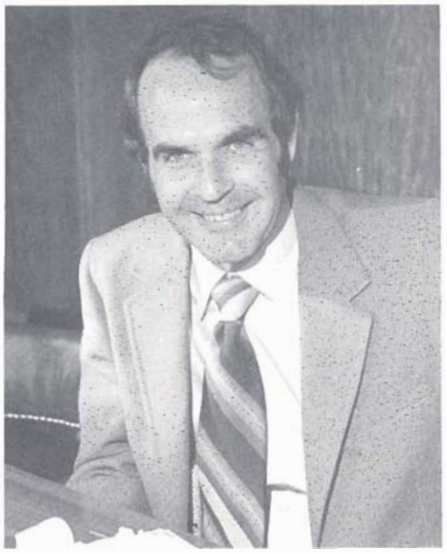
"The School of Chemical Engineering and Materials Science is also among the top academic departments in the amount of research funds it attracts, and three of our ten faculty members hold distinguished professorships," Locke said.

The school is considered to have a strong undergraduate program, which provides unusual research opportunities for undergraduates. Also, the school was ranked fifth nationally in 1976 in an article published in the *Chemical Engineering Education Journal* of the American Society for Engineering Education. The ranking was based on performance by faculty members in such areas as research, publications, and direction given in master's and doctoral degree programs.

Prior to joining OU, Locke worked as an associate research engineer for Continental Oil Co., production manager for R.L. Stone Co., and as program manager for thermal instruments at Tracor, Inc. During the summer of 1974, he conducted carbon black corrosion research for Phillips Petroleum Co. in Bartlesville.

At OU, Locke has done considerable research in the area of corrosion control and the correlation of polymer molecular structure with thermal and mechanical properties. As one of the few people in the United States looking at corrosion of concrete and steel, Locke has gained international attention that has resulted in invitations to international conferences.

Donna Murphy



Dr. Carl Locke, new CEMS director

Teaching duties still occupy much of the director's time. Dr. Locke is shown here with post-doctoral fellow Changiz Dehghanian.

Out of the classroom onto the bridge, as Dr. Locke actively pursues his research into polymer concrete

New Director Serious Jogger

The new director of the School of Chemical Engineering fears his administrative position will cut down on the time he uses for personal research, but he refuses to let it cut into his jogging time.

"I run three to five miles a day," Carl E. Locke said, "with three or four men on the engineering faculty." Locke and his running companions have even run competitively for the American Institute of Chemical Engineers. "It's an annual contest for chemical engineering faculty across the nation," Locke explained. "A group of four from each chemical engineering school run a mile and submit their times to the AIChE. Colorado won last year but we held the title for three years before that."

Locke, who took over the chemical engineering school for a four-year term, earned his bachelor's, master's, and doctoral degrees in chemical engineering at the University of Texas in Austin. His profound interest in math and science led him to pursue a career in engineering.

"An uncle of mine talked me into studying chemical engineering," Locke said. "When I got out of high school, I wanted to be a petroleum engineer but my uncle, who was very interested in chemicals and materials, sat me down before I left for school and talked me into giving chemical engineering a try. It was kind of a last-minute decision."

Most of Locke's research has been with the corrosion of metal and steel gaining him international attention as one of the only engineers conducting corrosion research. With a two-year grant from the National Science Foundation, Locke is developing a polymer concrete to reinforce worn bridge decks and overpasses. "The Oklahoma State Highway Department has used the concrete to patch several bridge decks around the state, and they are studying its effectiveness now," Locke said.

