March 18, 1966

Eighteenth Annual Report

To The Chemical Engineering Alumni

The Ohio State University

"My Boys Are My Jewels"

March 18, 1966

EIGHTEENTH ANNUAL REPORT TO THE ALUMNI OF THE CHEMICAL ENGINEERING DEPARTMENT AND PETROLEUM ENGINEERING

Dear Jewels:

Once again it is near Spring and the time of the year when my heart feels much lighter when I write to all of you. It is like a large painting where the various classes are depicted in a picture. It really is a wonderful feeling to think of all of you in that my time is growing shorter. Theoretically, I can retire in six years, but from now on I will play it by ear. I still am feeling very good and many times, like Don Quixote, I think I can lick my weight in wild cats.

Many who have and who have not made a contribution, have contributed to the cause this year. Without such help we could not accomplish the things which we do. We have one of the best and most stable staffs in the country and, therefore, it is possible to send these men to meetings to present papers and participate in the newer developments of chemical engineering.

We had a windfall this past year. Mrs. Lucille Roberts, wife of the late Louis A. Roberts, died and left her entire estate to the Department of Chemical Engineering for a fellowship to be known as the Louis A. Roberts and Lucille Roberts Memorial Fellowship Fund. The contribution amounted to $80,000, the interest from which will be the source of funds for the scholarship.

ENCLOSED IS A SELF-ADDRESSED STAMPED CARD WHICH WE WILL USE TO KEEP OUR FILES UP TO DATE. WE WOULD APPRECIATE IT VERY MUCH IF YOU WOULD RETURN IT TO US PROMPTLY. The anniversary classes received a similar card from the College of Engineering, but before we get this information it will be late next summer since they need to process the information to their records before passing them on to us.

Back in 1958 I prepared for Dean Carson a "Domesday" report in which we classified all of our alumni by companies giving many pages of useful information on where our alumni were employed. We want to do this again this year.

59th NATIONAL MEETING OF THE AMERICAN INSTITUTE OF CHEMICAL ENGINEERS

This meeting will be held May 15-18, 1966, in Columbus. The headquarters will be at the new Sheraton-Plaza Hotel located at the corner of Gay and Third Streets. On Tuesday, May 17, 1966, there will be an alumni luncheon for the Ohio State University Jewels. We have held many of these luncheons in the past in various cities, and we hope to have a good turnout this year. If you are planning to attend this meeting and the alumni luncheon, kindly write on the card mentioned above "I WILL ATTEND THE OSU ALUMNI LUNCHEON ON MAY 17, 1966."

THE ANNUAL CONFERENCE FOR ENGINEERS

The Annual Conference for Engineers will be held Friday, May 6, 1966. I do hope that many of you will return for this occasion. This report contains photographs of the anniversary classes who were here last year. There were other members from the anniversary classes, but they were attending other meetings when the photographs were taken.

On the following pages, the program of this meeting is given. All of you should get a notice from the College of Engineering. If you do not receive one, kindly let me know.

THE COVER OF THIS REPORT

Many have asked me why we call our men "Jewels". Some have guessed that the idea originated with the statue of Ohio's Jewels such as Grant, Sheridan, etc. This statue is on the grounds of the State Capitol.

The idea goes back much further to Roman times as you will note from the cover, except I do not know whether they had cigars in those days. In my many years at Ohio State, I have thought of our graduates who became giants in the chemical industry. I would hesitate to give them by name as it would take at least 60 pages to list all of them. The first quarters of the Chemical Engineering Department was in the so-called "Black Hole of Calcutta". This was located in the basement of the Chemistry Building which is now known as Derby Hall. There were no windows in the Spring and Summer and the temperature would approach 100°F. In spite of such surroundings, giants (our alumni) emerged. In 1925 we moved from the "Black Hole" to what Dean McQuig called "The Snake Pit of Stromboli". Dean Carson said that even though Chemical Engineering had the poorest of physical facilities, we were clean and good housekeepers. The alumni classes who were housed there until 1959 have made names for themselves. In that group there are presidents, vice-presidents, managers, technical associates, one president of a university, deans and professors in many of the large universities of today. We did not need jewels such as diamonds and rubies for our men were more than that - they are jewels in the true sense of the word.

The following is the story of the jewels (1) in Latin and for those of you who flunked Latin, I have translated it (I hope) into English:

Cornelia and Her Jewels

Proximum domicilio Cornēliae erat pulchrae Campānae domicilium. Campāna erat superba non solum formā suā sed maximē ōrnāmentis suīs. Ea laudābat semper. "Habēsne tū ūlla ōrnāmenta, Cornēlia?" inquit. "Ubi sunt tua ōrnāmenta?" Deinde Cornelia filios suos Tiberium et Gāium vocat. "Puerī meī," inquit, "sunt mea ōrnāmenta. Nam bonī līberī sunt semper bonae fēminae ōrnāmenta maximē clāra."

English Transalation:

Next to the home of Cornelia was a beautiful palace of Campana. Campana was not only proud and vain, but beautiful hereself. She was always decked with many jewels. She was always bragging and showing off. "Have you any jewels, Cornelia?", she asked. "Where are your jewels?" Then Cornelia called her sons Tiberius and Caius and said, "My boys are my jewels. In fact, good boys are always jewels with the greatest sparkle and brilliance that any good woman can have."

FELLOWSHIPS, SCHOLARSHIPS, GRANTS-IN-AID AND OTHER CONTRIBUTIONS TO THE CHEMICAL ENGINEERING DEPARTMENT

Once again, we are very thankful for the generosity of the many companies and agencies listed below. Without their help it would be impossible to have a graduate program. The laboratory costs for the undergraduate program would be prohibitive, if it was not due the generous donations of chemicals and, in many cases, laboratory equipment. The under-

graduate scholarships have helped many worthy and scholarly students, especially those on the five-year combined program in which an outstanding student can obtain a Master's degree with an additional quarter and a half of work.

The grants-in-aid have done much for the department. In some cases, it has enabled us to send our faculty members to national meetings to present papers and to keep up with the technical explosion in chemical engineering and to participate in national meetings, presiding at meetings at which they are officers. In some instances, the grants-in-aid are used for graduate fellowships. This is indicated in the table below:

FELLOWSHIPS

1. American Oil Foundation
2. Dow Chemical Company
3. Diamond Alkali Company
4. Koppers Company Teaching Fellowship
5. Shell Companies Foundation
6. Union Carbide Corporation - Chemicals Div.
7. Lubrizol Corporation
8. Procter and Gamble Company
9. Ohio State University
10. National Science Foundation
11. Louis A. Roberts and Lucille Roberts Memorial Fellowship Fund

UNDERGRADUATE SCHOLARSHIPS

1. Dow Chemical Company
2. Goodyear Foundation
3. Koppers Company, Inc.
4. Monsanto Company
5. Pittsburgh Plate Glass Foundation
6. Standard Oil of California
7. Union Bag-Camp Paper Corporation
8. Universal Oil Products Company

GRANTS-IN-AID AND OTHER CONTRIBUTIONS

1. American Cyanamid Company*
2. Diamond Alkali Company
3. Camille and Henry Dreyfus Foundation, Inc.*
4. Dow Chemical Company
5. Dow Corning Corporation
6. E. I. du Pont de Nemours and Co., Inc.
7. Esso Research and Engineering Company*
8. Hercules Powder Company
9. Mead Corporation
10. Monsanto Company
11. Pittsburgh Plate Glass Foundation
12. Union Carbide Corporation, Chemicals Division
13. Universal Oil Products
14. Socony Mobil Oil Company, Inc.

*Money also may be used for a pre-doctoral fellowship.

ENROLLMENT

The undergraduate enrollment is a little above last year's figures. This is also true of the graduate enrollment. These graduate students come from over 35 schools in the United States and the world.

PROCESS DYNAMICS LABORATORY AND DR. DRYDEN

We are very happy to have Dr. Dryden back with us again. He did an outstanding job in his two years at Kanpur, India at the Indian Institute of Technology. He was given several awards and the Design Award in Chemical Engineering at the Indian Institute of Technology is known as the Charles E. Dryden Design Award. He is now installing in our laboratories equipment for process dynamics. The full cost of which will be at least $50,000. Through the contributions of the alumni and grants-in-aid from chemical companies,

we contributed $25,000 toward this equipment and have applied to the National Science Foundation for matching funds of $25,000. In time, we will spend at least another $25,000 on this type of equipment. I do hope that the alumni coming back on ACE Day will be able to see the equipment partly completed. Through the efforts of Mike Kukla, our technician, and Kelly Latham, our mechanic, it is a job well done.

DECEASED, LOST, STRAYED, OR STOLEN ALUMNI

It is with a heavy heart that I receive notices of so many of our alumni dying. The list is given in this report and we believe it to be correct as far as we know.

We still have some mavericks - better known as lost, strayed or stolen alumni. If you know of the address of anyone appearing on this list, we would appreciate it if you would call it to our attention. Many alumni have helped materially with this information. When we loose an alumnus, I do have quite an empty feeling as once an Ohio State Chemical Engineer always an Ohio State Jewel.

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS

Our graduates are 100% in joining the American Institute of Chemical Engineers upon graduation. As I have mentioned several times in these reports, I wish that we could get more of the older chemical engineers into the Institute. Membership has done much for me in offering opportunities to meet new people, keep abreast with our expanding technology and above all it is with a sense of pride that I wear my Institute button.

IF YOU ARE NOT A MEMBER, I WILL BE MORE THAN HAPPY TO SEND TO YOU AN APPLICATION BLANK FOR MEMBERSHIP IN THE INSTITUTE.

SALARIES

The salary offers are listed in this report. They still seem to be skyrocketing. One of our Master's men has three different offers at $900 each. Other Master's men are in the $800 class, and our Bachelor's go from $750 up. If you compare our salaries with those published in the CHEMICAL AND ENGINEERING NEWS, and CHEMICAL ENGINEERING PROGRESS, the Ohio State chemical engineering salary offers are higher than these. Where it is going to stop and when I do not know. It puts quite a burden on the men who have been out five or six years. The list is not complete as some of the men are still taking trips.

OHIO STATE CHEMICAL ENGINEERS

We are still producing engineers rather than pseudo-scientists. Many schools are putting their emphasis on so-called engineering sciences, but we feel that those men are really not ready to function as an engineer when they graduate. Some think that by sitting on their tail and deriving equations which contain many assumptions, 90% of which are incorrect, they can design or run a plant. We give as much, if not more, mathematics as other schools. We do give the so-called engineering sciences, but we do not stop there. This is followed by our work in the Unit Operations and a heavy dose of laboratory work in which the gospil, as it always has been, is a course in blood, guts, sweat and tears. This is also true of chemistry which has been minimized in many chemical engineering curricula. We still believe in inspection trips. Many companies have given us verbal bouquets for the training of our chemical engineers and have asked us to continue what we are doing, of course, keeping up to date.

