

NEWS-LETTER

UNIVERSITY OF ILLINOIS

Department of Mining and Metallurgical Engineering Alumni

JANUARY, 1958

STAFF ADDITIONS ARE MADE IN METALLURGY AND PETROLEUM

An addition to the staff in Petroleum Engineering this Fall, Associate Professor Norman Street, comes to us all the way from Melbourne, Australia. Dr. Street did his undergraduate and graduate work at Melbourne University, receiving his Ph.D. in physical chemistry in 1956.

Dr. Street has had ten years' industrial experience in the ceramic industry in Australia, and then worked for the Australasian Petroleum Co. in Papua before returning to Melbourne as a lecturer in chemistry and geology while taking graduate work.

Norman is not a newcomer to these shores, having visited the U. S. in 1944 to study ceramic manufacture and in 1950 to study drilling mud practices in the Gulf Coast region. Norman brings his wife and baby daughter with him to Urbana.

Dr. Street will offer his first lectures next Fall, and in the meantime will be advising graduate students as well as initiating his own research on problems in physical chemistry related to the recovery of petroleum.

Short Course Given On Cathodic Protection

A successful week of instruction on corrosion and cathodic protection problems was concluded on the campus last month. Students from industry and visiting speakers came from the East Coast to Texas and Montana to participate. Prof. Bruckner was chairman of the course, and he, as well as Prof. Metzger, also contributed to the program as lecturers.

Mr. Julius Harwood, Head of the Metallurgy Branch, Office of Naval Research, gave the banquet address. Mr. Harwood visited members of the metallurgy staff when he was on the campus, and discussed ONR interest in the metallurgical research being conducted in the department.

Dr. C. M. Wayman joined the staff this fall as Assistant Professor of Metallurgical Engineering. Prof. Wayman received his B.S. and M.S. degrees in metallurgy from Purdue University, and completed his doctorate work at Lehigh University. His thesis research was concerned with factors affecting the strength and ductility of weld metals.

Dr. Wayman is teaching courses in ferrous process metallurgy and in alloy steels, and is organizing a research project in the area of diffusionless phase transformations under an Air Force contract.

Marvin is an expert on hi-fi and firmly established as an enthusiastic and generous consultant to the rest of the staff on problems in the design and construction of hi-fi systems. Marvin and his wife, Patty, are also avid bridge fans, and are willing and congenial additions to any evening around the card table.

Outstanding Personalities Here For Special Lecture Series

Dr. H. M. Rosenberg was the third annual summer lecturer in the department, as he came to Illinois from his position in the Clarendon Laboratories, Oxford, England, this past summer. While in the department, he taught a course on the mechanical properties of metals at low temperatures, a field in which he is an outstanding authority. Dr. Rosenberg was of considerable help to research workers in both metallurgy and physics who were concerned with problems associated with low temperature technology.

Dr. Rosenberg was accompanied by his wife and small daughter and before returning to England this Fall, the Rosenbergs managed to do a great deal of sightseeing, as well as attend technical meetings and visit other laboratories.

Careers Booklet

A new booklet aimed at interesting high school students in metallurgy is being prepared by staff members and will soon be ready for distribution. The purpose of the booklet is to give potential students and vocational advisers an idea of what metallurgy is, its importance, and the opportunities it offers. The booklet also presents information on the program in metallurgical engineering here in the department.

The text is brief and informal, and attractively illustrated with pictures carefully selected to interest the reader and give him some typical examples of some of the problems and accomplishments in the field.

Copies will be sent to high school libraries in Illinois, and to vocational advisers as well as to prospective students upon request. Alumni who may want copies for their own information or for distribution to any potential students they may be cultivating may write the department office for copies.

Another visiting lecturer to campus was Prof. Carl O. G. Borelius, who delivered a series of eight lectures last Spring under the joint sponsorship of our department and physics. The lectures, presented over a period of three weeks, were on a range of topics in the field of the physics of metals. Prof. Borelius has a long and brilliant career in the field of metal physics, and has made many outstanding theoretical and experimental contributions. His personal initiative led to the creation of the Department of Technical Physics in the Royal Swedish Institute of Technology, and he is still active in the work of the Institute. While here, he was freely consulted by members of both physics and metallurgy departments.

