

Mineral Industries

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THE DIVISION OF MINERAL INDUSTRIES EXTENSION -- THE PENNSYLVANIA STATE COLLEGE

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Accidents Cost the State 900 Million In Past 15 Years

(Dr. A. M. Northrup, the new Secretary of Labor and Industry, under the second Pinchot regime, claims Ashley, Pennsylvania, as his home. Having been a practicing physician in the hard coal district for a number of years, and being constantly in touch with Labor and Industry in his profession, as well as in his present position as Secretary of that State Department, he is well qualified to present the following views:)

The effort of any organization to spread information which will help to prevent accidents in the great Commonwealth of Pennsylvania naturally strikes a responsive note as far as the Department of Labor and Industry is concerned. We have noted with much satisfaction that the division of mineral industries extension work of the Pennsylvania State College places considerable stress on safety as an important phase of mining extension.

Pennsylvania, because of its large mining area, and other vast industries suffers heavily from accidents. According to the United States Bureau of Mines, there have been close to 28,000 deaths due to mine accidents in the State of Pennsylvania alone. Were it not for the cooperation of many scattered employers and workers, and of such organizations as the Division of Mineral Industries Extension, carrying on educational work along the line of safety, there is no question but what this number would be greatly increased.

Accidents place a heavy burden upon the pocketbook of industry as well as upon that of the State. A total of 2,641,645 accidents causing death, or disability of two or more days have been reported to the Department of Labor and Industry since Workmen's Compensation Laws first went into effect in 1916 in this State. Of this number 1,169,820 cases have come within the provisions of the Workmen's Compensation Act and have been awarded compensation totaling \$196,408,555.

This amount of \$196,408,555 is the direct cost to industry of accidents and represents only actual payments to injured workers or their dependents. It is estimated to be only one-fifth of the total accident cost. The other four fifths is made up of such items as: the cost of (a) time lost by the injured person; (b) time lost by his co-workers; (c) time lost by foremen and supervisors; (d) machine damage and spoilage of material; (e) interrupted production; (f) employee welfare and benefit associations; (g) partially unearned wages after the injured employee returns to duty. Of

(Continued on page three)

Fuel Technology Course Is Approved By The College Board of Trustees



DR. A. M. NORTHROP

Pinchot Appoints Steidle To Greater Pennsylvania Council; Gauger on Advisory Committee

Governor Gifford Pinchot has appointed Dean Edward Steidle of the School of Mineral Industries a member of the Greater Pennsylvania Council and Dr. A. W. Gauger, director of research in the School of Mineral Industries, a member of the technical advisory committee. Dean Steidle attended the organization meeting of the Council held in Harrisburg on January 14, and also a meeting of the Functional Committee on Industry held in Pittsburgh on February 1. Dr. L. E. Young, Penn State 1900, vice-president in charge of operations, Pittsburgh Coal Company, is chairman of the Functional Committee on Industry.

Gauger Delivers Paper at Institute

"The Condition of Moisture in Coals of Various Ranks," will be the subject of a paper to be delivered by Dr. A. W. Gauger, director of mineral industries research of the School of Mineral Industries. This paper will be delivered at the symposium on coal classification in February at the meeting of the American Institute of Mining and Metallurgical Engineers in New York.

Demand Increases for Engineers Trained in Fuel Preparation and Special Utilization in Industry

A curriculum in Fuel Technology to be given by the School of Mineral Industries was approved by the Board of Trustees of the College at a meeting in Harrisburg, January 1932. This course will lead to a Bachelor of Science degree in Fuel Technology to students completing the prescribed work.

This course will deal with the systematic knowledge upon which fuel production and consumption are based. The need for such a course has increased since the World War with the changes brought about by the exhaustion of the more easily mined coal, the depletion of the reserves of better quality coal, the increasing importance of new fuels such as oil and gas, and the introduction of many new scientific principles. Prior to the World War the attitude of the fuel industry in this country was to "get out the fuel and consume it." Now, however, the scientific production and utilization of fuel is the primary consideration.