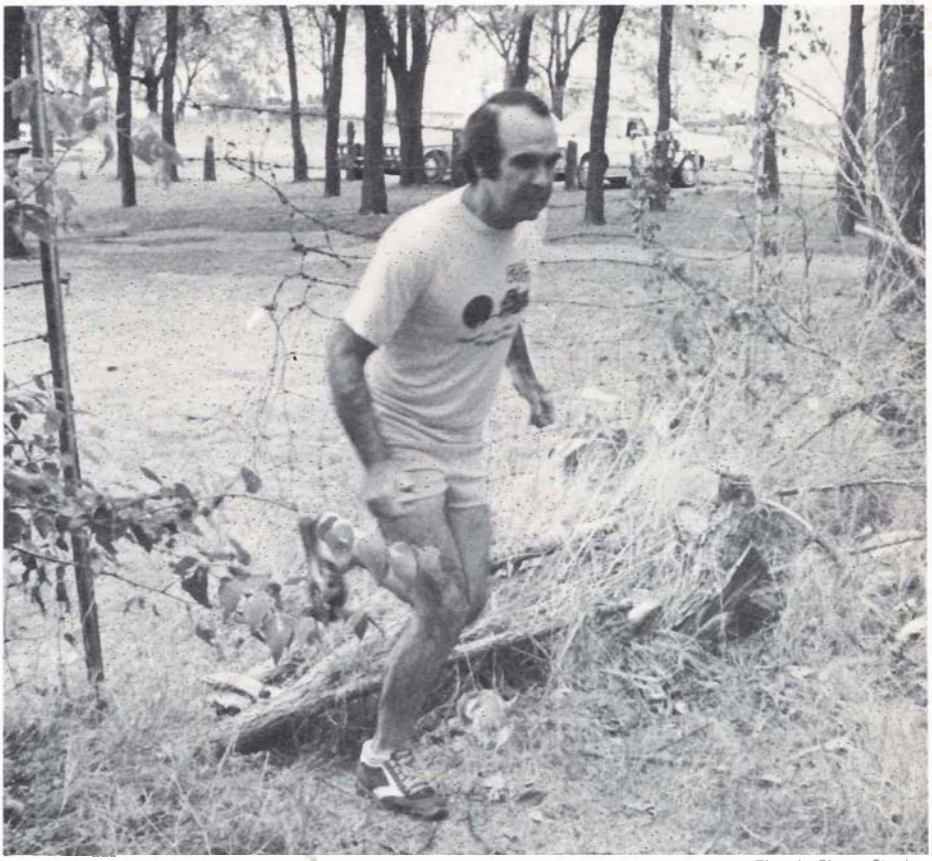


Photo by Sharon Strode

Jogging during lunch break

Such research would seem more lucrative if worked on full time but Locke enjoys working with the students and faculty. "Obviously we could all be making more money working for private companies, but we're here for the student contact," Locke said. "We have the best students on campus."