NOTES ABOUT THE STAFF

The mining consulting firm of Wright and Eadie are looking with disfavor on private flying as a time-saving device. On a recent job in Fort Dodge, Iowa, these intrepid aeronauts (Eadie, pilot and Wright, navigator) were grounded two days due to bad weather.

A large delegation of students and faculty attended the Illinois Mining Institute meeting in Springfield last October. A delegation of metallurgy students and staff were guests of Inland Steel and the Chicago Section, AIME, recently for a plant visit and technical meeting in Chicago. Still another student trip (don't they ever study?) was sponsored by the ASM, who provided transportation to the Metals Show for student members of ASM. The students were guests of the ASM at the annual Distinguished Service luncheon.

Dr. R. G. Wuerker attended the Southeastern States Mining Conference and Society of Mining Engineers of AIME joint meeting in Tampa, Florida on Oct. 15 to 18. He read a paper on "Distribution Curves for Heavy Media Separation of Iron Ores," and acted as chairman of one of the sessions of the Minerals Beneficiation Division.

The department was represented at the Gordon Conference on Chemistry and Physics of Metals held last July in Meridian, N. H., by Profs. Beck, Thomson, and Wert. Thomson and Wert served as session chairmen, and Prof. Wert presented a paper as well.

Profs. D. S. Lieberman and G. S. Baker presented papers at meetings of the 4th International Crystallographic Union Congress at Montreal last summer. George Baker has since resigned his position in the department and is now Asst. Prof. of Physics at the University of Utah.

Prof. George Eadie received his Engineer of Mines degree at last June's commencement. During the first five weeks of summer, George was on the faculty of the Civil Engineering Department at their summer surveying camp at Blackduck, Minnesota. George's duties

kept him pretty busy, but his family enjoyed an extended North Woods vacation.

The Dave Liebermans have another mouth to feed at home as their first child, Helise Etta, was born Nov. 11. The timing of her arrival was just right to let Dave present papers at the Metals Congress on the 5th and 7th, and still beat the stork to the hospital. Both of his papers were invited; one on "Metallurgy and Physics" before the Metals Division, Special Libraries Assoc., and a second before the IMD Seminar on the Science of Metal Hardening.

Prof. Bohl attended an eight-weeks summer institute on nuclear metallurgy at Iowa State College sponsored by the AEC and the American Society for Engineering Education. Prof. Bohl, who spent the previous summer at Argonne, will help plan courses to be offered for students working for a master's degree in the College's new program in Nuclear Engineering.

D. S. Lieberman and T. A. Read have been requested by the National Science Foundation to exhibit some of their research at the International Science Section of the 1958 Universal and International Exhibition (World's Fair) in Brussels, Belgium, as part of the United States' contribution. Descriptive materials, models, pictures, and actual demonstrations have been prepared on the unusual properties of gold-cadmium alloys, particularly the remarkable "three dimensional memory" effects.

At room temperature, a rod of gold-cadmium behaves like a piece of rubber, and will snap back to its original shape after it is bent. When it is hot, however, it is like many other metals in that it is difficult to deform and will break if bent too much.

Demonstrations like the ones sent to Belgium have been exhibited at Open House and other events on the campus, as well as at the Metals Show in Philadelphia and other places.

Walter Rose and Fred Wright worked this summer with the Illinois State Geological Survey. Prof. Wright served as engineering consultant-Coal Division and carried

out research on roof control problems. Prof. Rose worked in the Petroleum Engineering Section. Later in the summer, he attended the Second Cuban Petroleum Conference at Havana, where he presented a paper.

The staff and students doing research in radiation damage (a research project carried out jointly between physics and metallurgy) have had a very successful year. Experiments dealing with property changes under low temperature bombardment which had been underway for several years were finally completed successfully. The measurements alone were extremely difficult to make, and the problem was greatly complicated as they had to be made at 5° K and in the cyclotron. Those participating in the experiments have a great feeling of satisfaction in seeing them done.