THE THOMAS ALVIN BOYD SCIENCE SEMINARS IN CHEMICAL ENGINEERING

The College of Engineering of The Ohio State University is proud to present the distinguished speakers in this list of Thomas Alvin Boyd Lectures. Faculty members in engineering and the physical sciences will be present at these meetings and will stand ready to relate the topics of the talks to the research and teaching programs at Ohio State.

Presiding: Dr. R. S. Brodkey, Professor, Chemical Engineering, The Ohio State University

October 14, 1965: Professor L. E. Scriven, Department of Chemical Engineering, University of Minnesota: "Boundary Conditions in Fluid Mechanics"

November 14, 1965: Professor A. B. Metzner, Department of Chemical Engineering, University of Delaware: "Fluid Mechanics of Polymeric Melts and Solutions"

January 20, 1966: Professor Thomas J. Hanratty, Department of Chemical Engineering, University of Illinois: "Stability of the Interface for a Horizontal Air-Liquid Flow"

February 17, 1966: Professor H. L. Toor, Department of Chemical Engineering, Carnegie Institute of Technology: "Chemical Reactions in Non-Homogeneous Turbulent Fluids"

March 31, 1966: Professor S. K. Friedlander, W. M. Keck Laboratory of Environmental Health Engineering, California Institute of Technology: "Facilitated Transport: The System Oxygen-Hemoglobin Solution"

April 21, 1966: Professor Peter Harriott, School of Chemical Engineering, Cornell University: "The Effect of Mass Transfer on the Yield of Chemical Reactions"

May 12, 1966: Professor Robert E. Sparks, Engineering Division, Case Institute of Technology: "Engineering Problems in the Artificial Kidney"

All seminars will be held in the Chemical Engineering Building. Additional information regarding the seminars may be obtained by writing Dr. Robert S. Brodkey, The Ohio State University, 140 W. 19th Avenue, Columbus, Ohio 43210.

Dr. Thomas Alvin Boyd, B.Ch.E. '18, Ch.E. '38, D.Sc. '53 (Hon) and D.Sc. (Hon.) '52, The University of Detroit, is an internationally known authority on combustion and fuel chemistry. He was an early co-worker with Dr. Charles F. Kettering in the original General Motors Research Laboratories in Dayton and is credited with being one of the early pioneers in the development of tetraethyl lead. As a life-time associate and close friend of Dr. Charles F. Kettering, he authored "Professional Amateur", a biography of Charles Franklin Kettering, and "Prophet of Progress" selections from the speeches of Charles F. Kettering. Dr. Boyd has thoughtfully made available to the University the income from his book, "Professional Amateur" to be used in sponsoring lectures which will bring together persons with a variety of backgrounds but mutual interests.

LOOKING FORWARD TO SEEING MANY OF YOU ON FRIDAY, MAY 6, 1966, AND WITH KINDEST AND WARMEST REGARDS.

Sincerely yours,

Joseph H. Koffolt, Chairman
CHEMICAL ENGINEERING DEPT.

ACE DAY

Friday, May 6, 1966

8:30 a.m. to 9:30 E.S.T. Registration – Ohio Union, West Ballroom, 12th Avenue and N. High Street
a rallying point –– make your day's schedule

All Morning: Industry-Education Exchange
Department reacquaintance groups, Faculty consultation, alumni class reunion centers, student interviews and discussions

9:30 a.m. to 11:15 a.m. Personalized inspection tours, in small groups, informal tailored to your interests

Highlights:
New Engineering and Science Facilities:
New Engineering Administration Building
New Buildings for Metallurgical Engineering, Ceramic Engineering, and Mineralogy
Aeronautical-Astronautical Research Labs
Antenna Lab Field Station

24-Story Residence Halls
New North Residence Halls
OSU Reactor
New Medical Sciences Center
Site of University College
Site of Center for Tomorrow

11:30 a.m. LUNCHEON SESSION – Ohio Union Ballrooms
Suggestions: Share a table with your class, or faculties, and students of your department. Invite a student to be your luncheon guest.

Presiding: Marion L. Smith

Recognition of Alumni Classes of 1916, 1921, 1926, 1931, 1936, 1941, 1946, 1951, 1956, 1961 and 1966 with special recognition to the classes of 1916 and 1941.

Recognition of Engineering Honor Students
Presentation of Distinguished Alumnus Awards
Presentation of Texnikoi Distinguished Alumnus Award
Recognition of former Alumnus Award Winners
Recognition of President's Club Members

"Doorways for Digits" – J. W. Schaefer, Director, Data Communications Laboratory, Bell Telephone Laboratories, Holmdel, New Jersey

CHEMICAL ENGINEERING DEPARTMENTAL PROGRAM
13th ANNUAL CONFERENCE FOR ENGINEERS AND ARCHITECTS
FRIDAY, MAY 6, 1966
CHEMICAL ENGINEERING BUILDING – ROOM 207

2:00 p.m. Departmental Program
Presiding: **Joseph H. Koffolt,** Department Chairman
Welcome to Alumni and Anniversary Classes of 1906, 1911, 1916, 1921, 1926, 1931, 1936, 1941, 1946, 1951, 1956, 1961.

Presentation of Student Awards in Chemical Engineering
American Institute of Chemical Engineers – Annual Scholarship Award:
Presentation by Herbert Barnebey, President, Barnebey-Cheney Co., Columbus, Ohio and Chairman of the Central Ohio Section of the American Institute of Chemical Engineers

Central Ohio Section, American Institute of Chemical Engineers –
National Student Contest Problem Award
Presentation by Herbert Barnebey, President, Barnebey-Cheney Co., Columbus, Ohio and Chairman of the Central Ohio Section, American Institute of Chemical Engineers

The M. W. Kellogg Company, Division of Pullman Incorporated
The M. W. Kellogg Design Award in recognition of outstanding achievement in the Chemical Engineering Laboratory and Design courses, The Ohio State University, Department of Chemical Engineering.
Presentation by Dr. Aldrich Syverson, Professor, Chemical Engineering Department, The Ohio State University

American Institute of Chemists Professional Award

The Golden Anniversary Class of 1916:

LIVING	DECEASED
Charles G. Duncombe	Emil Harold Jakob Balz
James Walter Elwood	Howard James Young
Herbert S. Coith	Hanford A. Thirey
Fontaine R. Henninger	K. W. Reed
Raymond A. Jameson	Wilson Forrest Brown
Edward H. Loeb	Lloyd Elmore Smith
Richard Maeder	M. A. Muskopf
William T. Maidens	
Harold E. Mersereau	
Lowell H. Milligan	
Norman A. Mills	
William L. Mong	
Frank R. Porter	

2:30 p.m. Those who wish to socialize may do so in the Unit Operations Laboratory where refreshments will be available until 5:00 p.m.

2:30 p.m. to 3:20 p.m. CHEMICAL ENGINEERING EDUCATION IN INDIA
By Doctor Charles E. Dryden
Professor, Chemical Engineering
Room 207, Chemical Engineering Building
The talk will be illustrated by colored slides.
Your wives would be interested in this lecture.

OR

Those who are interested and would prefer to see the research facilities of the Department can do so.

Room 436 – Properties of Azeotropes – Dr. W. B. Kay

Room 414 – Surface Transport and Transient Adsorption – Reaction Research – Dr. A. Syverson

Room 332 – Mass Transport Phenomena of Fluids in Heterogeneous Media – Dr. C. J. Geankoplis

Room 221B–Chemical Engineering as Applied to Environmental Control – Dr. T. L. Sweeney

Room 425 – Phase Behavior of the Trempeleau Reservoir, Morrow County, Ohio; Miscible Displacement Studies of Clinton Sand – Professor H. C. Slider

Room 306 – Problems of Fluid Dynamics in Chemical Engineering Mixing, Turbulence, etc. – Dr. R. S. Brodkey

Room 310 – Chemical Kinetics of Flow Reactors – Dr. T. E. Corrigan

Room 405 –
Engineering Experiment
Station – Coal Research, Petroleum Refining Research, Reaction Mechanism Studies and Development of Analytical Methods – Dr. E. E. Smith – 156 W. 19th Avenue

Room 314 – 417 Process Dynamics, Control, and Simulation – Dr. C. E. Dryden

Room 29 – Nuclear Chemical Engineering – Dr. C. E. Dryden (Special arrangements can also be made to see the OSU Nuclear reactor at Kinnear Road.)

Water Resources
Center – Water and Waste Water Treatment Process – Professor W. D. Sheets – 1791 Neil Ave.

4:00 p.m. SOCIAL HOUR – Unit Operations Laboratory – Room 117

GOLF

Some ACE registrants may prefer a round of golf on the beautiful OSU courses, instead of the more stimulating learning experiences on campus. All right, tee times will start at 2:30. Professor Kenneth Cosens will be in charge of the golfing arrangements. Please indicate your interest in a starting time on your registration card and list any prior arrangements or preferences for playing partners. Professor Cosens will give you final arrangements when you check in at registration.

BIOGRAPHICAL SKETCH OF THE SPEAKER

Jacob W. Schaefer, missile guidance expert, is Director of the Data Communications Laboratory for the Bell Telephone Labs.

Upon graduation in mechanical engineering from Ohio State University in 1941, he became a member of the technical staff of Bell Labs. Initially concerned with the design of electronic anti-aircraft directors, Mr. Schaefer was soon called to active duty in the Army Ordnance where he was involved with the design and development of anti-aircraft fire control equipment and guided missiles. In 1944 Captain Schaefer proposed a missile system which included the principle of Command Guidance, for which he received the Army Commendation Medal.

From his basic patents on Command Guidance, the entire family of NIKE-AJAX, NIKE-HERCULES, NIKE-ZEUS and NIKE-X weapons evolved. Mr. Schaefer has devoted much of his professional career to the development of these weapons which have played key roles in the defenses of our country.

From 1963-65, for his leadership as Director of the Kwajalein Field Station in experimental work with the NIKE-X system against ICBM's launched from Vandenberg Air Force Base, the Army awarded him the Outstanding Civilian Service Medal. Following his return to the United States, he was appointed as Director of the Data Communications Laboratory - responsible for equipment that transmits nonvoice traffic over the telephone system. This work ranges from theoretical analysis of new data systems to the final design of equipment. He has been active in Boy Scout work for 11 years and served as member and president of his local school board. A tennis enthusiast, he and his wife, Mary, have three children.