Chris Casteel

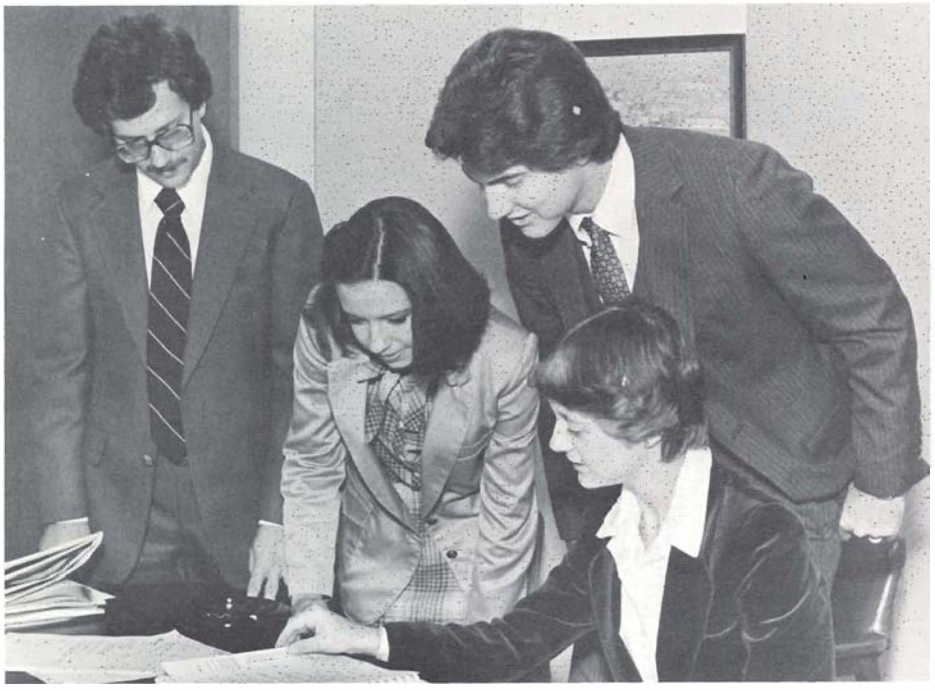
Aldag Leaves CEMS for Phillips

We are sorry to report that Dr. Arthur Aldag has left CEMS to work in the Research and Development Department of Phillips Petroleum Company in Bartlesville. As to reasons for his move this past summer, he said, "I thought it was time for a career change. I had an opportunity to do some applied research and that appealed to me.

"Research in universities tends to be basic, and I wanted to spend more time in the field." Aldag's area of specialization is catalysis, and his departure has "left a hole in the department," according to Carl Locke, director of CEMS.

Aldag is still appointed as an adjunct professor, and he continues to work with a few graduate students. Dr. Aldag sees himself returning to university teaching and research at some time in the future. We wish him well.

Marriage and Chemical Engineering



Marriage and engineering work well together according to (left to right) Charles D. Thomas, Connie C. Primeaux, B. Warren Primeaux, and (seated) Kathleen P. Thomas. All four now work in the process engineering department of Conoco.

Cupid is alive and well in chemical engineering thermo, despite any reputation to the contrary. Charles and Kathleen Thomas and Warren and Connie Primeaux all can testify to the interest of the little fellow in Carson Engineering Center as a home, for it was in their undergraduate engineering classes that these two couples met their future spouses. They later married and now all four are employed in Conoco's process engineering department in Ponca City.

Marriage between chemical engineers may become more common as the enrollment of women increases. At the present time, the computer reports that 78 of the 340 CEMS undergraduates are women (23 percent of the total). In the College of Engineering as a whole, women account for 13 percent of the total undergraduates.

The Thomases married shortly after they graduated in May of 1977. Kathleen was known then as Kathleen Patterson, daughter of Leon Patterson, who received his BS in chemical engineering from the University of Oklahoma in 1950. Charles graduated from high school in Valliant, Oklahoma, where his father, employed by Brown and Root, was involved with the construction of the Weyerhauser Paper Mill.

Charles comments that their working arrangement has gone well. "We sometimes give each other advice," he said, "but we have never been assigned to the same project." He mentioned possible problems that might occur with job location reassignment. "We will have to decide that a change will be best for both of us," he said.

Charles is working in the oil, gas, and coal division on the design of a large cryogenic gas process plant. Kathleen works in the engineering service division as a computer consultant.

Connie and Warren Primeaux married in August, 1980, shortly after they both finished their bachelor's degrees in chemical engineering. Warren is from Tulsa where his father is employed as a chemical engineer by Cities Service. Connie was Connie Carroll from Fairfax, Oklahoma. Both she and her brother Jeff were in chemical engineering, but Jeff is now a petroleum engineer. She works in the oil, gas, and coal division with Charles, and reports that he has been helpful to her. Her job involves the design of distillation columns for gas plants.

Warren is in the special projects division and is working on energy conservation projects in Conoco's gas plants. In addition, he is involved with a computer simulation of gas plants.

Connie believes that marriage of chemical engineers is great because they give each other technical support and can understand one another's problems. "Financially it is also great," she said. (Starting salaries for BSChE were about $23–$24,000 last year.)

Duane Wilson, manager of the process engineering department, stated that the married couple arrangement has worked successfully for Conoco. Their first couple was formed by two single employees who met and married while at Conoco in Ponca City.

The problem of new job opportunities and transfers is considered carefully by Conoco management. Recently one couple was transferred to a refinery in California. One of the couple works in process engineering, and the other is in the mechanics group at the refinery. Duane said, "Conoco is happy with the results of hiring engineering couples." Many companies will not employ husband and wife in the same location, much less in the same department as is the case of the Thomases and Primeauxs.

