

# NEWS - LETTER

UNIVERSITY OF ILLINOIS

Department of Mining, Metallurgy and Petroleum Engineering

JANUARY, 1965

## CHANGES IN MINING TO BE DECIDED

It is possible that in the near future the University will decide to discontinue the undergraduate curriculum in Mining Engineering and instead concentrate on graduate and research work in this and related fields. Such, essentially, will be the probable recommendation of a Committee on Earth Science Oriented Engineering that was appointed by Dean Everitt over a year ago.

In the following statement the Dean gave the principal reason for this impending action:

"... For a number of years, we have given a degree program in Mining Engineering and have also offered an identified Option in Petroleum Engineering. As a matter of fact, a state law specifies that we should give instruction in Mining Engineering at the University of Illinois. At the same time, the number of students who enroll in this program is very low, and hence, the cost of instruction is relatively high. It seems to me that it would be desirable to look over this whole area and do some significant long-term planning on the interdisciplinary nature of the engineering portion of the whole field. . ."

Although the committee operated under the College of Engineering, the membership included representation from the Department of Geology and from the Illinois State Geological Survey. Our Department was represented by two members, and the other members were from Civil Engineering, General Engineering, and Theoretical and Applied Mechanics. In his charge to the committee, Dean Everitt indicated his desire for a comprehensive approach to the study:

"... These are times when many engineering programs are in a state of flux and evaluation and require careful attention to changing needs and long term planning. Perhaps there is no area where this need is more imperative than in what might be defined as 'Earth Science Oriented

Engineering'. Changing needs and demands exist in the requirements of engineers and applied scientists with appropriate educational backgrounds at all levels in the fields of mining and reservoir engineering, geophysics and rock mechanics, mineral processing and other fields of comparable importance, all requiring an engineering approach to the application of the earth sciences.

"We see across the nation old programs being abandoned and new ones initiated. On the University of Illinois campus, we have great strength in many of the important areas, especially if we include the existing and possible contributions of close cooperation with the Water and Geological Surveys. I feel that to insure the wisest use of these resources and others we may develop, serious attention will be required."

The committee investigated the situation with regard to Earth Science Oriented Engineering on a nationwide basis as well as at the University of Illinois. These studies indicated that over the past ten to fifteen years there has been a decided reduction on a national basis of undergraduate degrees, enrollments, and job opportunities for graduating Baccalaureate students in the earth science and related engineering fields (geology, geophysics, geophysical engineering, geological engineering, mining engineering, and petroleum engineering). On the other hand, graduate enrollments have increased, and, indeed, many new and scientifically oriented programs are flourishing (e.g., rock mechanics, hydrogeology, geochemistry, theoretical geophysics). Employment opportunities for those with advanced degrees are excellent.

The committee found that although the University is actively conducting research and graduate teaching in various aspects of Earth Science Oriented Engineering, the work would be greatly strengthened by forming a Center

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## Enrollment of Undergrads Down

In the midst of the hordes of students swelling the campus, our departmental undergraduate enrollment continues to shrink. Even the College of Engineering has not participated in the general University increase; in fact, a downward trend that began in 1957 has continued. College enrollment now is 3573 as compared to 3839 in 1956.

In the department, the decline has been even more drastic. Undergraduates in mining number only eleven this Fall, and the plight of the mining program is discussed elsewhere in this paper.

Metallurgy undergraduates have decreased from a peak of 99 in 1956 to the present enrollment of 67. These figures cannot be explained in any obvious manner, nor is the fact that they reflect a national trend any consolation. They do serve, however, as an incentive to those who are concerned to exert special effort to encourage young people toward careers in the engineering fields. We certainly hope each alumnus will look for opportunities to speak to students, either on an individual basis, or as part of high school, professional society, or career programs, and promote interest in metallurgical careers.

Meanwhile, our graduate program is enjoying much growth as the research program of the department continues in a very vigorous manner. This Fall, we received eighteen new graduate students, and now have a total of 72 in the department. Last year the total was 57, and the year before, 51. Eight students received their Ph.D. last year: Lawrence Adler, Robert Block, Donald Beaman, Robert Heins, John Parsons, Giuseppe Ratti, Edward Van Reith, and John Ytterhus.

It would appear that there is danger that the undergraduate program may scarcely support the graduate enrollment, much less supply the needs of industry for B.S. engineers.

# NEWS ABOUT THE STAFF

## RESIGNATIONS

Prof. Bob Balluffi's resignation, which was reported in last year's *Newsletter*, became effective this summer, and Bob is now well into his duties at Cornell and their materials science program.

Prof. Don Beaman resigned his position as Asst. Prof. at the end of the summer, and he has taken a position at the new International Nickel Research Laboratory at Sterling Forest, New York. Don's address is 387 W. Cupsaw Dr., Cupsaw Lake, Ringwood, New Jersey. We will miss Don's sunny disposition and cheerful donations at the poker table, and can't feel he was safer here on the prairie than at his present proximity to the skiing slopes.