ACE DAY 1965

Many who attended the sessions on ACE Day last year requested, if possible, a copy of the talks given by Mr. Edward Slowter and Dr. Aldrich Syverson. It was my thought that many who did not attend would be interested, also.

Dr. Syverson is now giving one of the finest design courses in this country, utilizing the student's background in all the courses he took up to the Spring Quarter of the fifth year.

Ed Slowter is known to many of you. He has given much to our College and Department. His work on the Committee of 100 is an example of the unselfishness of his time to the University.

HOW TO PREPARE GRADUATES TO THINK IN THE "TOTAL SYSTEM" CONCEPT

By Aldrich Syverson, Professor,
Chemical Engineering, The Ohio State University
Presented at the Annual Conference for Engineers
The Ohio State University, April 30, 1965

In recent times we have heard many statements to the effect that technology is one of the most important forces in the world today. The role of the engineer in bringing this about has been a major one. The responsibility for the magnitude and the direction of this force is awesome and presents one of the greatest challenges of all time to the engineering profession. Leadership in the future will not be assumed by those who know a great deal about a little or by those who know a little about a great deal. At least 20-20 vision will be needed on a 360 degree horizon and in addition, at times, a crystal ball when all other organized and systematic approaches fail. If our profession is to play an important role in guiding this force, mutual assistance and the sharing of this responsibility by engineers in industry, government and education are requisite. The degree of success we achieve may well depend upon how well we can work out our problems together. I am sure this is one of the more important underlying reasons Dr. Carson, Dr. Bolz, and Dean Smith have had in founding and encouraging this Annual Conference for Engineers and Architects.

It is my privilege today to discuss with you one aspect of our work in engineering education. Engineering education begins with the understanding of some of the basic laws of nature and the mathematical relationships and their manipulations to describe the behavior of simple phenomena. Simplifications such as "assume isothermal steady state conditions", "neglect friction", or "assume the gas to be ideal" are very common and necessary at this early stage. The problems are relatively simple and the solutions are specific.

The next level in the academic program deals with the application of science and mathematics to physical and chemical phenomena which underlie a number of areas of engineering. Now the limitations or restrictions are relaxed somewhat. The problems are more complex and may encompass several fundamental principles; examples are studies in fluid mechanics, thermodynamics, field theory, solid state physics and dynamics. Concepts and methods for dealing with the physical and chemical changes encountered in these areas are basic to the creative design and a quantitative understanding of the operation of many engineering components or systems. I should like to point out that the problems are becoming larger and larger in scope. It is becoming apparent now that there may be more ways than just one to "skin a cat". In fact, from a technical standpoint only, there may be several ways in which the cat can be equally well "skinned". For example, for the relatively simple case of designing a heat transfer device for cooling a fluid - first of all, there is a wide choice of types of exchangers - then if the only objective is to cool the fluid, there is a wide range of conditions over which this might be accomplished such as different coolant temperatures and flow rates. The question then becomes which one shall we select? All the designs will do the job. What shall be our basis for judgment? Is it cost? Is it return on investment? Is it safety? Is it reliability? It is usually some combination of all of these and probably others depending upon the particular application. Thus, obtaining an answer to the question of defining the "best heat transfer device" is not simple and involves first of all imagination to conceive of all possible ways to effect the change; then to estimate design details by appropriate engineering calculations; and finally to arrive at a choice based upon economic or other factors. So far, our discussion has led to the design of a machine or a part of a larger unit - such as a heat exchanger, a control device, a distillation column, or a machine part. A great deal of new knowledge has come from research and development in recent years to enhance our ability to produce sound engineering designs with less and less empirical data. Improved materials of construction; much improved methods for dealing with engineering problems through the use of mathematics; a better understanding of the fundamental phenomena involved; the ability to manipulate more complex problems with the aid of computers - all of these have led to new high levels of engineering achievement and new purposes and methods in engineering education.

If we view the whole field of engineering, significant progress is developing in at least two important

directions - in the depth of understanding engineering phenomena at the micro or molecular level - and in the breadth of scope with which we can conceive and attempt to understand the interactions of complex macro systems.

It is my belief that students in engineering should be exposed to both views even though their life's work may be centered in either end of this spectrum, but more than likely, their responsibilities will lie somewhere in between. I am not speaking of the comparison of the generalist and the specialist - the optimization of macro systems, although encompassing a broad range of engineering, can be quite a highly specialized field. New optimization procedures are becoming intricate and elaborate and so large that it is becoming necessary to optimize the optimizer.

From the viewpoint of an educator, I am concerned about providing opportunities for students to think - in fact, **demanding** them to think - and to provide situations that will require the understanding of basic principles and the synthesis and manipulation of these to arrive at reasonable engineering solutions. To ask the right questions is not enough; useful answers are needed. If Mother Nature has been so kind as to provide a simple well ordered system for which there is a neat analytical description, we should rejoice and pursue the complete analysis with all vigor. On the other hand, many engineering problems are just not that simple. If disposing of these problems by "throwing them out the window" or ignoring them were an acceptable answer, life for the engineer would be considerably easier and probably very dull to many. Frequently workable solutions to complex problems are required before the complete theory and understanding have evolved.

Advances in both depth and breadth of scope are coming to the forefront at a rate that is making a frustrating situation for practicing engineers - and educators as well. Just "keeping up" is requiring more and more effort and a fair rate of speed is necessary just to stay even. All fields of engineering education are changing along with this technological revolution. You will hear much more about these in specific areas of engineering in the sessions this afternoon.

A short while ago,, I referred to one of the expanding areas of engineering - that of increasing our capabilities to deal with more complex systems. Although each area of engineering has its own specific problems, the general educational purposes and values as well as many methods of attack are common and, therefore,, might be of interest to all engineers. Furthermore, the actual application to large systems requires participation by engineers from many fields and an understanding of the overall problem and objectives by everyone. I should like to express a rather liberal interpretation of "system" by paraphrasing the definition used by the thermodynamicist.

"A thermodynamic system is that part of the universe the **properties** of which are under consideration"

or in our terms,

A system is that part of the universe the **behavior of which** is under consideration.

By this definition the physical size could by anything from that of the molecular level to that of a galaxy. I hasten to add that as academic exercises we are not solving massive problems using "out of this world techniques" and super machines. I do wish to point out that in general improvement of design methods and analysis of the behavior of large systems is an area of growing importance and that to consider the problems in terms of the total system can be a useful education device even though the problem is modest. To illustrate this I would like to take a specific example of a course in Chemical Engineering Process Design now in the experimental stages. Although this type of thinking and course development is being done in other areas of engineering, I shall limit my remarks to the Chemical Engineering aspect since this is the field with which I am most familiar.

The course I wish to describe is offered as an undergraduate requirement in the last quarter of the fifth year. The purpose of the course is to bring about a reappraisal and review of a number of basic principles; to combine these into working system; to simulate the operation and behavior of the system for appropriate ranges of significant variables and to choose an optimum arrangement, design and set of operating conditions. Only a minimum of data is provided and there are no restrictions or limitations on the design. As far as possible, optimization of the entire process is sought.

The system is a relatively simple one as far as chemical processes go - a reactor followed by three separation units. What background do the students have to solve this problem? They would have completed courses in thermodynamics, reaction kinetics, transport phenomena, organic and physical chemistry, chemical engineering economics, unit operations, instrumentation, chemical technology, differential equations and digital computer programming - all of which are necessary and basic to the problem. So that you might get some "feel" for the problem, let me outline the salient points associated with the reactor - in this case one of the four major components of the system.

The process involves a high temperature single phase gas reaction. The principal desired reaction

is thermodynamically reversible - simultaneously an unwanted reaction also occurs. If only a part of the raw material is converted, less of the unwanted material is formed, but more of the raw material must be separated, purified and sent back to the system. Depending upon a number of circumstances, both internal and external to the reactor there is a "best way" to design and operate the reactor. The major variables include temperature, pressure, feed rate, and the configuration of the reactor itself. The solution involves sets of simultaneous differential equations which satisfy the conditions of kinetics, thermodynamics, heat transfer, and fluid flow. Once the basic equations have been developed, the general solution in terms of certain key variables is programmed for a digital computer.

It is then possible for the student to design a whole series of reactors with almost no additional effort and with less than one minute of computer time per design. (Several days of calculating would be necessary to do this by hand.) He can readily observe the importance of each of the design factors even though factors such as the reactor tube diameter enter into the design in a very complicated way. The student can ascertain under what circumstances certain variables are most important and critical in the design and operation. He gets a "feel" for the dynamics of his design and thereby can gain a kind of judgement impossible to achieve in the past. He now has the opportunity to think, to visualize and to explore in terms of the "total system" for rather complex problems. Actually, more effort is spent on the fundamentals and how these are related than was possible a few years ago.

Similar treatments are carried out for the other major components of the system - the separation and distillation units. In theory, then it should be possible to establish a master program to have the computer optimize the whole system. We have not had the time even to begin such an ambitious task for the completely general automatic program and in my opinion, it would not be desirable or feasible for this course. It is up to the students to develop their own strategy and to examine a number of cases that are most promising based upon their knowledge and experience with each component. So far this has turned out to be a reasonable approach and some rather unique logic is displayed.

One of the results we hoped might accrue from this approach was that of giving the young engineer a better method for design as well as some tools for gaining a better insight and judgement along with a rigorous analysis and solution to the problem. Every effort is made to avoid getting into the position of the German lad many years ago who was attending a university. The boy's father had not had an opportunity to get a formal education, but he was eager to have his son go to college and was making a great sacrifice to do this. The son did well in his studies and in the beginning kept his father informed about his progress. As time went on, the relationship became more distant and the father called the son home to explain what he was studying.

The young man explained that it was becoming more and more difficult to discuss the advanced ideas with his father who had never studied these subjects and knew little about them. The son at last decided that he could illustrate an exercise in logic by proving that his father wasn't there. The argument went as follows:

"Father, if you were in Berlin you would not be here. Right?"

"Right," said the father.

"If you were in Heidelberg, you would not be here. Right?"

"Correct," said the father.

"If you were not in Heidelberg and you were not in Berlin, then you would be elsewhere. Right?"

"Right," said the father.

"Well, then if you are elsewhere, you cannot be here."

The father thought about this for a moment, became very angry with this nonsense and slapped his son in the face.

