

# NEWS-LETTER

UNIVERSITY OF ILLINOIS

Department of Mining, Metallurgy and Petroleum Engineering

JANUARY, 1967

## THOMAS ALBERT READ

Thomas Albert Read died on September eleventh in the University of Illinois Research Hospital — he would have been fifty-three years old on October twenty-first and this would have been his thirteenth year as Head of the Department of Mining, Metallurgy and Petroleum Engineering at the University of Illinois. He was born in Montclair, New Jersey to Thomas T. and Mary Peck Read. All of Tom Read's academic degrees were awarded by Columbia University: the B.A. in 1934 (his junior year was spent at the Technische Hochschule, Munich) and the Ph.D. in physics in 1940. His thesis on the internal friction of single crystals of metals was a landmark in the science of metals and a crucial experiment for the study of dislocations. He met Doris Pascal at Columbia; they were married in 1935 and their son, Tom, was born in 1943.

Scientific recognition and defense research and engineering responsibilities came quickly; he was successively Westinghouse Research Fellow (1939-41) in the remarkable group of scientists E. U. Condon brought together in Pittsburgh just at the start of the war; principal physicist in charge of the metals section, Frankford Arsenal (1941-47); and principal physicist, Oak Ridge National Laboratory (1947-48), before the call from his alma mater to return as Associate Professor of Metallurgy in 1948.

The following six years were exciting ones for Tom and especially so for the dozen or more graduate students who were fortunate enough to work with him during that fruitful period. Following his wartime work on the fracture of cartridge brass and radiation dam-

age, he was able to return to one of his first research interests on internal friction in metals and alloys in which he was a recognized world authority. Here he also conceived and with his students, developed, the crystallographic theory of phase transformations which bears his name; important studies of the effect of environment on the plastic deformation of metals and stress-corrosion were undertaken under his guidance.

His Columbia achievements not only further enhanced his reputation as exceptionally talented metallurgist and metal physicist but added that of dynamic educator and in 1954 he was chosen to be Head of the Department of Mining, Metallurgy and Petroleum Engineering at the University of Illinois, which, under his leadership grew to its present position among the leading departments in the country and to a world-wide reputation. Here Tom Read worked ceaselessly for the growth of the department and the welfare of students and staff while continuing his undergraduate and graduate teaching, his research, and his professional activities. He made every effort to develop and advance his staff members professionally so that they could realize their maximum potential. During this brief period of stewardship terminated by his untimely death, the number of senior staff doubled, the graduate student enrollment increased by a factor of ten, the annual research budget grew from less than a hundred thousand dollars to over a million, and the department expanded to occupy five times as much space.

Tom Read brought to his research, his undergraduate and graduate teaching, and his other professional activities, not only an unusual intelligence, a fertile imagination, an immense fund of

knowledge, a remarkably precise recollection of a substantial fraction of the scientific literature, and a well-developed experimental skill, but even more important, a rare "physical insight" possessed by only a few.

He approached with the same enormous energy and intensity, youthful enthusiasm, keen mind, and spontaneous wit a research problem in metal physics, the psychology of learning, the physics of music, the playing of the clarinet, dancing, games, and the frequent entertainment of students and colleagues. His inventiveness, intelligence, and humor exhibited themselves in many ways in both his professional and personal life.

The activities and accomplishments of Tom Read will long be remembered by the scientific community. He served his profession well and in many capacities.

His many significant scientific papers and inventions are part of the record of his life. Often in the forefront of speculative research areas, he was beginning a new program on super-plasticity just before his terminal illness.

His family has lost a son, brother, husband and father; his many friends, a comrade; his profession, a leading scientist and confrere; the university community, a scholar and teacher; and the world, a natural philosopher in the true sense, and a total man. As much as we were enriched by his vital life, we are impoverished by his passing.

Dean Everitt has asked Charles Wert to serve as Acting Department Head until a permanent decision is made. Prof. Wert has accepted this responsibility, and with the cooperation of the rest of the staff, the business of the Department is proceeding in as near a normal manner as is possible.

## RESULTS OF CURRICULUM SURVEY

Last year you were invited to respond to a questionnaire pertaining to certain aspects of the undergraduate curriculum.

The number of responses was disappointing (perhaps you felt you had already done your share of answering quizzes for the staff), but the fifty-odd returns permit a basis for some conclusions and do represent a good cross section of alumni in terms of years out of school, job function, and those having continued education beyond the B.S. degree.