It is interesting to the faculty to observe this new phenomenon of engineer marrying engineer. The Primeauxs and the Thomases won't be the last, as the women engineers get more numerous and the men wise up.

1979-80 Top Year For CEMS Contributions

The period from October 1, 1979, through September 30, 1980, was the best year in the history of CEMS with respect to contributions from alumni and friends and matching company contributions.

Contributions from alumni and friends during the period were $10,883. The Charles Perry Challenge Grant matched $10,000 of these contributions, pushing the total to $20,883. In addition, company matching contributions were the largest ever, totaling $8,200. Thus, contributions from outside the University to CEMS for the period totaled $29,083!

In addition to these contributions, CEMS will receive additional support from the University administration for special projects in the amount of $20,000. Thus, in effect, contributions by alumni and friends have provided $49,083 to CEMS.

This $49,083 provides the "margin for excellence," which is needed by a unit such as the School of Chemical Engineering and Materials Science to maintain program quality competitive with the best schools in the country.

Contributions from alumni are used principally for refurbishing laboratories, supporting undergraduate scholarships and activities, and maintaining active communications with alumni.

To these ends, $74,000 has been spent on the Unit Operations Laboratory in the past three years. Last year, 16 of the 80 undergraduate scholarships were supported, student projects and trips were sponsored, and the alumni magazine was published.

Support by the University administration will be used mainly for the purchase of laboratory equipment and funding of special projects by individual faculty members. All of these expenditures go beyond the base support budget and provide for our "margin for excellence."

OKCHE CONTRIBUTIONS
Past Four Years

1976–77 (10-1-76/9-30-77) (117 contributors)	$ 1,926.67	(from matching companies)
	9,489.67	(alumni contributions)
	9,489.67	(Perry's matching contribution)
TOTAL	$20,906.01	
1977–78 (10-1-77/9-30-78) (94 contributors)	$10,068.00	(alumni contributions)
	1,155.00	(from matching companies)
	10,000.00	(Perry's matching contribution)
TOTAL	$21,223.00	
1978–79 (10-1-78/9-30-79) (68 contributors)	$10,000.00	(alumni contributions)
	2,975.00	(from matching companies)
	10,000.00	(Perry's matching contribution)
TOTAL	$22,975.00	
1979–80 (10-1-79/9-30-80) (92 contributors)	$10,883.00	(alumni contributions)
	8,200.00	(from matching companies)
	10,000.00	(Perry's matching contribution)
TOTAL	$29,083.00	

1976–77	$20,906.01
1977–78	21,223.00
1978–79	22,975.00
1979–80	29,083.00
GRAND TOTAL	$94,187.01

CEMS Seeks a Computer

CEMS needs a computer of its own! Research and teaching needs of the School have grown so much that it is difficult for us to obtain adequate service on the present University and College of Engineering computers.

Professor Starling's use has increased dramatically and an even sharper increase is anticipated during this year. He hopes to receive a large grant from the Department of Energy for correlation of coal fluids properties. This project would require a large amount of computer time, and the present systems are used to such an extent that it is almost impossible for him to obtain the priority he needs.

Professor Lee, like Dr. Starling, does all his research on the computer. He and his students spend a lot of time in the computer center putting information in and waiting for the results.

In addition, we have expanded the use of computers in the undergraduate curriculum. Students are required to use the computer in nearly all their undergraduate chemical engineering courses, culminating in ChE 4273,

Advanced Process Design. In that course students must make simulation and optimization calculations that can require a large amount of computer time.

All these needs have shown us that we must do what is necessary to acquire our own computer capability.

To this end, Professor Starling has prepared a proposal in the amount of $150,000 for partial support of the purchase of a computer. This proposal was presented to an oil company foundation and has been approved by the foundation. It still must pass approval by higher management.