Two of our Research Associates have also resigned during the year. Dr. Rex B. McLellan has taken a position at Rice Institute, and Dr. Reginald Peart is now working at the IBM research labs. We have greatly enjoyed and benefited from the contributions of these two men, and wish them well in their new situations.

## VISITING PROFESSORS

Two visiting Assistant Professors are now with us. Dr. Kenichi Shimizu is Asst. Prof. of Metal Physics at the Institute of Scientific and Industrial Research, Osaka Univ., Japan. He is an expert on electron microscopy and diffraction. Dr. Shimizu is presently studying the phase transformation in stoichiometric TiNi and the transformation characteristics of FePt alloys.

Dr. Alan J. Morton came to us from the University of New South Wales, Australia. He did his doctorate research on the crystallography of the martensite transformation. He is continuing these studies here, and in addition is studying phase transformations in rapidly quenched materials. He has designed and built a gas quenching apparatus capable of quenching rates up to 75,000 °C/second.

Dr. Ronald Bullough is here for a year from his position with the Theoretical Physics division at Harwell, England. Dr. Bullough received his degree from Sheffield University, where he worked under Prof. Bilby. He has since be-

come reknowned for his work in the theory of continuous dislocations. While here, Dr. Bullough will continue his research, particularly in collaboration with Prof. Gilman, and will be prevailed upon to present seminars and discussions for the benefit of our staff and graduate students.

## WITH THE TRAVELERS

Prof. Wert held a position as Visiting Professor this past summer at Stanford, and presented a course in metal physics. While on the West Coast, he visited Choh Yi Ang and Ken Kamber in Santa Ana. Ang has moved into a new home at 1217 Sharon Rd in Santa Ana, and is particularly proud of the 18 orange trees in his back yard.

Charlie and Prof. Thompson are enjoying the popularity of their text "Physics of Solids" which was brought out by McGraw-Hill early in 1964. A very favorable review of the book appears in the November, 1964 issue of the *Journal of Metals*.

Prof. Paul Beck was visiting lecturer at Clausthal Institute of Technology, Germany, last summer, and visited five scientific research laboratories in Budapest and gave a talk at the invitation of the Hungarian Academy of Science in Budapest. He attended the Nuclear Magnetic Resonance Conference in Louvain, and presented talks at the University of Ghent, Belgium, and at the Conference on Magnetism in Nottingham, England, in September. Somewhat closer to home, Prof. Beck made initial plans for and presented three lectures of a Course on Alloy Phases at the University of California at Los Angeles, and gave talks at North American Aviation Research Center and Battelle Memorial Institute this Fall.

Prof. Walter Brucker returned from his sabbatical leave in August. At the Polytechnic Institute in Milan, Italy, he engaged in research on a-c corrosion of lead and consulted with Italian scientists interested in corrosion and welding. Further visitations of professional interests were made with Prof. Pourbaix in Brussels and Prof. Lacombe in Paris. He also visited laboratories at Ox-

ford, Cambridge, and the Imperial College in London. The exciting cultural aspects of European travel were shared with Mrs. Bruckner from Naples to Scandinavia including their return home via Iceland. In all, the Bruckners visited a total of eleven different countries.

## UNDERGRAD WINS AWARD

One of our undergraduates, Roy Adams, reflected honor and glory on himself and the department, not to mention the satisfaction of a \$50 cash award, when his display for the 1964 annual Engineering Open House was judged the first place winner. Roy's exhibit, developed under the direction of Prof. Wayman, was a bubble raft model of a crystal. The exhibit was well-conceived, expertly built, and demonstrated by a crew of students who were well-prepared to answer questions about the principles which it demonstrated. Roy is now a graduate student in the department.

## WAYMAN HAS NEW TEXT

Prof. Wayman is the author of a new text in the Macmillan Series in Material Science. His book, which was only recently released, is entitled "Introduction to the Crystallography of Martensitic Transformations." The text deals primarily with the mathematical description and analysis of martensite transformations, and includes an introduction to matrix algebra necessary for an understanding of the treatments discussed. It is intended as a text for advanced students in the field.

## Mining (Cont. from Page 1)

of Theoretical and Applied Geosciences (TAG) to coordinate course offerings and research now being conducted separately by our staff and also by staff members of other departments including Civil Engineering, Geology, and Theoretical and Applied Mechanics.

With regard to undergraduate work in the area, the committee is recommending discontinuation of the undergraduate mining curriculum with some of the undergraduate mining courses being incorporated into a broadened Geological Engineering Option in the General Engineering Department.