Some arbitrariness was invoked in tabulating the responses. In particular, it was difficult to decide whether a job should be considered "R & D" as opposed to "engineering" (or "production"); all responses were placed in one of these broad categories. Also, many qualifications were included in answers to the questions and it was difficult to tabulate many as a flat "yes" or "no." It was assumed that each person responded to the questions in terms of the curriculum as it was when he was in school. A summary of individual questions follows:

1. Do you feel an introductory survey course in metallurgy is necessary or desirable? The response was about 3:1 in favor of retaining an introductory course. Those receiving their degree before 1954 and those having done graduate work were a little less emphatically in favor. Most felt some type of orientation was necessary and made later work more meaningful.

2. Should extractive metallurgy be required? The alumni were about 2:1 against requiring extractive metallurgy. Individual opinions ranged from an emphatic

"no!" to just as positive a "yes!" Those in engineering-oriented positions were nearly divided in their responses. Most felt that any coverage should be minimal, either incorporated in an introductory course, or offered as an elective.

3. Is more physics of metals desirable? The overall response was fairly balanced on the question with the general sentiment rather against additional work in this area. It is most interesting that those in R & D were 2:1 against more metal physics. The feeling seems to be "let a student learn metallurgy first, and save the solid state work for graduate school." Those with graduate degrees responded 3:1 against increasing undergraduate content in metal physics. It is also seen that graduates before 1954 are slightly in favor of more metal physics, while the more recent graduates are fairly strong against. It appears that changes in more recent years may have satisfied the need felt by our graduates.

4. Should engineering metallurgy be taught on the basis of phenomenon rather than on the basis of materials as it has been in the past? The response to the "materials vs. phenomenon" approach was not very decisive. A large number of alumni avoided making a choice by commenting that both approaches are important, or that either approach could be satisfactory. The consensus could best be summarized by the observation that both points of view are important and neither can be ignored; in the end it is the quality of the teaching rather than the method of presentation that is of the greatest importance.

5. Is there too much lab work in metallography? It is obvious that an overwhelming majority of 5:1 of those involved in engineering practice felt that the emphasis put on metallography in their undergraduate program was worthwhile. Those in research were not as strong in their support, but the results were still 2:1 against decreasing the amount of metallography. There was little difference of opinion of the older group of alumni as compared to the more recent graduates. Only those who went beyond the B.S. degree were about evenly divided in regard to the optimum amount of laboratory work.

Comments regarding "areas omitted" and "courses least useful" ranged widely and in most instances reflected individual experiences. Each "Today's student knows all too little about aluminum" was balanced by a "We spent too much time on nonferrous metals — I see only steel." Some areas were mentioned by several and indicate a real need for improvement. Some of these were: failure analysis, economics and business principles, technical writing and expression, mathematics, fracture mechanisms etc.

A large number of alumni also expressed much concern over trends toward too much emphasis on preparation of students for graduate work and research at the expense of engineering metallurgy.

Curriculum building is a dynamic, never-ending activity. Feedback from alumni is the most important input we have to help improve our program. We are always interested in your comments and criticism.

### SUMMARY OF CURRICULUM QUESTIONNAIRE

QUESTION	Overall		By Job Function				By Year of Degree				By Degree			
	Yes	No	Yes	No	Production	No	Before '54	After '54	Yes	No	B.S. Only	Beyond B.S.	Yes	No
Is introductory course desirable?	73	27	71	29	75	25	67	33	78	22	78	22	63	37
Should extractive met. be required?	35	65	29	71	45	55	40	60	32	68	33	67	39	61
Is metal physics beyond Phys. of Metals desired?	43	57	32	68	63	37	56	44	36	64	56	44	24	76
Should engr'g. met. be taught on basis of phenomena rather than materials?	41*	37	40	33	42	42	48	19	36	50	44	38	35	35
Too much lab work in metallography?	26	74	33	67	16	84	28	72	24	76	17	83	46	54

Figures are percentages of responses; in all, about 50 questionnaires were returned.

\*Balance of comments indicated no particular preference for method of presentation or indicated that both methods are important.

# NEWS FROM ALUMNI

The annual alumni dinner was held this year in Chicago during the Fall ASM-AIME meetings. An enthusiastic group of about 75 were on hand, including a few wives, and most graduation classes were represented. Next year's meeting will be in Cleveland, and you will be informed of the meeting in plenty of time to schedule this event on your calendar.

We are sorry to report that Frank Stamberg, '21, died suddenly near Athens, Greece, while on a world tour with his wife. He had retired from the So. Ill. University faculty in June. During his career, Mr. Stamberg had also worked for Standard Oil, Harrison Sheet Steel Co. and Colonial Tanning Co.