EE's Will Take Metallurgy Course

Our department has organized a new service course in the physics of metals to be taken by sophomore electrical engineers. Instruction in this course will begin on a limited scale this February, and become a required course for all EE's next year, when about 200 students will be enrolled each semester.

This course is patterned somewhat after the physics of metals course taught our own seniors. It will, however, be on a much more elementary level, since the students will have less knowledge of metallurgy and physics.

The Electrical Engineering Department has requested that the course should emphasize electrical resistivity of metals and ferromagnetism. These topics will be treated from the atomic point of view, with a lot of attention being paid to the effect of the crystalline nature of metals.

No adequate text exists for this course, since the subject matter is specialized to electrical engineering. A set of notes is being prepared by Prof. Wert for student use. These will probably form the basis for a textbook for the course after several years of revision.

NEWS OF THE ALUMNI

Burton C. Person, B.S., Met '47, formerly with Esso (NY) has joined the John Wood Company in New York as assistant to the chairman.

J. R. Burns, Min '39, Works Manager, U. S. Gypsum Company, Shoals, Indiana, visited the department while job interviewing on the campus. He brought us greetings from Robert A. Henn, Min '56, who recently transferred from Gilman, Colorado to Shoals. The Hennis had a baby boy while in Colorado.

Alphonso Merlini, Ph.D., Met '54, visited here last summer on his way to Berkeley, California to do X-ray diffraction work at the University of California. Alphonso had spent two years in Guinier's laboratory in Paris.

Marvin B. Neal, Min '54, returned in November from his tour of duty with the Armed Forces, a great part of which was spent in Japan. The Neals now have three children.

Al Haarr, Met '57, sends in his address as 166 Freeport Rd., New Kensington, Pennsylvania, where he is working for Alcoa. He has taken an interest in spelunking, or cave exploration, much to the disappointment of his good friend and mountain-climbing enthusiast, Bill Becker, '57. Bill has taken a teaching assistantship in the department, and is working for his master's degree.

Harry I. Phemister, Min '29, has resigned from his position with American Cyanamide, Latrobe, Pa. He receives his mail now at Plaza Courts, 600 E. Main, Carbondale, Illinois.

Two former Metallurgy grads, Duane Moberg, '56, and Martin Coale, '54, have finished their military service and have come back to the alma mater to work for master's degrees. Duane was the first to return to the fold, and is working in the field of martensite transformations. Martin returned from four years in the Navy spent in various parts of the world, mostly the South Pacific, to resume his study of metallurgy.

James W. Goodrick, Min '51, Drilling and Blasting Foreman with Baroid Sales Division, National Lead Co., Marvern, Arkansas, dropped into our offices last June and brought us up-to-date on the whereabouts of some of his classmates. Tom Keim, '51, is now Plant Superintendent for Baroid Sales Division, National Lead, at Sweetwater, Texas. Denny Benner, '51, is back as Safety and Hygiene Engineer for St. Joseph Lead Company, BonneTerre, Missouri. Gordon Roughly, '52, as well as Nick Szabo, '51, work as civil engineers with the State Highway Department, in Springfield, Illinois.

R. B. Snow, Met '53, was a visitor last year while on assignment to a Nike station in Gary, Indiana. Bob was anticipating his discharge from the service, and was investigating employment leads.

Phil Leighly, Ph.D. Met '52, research metallurgist at Denver Research Institute, sends information about Burt Davis, M.S. Met '52. Burt is working at Convair and has been concerned with operations with solar furnaces. His address is 2914 Naugatuck, San Diego, California.

Leon L. Felts, Min '52, dropped in during the summer vacation. Leon is now with Convair Aircraft in Lancaster, California.

R. L. (Dick) Sloan, Min '54, is back from the service and has taken a position with the Carter Oil Company, and is residing in Effingham, Illinois.