"Father, why did you strike me?" asked the son.

"How could I have struck you? You just proved that I wasn't here!"

The role of the engineer in the next decade or two will most certainly change. Even now, many routine design functions are done by machines and this will be extended to many other engineering activities. Searches into the workings of nature and the discovery of new materials and physicochemical phenomena will most certainly continue at an increasing pace. Assembling these into large workable efficient systems for communications, transportation and production of goods and services is becoming increasingly more important. At least an awareness of the most important factors in a system is the first step toward developing sound engineering judgement and purposeful objectives. As engineering educators we must pursue our work with the same dynamic force that has produced the technology we teach - always seeking new teaching methods and teaching aids; experimenting, evaluating, rejecting the useless and adopting that which holds most promise. Then lest we forget that all this is for people – not for machines – and that certain guiding principles change little with time, I

would like to close with a comment about education made more than two thousand years ago by Isocrates,

"Whom, then, do I call educated? Those who manage well the circumstances which they encounter day by day and who possess a judgement which is accurate in meeting occasions as they arise and rarely misses the expedient course of action."

Isocrates in "Panathenaicus"
436-338 B.C.
Greek Orator

THE ALUMNI STAKE IN OHIO STATE UNIVERSITY

E. E. Slowter, B.Ch.E. 1934, M.Sc.'35, Ch.E. '39,
Vice President, Battelle Memorial Institute
April 30, 1965
Organization Chairman - Committee of 100 -
College of Engineering

Engineers are accustomed to reports, and this will be just that: a status report on your current stake in your University. As with all reports, I had to review the past, to give you some view of the present and future. Part of this review led through past reports of our Chairman, Elliott Kimberly, who has spoken to you on previous ACE days, and who is here again today. As I read these, I could see the hours he had spent in working for a better College of Engineering, and the miles he put on his various Chrysler cars in driving to Columbus for all sorts of meetings. Hours and miles that were totally for an intangible purpose. Kim doesn't even live in Ohio, but he does understand that as a citizen of the United States and the world, he does have a stake here.

What of the rest of us alumni: the few who are here today and the greater number who are not here but are part of us? We do, of course, have a small personal stake in what OSU is and becomes; because, in a vicarious way, its accomplishments reflect on us as graduates. But far more important, is our collective stake in what OSU accomplished here in improving educational levels for the whole state; in becoming the outstanding engineering and science graduate center of the Midwest; and providing the technical background and support that can raise the economic level of the whole country. All intangibles you may say, as far as the alumni are concerned. But what is done here and in other schools throughout the world will effect all of our tangible values henceforth, just as the action of the Legislature in establishing Ohio State University in 1870 was one part of the chain in determining your tangible presence here today.

What is the Committee of 100? It is really a committee of the whole; you are all invited to be a part of it – no initiation fee, no dues, no secret password – just a genuine concern for OSU's College of Engineering. As a practical matter, not all of you feel you have time for direct activity, but some of you who do, have volunteered to act as sparkplugs to generate various activities to make our College of Engineering one of the best in the world. Over 130 of you have agreed to be these sparkplugs and some 60 of this group have agreed to act as county representatives, to represent the College of Engineering and the University in your local area. If other of you would like to join, see me after this meeting or drop me a note. The duties have not been onerous, but the organization has been in existence when needed, and, when needed, has been effective. Primarily our activities have been to acquaint our local representatives in the legislature with the needs of the College, as they fit in with those of the total University. We have given support to the intangibles of morale, and the esprit de corps that create a great university. As a practical example, we gave our complete support to the bond issue of November 1963, from which the present funds for planning and construction are now being derived.

Our Alumni group has supported other groups in united efforts for developing the University. You have probably all recently received the 26th Report from the Development Fund, showing how alumni donations have made possible the establishment of incentive awards, which the Dean may grant to faculty members who have made unusual achievements or contributions to the College program. These incentive awards, while still small in number and financial amounts, have been extremely beneficial in making it possible for the College to recognize and honor its high achievers. It is through programs of this kind, that the outstanding members of our faculty can be stimulated, and additional eminent faculty attracted to OSU.

What have the University and the College done with this support? In the case of the Alumni Awards for Distinguished Teaching, five faculty members of the Engineering College have received this award in recognition of their outstanding contribution as classroom teachers. These have been Professors R. H. Zimmerman, M.E., F. C. Weimer, E.E., R. C. McMaster, Weld.E., H. E. Wenden, Mineralogy, and W. T. Morris, I.E. Significantly, no other College in the University has received more awards. Still another evidence of our outstanding faculty are the National Outstanding Teacher Awards presented by the American Society of Metals. In the past five years, three OSU professors of metallurgical engineering have been honored as recipients of this $2,000 award. These men were Professors Joseph

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Spretnak, George St. Pierre, and John Hirth.

In the area of physical facilities, the 1963 bond issue has provided funds from which plans for the following facilities have been developed:

Materials Engineering and Science Building
Engineering Classroom & Laboratory Building
Electronics Laboratory
Systems Engineering Building
and
Aerodynamics & Propulsion Laboratories

Construction is underway on a remodeled building for engineering Mechanics and an addition to Caldwell Laboratory for E.E. The metallurgy-mineralogy graduate laboratory addition has just been completed. It is expected that the dollar value of the added facilities for the Engineering College in the period 1964-68 will be about $14 million. There is a synergistic effect from these new funds, and Ohio State has been able to attract matching money from the National Science Foundation because it did have these funds. This has included $250,000 for the Aerodynamics Laboratory, $250,000 for the Electronic Research Laboratory, and $250,000 for the Metallurgical-Mineralogy Research Laboratory.

For development of an outstanding graduate center, there must be research conducted which is suitable for the development of the graduate student. The amount of this research has doubled in the past five years (from $2.6 million in 58-59, to over $5.0 million in 63-64), and the University is cooperating with industry and other organizations in developing new courses suited to today's needs, and is working out ways in which adjunct professorships will permit a man to teach while participating in industrial research and thus be effective in two areas. Short courses, ranging from one day to two weeks in length, have been devised to permit engineers in industry to come back for refresher courses which will keep them up-to-date. Today's theme of "Educating Today's Engineer for Tomorrow's Industry" should give you some idea of how the College is attacking the problem of speeding the transfer of information from the academic world to the industrial world.

In previous years, you have heard that money is needed for the improvement of the College, money which comes from the Legislature in the form of appropriations. The past bond issue was an excellent start, and you can see that results are now appearing. However, this is a never ending need and there will be a continuing need for this form of support. The current $290,000,000 bond issue on the ballot this Spring has earmarked about $12,500,000 for Ohio State for expansion of facilities for students in the first two years. Construction of these facilities will greatly relieve the pressure on our Engineering and Science Center for classrooms and laboratories. Thus, the College of Engineering will have a very direct benefit from the passing of the bond issue even though none of the money is directly marked for engineering. Our Committee of 100 urges all Ohio alumni to support this bond issue, themselves and through their friends, neighbors, etc. One of the long-range objectives of the College of Engineering is to improve the academic standards for entrance. The establishment of a community or general college at Ohio State may be an important step to improving these entrance requirements. Obviously, the College cannot operate alone, but must be thoroughly cognizant of how other parts of the University can better enable the Engineering College to concentrate on its objective of improving and increasing the quantity and quality of its instruction in the sciences and engineering.

In past years, you have heard reports of our progress, and, sometimes, our disappointments, but our program has now progressed far enough so that you can now see some of the tangible results. We may not have started soon enough, but the direction is right; let's keep it going.

EES
April, 65

FORMS! FORMS! FORMS! (##$%***%%##)

(The words in parenthesis have been censored)

We know what forms are and how we cuss them. Professor John E. Leffler, Chemistry Department, has given me permission to reproduce his article in this report.

HOW TO OUTWIT FORMS

John E. Leffler

John E. Leffler is Professor of Chemistry at the Florida State University. This is his first appearance in the ATLANTIC.

"In the November **Atlantic**, the article "A Matter of Form(s)" by Celia Darlington described the horrible fate of an organization such as a university when it finally becomes totally submerged in paper. It was suggested that paper itself be elaborated into some sort of device to reduce the stultifying overabundance of forms, blanks, **fragenbogen**, and so forth, now arresting the wheels and clogging the rushing waters of our otherwise wholly admirable and efficient Western civilization. The present article is a report on a strikingly successful technique recently developed and field-tested at a large Southeastern university."

"Once the psychology of the people who devise and send out forms is understood, the means of defense become almost obvious. The only weak point of these formidable adversaries is their inordinate and compulsive respect for any form or certificate whatever."

"An anonymous colleague and I therefore adopted the following tactics: A Pink Slip was stapled to each of the hundred or more intramural forms in our test collection assembled from the offices of a single university. The forms were then returned without comment or return address to the university offices from which they originated. You will note from the sample below that the Pink Slip is designed to be as intimidating and as insulting as possible.

Please execute and return at once to the
COMMITTEE FOR THE ABOLITION OF
UNPROFITABLE PAPER WORK

Has the attached form been approved by the Committee?

Yes _____ No _____
(Check One)

Your Signature _____
(Legible)

Your Official
Job-Designation
or Title _____

The misprint identifies this copy as coming from the second printing. The first printing is now quite rare."

"An especially important feature of the plan is that the Committee for the Abolition of Unprofitable Paper Work does not actually exist; it is merely an interesting hypothesis. Thus the frantic telephone calls and other disturbed-anthill behavior elicited by the slips failed to uncover any agency empowered to overrule the Committee. The flood of forms therefore dwindled to a trickle. When a slight relapse toward the previous unacceptable behavior began to set in after two weeks, we applied a psychological reinforcement in the shape of a second batch of forms. The second batch of forms bore pink slips on which was scrawled the word **urgent.**"

"For use against only moderately objectionable forms we have developed another technique. We actually fill out such forms in part, except that we neglect to answer any impertinent or inconvenient questions. We do not, however, return the required seven copies. Instead, we return just one copy to which is stapled an E Pluribus Unum Replicate Surrogate, shown below."

② E PLURIBUS UNUM ②

REPLICATE SURROGATE

This certificate legally replaces (2) two copies of any document, public or private, to which it is attached.

② ②

"So far the Replicate Surrogates are available only in the blue two-copy denomination, but if we are in an especially jovial mood we attach another Replicate Surrogate to the first. Since the second Replicate Surrogate has the effect of tripling the first, the net effect on the substrate document is as though it were accompanied by six copies."