Fuel Technology Field Grows

The body of knowledge pertaining to fuel production and utilization has grown to include not only certain of the fundamental features of mining, chemical, and mechanical engineering, but also more highly specialized applications of science peculiar to the fuel industry itself. Among such applications may be included special utilization of fuels as in cement kilns, the physics of coal preparation and washing, the chemistry of coal treatment for dust prevention, the physics and chemistry of coking, complete gasification of coal and hydrogenation. In addition, changing conditions make an economic treatment of the industry of prime importance.

Outline of Course

The curriculum not only gives fundamental training in chemistry and physics and allied subjects but will include such courses as origin and constitution of coal, mineralogical and geological structure of the coal measures, pertinent problems relating to exploitation which will provide the desired sizes of product, methods of cleaning and beneficiation, classification of coals for special uses, etc.

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Mining Subjects in High Schools

A very important step has been taken by the state in the advancing of funds to provide for classes in mining subjects in the junior and senior high schools of the coal districts of Pennsylvania. These are to be in the nature of test classes and upon their results will depend the future extension of this new field in vocational education. The city of Hazleton has been selected for the first trial of these classes and conferences are now going on between the state department of education, the Hazleton school district officials, and the School of Mineral Industries, to work out a program for these courses.

The aim of these classes will be to educate the high school student to that type of work which he is most likely to follow after his graduation, regardless of his high school course. In the coal regions this work is generally connected with the mining of coal. The courses will be planned so as to give the student a good foundation in mining principles to aid him in advancing more rapidly in this field upon leaving school. The student will elect this mining course just as he now elects a college preparatory course, a commercial course, or a shop course. At the present time it is the custom for many high school students in the coal regions to elect a commercial course which gives them but little practical knowledge such as can be applied to their work in the mines after graduation. However, under the plans now being considered for the addition of a mining curriculum, the student would receive instruction in subjects directly relating to mining and of great practical value.

Addition of Fuel Technology Curriculum

The field of work covered by the School of Mineral Industries has been increased by the Board of Trustees' approval of a curriculum in Fuel Technology. With the addition of this course the School of Mineral Industries now offers instruction, technical advice, research facilities, and extension services in every field of mineral industries, namely, geology, mineralogy, and geography; petroleum and natural gas; mining and quarrying; fuel technology; metallurgy; and ceramics.

The importance of this new curriculum is clearly seen when recent trends in the fuel industry are considered, especially in Pennsylvania where this industry occupies a leading position. The knowledge relating to fuel technology has increased so extensively in recent years that a special treatment of the subject is necessary. In many instances the success or failure of ceramic and metallurgical processes may depend upon fuel technology owing to the close inter-relation of these three branches. Depletion of the higher quality fuel reserves in this country has made necessary a study of the special treatments by which poor quality fuel can be utilized.

The importance of this branch of mineral industries can be further realized when it is considered that many authorities feel that the need for technologists on the part of producers exceeds the need for mining engineers and that this demand will increase.

New Books in Library

Institute Geologico de Mexico, Boletin No. 50—Las Meteoritas Mexicanas.

U. S. G. S. Professional Papers No. 164—The Kaiparowits Region, A Geographic and Geologic Reconnaissance of Parts of Utah and Arizona.

No. 165—Shorter Contributions to General Geology 1930.

No. 168—Origin and Micro-fossils of the Oil Shale of the Green River Formation of Colorado and Utah.

Exploration of Rock Strata and Mineral Deposits by the Seismic Method.

History of the Seismic Method for the Investigation of Underground Formations and Mineral Deposits, by Professor L. Minthrop.

Geology in Its Relation to Landscape—Henderson.

Geologic Structures—Willis

Earth Evolution and Its Facial Expression—Hobbs.

Recent Journal Articles

Fuels—Coal, Petroleum, etc.

Low T Carbonization—Fuels and Furnaces, Vol. 9, p. 1359, Dec. 1931.

