NEWS-LETTER

UNIVERSITY OF ILLINOIS

Department of Mining and Metallurgical Engineering Alumni

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RELATIONS WITH HIGH SCHOOLS IMPROVED

One of the areas of endeavor to which the College is devoting increasing attention is closed co-ordination with the high schools of the state. The objectives of this program are to inform prospective students on engineering careers, resulting in better students, better prepared to start the engineering curriculum.

One step was taken with the change in mathematics entrance requirements, and the distribution of the bulletin "Mathematical Needs for Prospective Students at the College of Engineering of the University of Illinois." This bulletin, resulting from extensive study, has received nationwide attention. Currently, a committee is at work developing a high school math sequence satisfying the general educational requirements of all students and also preparing students for our entrance requirements.

The Engineering Open House, which is now an annual affair, is another important contact with the high schools. It is hoped to impress prospective students with the excellence of the College's physical plant, with the implication that if the equipment and labs are good, the staff is probably equally good.

Personal contacts are made through talks given at high schools by our deans and other interested staff members. These contacts attempt to tell students what engineering is and what it is not, what engineering does, and what sort of education is required. Currently, a film describing activities at the College is being prepared to send to the high schools.

Last fall, an Engineering Alumni Committee was set up with the purpose of placing alumni as advisors to high schools in Illinois and adjacent states. The job of this group is not to "sell" the College; they are to be information specialists. While we would like to see the better students come here, this group would not hestitate to help where another school or career is better suited to the individual's case.

The size of the committee is by no means adequate to cover all our high schools, and good representatives are still needed. If you can find time to act in this capacity, the College, through Dean H. H. Jordan, would appreciate hearing from you. The work is stimulating, and gives the satisfaction of being of help to others.

Department to Offer Metallographic Service To College of Engineering Investigators

The Department this year has inaugurated a Metallographic Service Laboratory for the benefit of others in the College whose investigations require metallographic data, but who lack the facilities and the talent to do a satisfactory job.

Those outside of the Department who are working with metals have recognized both the importance of including metallographic data in their reports, and also their own limitations in preparing work which could satisfactorily compete with work from industrial laboratories. These people have agitated for such a service which is now provided by our department.

The College has appropriated funds for new equipment and an operating budget, and the work is carried out under the supervision of the regular staff.

We are glad to provide this service and welcome this opportunity to emphasize the importance of metallurgy to other engineers. The service has proved popular in the short time it has been available, having already completed work for the Ceramics, E.E., C.E., M.E., and T.&A.M. Departments.

AIME Honors Beck, Gilbert

Individual efforts of members in the department have received outstanding recognition this year. Prof. Paul Beck achieved the distinction of receiving the Mathewson gold medal of the AIME for papers published during 1949-52 in the AIME Transactions on annealing textures. The award was made at the annual AIME banquet in Los Angeles last February.

Also at this meeting a paper by Bruce Gilbert, a graduate assistant in mining, was announced winner of the national student paper contest for 1952. His paper was entitled "Shore Scleroscope Hardness Tests Made on Moh's Scale Minerals, from Talc to Quartz, Inclusive." Since Bruce was unable to attend the meeting, the paper was read by Prof. Wuerker. Bruce was preparing for a trip to Korea at the time.

Our third coup was engineered by Wilford Couts, a junior in metallurgy, in a student paper contest among those taking the foundry course offered by the M. E. Department. Couts took the prize for the best paper away from the preponderance of M. E.'s enrolled in the course.

Engineering Course for LAS Students Planned

The College of Engineering is planning to offer next fall to students "south of Green Street," an elective course in the philosophy and ideas of engineering. In the technological age in which we live, it is increasingly important that non-technical people appreciate the scope and philosophy of technical sciences, and be able to evaluate their influence on social and political changes.

This announcement should come as some satisfaction to those who have felt the pressure to "humanize" the engineer by including non-technical courses in his crowded curriculum, without consideration of the fact that the idea of a well-rounded education is a two-way street.

New Curricula Effective This Fall

As was reported in the News-Letter last year, the faculty of the College of Engineering has approved new mathematics entrance requirements effective September 1953 and some modification of the first two years' basic program for all engineers. As this necessitated adjustments in the entire curriculum, the department has taken this opportunity to enact many desirable changes.