# ALUMNI NOTES

We were all ready to serve coffee and doughnuts to the expected crowds of visitors the morning of the homecoming football game this Fall, figuring that the twin attraction of Butkus & Co. and our new quarters would attract a great number of alumni. As it was, only a few came by; principally the loyal delegation from Battelle headed by Stan Paprocki, '46. We are not easily discouraged, however, and make the invitation clear for next year. We challenge you to come by next Fall, and we'll have a brew prepared guaranteed to cure any residual effects of the previous night's activities.

Charles Dodge, '24, retired last May to Norris, Tennessee (130 Orchard St.), after a long and interesting career which began just after World War I in Eccles, W. Va., as assistant to the chief engineer of a coal mine. Later he became research engineer for Associated Mining Companies of U.S. Steel. He was then Asst to the Gen Supt, Mining Dept of Youngstown Sheet & Tube. Mr. Dodge then joined the staff of the U.S. Bureau of Mines. During WW II he was Asst Chief, Rescue Division, with the rank of Major in the Army Special Services. He then returned to the Bureau of Mines, and finally in the twilight of his career, accepted a position as valuation engineer for the Internal Revenue Service. Mr. Dodge can look back with a great deal of satisfaction on his career and now follow the careers of his children's families: all five are professional men in medicine, business, and engineering, although none are in mining.

L. H. McCreery, '37, is back with Ling-Temco-Vought since June, 1963. His responsibilities include supervision of the Structures Materials Group in the Engineering Dept of LTV Michigan Division. The McCreery's have three married daughters and a fourth who is a high school junior, and have been made grandparents four times over. Lowell's address is now: 22040 Drexel Dr, Mt Clemens, Michigan.

Maurice Murphy, '41, visited the

department when he was in Urbana to deliver his daughter, a student in the University, for Fall registration. Maurice serves in the Air Force with the Directorate of Scientific and Technical Intelligence, Defense Intelligence Agency.

C. O. Dodson, '42, visited us early this Fall and was persuaded to return in November to present a talk to the Mineral Industries Society. Chuck is V-Pres of Engineering, Niagara Weaving Co, whose main product is fourdiniere wire cloth for the paper industry. He gave an illuminating talk on the manufacture of this product, followed by some general remarks about opportunities and challenges for the metallurgical engineer in industry. Our students eagerly receive one who can tell them about "life on the outside", and when that person is a graduate of the department, the rapport is even greater. We greatly appreciate having had Chuck here and would welcome other volunteers who can remember from their undergraduate days how grateful they were for such presentations.

Harry Czyzewski, '42, has been named by Gov. Mark Hatfield of Oregon, to serve as industry representative on a steering committee which arranged a conference on atomic energy development and state and municipal regulation.

Roland P. Carreker, '46, was awarded the AIME New England Conference award for his paper "Dip-Forming, A Continuous Casting Process." The paper was published in the October, 1963 issue of the **Journal of Metals**. Roland is with General Electric in Schenectady.

Ed Sluetz, '47, has been promoted by Caterpillar Tractor Co. to the position of President of their Mexico subsidiary located in Monterrey, Mexico. Previous to this position, Ed was manager of purchasing and later Works Manager of Caterpillar's Brazil plant. Congratulations, Ed!

Muammer Unal, '49, better known to his classmates as Mike,

is now Asst Supt of the electrolytic tinning and shearing mill for a new steel plant at Eregli, Turkey. His address is Erdemir, Kdz. Eregli-Turkey.

L. A. Dingwell, '50, is back in the area, having taken a position with Wagner Malleable in Decatur, and we have the opportunity of seeing him at local ASM meetings. Ding previously held a position with Albion Foundry, Albion, Michigan, and before that worked at Kropp Forge Co, Chicago.

Orville Kimball, '55, was here this Spring to discuss problems concerning his research on clustering in gold-nickel alloys with Prof Wert's group. Orville is finishing up his Ph.D. at Northwestern. He received his M.S. at RPI, and prior to that spent four years at GE's Research Laboratory at Schenectady.

Ron Larsen, '58, was on the campus recently attending an SAE conference on stress analysis sponsored by the T & A M Department. Ron is with Sunstrand Aviation in Rockford. I could add that his company is anxiously looking for a young metallurgist to employ, but that same remark would then have to be appended to each paragraph in this paper.

Joe Legru, '58, is now in the Graduate School of Business Administration at the University of Missouri. Joe spent two years in the service after graduation, and then worked two years at McDonnell Aircraft before returning to school.

Bob Stusrud, '59, who is an experimental metallurgist at GM's Allison Division in Indianapolis was on the campus this Fall during the football season. He came by the laboratory with one of his colleagues to tour our facilities in metallurgy and nuclear engineering.