In addition, he has included partial support of the computer in the proposal for the DOE project. If the DOE project is funded, and the foundation support is forthcoming, we will be able to purchase a VAX, IBM, PDP 1170 or equivalent, which will cost $350,000 to $400,000.

Our plans are that we would donate the computer to the University in return for priority rights. A CEMS job would have top priority over jobs from other sources. We would be forced to set some CEMS priorities because of the large use we will have.

The University Computer Service has been approached about operation of the computer, and they are favorably inclined to help us. This would relieve us of the expense and charge of maintenance and operational concerns.

We hope to have an excellent computing facility here in CEMS soon. Keep your fingers crossed everything breaks for us in the right way.

Gas Chromatograph

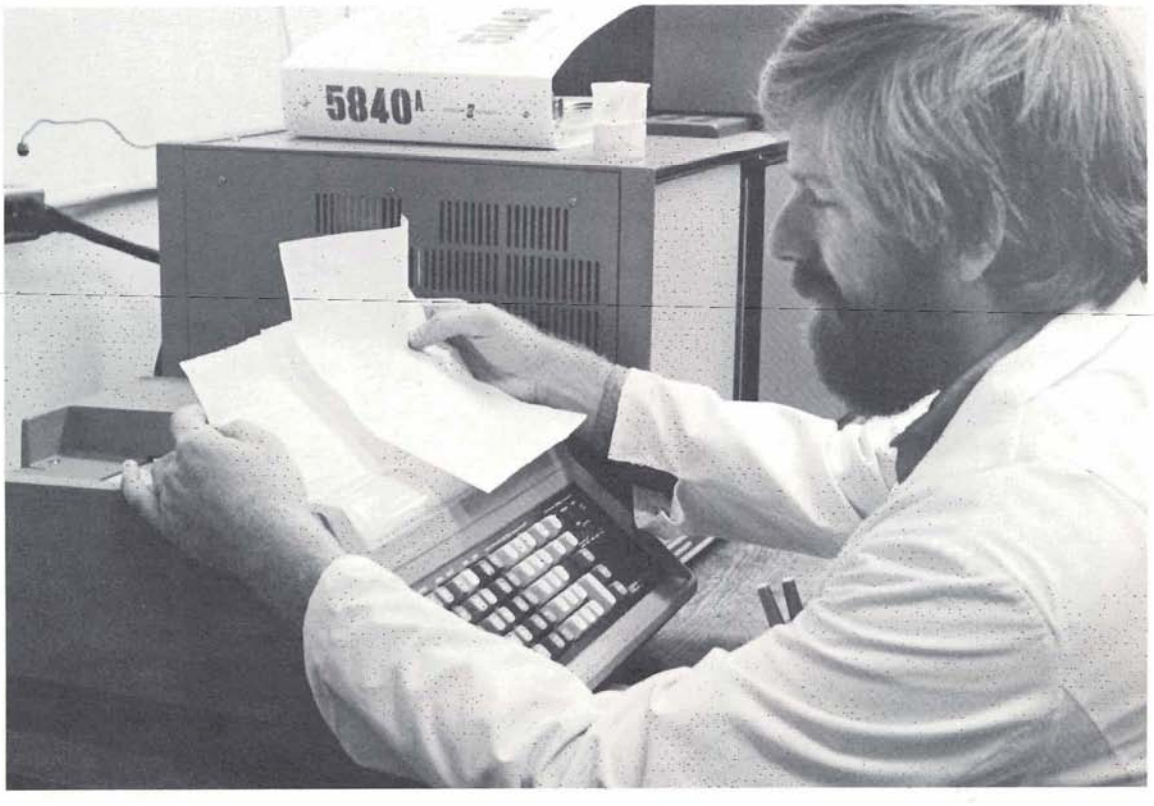
The Unit Operations Lab now has an excellent gas chromatograph which was purchased with University Associates and OkChE monies. This unit HP 5840 is really an amazing instrument. It is operated and controlled by a micro-processor. This same computer provides the read-out in analog form with all the peak areas and concentration information. It has capacity for two columns and two detectors.