Can Aerial Geology Locate Oil and Gas Areas?—Oil and Gas Journal, Vol. 30, p. 11, Jan. 14, 1932.

How Important Factors Influence Well Spacing—Petroleum Engineer, Vol. 3, p. 14, Dec. 1931.

By-Product Coke and Gas Industry for 1931—Blast Furnace and Steel Plant, Vol. 20, p. 64, Jan. 1932.

Aerial Photography and Oil—Oil Weekly, Vol. 64, p. 14, Jan. 15, 1932.

Review of the Coal Industry—Min. and Met., Vol. 13, p. 7, Jan. 1932.

Mining and Metallurgy

Outline of Placer Mining, History of, Black Hills. Eng.—Vol. 19, p. 283, Nov. 1931.

Necessity for Mechanized Coal Mining—Min. Cong. J., Vol. 18, p. 24, Jan. 1932.

Progress in Mining Methods in 1931—Min. & Met., Vol. 13, p. 4, Jan. 1932.

Air Separation Process Revolutionizes Feldspar Industry—Min. Cong. J., Vol. 18, p. 28, Jan. 1932.

Potash Mining in Germany—Eng. and Min. J., Vol. 13, p. 33, Jan. 1932.

Mining Geology—Min. & Met. Vol. 13, p. 39, Jan. 1932.

Mineral Dressing—Min. & Met., Vol. 13, p. 25, Jan. 1932.

Perfection and Use of 50 gm. Flotation Cell—Eng. & Min. J., Vol. 133, p. 28, Jan. 1932.

Geophysical Prospecting—Min. & Met., Vol. 13, p. 16, Jan. 1932.

Deposition of Mn.—Econ. Geol., Vol. 26, p. 799, Dec. 1931.

Ceramics

Making Superior Glass from Blast Furnace Slag—Chem. & Met. Eng., Vol. 38, p. 701, Dec. 1931.

Comparative Study of Ball Clays for Use in Semi-Porcelain Bodies—Cer. Age., Vol. 19, p. 18, Jan. 1932.

Opacifying Enamels with Fluorides—Cer. Age, Vol. 18, p. 314, Dec. 1931.

Life of the Sagger as Affected by Varying Certain Properties—Bur. of St. J. of R., Vol. 7, p. 1017, Dec. 1931.

Physical Properties of Cast Stone—Bur. of St. J. of R., Vol. 7, p. 1067, Dec. 1931.

Geology

Spontaneous Rock Expansion—J. of Geol., Vol. 39, p. 715, Nov. and Dec. 1931.

The Foraminifera of the Saratoga Chalk—J. of Pal., Vol. 5, p. 297, Dec. 1931.

Metallurgy

Spectroscope Permits Rapid Analysis of Steel—Steel, Vol. 90, p. 31, Jan. 18, 1932

Ppt. & CN Recovery Process—Eng. & Min. J. Vol. 133, p. 53, 1932.

Thermal Expansion of Heat-Resisting Alloys Ni-Cr, Fe-Cr, Ni-Cr-Fe.—Bur. of St. J. of R., Vol. 7, p. 1031.

Fe. and Steel Metallurgy—Min. & Met., Vol. 13, p. 27, Jan. 1932.

Review of Fe. and Steel Lit. for 1931—Blast Furnace & Steel Plant, Vol. 120, p. 75, Jan. 1932.

Rare Meta's Developments—Min. & Met., Vol. 13, p. 36, Jan. 1932.

Blast Furnace Practice in 1931—Blast Furnace and Steel Plant, Vol. 20, p. 54, Jan. 1932.

Plane Polarized Light in Micro-Investigation of Ores and Metals—Can. Min. & Met. Bul. No. 237, p. 1, Jan. 1932.

New Well Cutting Added To Core Depository

The well cutting from the Lytle Shoemaker No. 2 well, located in Farmington township, has been received by the School of Mineral Industries and will be filed in the core depository where it may be used for research in the deeper formations of the Silurian deposits.