Ivars Freimanis, '59, came by early this Fall as he was passing through on his honeymoon. Congratulations to Ivars on achieving this notable milestone. He is em-

(More Alumni News may be found on page four)

## MAIN CHANGES IN CAMPUS SCENE

A visitor to the campus, even though absent for only a year or so, is immediately struck by the great physical changes in the University. Giant dormitory complexes featuring high rise structures have sprung up all over the campus. The Illini Union has doubled its size and services. A new Civil Engineering building has begun to take shape north of Springfield Ave. The Materials Research Laboratory which will mean so much to our research program is expected to be ready for occupancy this summer. New buildings for Commerce and Education have been completed on the South Campus this year, and additions to the Biology and East Chemistry buildings are now underway.

Meanwhile, the campus at Chicago Circle (Congress Circle until the Congress Expressway changed its name) will take in its first students in February, and its enrollment is expected to start at about 7000 and rapidly rise to 20,000 by 1970. Courses in materials will be offered there, and it will be interesting to see if the State can support such programs at two institutions with our enrollment as small as it is.

For the first time in history, the University had to refuse admission to qualified applicants this Fall—some of them from the upper half of their class. With over 27,000 students on the Urbana campus, housing as well as staff and classroom shortages forced a limitation on enrollment.

The University is now following a pattern of progressive admissions. Until April 15, applications will be accepted only from students from the top quarter of their high school graduating class, or the top 15% for nonresidents. Transfer students who are residents must have a 3.75 average. From April 15 to May 15, entering freshmen must rank in the top half if they are residents, top quarter if nonresidents. If there are more applicants in this group than space available (this was the case this Fall), a system of priority will be established based on class rank and scores on entrance examinations. Other applicants will be considered after May 31, but it is unlikely space will be available. It is important to note that the University expects to be

## ALUMNI NOTES

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employed at Crane Seal Co. in Chicago.

Joe Wdowiarz, '62, finished his M.S. degree at RPI this year, and has joined the staff at Battelle Memorial Institute. Joe is engaged in welding research at Battelle.

Congratulations also to Al Ashurst, '63, on his marriage in November to the former Miss Eleanor Hood in Columbus, Ohio. Al has been at Battelle since his graduation. The Ashursts now live at 3133 Tremont Rd, Columbus, Ohio.

Tom Wendt, '63, completed his M.S. degree at the Univ of Wis-

consin, and has returned to Illinois this Fall to begin work on his Ph.D.

consin, and has returned to Illinois this Fall to begin work on his Ph.D.

Michael Cohen, '63, has also taken on graduate studies at the request of his employers, American Steel Foundries. We trust this is because Mike has been found worthy of the development, and not because of deficiencies in his preparation.

Joe Gilkison, '63, received his M.S. here last February, and has joined the metals joining group at U.S. Steel Applied Research Lab at Monroeville, Pa. Ralph Leonard, '63, also finished his M.S. this Spring, and also accepted a position at the lab in Monroeville. To complete our infiltration of the organization, Sid Diamond began working at the Monroeville lab at the first of this year. Sid will finish writing his Ph.D. thesis while at Monroeville, having completed the experimental part of his work on diffusion of carbon in nickel.

Lowell Hoffman, '63, will complete requirements for his MBA at Indiana this June. Lowell has held an assistantship in the Aerospace Research Application Center of the Indiana U. Foundation. Through arrangements with ARAC, he has had a great deal of experience working directly with industries on a variety of technical and production problems. Lowell is very enthusiastic about the program, and recommends it to anyone planning graduate work in business.

Fred Fabricant, '64, is now participating in Weirton Steel's two-year training program. Fred was here at homecoming, and called to report that he finds his work and experience very interesting and enjoyable. Fred's address is 415 McKee, Steubenville, Ohio.

Earl Schneider writes from Edwards AFB that he is completing by correspondence the elective course he needs for his degree. Lt. Schneider is Project Officer at the Rocket Propulsion Laboratory, and has technical direction and responsibility for rocket motor case and nozzle development programs.

able to accept all qualified applicants at midyear.  
If you are concerned about the "closing college door" for your child, let them rank high in their class, apply early, and failing all else, plan to enter in February rather than September.

The University is beginning to use computers to aid and speed (the latter has yet to be demonstrated) registration. Nearly all continuing students now "advance enroll". A student makes out his program in consultation with his adviser before completion of the current semester, and this data is fed into the computer, which then determines the number of sections necessary, and distributes the students among the available sections. Instead of the mad rush most of you associate with registration, the advance enrolled student need only pick up his printed program, pay his fees, and be on his way. As much as possible, students will be able to select their preferred section times and classes.

Attention is being directed now to year-round operation as increased enrollments will force all colleges to make maximum use of their facilities. Very much implied in this program is a conversion of the quarter system. If this comes, as many predict it rapidly will, it will serve as an opportunity to critically review the curriculum, and the balance between "applied" and "basic science" oriented courses considered. Comments by you, the product of the system, would be very helpful as the faculty deliberates these important points.