"Neither the Pink Slip nor the Replicate Surrogate is protected by copyright, and readers are invited to have their own supplies printed as needed."

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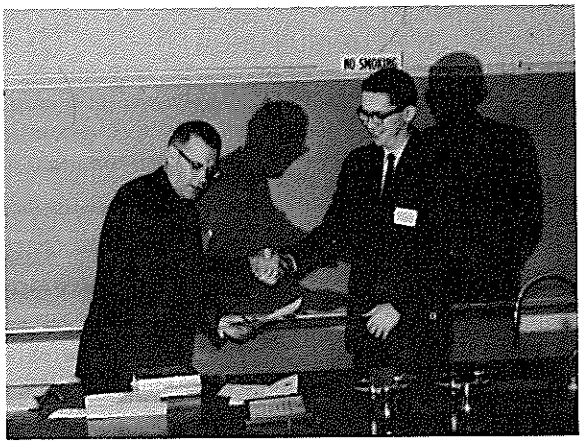
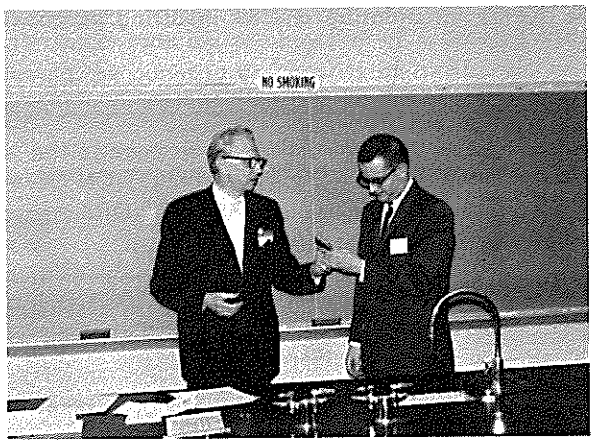
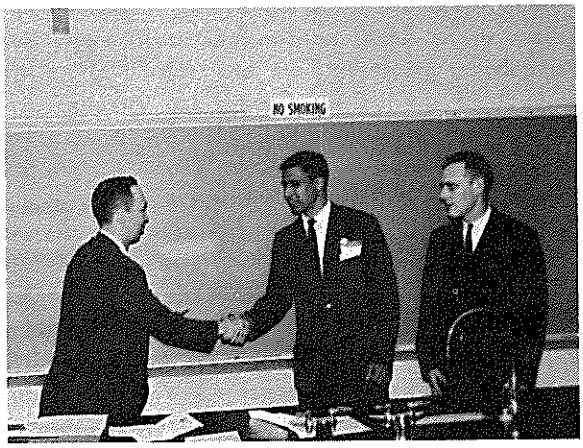


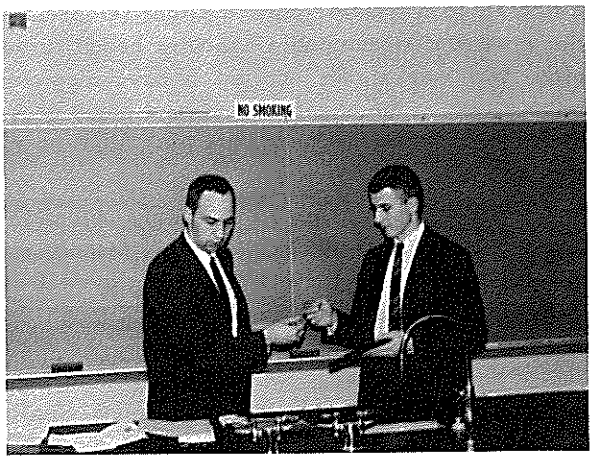
Dr. A. Syverson presenting the M. W. Kellogg Design Award to Charles Baumann.



Dr. E. Kropa (now deceased) presenting American Institute of Chemists Professional Award to William Kerns.



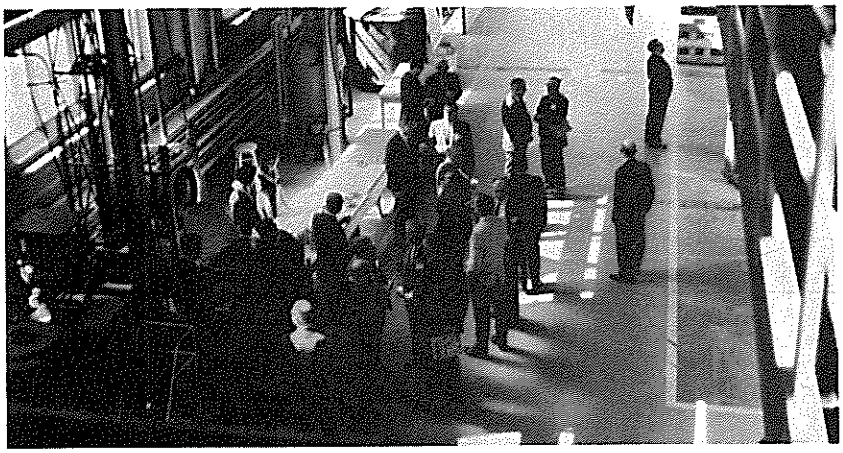
James Jackson presenting the Central Ohio Section Student Contest Problem Award to John Gegner and Eugene Wheeler.



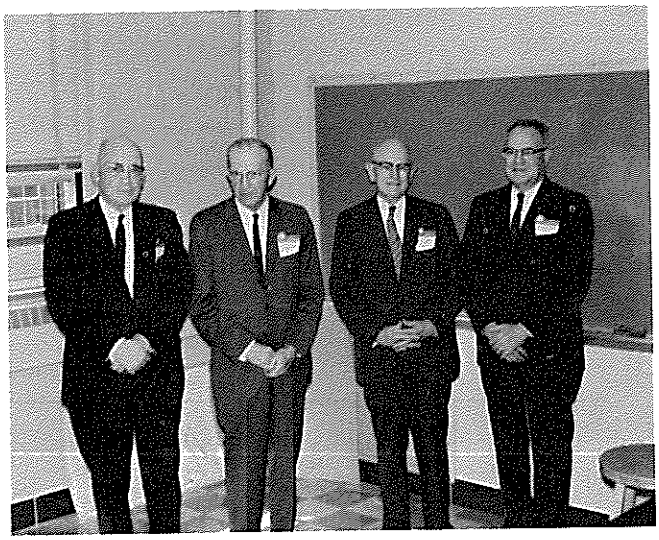
James Jackson, President, Central Ohio Section, AIChE, presenting the AIChE Scholarship Award to John Wood.

The Alumni Session

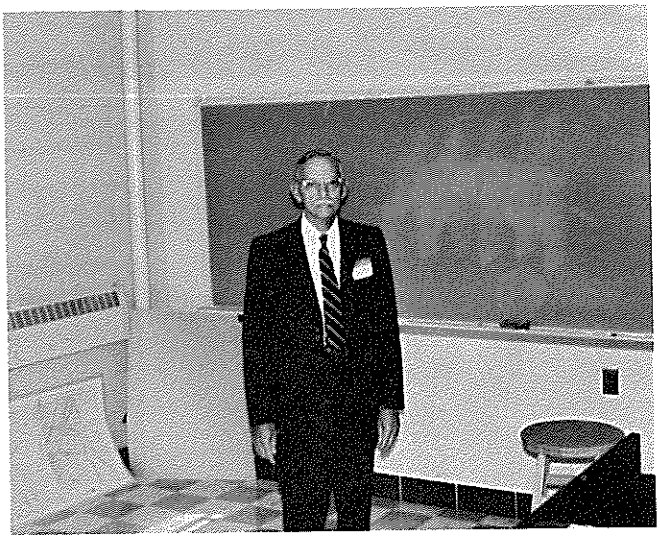
Another photograph of the Alumni Session



Part of the group that "goofed off" and socialized. The other group is being "deobsolessed" by Prof. Bob Brodkey.

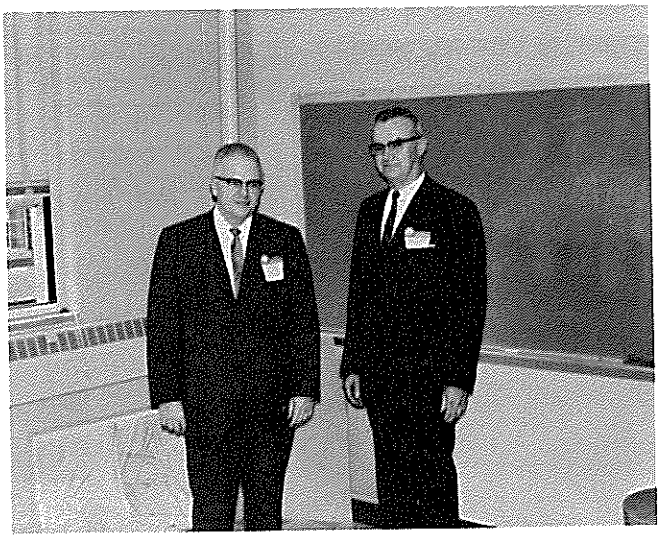


Pre-1920 – THE SAGES.
Sam Shenefield '18, John Smoots '14, Thomas A. Boyd '18, Leonard Cappel '18.

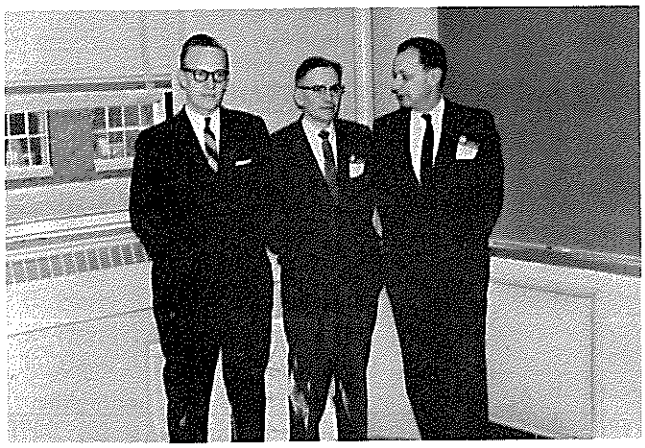


1920 – M. W. Harman

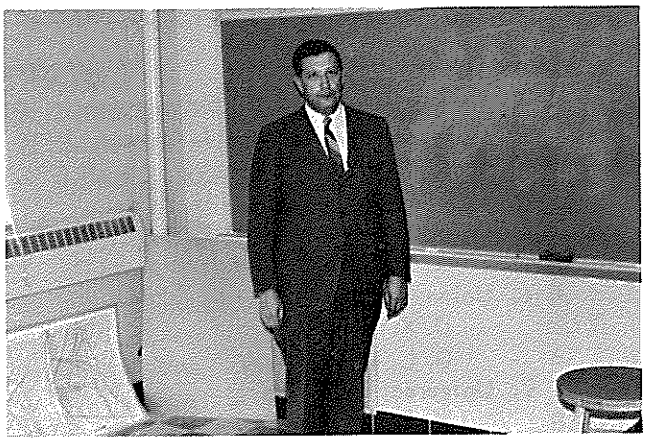
1925 – Dr. F. Underwood, Dr. G. Zinzalian, M. T. Metz, R. J. Paddock, M. Beynon, M. Braidech.