James Dobbin, Met '53, has received his discharge from the USAF, and has joined Alcoa as metallurgist at their Davenport, Iowa sheet and plate mill.

S. H. Cohlmeier, Min '41, is manager of a U. S. Steel Company project studying new iron ore sources in Wyoming.

C. M. Squarcy, Met '36, has been promoted to Manager of Iron Production, Inland Steel Company, E. Chicago, Indiana. He has been Superintendent of the Blast Furnace Department.

Vin Doo and John M. Silvertson have recently received their doctorate degrees in metallurgy. Vin is remaining in the department as a research associate, and will continue his work on diffusion with Prof. Balluffi. Jack has also decided on university life, as he accepted a position as Asst. Prof. of Metallurgy at the U. of Minnesota.

James R. Miller, Min '50, has left the Midwest, and is now with Ocean Services, Inc., a branch of Utah Construction Co., in San Francisco, California.

Dick DeWitt, Met '49, is now with the Austenal Laboratories in Chicago as metallurgist in the precision casting field. Dick visited the campus last Spring to renew acquaintances and gave the department a film on precision casting to be added to the department film library. Lee Frey, Met '49, also with Austenal, is scheduled to be plant manager of the new plant Austenal is building at LaPorte, Indiana.

Dennis Bobka, Min '53, has joined Teletype Corp., in Chicago as contract engineer.

W. W. Slade, Min '46, with Owens-Illinois, Oakland, California, received his Engineer of Mines degree at the commencement exercises in June, 1957.

Earl Carlson, Met '56, paid us a visit last Spring while he and his family were en route to an 18-months' army tour in Hawaii. Earl spent six months with Electromet in Chicago and Niagara Falls before being called in the Army.

Dr. Charles C. Boley, Min '35, was recently separated from his work with the U. S. Army, and has become coal technologist, U. S. Bureau of Mines, Denver Federal Center, Denver, Colorado.

Bill Albert, Met '56, who was employed at U. S. Steel's Fairless Works, is now in the Army and stationed in Germany.

Two good friends from their undergraduate days, Ron Nylen, Met '57, and Bruce Aufderhaar, Met '56, are now employed at Mallory-Sharon in Niles, Ohio.

Many Grads Attend Alumni Luncheon

A large number of metallurgy alumni gathered together for the annual Alumni Luncheon at the Metals Congress in Chicago last November. Three former staff members were present: Jim Bechtold, Westinghouse Research Labs in Pittsburgh; Harry Czynewski, Manager of Metallurgical Engineers, Portland, Ore.; and John Snyder, DuPont at Wilmington, Del. Present staff members who were there included Tom Read, Head, Paul A. Beck, A. C. Forsyth, Earl Eckel, Walter Bruckner, and R. E. Cramer of the T. & A. M. Department.

Prof. Read, in an informal program following the luncheon, cited the growth of the department as reflected in new courses, research projects, and staff members. He urged alumni participation in meetings with high school seniors to provide them with information on opportunities in metallurgy. The new pamphlet on careers in metallurgy which will be ready for early distribution was suggested for use in increasing student interest in studying metallurgy at Illinois. C. A. Swartz, who is an ASM trustee, emphasized industry's great need for metallurgists who can make use of the optical microscopes and interpret microstructures in terms of potential service behavior.

Alumni who attended the luncheon were: Fred Siegrist, '48, ASM-MEI; R. E. Herzler, '40, Reynolds Metals, Chicago; W. W. Berkey, '48, Reynolds Metals, Richmond; Robert Necheles, '51, Armour Research; S. W. McGee, '52, Armour Research; H. B. Nudelman, '52, Armour Research; Joe Borrino, '52, Sinclair Research, Harvey; G. R. Caskey, '50, DuPont, Aiken, S. C.; D. L. Dyke, '50, General Electric, St. Petersburg, Fla.; Albert Klein, '55, American Can, Barrington, Ill.; Norman Block, '48, Foster Wheeler; Ed Spencer, '47, American Can; R. W. Klann, '48, Deere & Co., Moline; Fred L. Riddell, '43, H. Kramer, Chicago; D. R. Gosch, '39, H. A. Wilson Co., Union, N. J.; Roy M. Brodnick, '49, Micro-Switch, Freeport, Ill.; Verle Utzinger, '49, Mueller Co., Decatur; Willard Garcia, '49, Kawneer, Niles, Mich.; Carl Weymueller, '49, ASM, Cleveland; Richard Gaydos, '53, Republic Steel, Chicago; Philip Frederick, '50, Allegheny Ludlum,