The principal change has been the formulation of two options in metallurgy, d signated as industrial and physical metallurgy. The industrial option is essentially the curriculum in metallurgy that has been previously offered, although now modified to some degree. The physical metallurgy option is designed to meet the needs of students who are particularly interested in training for work in fundamental research in metals. It is expected that these students will continue in the graduate school and only those with an excellent record in the first two years will be admitted to the program.

We expect, of course, that the great majority of our metallurgists will continue in the industrial option, and that our major job is to train these men for engineering jobs. At the same time, however, there are usually one or two men a year who are definitely planning on graduate work and a scientific career. These students are handicapped in not having time to take work in physics and math as undergraduates.

The physical metallurgy option allows the student to waive certain engineering and production problem type courses and to fit more physics and math into his undergraduate program. At the same time, enough metallurgy and engineering is retained so that the products of the option is not overly specialized. Men electing this option will be under the guidance of Profs. Beck, Marx, and Wert and the physical metallurgy group.

In the space following are presented the curricula now offered by the department. This includes the new common freshman program and the new physical metallurgy option, in addition to the revised curricula in mining and industrial metallurgy. Because of the lack of space, only the names of courses are given.

CURRICULA TO BE INITIATED IN FALL 1953

COMMON FRESHMAN PROGRAM FOR ALL ENGINEERS

First Semester	Hours	Second Semester	Hours
General Chemistry	3	Chem. of Metallic Elments	4
Elements of Drawing	3	Descriptive Geometry	3
Analytic Geometry	5	Differential Calculus	3
Hygiene	2	Physics	4
Rhetoric	3	Rhetoric	3
Engineering Lectures	0	P. E.	1
P. E.	1	Military	1
Military	1		
	18		19

SECOND YEAR—METALLURGICAL ENGINEERING

Physics	4	Physics	4
Integral Calculus	5	Introduction to Metallurgy	3
Quantitative Analysis	5	Statics and Dynamics	4
P. E.	1	Military	1
Military	1	P. E.	1
Non-technical Elective	3	Non-technical Elective	3
	19		16

THIRD YEAR—INDUSTRIAL METALLURGY OPTION

Pyrometry	2	Physical Chemistry	3
Physical Chemistry	3	Ferrous Metallography	3
Principles of Physical Metallurgy	3	Ferrous Metallography Laboratory	3
Principles of Physical Metallurgy Lab	1	Electrometallurgy	2
Ferrous Process Metallurgy	3	Electrometallurgy Lab.	1
Metallurgical Calculations	2	Physics of Metals	3
Non-technical Elective	3	Resistance of Materials	3
		Resistance of Materials Laboratory	1
	17		19

THIRD YEAR—PHYSICAL METALLURGY OPTION

Pyrometry	2	Physical Chemistry	3
Physical Chemistry	3	Differential Equations & Orthogonal Functions	3
Advanced Calculus	3	Ferrous Metallography	3
Principles of Physical Metallurgy	3	Ferrous Metallography Laboratory	3
Principles of Physical Metallurgy Laboratory	1	Physics of Metals	3
Ferrous Process Metallurgy	3	Tech. or Non-tech. Elective	3
Non-technical Elective	3		
	18		18

FOURTH YEAR—INDUSTRIAL METALLURGY OPTION

E. E. Circuits & Machines	2	Applications of Electrical Equipment	2
Circuits & Machines Lab.	1	Electrical Equipment Lab.	1
Non-Ferrous Metallography	3	Mechanical Metallurgy	3
Non-Ferrous Met. Lab.	3	Alloy Steels	3
Non-Ferrous Process Met.	3	Advanced Physical Metallurgy Laboratory	3
Seminar	1	Seminar	1
Advanced Laboratory in Materials Testing	3	Tech. or Non-tech. Electives	5
Senior Inspection	0		
Tech. or Non-tech. Elective	2		
	18		18

FOURTH YEAR—PHYSICAL METALLURGY OPTION

First Semester	Hours	Second Semester	Hours
Non-Ferrous Metallography	3	Radiochemistry	2
Non-Ferrous Metallography Laboratory	3	Radiochemistry Laboratory	1
Seminar	1	Advanced Physical Metallurgy Laboratory	3
Metallurgical Kinetics & Thermodynamics	3	Seminar	1
Intermediate Atomic Physics	3	Electricity & Magnetism	4
Electricity & Magnetism	4	Tech. or Non-tech. Elective	5
Senior Inspection	0	Tech. Elective (in Physics)	3
	17		19