Hjalmar Johnson, '22, was honored by his selection as a recipient of the College of Engineering Alumni Honor Award. This award is conferred annually to approximately five alumni for distinguished service to engineering. At the time of his retirement in 1963, Mr. Johnson was Vice President of Planning and Research for Inland Steel. In addition to his brilliant career in the steel industry, Mr. Johnson served his community and his alma mater well. He has been a trustee of the University YMCA and president of the Alumni Foundation.

Fred Riddell, '43, has been elected vice president and chief metallurgist of H. Kramer and Co. Fred spent three years in the Navy following his graduation on assignment to the Naval Research Lab, and has been with H. Kramer ever since.

Michael Nevitt, '43, has been named director of the Metallurgy Division of the Argonne National Laboratory. At the time the announcement was made, Mike was in England as visiting professor of physics at the Univ. of Sheffield. Mike received his Ph.D. here in 1954, and spent two years as Head of the Metallurgy Department at VPI before joining the staff at Argonne.

Thomas E. Perry, '48, was promoted to asst. chief metallurgist for Republic Steel, and is now located at Cleveland. Tom has been with Republic since his graduation,

and was most recently asst. chief metallurgist for the Central Alloy District.

Robert C. Bertossa, '49, is now vice president and general manager of Coast Metals, Inc., Little Falls, N. J. Bob was most recently vice president and technical director of Pyromet, Inc. He has also held research positions at Stanford Research Institute and the Chicago Bridge & Iron laboratory at Birmingham, Ala.

Warren Jonsson, '49, has been promoted to manager of technical services of Apex Smelting Co.

Vaughn Hildebrandt, former staff member here from 1949 to 1954, has completed a coast-to-coast move. Vaughn left Kaiser Aluminum's research lab in Spokane, and is now manager of metallurgical development for Archer Aluminum in Winston-Salem, No. Car.

Earl Hasemeyer, '48, sends us his new address: 7701 Logan Dr., S.W., Huntsville, Ala., 35802.

Jack Raymer, '51, was recently appointed manager of engineering at the Avco Lycoming plant in Charleston, So. Car. Jack has been with Avco since 1954. He spent two years at Wright Field AFB following his graduation and was a research engineer at Aberdeen Proving Ground from 1952 to 1954. Jack has added four daughters to his family since leaving here and now lives at 1328 Winchester Dr., Charleston.

We have reports on the location of a couple of foundrymen: George Haley, '56 is with CAMETCO, Box 266, Duquesne, Penn. (an outfit whose principal business is alloy briquettes) and Gene Schwetz, '51, is with Meehanite Co. in New Rochelle, New York.

A. John Birkle, '57, was the principal author of the paper which received the Henry Marion Howe Award this year. The award was made this Fall at the Metals Congress in Chicago. John's paper was "A Metallographic Investigation of the Factors Affecting the Toughness of Maraging Steels." John has been at Youngstown Sheet & Tube in Youngstown for about a year; he

was formerly with U. S. Steel in the Applied Research Laboratory.

Al Haarr, '57, is now with Gibson Electric Co., Delmont, Penn., as a research engineer. Al had been with Alcoa Research Labs since graduation not counting two years military duty. Al's address in Delmont is 50 Clover Dr.

Congratulations are due Jim Horak, '58, who has received his Ph.D. from Northwestern. Jim is in the Metallurgy Division at Argonne National Lab, and accomplished most of his graduate work the hard way—while still on full-time appointment at Argonne.

Frank Krempski, '61, is working on the physical metallurgy of nickel base alloys at Union Carbide Stellite Div. in Kokomo, Ind. His address is 3713 Oakhurst Dr. in Kokomo. Frank hopes to pick up his graduate studies in the near future.

Denes Bardos, '61, completed his Ph.D. this year, having carried out his research at Argonne Lab under the supervision of Prof. Beck. Denes has accepted a post doctoral fellowship and will remain on the Argonne staff. Denes entered the University as a music student in 1957, and in addition to his academic degrees, accrued six children in the years since.

Steward Veeck, '63, is now at Battelle as a research engineer, having left his job with Atomic International in a similar capacity.

Ray Roeschlein, '63, has completed his ROTC commitment by serving as a 1st Lt. in the Air Force Material Lab at Wright-Patterson AFB. Ray is now located in Harvey, Ill., where he is in the met lab of the Wyman-Gordon Co.

Larry P. Tabaka, '65, is engineering officer about the cruiser USS Topeka, and has seen service off Vietnam.

Jim Remley, '65, has been invited by his company, Western Electric, to participate in a two-year, full salary M.S. graduate program in metallurgy taught at the Princeton Research Center of Western Electric.