INSTRUCTION AND RESEARCH IN PETROLEUM PRODUCTION REPORTED

A growing staff pacing the increase in student enrollment emphasize how petroleum engineering, the infant of our department, is beginning to crawl and show other evidence of young life.

At the beginning of the Fall semester, five students were enrolled in graduate work, thus crowding the laboratory space in the Ceramics Building attic which had finally been furnished and equipped earlier in the year. One of the students, James Cleary, completed his research, and was one of the featured speakers at the Illinois Basin AIME symposium on hydraulic fracturing which this department sponsored in December. Mr. Cleary thus earned the first master's degree awarded by this department in petroleum engineering.

Other research studies currently being undertaken by students and staff include: programming of network model problems in ILLIAC to investigate the microscopies of oil recovery, the analytics of fluid flow through porous media, the correspondence between directional permeability and sand grain orientation as seen in thin-section, and a study of the relation between pore tortuosities measured by ionic current conduction and fluid flow.

Mr. Carl Sherman, the new head of the petroleum engineering section of the Illinois State Geological Survey, will join the staff on a tenth-time basis, and will offer a series of lectures on drilling and production practice commencing February, 1958. Mr. Sherman obtained his M.S. in Petroleum Engineering at Pennsylvania State Univ. in 1951, and thereafter was employed in various oil industry capacities before coming to Urbana last September.

During the past year, a number of major changes have been introduced into the undergraduate petroleum engineering curriculum.

Watervliet, N. Y.; F. J. Bolda, '48, IBM, Poughkeepsie, N. Y.; William J. Craig, '41, Lockheed Missile, Van Nuys, Calif.; C. E. Sims, '15, Batelle; P. H. Booth, '29, Youngstown Sheet and Tube, Chicago; R. C. Anderson, '51, Consultant Houston, Texas; J. M. Raymer, '51, Lycoming, Stratford, Conn.; and C. W. Dollins, '30, Union Carbide, Oak Ridge.

These changes give the student better preparation for jobs in industry and he is given the incentive and opportunity to continue into graduate work.

The curriculum is it was previously constituted gave adequate emphasis to mathematics (through differential equations), the physical sciences, and geology. Minor changes introduced in these fields include the addition of a physical chemistry laboratory and the substitution of Physical Geology for Geology for Engineers. The first change recognizes the close connection between petroleum engineering laboratory work and physical chemistry principles; the second affirms that geology is one of the parent disciplines from which petroleum engineering is derived.

A major change has involved the addition of Mining Engineering 240, Survey of the Petroleum Industry, in the fourth semester. This course introduces the student to the subject matter at an early stage, and emphasizes the equal importance of economic considerations to engineering principles. Mining Eng. 244, Petroleum Production Laboratory, has been increased to a two-hour course, so that the student gets lecture material along with the laboratory work. Both of these changes correct a defect of the older curriculum which left the student unidentified for two and one-half years with the subject matter of his field of choice, and then brought him to applications without introductory preparation.

Finally, three courses have been added for graduate and advanced undergraduate students. These include Advanced Reservoir Engineering, Recovery of Petroleum, and Advanced Petroleum Engineering Laboratory. Thus it is now possible for the ambitious undergraduate to take additional elective work and achieve an increased preparation for industrial jobs. More important, a systematic basis is now had to offer formal training at the graduate level.

Bob Thomas, Met '52, was in town last Spring and visited the lab during the annual Open House. Bob is with American Steel and Wire at Waukegan in their Stainless Division.