This is one of the deepest wells in the state, having been drilled to a depth of 7,148 feet.

Geology Maps and Cases in Library

All of the maps and cases relating to geology were recently moved from the main college library to the Mineral Industries library where they will be available for use.

COST OF ACCIDENTS

(Continued from page one)

this basis the total cost of accidents to industry in Pennsylvania during the fifteen years in which Workmen's Compensation has been in effect, was more than \$900,000,000 or, based on the 1930 census of population, a per capita cost of nearly \$95.

We have been considering so far only the cost to industry. Let us check up the cost of these accidents to the State. Pennsylvania at present must supplement the safety work of industry by a very considerable force of safety inspectors and a Bureau of Rehabilitation. This protection is not questioned by employers or anyone else, yet it costs the taxpayers over a quarter of a million dollars every year and should be considered as an item of accident expense. It is fair to assume that two thirds of the work done by the staff of about ninety inspectors, general, special and supervisory, could be done away with in the Bureau of Inspection if it were not for accidents. This means that of a total of \$387,327.24 for salaries and expenses paid out in this department for a year, approximately \$258,218.16 can be charged to safety work.

In the Bureau of Rehabilitation, it may be said that somewhat less than half of their work would be unnecessary and in the neighborhood of \$20,000 cut from their yearly expenses and their staff be reduced, if it were possible to eliminate accidents.

Then there are salaries and traveling expenses of \$150,175.97 for the thirteen referees and clerks, an item for which accidents are directly responsible. The same is true of the Compensation Board of three members, with a Secretary, a reporter and seven clerks and stenographers, which cost the State last year \$94,419.35. Last but not least comes the Bureau of Workmen's Compensation itself, with a Director, Assistant Director, ten adjusters and a staff of clerks and stenographers, costing the State slightly less than \$265,000 last year.

There is no question that these are, at present, necessary expenses for the State to cover in order to protect the workers. One of the functions of the Department of Labor and Industry is to prevent accidents, and the sums spent for this purpose are well spent.

Since the human factor plays so large part in many of the mine accidents of the State, the division of mineral industries extension of Pennsylvania State College has touched a vital point when it states that "the only answer to this problem is through adult education."

Ashley Delivers Lectures

Dr. George H. Ashley, state geologist, and professorial lecturer in geology to the School of Mineral Industries delivered two lectures, January 19, on the "Geology and Mineral Resources of Pennsylvania." The first lecture was given before the freshman class in the Mineral Industries School while the second was given before the public.

Deputy Superintendent of Public Instruction



MR. L. H. DENNIS

Mr. L. H. Dennis, in 1925, was appointed Deputy Superintendent of Public Instruction with a major assignment in the field of Vocational Education for the State of Pennsylvania. In this position he is rendering great aid in co-operating with the School of Mineral Industries in furthering vocational education in the mineral industries of Pennsylvania under the Smith-Hughes Act.

Mr. Dennis has been Director of the Bureau of Vocational Education in Pennsylvania for the past twelve years, and has been in state service in an administrative capacity more than nineteen years. He has also had a highly successful career in the public schools of Pennsylvania, both as a teacher and an administrator. Mr. Dennis' experience has touched the rural school problems widely, the high school field, and notably the field of vocational education.

Following his early boyhood, which was spent on a farm in New Hampshire, Mr. Dennis came to Pennsylvania. Here he secured a rich industrial experience in foundry, machine shop and constructive jobs. He later graduated from the Bloomsburg State Normal School and The Pennsylvania State College. Graduate work was pursued at Cornell University, Bucknell University and Teachers College, Columbia University. He is a member of the Alpha Zeta, Phi Kappa Phi, Phi Delta Kappa, and Gamma Sigma Delta fraternities.

For ten years, Mr. Dennis served either as a teacher or principal in public schools and taught for two years at The Pennsylvania State College. Six years were spent in the position of supervising principal.