# NEWS FROM THE CAMPUS

There are several aspects of enrollment in which we think you might have considerable interest. Primarily, we are concerned with our undergraduate enrollment and the shrinking number of B.S. graduates available to fill the needs of industry as well as enter graduate schools for advanced study. Fortunately, some industries that employ our graduates share this concern sufficiently to support our efforts to stimulate enrollment.

The principal thrust of our campaign is based on obtaining scholarship funds which we can then heavily promote in the high schools. We think this is one positive way we can get students to at least recognize that metallurgy exists, and perhaps include it as one possible course of study.

As a result of our initial efforts, we now have nine undergraduate scholarships earmarked for metallurgy students, and over which the department exercises considerable control with regard to establishing criteria for disposal. Caterpillar Tractor and Fansteel Metallurgical are each supporting three \$500 grants. We hope to have many more.

Specifically, we ask you now to consider whether your company can join this program. We have contacted a great number of companies, but perhaps action depends more on having people like yourselves, who are better aware of the problem, take the initiative within your own company. If you want more information on how to participate in the program, please write to the department for details.

For the first time in many years, our enrollment has gone up this Fall. After falling from a postwar high of 100 metallurgy students in 1957, we had only 58 undergraduates last year. This Fall, we have grown back to 71.

The graduate enrollment is currently 66 students — down some from last year. More importantly, the graduate college has just announced the establishment of departmental quotas on the numbers of new graduate students accepted.

The number of degrees granted in 1966 was quite impressive: the department had 17 B.S., 15 M.S., and 13 Ph.D. degrees earned during the year.

Stanley H. Pierce, Associate Dean of the College, died Oct. 30, 1966. He served in this capacity since 1953, and many of our alumni remember him for his genuine friendliness and the tireless energy he devoted to affairs related to students and their welfare. His advice to students, and to the staff about students, was wise, and the College will miss him in the years to come.

Prof. John Gilman received this year one of the highest distinctions that can be awarded in the field of metallurgy; that of presenting the Campbell Memorial Lecture. The presentation was during the Metals Congress in Chicago this Fall. Jack's talk was entitled "Monocrystals in Mechanical Technology." We all take pride in this recognition of Jack's outstanding work.

Prof. Gilman presented a lecture at the 5th National Congress on Applied Mechanics entitled "Progress in the Microdynamical Theory on Plasticity." Another contribution to the profession during the year was Jack's chairmanship of the 1966 ASM seminar on the atomic and electronic structure of metals.

Prof. Paul Beck was one of sixty scientists invited to participate in a conference on Phase Stability, organized by Battelle and held in Geneva this summer. Paul gave an invited paper and also led one of the discussion sessions. He also attended a conference on Low Temperature Specific Heat in Helsinki and a conference on Low Temperature Physics in Moscow. Paul presented papers at both meetings, and also visited laboratories in Moscow and elsewhere in Europe.

Prof. Charles Wert was one of about ten staff members from the entire University appearing in the "Faculty Citations" section of last year's Illio yearbook. This is a new feature of the Illio, conceived to honor outstanding members of the faculty. Charlie was nominated for the honor by the College, and final selections were made by a board of students.

Profs. Robert Bohl and David Lieberman received Undergraduate Teaching Awards last summer.

This program is designed to improve undergraduate instruction, and awards of summer appointment and necessary expenses are granted on the basis of proposals by staff members for specific projects designed to aid teaching at the undergraduate level.

Over the past few years, Prof. Fred Wright and Prof. Walter Rose have served on an ad hoc committee concerned with recommendations for the coordination of existing engineering-oriented earth sciences programs on the Urbana campus. The committee was set up originally to report to the Dean of the Engineering College, but now is reporting to the Dean of the Graduate School. Beyond this immediate problem by drawing attention to interdisciplinary areas, the committee is attempting to determine the best way to utilize cooperation between various departments as new programs develop. As a part of the committee recommendations already adopted, the undergraduate curriculum in mining engineering has been transferred to general engineering.

Throughout the history of the department, our students have never had an area set aside specifically for informal relaxation, socializing, and group studying. Any lounging in the past has had to be along the corridors or in the dismal atmosphere of the communities' smoke-filled pool halls.

That situation is now changed. We have completed our long-awaited student lounge, and we invite your inspection — coffee is always available. It is an area which used to be the "preparation room" between the two large first floor lecture rooms. The physics department used to set up demonstration experiments there for the large physics lecture sections. But the space is completely transformed now by new tile flooring, acoustical ceiling with recessed lighting, air conditioning, beautiful furnishings, and new paint and paneling. It is now quite the center for student activity, and should make a strong contribution to student morale.

Incidentally, some of the new pool halls around the campus are quite palatial, too.