THE MINES MAGAZINE

AROUND THE WORLD WI
THE MINERAL INDUSTRI

Featuring—

- ECONOMIC PROBLEMS OF STEEL INDUSTRY
- GOLD AND SILVER MONETARY STANDARD
- DEVALUATION EFFECT ON LEAD AND ZINC MINING INDUSTRIES
- POLITICS AND POLICIES
- ALASKA FISHING INDUSTRY
- IMPORTANCE OF BIG BUSINESS
- "MINES" GEOLOGICAL MUSEUM
- ACCIDENT PREVENTION

JULY • 1950

VOLUME XL NO. 7

PERSONAL NOTES

Henry Schoellhorn, '40, Chief Computer, Seismograph Service Corporation, has been transferred from Colombia, South America, to Mexico, where he is addressed in care of Petroleos Mexicanos, Av. Juarez 96, Mexico, D. F., Mexico.

Robert B. Shaller, '49, has a new address in Canada where he is serving as Computer, Seismic Field Crew, for Geophysical Service, Inc. He is still with Party 336, and, at present, is at High Prairie, Alberta, Canada.

Hall Stewart, '43, Engineer for Prairie States Oil & Gas Company, is addressed Box 856, Danville, Illinois.

D. F. Sylvester, '38, has moved his residence in Savannah, Georgia, to Apt. 47-A, Chatham City. He is Engineer for Austin Bridge Company.

T. H. Tepper, '49, Chemical Engineer for The Texas Company, is addressed 2434 Evergreen Drive, Port Arthur, Texas.

Lester G. Truby, Jr., '48, has been transferred from New Orleans, La., to Houston, Texas, by Humble Oil & Refining Company, with address in care of the company, Petroleum Engineering division, Box 2180.

LIST OF MEMBERS OF THE ALUMNI ASSOCIATION WHOM WE DO NOT HAVE CORRECT ADDRESS FOR

Dewey Bowling, Geol.E. '49
L. J. Brewer, E.M. '39
Alan Carlisle, Ex-'51
R. S. Coulter, E.M. '19
Donald M. Frederick, Jr. Ex-'50
John J. Gallagher, Ex-'51
John M. Gardner, P.E. '33
John W. Gettman, E.Met. '47
R. D. Griffey, E.Met. '39
Vincent L. Jacques
Carl J. Lomax, Jr Geol.E. '43
R. H. Maddux, Ex-'07
Otto H. Metzger, E.M. '19
Jack R. Sheehan, Ex-'49
P. Sudasna, E.M. '48
Stanley M. Walker, Ex-'11
Donald Whittaker

K. D. True, '35, as Plant Manager, Sheet Metal Specialty Division, Follansbee Steel Corporation of Follansbee, West Virginia, has three fabricating and finishing plants under his jurisdiction. His home address is 40 No. Remington Road, Columbus, Ohio, where he receives mail.

Wallace Tucker, '49, has been promoted to Junior Engineer by Continental Oil Company. His address is Box 324, Lance Creek, Wyoming.

William H. Volz, '39, is now associated with Nederlandsche Pacific Petroleum Mij, and is addressed in their care, 52 Kebon Sirih, Djakarta, Java, Indonesia.

George E. Wagoner, '28, was elected president of the Society of Exploration Geophysicists at their annual convention held in Chicago recently. He is manager of Exploration, Southern division, of the Carter Oil Company, with address Drawer 1739, Shreveport, La.

Jerry F. Whalen, '49, has a change of address from Minneapolis to 2601 West Third Street, Duluth, Minn. He is associated with North Western-Hanna Fuel Company.

John H. Winters, '47, now has a residence address in Chicago, 238 No. Lackwood Avenue. He is employed by the St. Joseph Lead Company.

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Letters . . .

HAS RESUMED FORMER WORK AFTER RETURN FROM GREECE

From RAYMOND G. TRAVIS, '25, *P. O. Box 1002, Rapid City, South Dakota*

I wish to change my address for *Mines Magazine*, all other publications and correspondence to that given above, which is my permanent address.