1930 – P. S. Dunn, E. Cannon



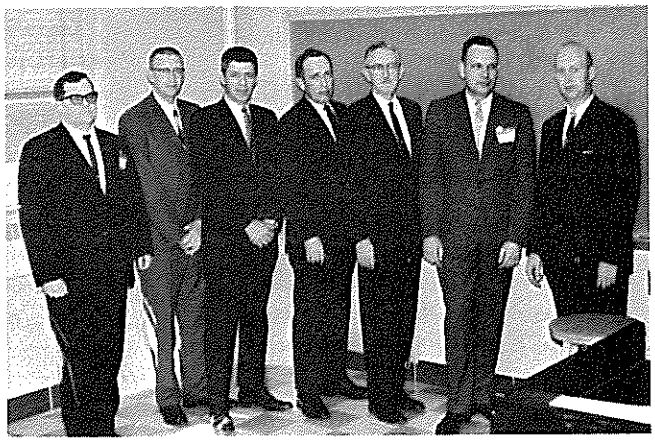
1935 – C. B. Cochran, L. Weinland, E. Slowter



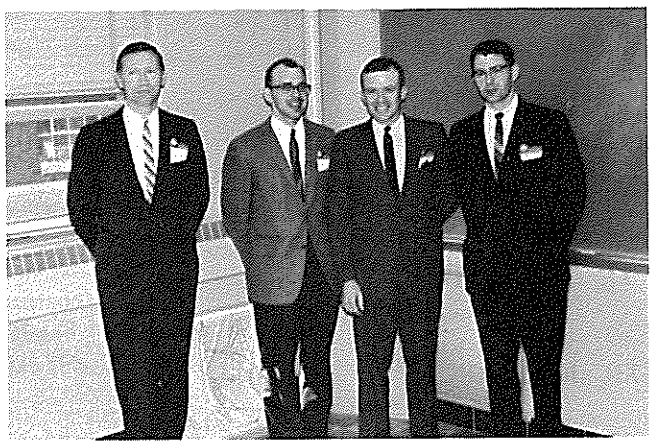
1945 – M. Bobal

1955 – W. H. Seaton, R. W. Serfass, C. E. Fleming, C. L. Benford, G. L. Moll

1940 – C. B. Kemp, W. Wendschuh, W. Fisher, Col. C. Boardman, F. Malek



1950 – D. R. Hamilton, D. E. Calvin, J. E. Anderson, D. W. Wilson, J. R. Harrison, F. Winterkamp, W. T. George



1960 – W. F. Todd, V. L. Anderson, M. H. Marshall, J. O. Estill

THE OHIO STATE UNIVERSITY
DEPARTMENT OF CHEMICAL ENGINEERING

1965-1966 LIST OF STAFF MEMBERS, FELLOWS, SCHOLARS, AND RESEARCH ASSISTANTS AND FELLOWS

I. PROFESSORS
1. Joseph H. Koffolt (Chairman)
2. Robert S. Brodkey
3. Charles E. Dryden
4. Christie J. Geankoplis
5. Webster B. Kay
6. Edward V. O'Rourke (Emeritus)
7. Aldrich Syverson

II. ASSOCIATE PROFESSORS
1. Thomas E. Corrigan
2. Waldron D. Sheets (Research)
3. H. C. Slider (Pet. Eng.)
4. Edwin E. Smith

III. ASSISTANT PROFESSOR
1. Thomas L. Sweeney

IV. INSTRUCTOR
1. Edwin R. Haering

V. TEACHING ASSOCIATE A
1. Patrick D. Culnan, Jr.

VI. TEACHING ASSISTANT C
1. K. S. Gandhi (Summer)
2. R. D. Hoffman (Summer)
3. W. E. Lewis (Summer)
4. D. R. Springer (Summer)

VII. TEACHING ASSISTANT E
1. T. A. Coleman (Summer)
2. R. C. Chase (Summer)

VIII. TEACHING ASSISTANT G
1. C. E. Baumann
2. K. S. Gandhi (Fall)
3. R. R. Shaefer
4. R. D. Hoffman (Fall, Winter)
5. R. Kovach (Spring)

IX. SECRETARY
1. Marjean Trau

X. STENOGRAPHERS
1. Suzanne Phillips
2. Sharon Sims

XI. TECHNICIAN
1. Michael Kukla

XII. MECHANIC
1. Keldon Latham

XIII. FELLOWSHIPS
1. Diamond Alkali - R. M. Kovach
2. Dow Chemical - A. W. Thornton
3. Koppers Teaching Fellow - J. R. Barber
4. Lubrizol - F. C. Arnold
5. National Science Foundation -
   T. W. Doub, Jr.
   R. R. Huddleston
   E. L. Jarrett
   K. N. McKelvey
6. Procter and Gamble - R. S. Cunningham
7. Shell Companies - W. E. Lewis
8. Socony Mobil Oil - L. Jones
9. Union Carbide Corp., Chem. Div. -
   T. A. Coleman
10. AID - S. K. Bhalla
11. Tau Beta Pi - H. C. Castilow

XIV. SCHOLARSHIPS
1. General Motors - J. M. Salladay
2. Goodyear Foundation - J. Gosney
3. Monsanto - T. E. Fitz
4. Standard Oil of Calif. - H. Zeller
5. Union Bag-Camp Paper Corp. -
   W. P. Burgess
6. Union Carbide Corp. - B. E. Poling
   D. K. Reese, Jr.;
   G. L. McKee
7. Universal Oil Products
   W. F. Deerhake
   J. M. Yacher

XX. RESEARCH ASSISTANTS - ENG. EXP. STA.
1. M. G. Konicek
2. A. Morth
3. D. Stiles
4. K. Svanks
5. B. Yao
6. E. Medniss

XXI. RESEARCH FELLOWS - RESEARCH FOUND.
1. J. R. Barber
2. D. Denny
3. J. Genco
4. D. Hissong
5. H. T. Kim
6. J. E. Williamson
7. Miss Mamata Dutta
8. F. Groening

XXII. STUDENT ASSISTANTS
1. R. Furlow
2. D. J. Mozeleski
3. A. Shuki
4. H. Zeller
5. G. L. McKee
6. W. P. Burgess

DECEASED CHEMICAL ENGINEERING ALUMNI

(Number in Parenthesis Indicates Number of Graduates that Year)

1906 (3)
1. Thomas Beer
2. B. T. Brooks, Chemist

1907 (6)
1. Harry R. Drackett
2. Harry E. Surface
3. Dana J. Demorest

1908 (6)
1. Frank M. Dorsey
2. Charles P. Hoover
3. Paul McDorman
4. Arthur C. Nothstine, Jr.
5. Harry M. Williams

1909 (6)
1. Erwin Sohn
2. O. R. Sweeney
3. Sydney H. Katz

1910 (7)
1. Ernest H. Grant
2. William D. Lareaux
3. W. A. Richey
4. Lear H. Van Buskirk
5. P. S. Beebe

1911 (11)
1. Harry V. Atkinson
2. Sumner B. Frank
3. Roscoe C. Jones
4. Clarence B. King
5. C. J. Burkley
6. Albert W. Davison
7. Howard Dock
8. Ralph E. Hall

1912 (11)
1. P. M. Giesy
2. E. S. Boerstler
3. F. J. Montgomery
4. C. E. Veit
5. Walter O. Augustine
6. W. A. Richey

1913 (12)
1. Henry N. Case
2. Charles R. Parkinson
3. Albert N. Erickson
4. Reuben L. Walter
5. Howard E. Fritz
6. A. C. Perrin
7. James Brown
8. W. M. Davis

1914 (19)
1. Emil H. Balz
2. W. T. Burgoon
3. Paul Cottringer
4. A. A. Chambers
5. Roy D. Fritz
6. L. A. Gregg
7. Edward G. Hines
8. Brice Stewart Hull
9. Lesley S. Jenkins
10. P. R. Morris
11. A. A. Kohr
12. R. W. Shafor
13. A. R. Willis

1915 (20)
1. C. R. Bennett
2. Walter M. Berger
3. Ralph Peter Heikes
4. H. L. Dick
5. Carl W. Simpson
6. J. W. Melick
7. J. O. Lord
8. G. D. Evans
9. A. R. Willis
10. Melvin DeGroote
11. F. C. Dunn

1916 (21)
1. M. A. Muskopf
2. Hanford A. Thirey
3. K. W. Reed
4. F. C. Vilbrandt
5. W. F. Brown
6. L. E. Smith
7. J. W. Young

1917 (20)
1. Carl E. Aungst
2. Walter L. Krueger
3. William A. Wirth
4. D. F. Alexander
5. F. L. Sinks
6. H. H. Thompson
7. Fred N. Schaad
8. H. D. Holler (Ph.D.)
9. W. I. Burt

1918 (19)
1. G. A. Burrell
2. Aubrey E. Hess
3. Garland H. Hufford
4. Edwin W. Mann
5. H. Alton Michell
6. J. M. Ort
7. A. H. Vilbrandt
8. A. E. Galloway
9. J. H. Young
10. P. M. Horton
11. F. T. Andrews

1919 (8)
1. Howard F. Anders
2. J. G. Ralston
3. H. W. Seyler

1920 (31)
1. Haney C. Howell
2. Louis J. Mathies, Jr.
3. Roy Paster
4. Victor J. Roehm
5. Harold T. Reiner-Ruff
6. Carroll L. Strait
7. Joseph M. Volzer
8. Russell F. Hamilton
9. R. R. Kennedy

1921 (29)
1. Walker F. Spear
2. W. K. Gilkey
3. William Green
4. C. M. Evans
5. John E. Wiss
6. Donald Brooks
7. R. B. Hollenback