SECOND YEAR—MINING ENGINEERING

Physics	4	Physics	4
Integral Calculus	5	Elements of Economics	3
Geology for Engineers	3	Mineralogy for Engineers	3
Elements of Mining	2	Fuels	3
General Surveying	3	Statics	2
P. E.	1	Mine Surveying	2
Military	1	P. E.	1
		Military	1
	19		19

Summer Mine Surveying—2 hours

THIRD YEAR—MINING ENGINEERING

D.C. & A.C. Circuits	3	D.C. & A.C. Appartus	3
D.C. & A.C. Laboratory	1	D.C. & A.C. Laboratory	1
Prospecting and Exploration of Mineral Deposits	3	Steam, Air, & Gas Machinery	3
Analytical Mechanics	3	Mineral Dressing	3
Resistance of Materials	3	Fluid Mechanics	3
Resistance of Materials Lab	1	Fluid Mechanics Lab.	1
Non-technical Elective	3	Non-technical Elective	3
	17		17

FOURTH YEAR—MINING ENGINEERING

Mine Administration and Valuation	3	Introduction to Metallurgy, or Engineering Metallurgy	3
Mining Methods	4	Mining Design	3
Haulage, Hoisting, & Pumping	4	Mine Ventilation	3
Coal Preparation	1	Seminar	1
Inspection Trip	0	Tech. or Non-tech. Elective	6
Geophysics of Mining	3		
Tech. or Non-tech. Elective	2		
	17		16

The curricula listed above have many desirable features over the present ones. A greater number of elective hours are available to enable the student to develop special interest, whether technical or non-technical. The earlier appearance of mathematics in the program allows its use as a tool in technical courses and as a prerequisite. Physics, fundamental to all engineering, is given more emphasis, while credit in drawing is reduced.

We are now drafting an option in mining for students wishing to prepare for careers in petroleum production. In view of the importance of Illinois as an oil producing state, and of the fact that many of our mining graduates are accepting jobs in this field, this seems a necessary and desirable step.

There is considerable interest in the success of the new freshman program. Graduates of most high schools in the state will be deficient in math when they enter the University and will be unable to follow the regular program. A University committee is attempting to design a math program suitable for the high schools, and which will fit the general needs of most students as well as those who will attend engineering colleges. An experimental program is now being carried out at University High School.

In addition to this problem, there are many who expect the second semester of the first year to be the Waterloo of many prospective engineers. Already less than 30% of our students graduate in eight semesters. How this figure will change under the new curricula remains to be seen. A reconsideration of the five-year curriculum seems likely .

Undergraduate Enrollment Up

You are all aware of the fact that the number of graduating engineers has been very low the past few years, especially if you have been engaged in any recruiting activities for your company.

Our enrollment figures only confirm what is already quite evident, and the situation is similar at Universities all over the country. The figures do show some encouragement for the future, however, as our sophomore class is as large as any since prewar days. In the past, we have always had an increase in numbers between the second and third years, as students from other colleges and other departments transfer to us.

We are expecting a large junior class again next year and in the following year we should again graduate a good sized class of engineers. It is interesting to note that the Korea veterans are now entering the University in large numbers. Below is tabulated our current enrollment compared with last year:

	MIN	MET	TOTAL
1952	59	90	149
1953	40	99	139

Although our enrollment is less than last year, a much greater proportion is found now in the first two years:

	Fr-Soph	Jr-Sr
1952	72	77
1953	82	57

Beck Offers New Graduate Course

The department has drawn upon the excellent background of Prof. Paul Beck to add to the offerings of the graduate program. Prof. Beck is teaching for the first time this semester a course designated Met E. 407, "Plastic Deformation and Annealing of Metals."

This course includes a review of X-ray and projection techniques commonly used to analyze data in this field, in addition to the topics included in the title of the course.

NEWS OF THE ALUMNI

Joe Melill, of last year's class in metallurgy, realized his ambition of settling in Southern California when he accepted a position as research engineer with North American Aviation. His address is 13707 Crenshaw, Hawhtorne, California.

We enjoyed a recent visit from E. Bremer, a miner of the class of '26, who was in town for a Foundry Safety Conference sponsored by the M. E. Department. Bremer is now with the **Foundry** magazine.

Stuart L. Rice visited the lab while on vacation from Topeka and his job on the Santa Fe. Stuart is working as metallurgist, investigating various railroad material failures. The Rices now have an 8 mos. old girl, and are building their own home in Topeka.