Mr. Dennis' services to public education have been recognized in many ways. In 1922 he was elected President of the National Association of State Directors of Vocational Education; in 1923 President of the Department of Vocational Education and Practical Arts of the National Education Association. During the same year, he

was also elected President of the National Society for Vocational Education and in 1924 was reelected for a second term.

In 1924 and 1925, Mr. Dennis served as a member of the Pennsylvania Rural Education Commission appointed by Governor Pinchot. At the present time he is a member of the Committee on Elementary Education of the National Near East Relief; a member of the Advisory Committee of the American Year Book Corporation representing the American Vocational Association; a member of the Board of Directors of the Pennsylvania Council of Agricultural Associations and a member of Governor Pinchot's State Unemployment Committee.

In 1912, Mr. Dennis was called to the Department of Public Instruction to serve as specialist in agricultural education and in 1915 was promoted to the directorship in the Agricultural Division of the Bureau of Vocational Education. In 1920 he was made Director of the Bureau of Vocational Education. This included the administration of Agricultural, Industrial and Home Economics Education and Continuation Schools. In this capacity he still serves in addition to his duties as Deputy Superintendent of Public Instruction.

Coal Research Club Elects Gauger to Membership

Dr. A. W. Gauger, director of research for the School of Mineral Industries, was recently elected to membership in the American branch of the Coal Research Club. Membership in this club is restricted to those who are engaged in research on the origin and constitution of coal and who have made outstanding contributions in this field. The investigations of Dr. Gauger and his associates on moisture in North Dakota lignites and on their constitution qualify Dr. Gauger for his election to this group.

Jacobson Delivers Talk On Oil Field Petroleum

Carl T. Jacobson, superintendent, Forest Oil Company, Bradford, delivered a paper recently to the classes in geology and petroleum engineering in the School of Mineral Industries. The subject of Mr. Jacobson's paper was "The Theory and Practice of Oil Field Production in the Bradford Field." This talk was one of the series of lectures sponsored by the Petroleum Advisory Board.

School Obtains National Research Council Grant

The School of Mineral Industries has accepted a grant from the National Research Council for fuel research to be carried on by the research division of the school under the direction of Dr. A. W. Gauger. This grant will enable Dr. Gauger to continue his researches on the condition of water in coals of all ranks.

Hold Conferences to Develop High School Mining Courses

Several conferences called jointly by the Department of Public Instruction and the School of Mineral Industries have been held at Hazleton, Pa., for the purpose of developing a program of mining education in the Hazleton district high schools. At the first meeting, held January 7, the main subject under discussion was the incorporation into the junior and senior high schools of elective subjects pertaining to mining. The meeting was presided over by Dr. A. D. Thomas, superintendent of the city schools. He was assisted by Fred Haegels, local director of vocational education and Professor H. B. Northrup, representing the School of Mineral Industries.

Suggested outlines for high school curriculum in mining courses were discussed at the second meeting held in Hazleton January 27. Further discussion of these outlines will be taken up at a meeting in Hazleton February 16.

New Equipment Added to Coal "Prep" Laboratory

Several valuable pieces of equipment have been received recently for use in the coal preparation laboratories in the School of Mineral Industries. The Philadelphia and Reading Coal and Iron Company and H. M. Chance & Company jointly presented laboratory working model of the sand flotation process for cleaning coal. This apparatus is much used in the anthracite region and has possibilities for use in the bituminous fields.

The Koppers-Rheolaveur Company have loaned indefinitely a laboratory demonstration model of the Rheolaveur process of cleaning coal which is used fairly extensively in both anthracite and bituminous fields.

These two machines together with the laboratory model by the Hydrotator which was presented about a year ago by the Hydrotator Company of Hazleton, Pennsylvania, makes equipment for coal cleaning completely up to date.