We also purchased a flame-ionization detector which is suitable for hydrocarbon mixtures, and we plan to use OkChE monies to purchase a thermal conductivity detector to be added to the unit to increase the applications of the chromatograph.

We plan to use the gas chromatograph for a few of the existing experiments. In addition, we are planning some new experiments designed so that the gas chromatograph with the two columns and two detectors will be an important aspect.

For example, a combustion experiment using different fuels and air/fuel ratios seems ideal. The flame-ionization detector would be used for fuel analysis and the thermal conductivity for analyzing the flue gas.

Dr. Jay Radovich works with the new gas chromatograph purchased with Associates money and matching alumni funds.



OkChE and Foundation for Excellence Boards Meet

Members of the OkChE Board and Foundation for Excellence Boards met with the CEMS faculty on Friday, November 21. This annual meeting is used by the faculty to review activities of the past year and by the board to decide on how to spend the OkChE donations, and for the board to meet some scholarship students.

You might be interested in seeing some of the statistical information the board members received. Table 1 lists the enrollment in the undergraduate programs by class rank. The enrollments of international students and women are also shown. These large enrollments have resulted in large undergraduate classes. Table 2 lists enrollments in the fall 1980 classes. Table 3 lists the pre-enrollment numbers for spring 1981.

Another bit of interesting statistics is the number of people finishing undergraduate and graduate degrees. Table 4 contains information concerning the BS, MS, PhD, and Doctor of Engineering degree recipients in the decade 1970–1980 and the cumulative totals over the years in each category.

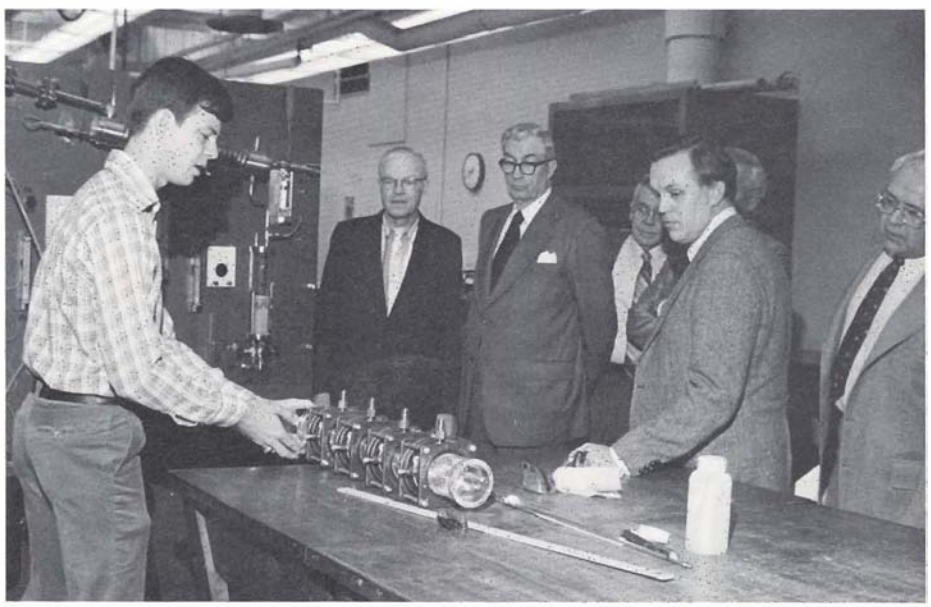
As business of the day, we discussed our search for new faculty with the boards. We have two openings and are looking very diligently for people to fill those positions.

The boards met with the scholarship students once again. This seems to be a highlight of the visit for the board members. The students also enjoy it very much, and some of them have made contacts at the meeting that led to summer and even permanent employment.

The boards also met with Dr. J. R. Morris, provost, concerning the Foundation for Excellence.

The faculty appreciates the interest and support of the board members. Their efforts have been beneficial to the school and will continue to be so.