1922 (33)
1. Paul R. Hines
2. Walter L. Klaiber
3. Roland M. Kohr
4. R. E. Wolfe
5. R. E. Whinery
6. Wallace Wing
7. Ben Blumenthal
8. Carl J. Beckert
9. C. A. Ritchie
10. Andrew Karsten
11. Marion Reed

1923 (60)
1. R. T. Donham
2. Albert G. Corwin
3. James T. Goff
4. William J. Harrison

5. G. R. Lyon
6. J. L. Roberts
7. J. L. Ware
8. E. N. Prinz

1924 (28)
1. Carroll M. Allen
2. Raymond S. Carter
3. C. Weis
4. George W. Ruhl
5. Virgil Hutton
6. H. T. Ruff (Ph.D.)
7. Frank J. Koehne

1925 (35)
1. Lorin E. Lutz
2. Frederick H. MacLaren
3. Adolph Valley
4. John Bowers
5. Chennan Shen
6. Henry F. Palmer
7. S. M. Sun
8. Arthur E. Juve
9. Alfred M. Eyerman

1926 (14)
1. J. L. Thoma
2. Mao Han Tuan

1927 (19)
1. Charles E. Hammett
2. Dwight S. Masters
3. Edwin F. Nussdorfer
4. Charles R. Owens
5. L. E. Mong

1928 (19)
1. Thomas C. Chadwick
2. E. E. Martin

1929 (24)
1. James Pace Alton
2. Ming Tan Hsieh
3. W. J. Michel

1930 (34)
1. G. B. Malvea
2. K. M. Sprinkel
3. J. L. Arns

1931 (43)
1. T. W. Elslager
2. Adolph Wassertheurer
3. C. J. Black

1932 (40)
1. Conrad F. Daum
2. David M. Goodfriend
3. Alfred E. Galloway
4. E. C. Piotter

1933 (42)
1. Francis E. Pickering
2. Carl H. Albrecht
3. H. L. Sittler

1934 (39)
1. George K. Dumbauld

1935 (66)
1. Harvey C. Gillogly
2. William Swisher
3. Lee Kleinmaier

1936 (42)
1. Robert L. Scroggs

1937 (53)
1. Richard M. Abbott
2. Clare O. Ewing, Jr.
3. Leon W. Omwake
4. William C. Shank
5. E. H. Osborne
6. James Braden
7. J. B. Mitchelson

1938 (71)
1. D. J. Gaston
2. Howard J. Orlowski
3. Alexander Newhouse
4. Henry F. Palmer
5. Richard D. Schafer

1939 (69)
1. Robert E. Scheiber

1940 (73)
1. Carmen Adovasio
2. F. Wayne Beall
3. John R. Linn

1941
1. John W. Russell

1942 (67)
1. Vaughn E. Kelly
2. Julian Adam Yocum

1943 (90)
1. M. F. Dick
2. Willis T. Harberson

1944 (28)
1. K. E. Kress

1945 (14)
1. Roland L. Allen
2. Charles J. Speitz, Jr.
3. Howard Wilkinson

1947 (103)
1. Sidney Miller

1948 (147)
1. D. L. Wiggins
2. Robert J. Wygal

1949 (132)
1. Thomas O. Feasel
2. John W. Shook, Jr.

1950 (87)
1. Robert C. Johnston
2. David Pickard

1951 (103)
1. Turney Ferguston
2. John R. Seferian

1953 (44)
1. Al-Kazimi, Abd Ali M.

1955 (57)
1. Fred C. Ohnmeiss

1960
1. Rolland E. Blosser

THE OHIO STATE UNIVERSITY
DEPARTMENT OF CHEMICAL ENGINEERING

SALARY OFFERS FOR 1965-1966

March 8, 1966

Underlined salary offer accepted.
λ Going on for graduate work = either M.Sc. or Ph.D.
Δ Has already accepted a position. Received offers during 1964-1965.
* Indicates industrial experience.
** Took very few interviews. Interested in a particular company, going into the service, or will graduate in December, 1967.
I International students. Will return to home country.
\+ Accepted position. Received offers during 1965-1966.

BACHELOR OF CHEMICAL ENGINEERING (5 years)

	No.	Invitations for Plant Trips	Salary Offers
	1	16	725, 750, 700, 695, 693, 710, 800, 715, 700, 720
	2	19	715, 720, 720, 750, 708, 685
**	3	1	725, Going into U.S. Navy for 4 years.
	4	8	725, 725, 725, 720, 725, 720
	5	16	715, 720, 725, 700, 745
+	6	8	700, 725, 675, 725, 725, 725, 725
	7		
	8	4	700, 720
	9	7	700, 725, 710, 725, 700, 725, 720, 740, 720, 725
**	10		
λ	11		
	12	5	671, 675, 720, 725
	13	20	725, 705, 710, 690, 670, 685
	14	3	

COMBINED BACHELOR OF CHEMICAL ENGINEERING AND MASTER OF SCIENCE

	1	11	845, 790, 833, 830
Δ	2	4	775, 750
Δ	3	17	765, 775, 760, 770, 770, 750, 750, 750, 770, 770
	4	27	815, 833, 825, 820, 790, 800, 800, 800, 740, 825, 825, 830, 820, 765, 789, 800
λ	5	1	755
	6	41	850, 850, 840, 785, 790, 869, 825, 815, 835, 815, 860, 870, 808, 850, 900, 860, 900
Δ	7	15	760, 760, 775, 785, 765, 770, 793, 760, 760, 765
Δ	8	16	750, 735, 725, 715, 740, 720, 727, 745, 720, 730, 710, 715
	9	11	820, 800, 810, 820, 725
	10	9	815, 850, 770, 840, 835, 800, 820, 825
	11	16	800, 825
Δ	12	15	735, 765, 760, 725, 765, 775, 775, 750, 760, 785, 780, 700, 780, 800, 775, 766
	13	6	800, 800, 770, 770
	14	8	800, 850, 708, 800, 850, 792, 800, 825, 833
	15	25	850, 820, 875, 850, 875, 790, 800, 845, 825, 808
	16	8	780
	17	25	825, 810, 850, 850, 825, 850
**	18	15	850, 800, 850, 835, 833, 800, 835

COMBINED BACHELOR OF CHEMICAL ENGINEERING AND MASTER OF SCIENCE (continued)

	No.	Invitations for Plant Trips	Salary Offers
Δ	19	11	775, 760, 675, 775, 785, 800, 790, 800
	20	2	820, 820, 825
Δ	21	19	785, 775, 785, 775, 785, 770, 770, 760
Δ	22	20	785, 735, 735, 800, 775, 760, 760, 770, 750
Δ	23	25	775, 800, 810, 775, 800, 835, 785, 830, 835, 785, 800, 800, 800

MASTER OF SCIENCE (B.Ch.E. From Other Schools)

λ	1	7	
λ	2	10	
λ-I	3		
λ	4	1	
	5	1	775
λ	6	2	750
λ	7		
Δ	8		In the U.S. Air Force.
λ	9		
Δ	10	2	675, 725
Δ	11		At Wright-Patterson Air Force Base.
Δ	12		At Wright-Patterson Air Force Base.
Δ	13	3	750
Δ	14		At Battelle Memorial Institute.
	15		
Δ	16	3	775
Δ	17	6	750, 800, 785, 770

Ph.D. DEGREE

	1		
	2		Ph.D. in Mineralogy
	3		
	4		1050, 1100, 1130, 1130
Δ	5	18	950, 950, 1025, 1000, 1000, 1000, 1000, 1025, 1000, 950
Δ	6	12	1083, 1050, 1075, 1050, 1050, 1050
	7	10	1100, 1175, 1150
	8	2	
Δ	9		Has a position with Socony Mobil while working for Ph.D.
Δ	10	7	1050
	11	13	1100, 1125, 1100, 1092, 1100, 1100, 1050, 1125, 1125, 1100
	12		
I -	13		
Δ	14		
	15	2	
	16	8	
	17	3	1200, 1150, 1100
Δ	18	14	965, 980, 980

SUMMER JOB OFFERS

FOURTH YEAR STUDENTS

No.	SALARY OFFERS
1	
2	510, 545, 590
3	
4	650, 650
5	600, 575, 500, 590
6	
7	
8	
9	Does not plan to work this summer.
10	
11	
12	
13	
14	
15	620
16	590
17	585, 545
18	545
19	545
20	545, 585
21	
22	545
23	2.00/hr.
24	
25	590, 545
26	585, 525, 575, 580, 600
27	606, 600, 550, 635

THIRD YEAR STUDENTS

No.	SALARY OFFERS	No.	SALARY OFFERS
1		16	
2		17	
3		18	525, 530
4		19	
5	530	20	
6		21	495
7		22	495, 525, 530
8		23	525
9			
10			
11			
12			
13			
14			
15	525, 545, 500, 525		

GRADUATE STUDENTS

1	800, 800, 910

"THE MUCH ADO ABOUT NOTHING DEPARTMENT"

As you all know, laughter coupled with a light heart makes life worth living. This is the purpose of what follows:

THE ORIGINAL A AND B CLUB

At our Faculty Club there is a group of professors who meet for a short period after lunch to discuss the state of the University and some times "to politic". This club is known as the Anvil Bellows Club, A and B for short.

After the turn of the century and the good old days, there was an A and B Club which met in a private room above the Bar of the Dutchman. The late Professors Foulk and Evans told me many stories about this club. There was another one downstairs at the Bar of the Dutchman - it became so notorious that Prexy Thompson and the Board of Trustees took action. These letters were in the files, as they should be, of Dr. Withrow. The following are copies of two of the letters which disbanded the Downstairs Chapter of this club:

May 15, 1907

President W. O. Thompson
Columbus, Ohio

Dear Sir:

We respectfully request that you present to the various college faculties by such means as may be considered by you to be most appropriate, the attitude of the Board of Trustees toward a criticism upon some members of the Faculty, which has become sufficiently public as to reach the Trustees and the Governor of the State, giving rise to comment and inquiry.

The charge has been made, by whom we do not know and against whom we do not know, that some members of the Faculty make a habit of gathering at stated times in one or more public saloons of this City and there spending considerable time in drinking and discussing affairs of University interest.

We express no opinion that these gatherings are indecorous or objectionable in any way, nor do we desire to inquire concerning them; but we submit that if they form the basis of criticism, however unjust, they should be discontinued; for the members of the Faculty hold such position of influence in the community and especially with the student body, that they should yield their personal views to the necessity of upholding a course of conduct absolutely above criticism or cavil.