New Exhibits Placed in Museum

Several new exhibits were received recently for the museum in the School of Mineral Industries. An exhibit of cleaned and sized bituminous coal was sent by Pittsburgh Coal Company and another similar exhibit of coke from the Philadelphia Coke Company. Dr. D. F. McFarland arranged for displays, one of aluminum articles manufactured by the Aluminum Company of America, and the other of zinc products of the New Jersey Zinc Company.

Secretary of Mines in Gov. Pinchot's Cabinet



MR. W. H. GLASGOW

Walter H. Glasgow, secretary of mines in Governor Pinchot's cabinet, is the head of another department of the state government which is giving great aid to the School of Mineral Industries in its vocational training in the mineral industries of Pennsylvania.

Walter H. Glasgow, son of Maurice R. and Jeannette Williams Glasgow, was born August 16, 1885, at Bellwood, Blair County. He was educated in the public schools of Altoona, York and Blairsville, graduating from the Blairsville High School in 1902. Entered the service of the H. C. Frick Coke Company, General Superintendent's office at Scottdale, Pennsylvania, March 9, 1905; organized the safety work of that company and was chairman of the General Safety Committee 1912-25; appointed Assistant General Superintendent of that company and allied interests, January, 1915, operating 65 mines and coke oven plants, and continued in that capacity until July 1, 1927, when he resigned to accept the appointment as Secretary of Mines. During the World War he served as special assistant in the Department of Interior at Washington, D. C., on work incident to the drafting and operation of the Explosives Act. He has been a member, since organization nine years ago, of the Advisory Board of the Cooperative Mining Course at Carnegie Institute of Technology, Pittsburgh, and now is vice-chairman of that Board. He was appointed by Governor Pinchot in 1926 a member of the Board of Trustees of the Cottage State Hospital, Connellsville, Pennsylvania, and reappointed by Governor Fisher.

Mr. Glasgow's interests are of a diversified nature. While his principal endeavors are directed toward the efficient operation of the State Department of Mines, he finds time to devote a portion of his leisure to the beneficence of his fellow man. He is a member of fraternal and patriotic organizations and is a staunch friend of The Pennsylvania State College. For exercise,

he directs his attention to golf, at which game he is a very proficient and ardent devotee. The Glasgows have four children, the son Walter Glasgow, Jr., is enrolled as a freshman in the School of Mineral Industries in the course in Mining Engineering.

ADDITIONAL EDUCATIONAL FACILITIES OFFERED IN MINERAL INDUSTRIES

The Division of Mineral Industries Extension is now fairly well known throughout the State for the work it is offering in connection with education in mining through extension classes. It is now prepared to offer subjects in mineral industries education through correspondence courses. Previously, several subjects pertaining to primary mineral industries were offered by other divisions of the college extension service. In order to make the School of Mineral Industries self-contained and to expedite the work of the School, it was deemed proper that those mineral industries subjects which are taught in residence by the faculty of the School of Mineral Industries, should, in like manner, be taught by its extension agencies.

The division of Mineral Industries Extension is, therefore, prepared to offer the following subjects for correspondence study:

Practical Industrial Courses

Metallurgy

- S 30 Practical Metallurgy for the Steel Foundry
- S 31 Practical Metallurgy for the Grey Iron Foundry
- S 32 The Practical Heat Treatment of Steel

College Courses

Ceramics:

- Cer. 9aC Limes, Plasters and Cements

Geography:

- Geog. 21C Physical Geography
- Geog. 60C Physiography of the United States.

Geology:

- Geol. 31C General Geology

Metallurgy:

- Met. 59C The Metallurgy of Iron and Steel

As additional courses of correspondence study are contemplated and under preparation, notice of these additional courses will be carried in MINERAL INDUSTRIES. As soon as is warranted, a catalogue will be issued covering mineral industries extra mural and home study or correspondence courses. This catalogue will give all essential information pre-requisite to enrollment.

Should any one be interested in any of the present courses offered, complete information concerning such courses may be obtained by addressing Professor H. B. Northrup, Director, Mineral Industries Extension, The Pennsylvania State College, State College, Pennsylvania.