Combined Boards of OkChE and Foundation for Excellence at their annual meeting at the University of Oklahoma



Board members tour the Unit Operations Lab with the help of Mark Southard, graduate student in chemical engineering

TABLE 1

UNDERGRADUATE ENROLLMENTS

CHEMICAL ENGINEERING

	Freshmen	Sophomores	Juniors	Seniors	Total
Total	100	121	75	44	340
International	10	20	11	14	55
Women	21	22	15	20	78

METALLURGICAL ENGINEERING

	Freshmen	Sophomores	Juniors	Seniors	Total
Total	6	7	7	2	22
International	2	1	3	2	8
Women	0	1	1	0	2

TABLE 2

CHEMICAL ENGINEERING UNDERGRADUATE CLASS ENROLLMENT

		FALL 1980
ChE 2033	Fundamentals (2 sections)	103
ChE 3123	Heat and Mass Transfer	59
ChE 3473	ChE Thermodynamics	71
ChE 4253	ChE Design I	57
ChE 4261	ChE Design Lab (3 sections)	39
ChE 4473	Kinetics	54
ChE 4553	Polymer Science	23

TABLE 3

SPRING 1981
(pre-enrollment as of 12/5/80)

ChE 2033	Fundamentals	36
ChE 3333	Separation Processes (2 sections)	68
ChE 3432	Unit Operations Lab (3 sections)	59
ChE 4173	Corrosion Engineering	25
ChE 4273	Process Design II	46
ChE 4281	Design Lab II	42

TABLE 4

DEGREES CONFERRED BY CEMS

BACHELOR'S DEGREES CONFERRED

	1970–1980	Cumulative Total
Chemical Engineering	276	733
Metallurgical Engineering	42	83
Total Bachelor's Degrees	318	816

MASTER'S DEGREES CONFERRED

	1970–1980	Cumulative Total
Chemical Engineering	83	211
Metallurgical Engineering	18	35
Total Master's Degrees	101	246

PhD DEGREES CONFERRED

	1970–1980	Cumulative Total
Chemical Engineering	49	110
Metallurgical Engineering	3	10
Total PhD Degrees	52	120

DOCTOR OF ENGINEERING DEGREES CONFERRED

	1970–1980	Cumulative Total
Chemical Engineering	1	1

Alumni Notes

Let us know where you are and what you are doing. Please fill out one of the enclosed information cards and send it to us. We will publish the information in our next issue of OkChE.

1910s

Albert E. Gartside, BS '13, 924 Wild Cherry, St. Louis, MO 63130, is retired.

1930s

John R. Cooper, BS '31, 813 S. Race, El Dorado, KS 67042, is retired.
Arlo Scoggin, BS '39, MS '40, 1345 Sleepy Hollow, Coshocton, OH 43812, is a specialist in industrial marketing for General Electric.

1940s

Gerald D. Butterworth, BS '41, 4663 S. Maplewood, Tulsa, OK 74134, is retired.
Henry W. Hennigan, BS '45, 1117 S. Dewey, Bartlesville, OK 74003, works as a section director for Phillips Petroleum.
Gerald L. McCurry, BS '41, BA '51, 6930 E. 62nd, Tulsa, OK 74133, is employed by C. E. Crest as vice president and manager of operations.
William P. Orr, BS '40, 137 Canoe Brook Parkway, Summit, NJ 07901, is president of the engineering group of Combustion Engineering, Inc.
Earl E. Patterson, BS '44, MS '47, 8318 Whitewood, Richmond, VA 23235, serves as general director for special projects with Reynolds Metals.
Kendall C. Purgason, BS, ME '49, 6401 S. Sandusky, Tulsa, OK 74136, is employed by Warren Petroleum as vice president in the manufacturing department.
Frank O. Reudelhuber, BS '48, 2026 Matagorda, Dallas, TX 75232, is self-employed as a petroleum engineering consultant.