Very respectfully,

The Board of Trustees of the Ohio State University

By
Guy W. Mallon, President

The most appropriate means of fulfilling the duty assigned seemed to me to be a personal letter with a copy of the action of the trustees.

Very truly,

W. O. Thompson

To Members of the Faculties of the Ohio State University:

The following communication was addressed to the President under date of May 16th.

Columbus, Ohio
May 16th, 1907

President W. O. Thompson
Campus

My Dear Mr. President:

At a meeting of the Board of Trustees held May 14th, the following resolution presented by Mr. Pomerene was unanimously adopted:

"In view of the reports which have reached this Board to the effect that some members of the faculty frequently gather in saloons of the City and there discuss University matters, which conduct, if the report be true, cannot but be detrimental to the University, Resolved, that the President of this Board address a letter to President Thompson, setting forth the views of this Board in relation to such habits, and asking a discontinuance of such gatherings on the part of the faculty."

Yours very truly,

(signed) Carl E. Steeb,

Secretary

In response to the above action the letter of May 15th was sent.

LOST, STRAYED OR STOLEN ALUMNI IN CHEMICAL ENGINEERING

IF YOU KNOW THE ADDRESS OF ANY OF THESE, WE WOULD APPRECIATE IT VERY MUCH IF YOU WOULD INFORM US.

1910
1. E. W. Gorman
2. C. G. Wood

1915
1. Harry Mitzen
2. Kenneth Kersey

1916

1917
1. W. J. King
2. Earl R. Schaefer

1918

1919
1. C. C. Keckler

1920
1. Yu Seng Tsen

1921
1. Henry W. Hess
2. R. D. Kumajon

1922
1. Klahr A. Cover
2. En-Fou Lee Toma
3. Victor R. Morris
4. Chang Uyen Pang

1923
1. A. F. Acosta
2. H. M. Davies
3. W. H. Miller
4. H. L. Moon

1924
1. Tien I. Chen

1925
1. Marion C. Reed
2. C. M. Sun

1926
1. Ford C. Davis
2. J. A. Thompson
3. Cho Wu

1927
1. Cheung Ying Chu

1928
1. E. E. Martin
2. R. B. Goble

1929

1930
1. Chieh Ma
2. Wei Yang

1931
1. Mrs. Hao Feng Yun Hsiang

1932, 1933

1934
1. B. A. Bowman

1935
1. E. C. Painter

1936

1937
1. Robert V. Cobb

1938
1. L. W. Love
2. Tse Kao Wu

1939
1. Samuel Teplitz

1940
1. G. D. Kane

1942
1. Vahab Khamneizaden

1943
1. R. H. Collins
2. H. C. Hadsell

1944
1. Richard D. Mitchell

1945

1946
1. R. E. Morris

1947
1. L. E. Parker

1948
1. Lan Ching Wang

1949
1. Chi-Ti Pan

1950
1. Vopinchandra Nanavati

1951
1. En Tsch Ming

1952
1. R. H. Hill

1953

1954
1. Charles Thacker, Jr.

1955, 1956

1957
1. Clifford N. Click

1958, 1959, 1960

1961
1. David A. Parker

PLACEMENT OF CHEMICAL ENGINEERING GRADUATES

JUNE, 1965 – MARCH, 1966

BACHELOR OF CHEMICAL ENGINEERING

NO.	NAME	COMPANY AND LOCATION
		JUNE, 1965
1.	Frederic C. Arnold	Working for M.Sc. degree at Ohio State University.
2.	James M. Davidson	Working for M.Sc. degree at Ohio State University.
3.	Oliver Lawrence Davies	Working for M.Sc. degree at Ohio State University.
4.	Vincent L. DePaola	Humble Oil and Refining Company, Bayway, New Jersey.
5.	Thomas W. Doub, Jr.	Working for M.Sc. degree at Ohio State University.
6.	Ronald S. Evanko	Dow Corning Corporation, Midland, Michigan
7.	Frederick H. Flor, Jr.	United States Navy
8.	John P. Gegner	Working for M.Sc. degree at Ohio State University.
9.	William J. Kerns	Working for M.Sc. degree at Ohio State University.
10.	Ronald G. Magley	Dow Chemical Company, Midland, Michigan
11.	Thomas C. McKelvey	Wyandotte Chemicals Corporation, Wyandotte, Michigan
12.	Larry R. Perkins	Working for M.Sc. degree at Ohio State University.
13.	Louys W. Perkins	Liquid Carbonic Division, General Dynamics Corp., Chicago, Illinois
14.	Ronald J. Rundt	Atlantic Refining Company, Corpus Christi, Texas
15.	Paul Henry Schmitz	Shell Chemical Company, Marietta, Ohio
16.	William A. Smith	Working for MSc. degree at Ohio State University.
17.	David J. Stazenski	General Tire and Rubber Company, Chemical Division, Akron, Ohio
18.	Richard M. Veazie	Working for M.Sc. degree at Ohio State University.
19.	John A. Weaver	B. F. Goodrich Chemical Company, Development Center, Avon Lake, Ohio
		AUGUST, 1965
1.	Charles E. Baumann	Working for M.Sc. degree at Ohio State University.
2.	Eugene N. Wheeler	Working for M.Sc. degree at Ohio State University.
		DECEMBER, 1965
1.	Frederick J. Rerko	U.S. Navy, Naval Air Station, Pensacola, Florida
2.	Michael C. Royer	
		MARCH, 1966
1.	James O. Nye	Working for M.Sc. degree at Ohio State University.

MASTER OF SCIENCE

		JUNE, 1965
1.	Richard M. Dunlop	Esso Research and Engineering Co., Linden, New Jersey
		AUGUST, 1965
1.	Douglas W. Hissong	Working for Ph.D. at Ohio State University.
2.	Roy R. Huddleston	Working for Ph.D. at Ohio State University.
3.	Kiu H. Lee	Union Carbide Corporation, Chemical Division, South Charleston, West Virginia
4.	Edwin K. Middleswart	Kaiser Chemicals, San Leandro, California
		DECEMBER, 1965
1.	James M. Davidson	Chevron Research Corporation, Richmond, California
2.	Oliver L. Davies	Continental Oil Company, Ponca City, Oklahoma
3.	Thomas W. Doub, Jr.	Working for Ph.D. degree at Ohio State University

PLACEMENT OF CHEMICAL ENGINEERING GRADUATES (continued)

MASTER OF SCIENCE (continued)

NO.	NAME	COMPANY AND LOCATION
4.	K. S. Gandhi	Working for Ph.D. degree at University of California.
5.	John P. Gegner	Standard Oil Company of California, Chevron Research Corporation, Richmond, California
6.	William J. Kerns	E. I. du Pont de Nemours and Company, Polyolefins, Division, Orange, Texas
7.	William E. Lewis	Working for Ph.D. degree at Ohio State University.
8.	Arthur H. Morth	Monsanto Company, Polymer and Hydrocarbon Division, Indian Orchard, Massachusetts
9.	Larry R. Perkins	Dow Chemical Company, Midland, Michigan
10.	Larry A. Stichweh	Chemstrand Company, Pensacola, Florida
11.	Gary L. Street	Dow Chemical Company, Midland, Michigan
12.	Richard M. Veazie	Continental Oil Company, Ponca City, Oklahoma
13.	Eugene N. Wheeler	Procter and Gamble Company, Cincinnati, Ohio
		MARCH, 1966
1.	James V. Braun	Wright-Patterson Air Force Base, Dayton, Ohio
2.	Erich L. Eggers	Wright-Patterson Air Force Base, Dayton, Ohio
3.	Eugene Lawrence Jarrett	Working for Ph.D. degree at Ohio State University.
4.	James S. Knox	U.S. Air Force Academy, Colorado Springs, Colorado
5.	Linda S. Lowe	Chemical Abstracts, Columbus, Ohio
6.	John H. Miller	Wright-Patterson Air Force Base, Dayton, Ohio

DOCTOR OF PHILOSOPHY

		JUNE, 1965
1.	Edward R. Corino	Esso Research and Engineering Company, Linden, New Jersey
2.	Dae Sik Kim	Esso Research and Engineering Company, Linden, New Jersey
		DECEMBER, 1965
1.	Joseph M. Genco	Battelle Memorial Institute, Columbus, Ohio
		MARCH, 1966
1.	Dale Denny	M & R Research Laboratories, Columbus, Ohio

COLLEGE OF ENGINEERING ENROLLMENT, AUTUMN QUARTER, 1965

	1st Year Total	2nd Year	Total Pre-Engr.	3rd Year	4th Year	5th Year	5th Comb. Prog.	Total 5th Year	Total Prof. Engr.	Sum Total
Aero	119	83	202	35	39	46	2	48	122	324
Agr. E.	4	8	12	9	12	2	1	3	24	36
Cer. E.	14	17	31	19	15	11	7	18	52	83
Chem. E. '65	89	53	142	24	29	13	13	26	79	221
'64	119	54	173	25	27	13	12	25	77	250
'63	71	52	123	29	25	17	10	27	81	204
'62	92	63	155	38	28	11	8	19	72	227
'61	92	61	153	23	18	9	12	21	62	215
'60	75	45	120	23	17	26	13	39	79	199
'59	75	35	110	23	25	26	16	42	90	200
'58	79	29	108	44	34	27	9	36	114	222
Civ. E.	71	64	135	34	34	34	6	40	108	243
Elec. E.	180	157	337	72	76	78	20	98	246	583
Ind. E.	25	40	65	44	51	46	6	52	147	212
Mech. E.	117	100	217	78	65	50	11	61	204	421
Met. E.	17	15	32	13	12	9	5	14	39	71
Mine. E.	0	0	0	0	1	12	0	12	13	13
Phys.	12	33	45	14	8	9	6	15	37	82
Weld. E.	5	19	24	18	14	16	0	16	48	72
Und.	430	60	490							
Totals	**1083**	**649**	**1732**	**360**	**356**	**326**	**77**		1119	
Total Engr.									2851	

SCHOOL OF ARCHITECTURE AND LANDSCAPE ARCHITECTURE

			3rd	4th	5th				
Arch.	84	61	39	35	31			240	240
Land Arch.	3	5	4	8	5			25	25
Total Reg.	**1170**	**715**	**393**	**399**	**362**	**77**		**3116**	**3116**
Irreg.								7	7
Part-time Educ. Oppor.								195	195
GRAND TOTAL									**3318**

Included in above totals: Lakewood-47, Lima-57, Mansfield-64, Marion-24, Newark-46, WPAFB-75, Columbus-76

Eighteenth Annual Report

To The Chemical Engineering Alumni

The Ohio State University