I have resumed my work in coal mining methods and practices and the electrical power requirements of coal mines, in the Missouri River Basin, for the Fuels and Explosives division of the United States Bureau of Mines.

I have just completed the field work and reports on lignite investigations on the Island of Euboea, Greece, which has kept me busy since early September 1949.

I may go on another foreign assignment in the near future for the Economics Cooperation Administration, under the mineral development programs of the Marshall Plan.

I am sorry that I cannot attend commencement at Golden and the reunion of my class of 1925, but I will be engaged in a field study in North Dakota.

Best wishes.

P. S. I enclose check for the silver shower of the 25th anniversary of the class of 1925.

HAS NEW POSITION IN CALIFORNIA

From ERIC A. BERG, '41, *424 So. Broadway, Redondo Beach, Calif.*

I have gotten settled in my new position in the mechanical design department of Harvey Machine Company and find it most agreeable.

We have rented a place in Redondo Beach in order to live close to work; the address is as shown above. Would you kindly have your files changed to this address, both for residence and mailing. Thank you.

JUST A SAMPLE OF SOME OF THE THINGS A MINES MAN DOES

From VINCENT D. BARTH, Ex-'41, *Battelle Memorial Institute, Columbus, Ohio.*

Thanks for your letter of recent date and in answer to your request for an outline of my progress at Battelle where you placed me in October 1947, I am giving a thumbnail sketch —

In the summer of 1948, I studied for and passed the State of Ohio's professional metallurgical engineer's test, and now have a license to hang over my desk. The test was two full days long. It was something of a job to remember some of the stuff we had in school. In the spring of '48 I completed a public speaking course given by Battelle but, unfortunately, am still not an accomplished public speaker. In the fall, winter, and spring of 1948-1949, I took integral and differential calculus again at Ohio State University in order to "brush up." Last fall and winter I took graduate courses in mechanical metallurgy and "Theory of Metals." (These were evening school courses.)

At Battelle, I have worked on a number of research problems, the most difficult being to make zinc as corrosion resistant as stainless steel. The most successful work has been on "salt bath chromizing." I wrote a paper on this research which was published in the October 1949, Journal of the Electrochemical Society. Campbell and Gouser, whose names also appear, are my supervisors. This paper won the Turner prize of the Electrochemical Society this spring. Much research, of course, doesn't come out so well.

Well, that's most of what has happened here. I haven't set the world on fire, and probably never will, but I have enjoyed doing the above.

Frank Stephens, '42, circulates *The Oredigger* among the Alumni. I work in the same department with Dwayne Day, '47; every now and then I see Roland Fischer, '42, Bob Merritt, '48, Bob Kesler, '48, and Bob Elsner, '48, all good *Mines Men*. I saw Ray Schatz, '35, a couple of days ago.

Our local group hasn't done much lately because I'm afraid we all allow ourselves to get swamped with other things that must be done (or at least we think they have to be done). We did get together recently for pictures and a talk on scaling the face of Long's Peak.

We all hope that some day Battelle will be moved to Denver, but the Institute is constructing more buildings here so I guess we will have to settle for Columbus for the time being.

If you see Carver Ellis or Jim Colasanti, please give them my regards, and thanks again.

AT PRESENT LOCATED IN OKLAHOMA

From FRED E. RUGG, '49, *Box 703, Lindsay, Oklahoma.*

Enclosed is check to cover my 1950 dues.

At the present time I am petroleum engineer for Sinclair Oil and Gas Company, serving them here in the "Golden Trend" area of Oklahoma.

My address while here is as given above.

TRANSFERRED TO JAPAN

From F. ERICH BRUHN, '22, *Lt. Col., USA.*

I have just recently established residence in Tokyo, Japan .

In order that I may continue to receive *Mines Magazine* regularly, I would appreciate if, in the future, you would address it as follows: Lt. Col. F. Erich Bruhn, Transportation Section, GHQ, Far East Command, APO 500, c/o P.M., San Francisco, Calif.