George Clark, Assoc. Prof. of Mining, has been appointed to the executive committee of the St. Louis section of the AIME. George has been quite active in the affairs of the section for some time.

Prof. Walker was elected vice-president of the Illinois Mining Institute at their November 1952 meeting. An annual term as vice-president is traditionally followed by election to the presidency.

Eugene Robertson, Min '36, has received his Ph. D. in geology from Harvard University, and is now at Harvard doing research work.

Lee House, Met '48, was in Urbana last fall, just previous to his move from Armco to G. E.'s Aircraft Nuclear Propulsion Project at Lockland, Ohio, where he now holds a position as technical engineer. Lee wants to know what has happened to all his classmates, and would enjoy hearing from them. He is still living in Middletown, Ohio—3212 Bexley Dr.

James R. Miller, Min '50, has recently accepted a position with the Link-Belt Co. in Chicago.

Bob Anderson, Met '51, has established contact with the department, and hopes the reporting of his address might bring some of his classmates to write him: 4317 Jefferson St., Houston, Texas. Bob is organizing a metallurgy department for the W-K-M Company, manufacturers of oil field and pipeline valves. Bob recently married a local girl, and they plan to start home building soon.

The calloused hands and suntanned countenance that Prof. Hildebrandt has been sporting these past months were hard-earned in a good cause. Since ground-breaking last May, Vaughn has almost single-handed built his own home in southwest Champaign, and now the Hildebrandt family is living in their beautiful new 7-room home, while Vaughn is adding the finishing touches.

Although somewhat belated, special congratulations are due Roy and Louise Anderson on the birth of their twin girls last September. Roy, from last year's mining class in located in Liberty, Texas.

If you have seen the current number of **Acta Metallurgica,** the new international publication for the science of metals, you were probably impressed by the fact that it contained four contributions from this department. Papers by Profs. Charles Wert and John Marx; C. Y. Ang, a graduate assistant in metallurgy; Prof. Marx and G. S. Baker and J. M. Sivertson, both graduate assistants, and Prof. Paul Beck were contained in the March issue.

Mining grads of '40 and '47, Grant Hollett and R. N. Morris were on the campus recently to interview mining engineers for jobs after graduation.

Gilbert Jones, originally in the class of '51, has returned to the University after completing his tour of duty with the army to finish work on his B. S. in metallurgy.

Rodney Caudle, Min '51, now calls the San Fernando Valley home. He is doing stress analysis work for Lockheed Aircraft on jet planes. Rod and his wife had a baby girl, Anita Rose, October 14.

Our congratulations to Charles M. Squarcy, Met '36. Chuck was awarded the 1953 J. E. Johnson, Jr., award by the AIME at the February meeting in Los Angeles. Chuck is now assistant superintendent of the blast furnace department at Inland Steel Co., having been with the company since his graduation, with the exception of over three years in the service. Chuck is the fourth Illinois man to have received this award—made annually to an outstanding young blast furnace operator. The other winners were Hjalmar Johnson, F. M. Rich, and Leonard Tofft.

Prof. Chedsey has spent considerable time this year in observing operations in the field. In addition to accompanying the students to mines in Missouri and So. Illinois during the regular senior inspection trip, he was on a trip to the Univ. of Kansas for the Engineers' Council for Professional Development in January. While there he addressed the AIME student chapter on "The Professional Attitude." During the Easter recess, he visited mining areas in eastern Kentucky and West Virginia.

Recent Seminars on Variety of Topics

This year's program for the staff and graduate colloquium is studded with the names of outstanding metallurgists. These talks provide our staff and students an excellent opportunity to meet these men and learn first hand of their latest ideas and researches.

Last winter, talks were given by Dr. Peter Greenfield on "Alloying Characteristics of Zirconium;" Morris Cohen of M.I.T. on "Recent Researches on Martensitic Transformations;" Irvin Kramer of Horizons, Inc., on "Metallurgy of Titanium;" and B. E. Warren of M.I.T. on "Structure of Cold Worked Metals."

Lectures heard so far in the current semester have been by Andre Guinier on "Review of Current Ideas on Precipiation;" D. C. Jillson of General Electric on "Crystallography of the Deformation and Annealing of Titanium;" John Bardeen on "The Kirkendall Effect;" L. F. Yntema of Fansteel Metallurgical Corp. on "Refractory Metals;" and M. J. Manjoine, Westinghouse, on "Flow and Rupture at Elevated Temperatures."