1950s

John M. Campbell, Ph.D. '51, 121 Collier, Norman, OK 73069, is board chairman of Campbell Group.
Don Coldiron, BS '54, 50 Madison Ave., Piscataway, NJ 08854, works for Tenneco.
J. W. (Bill) Kongable, BS '51, 817 Rosewood, Dickinson, TX 77539, is superintendent of manufacturing for Monsanto in Alvin.
Frank P. Williamson, BS '50, 13034 Hermitage Lane, Houston, TX 77079, is an engineering associate with Exxon.

1960s

Henry Chao, Ph.D. '67, 6421 Batavia Ave., Wisconsin Rapids, WI 54494, is employed as a research associate with Consolidated Papers.
Ralph R. Hall, BS '64, 6 Marianna Place, Morristown, NJ 07960, is a staff engineer with Exxon working as a senior process advisor for China Gulf's DILCHILL Dewaxing Plant in Taiwan.
Wilson Lee, MS '68, 51 Hearthstone, Bloomfield, NJ 07003, serves as a senior scientist for Hoffmann-LaRoche, Inc. He was elected an active member of New York Academy of Science.
Edwin J. Stahl, Jr., BS '61, 2113 Amhurst, Duncan, OK 73533, is employed as section supervisor with Halliburton Services.
Safdar Waliullah, BS '64, 1015 4th Street SW, Calgary, Alberta, Canada, works as a senior process engineer for PCL-Braun-Simons, Ltd.

1970s

Oladis de Rincon, BS '71, MS '75, Av 69 #73-51, Urb. Los Olivos, Maracaibo, Venezuela, serves as a professor at Universidad del Julia and is in charge of the corrosion lab. She is married to Dr. Nelson Rincon and has two children.
Walter M. Ford, BS '71, 15342 Starbuck, Whittier, CA, was just promoted to supervisor of maintenance and operations of fuel pipeline, Southern California Edison. He and his wife, Diana, have two boys—Bill, 8, and Richard, 5.
Larry Gammon, BS '75, 12402 Tottenham, Houston, TX 77031, now works as a process engineer for Hudgens Engineering.
Robert J. Gimpel, BS '73, 9500 Selkirk, Anchorage, AK 99502, is employed as a production engineer with Sohio Alaska Petroleum Co.
Kevin M. Goin, BS '73, MS '76, Ph.D. '79, 2700 Ernest, Apt. 108, Lake Charles, LA 70601, works in control systems of the petrochemical division of Cities Services Co.
Terry Hight, BS '76, 608 St. Julien, Kenner, LA 70062, is a petroleum engineer with the U.S. Geological Survey.
David Kwok, Ph.D. '70, 23W067 Kings Ct., Glen Ellyn, IL 60137, is a senior research engineer for Amoco Chemicals Corp.
Denis Martin, BS '74, 15926 Walnut Wood, Houston, TX 77084, works as a process control engineer with Setpoint, Inc. He has a daughter, Selena—age 2—and is expecting another child in January.
George V. Ricks, Jr., BS '77, 11626 Featherbrook, Dallas, TX 75228, is employed as a drilling engineer for Texas Pacific Oil Co.
David B. Ruble, BS '78, Box 1600, Midland, TX 79702, is a project engineer with Exxon. He recently presented a paper at the SPE 55th Annual Technical Conference in Dallas.
Woodrow Sun, Ph.D. '73, 3333 S. Graystone Place, Springfield, MO 65804, is an associate professor at Southwest Missouri State University.
Freddy E. Wilson, BS '79, 4851 W. 5100 So., Kearns, UT 84118, is employed as a chemical engineer with Hercules Incorporated Aerospace Division.

CEMS Alumni Dinner

The faculty would like to meet with as many CEMS alumni as possible during the AIChE national meeting in Houston, April 5–9, 1981.

We have contacted AIChE and plans are now being made for a dinner at that time. We would like for all CEMS alumni planning to attend the AIChE meeting, or living in the Houston area, to be aware of the dinner. Several faculty members will be there, and we plan to have a presentation concerning the University of Oklahoma and the department.

We will send out details of time, place, and cost as soon as they are available.

Thanks to you, CEMS gets better and better. Here new director Carl Locke stands surrounded by many of the past issues of OkChE magazine.