TECHNICAL MEN WANTED

Those interested in any of the positions listed may make application through "Mines" Capability Exchange, 734 Cooper Building, Denver 2, Colorado.

(841) INSURANCE SALESMEN. An old established life insurance company offers excellent opportunities for inexperienced and experienced salesmen. The type of men wanted should be capable of earning several thousand dollars per year.

(1148) JUNIOR MINING ENGINEER. An eastern manufacturer of iron products has a position open for young mining engineer in connection with their iron mines. Applicant should have some mining experience and ability to supervise men. Salary will depend upon experience and ability of applicant.

(1153) PHYSICISTS AND RESEARCH ENGINEER. A research organization established in the middlewest has positions open for physicists, and electrical engineers with good background in physics, electronics and electrical research. Applicants should have Master's or Doctor's degrees. Salary open.

(1154) MINING OR METALLURGICAL ENGINEER. A well established company operating in foreign countries has a position open for an engineer who has ore-buying experience and a good knowledge of the Spanish language. Salary open.

(1155) MINING AND METALLURGICAL ENGINEER. A company operating non-metallic mines in the south has a position open for graduate engineer to work in open pit mining and carry on research work for the flotation of non-metallics. However, several months training will be required before taking on an executive position. Salary open.

(1171) MILL FOREMAN. A South American mining company has a position open for a graduate metallurgist as Mill Foreman. Applicant must have had experience in the operation of flotation and concentration equipment. Must have a good working knowledge of Spanish and be able to successfully handle South American employees. Must report single status for six months. Salary open with liberal vacation allowance and free living quarters. Bonus to the right man.

(1172) RESEARCH CHEMICAL ENGINEERS. A South American mining company has a position open for Research Chemical or Metallurgical Engineers under 30 years of age. Must be familiar with analytical procedures in the determination of all elements, including rare metals. Salary open.

(1176) METALLURGIST. An aircraft manufacturer has position open for metallurgical graduate with education and experience covering metallurgical testing of ferrous and non-ferrous metals as well as physical processing, heat treatment, welding practices and ability to coordinate these practices with the application of metals for manufacturing. Salary open.

(1178) JUNIOR METALLURGIST. A mining company in South America has position open for Junior Metallurgist with some experience in ore-dressing and laboratory work. Knowledge of Spanish is desirable. Starting salary, $8000 per year plus living quarters. Transportation by air, free. Yearly bonus of 1 month. 3-year contract.

(1182) SALES ENGINEER. A large steel company has position open for Sales & Service Engineer. Must be thoroughly acquainted with oilfield practice and have had 5 to 10 years experience. Applicant must have administrative ability and excellent personality. Fine opportunity for the man who can meet requirements. Salary depends upon experience and ability of applicant.

(1186) JUNIOR MINING ENGINEER. Well known mining company operating in Central America has position open for Junior Mining Engineer who is qualified to make underground and surface surveys and maps. Good opportunity to advance into production. Salary open.

(1188) DRAFTSMAN & DESIGNING ENGINEER. Well known consulting engineering organization located in the middle-west has a position open for designing engineer who has had extensive experience with the cement industry. Should have had from 5 to 10 years experience of which 3 to 4 years have been drafting and designing. Probable salary, $400 to $500 per month.

(1194) MINING ENGINEER. A well known company operating a gold mine in Central America has position open for mine manager. Applicant must have had several years experience in operation of mines in Latin America. Salary depends upon qualifications and experience of applicant.

(1197) RESEARCH METALLURGIST. A well known research organization is setting up a new department covering research in connection with projects for pyro- and hydro metallurgy. Applicant must be able to direct research and be well grounded in physical chemistry and especially

(Continued on page 7)

Professional . . .

CARDS

K. L. Koelker, '14
Consulting Mining Engineer
318 Joplin St. Joplin, Mo.

Jean McCallum, '10
Mining & Metallurgical Engineer
Consulting
722 Chestnut St. St. Louis 1, Mo.

Vincent Miller, '35
Exploration Service Company
Bartlesville Oklahoma

Cleveland O. Moss, '02
Consulting Petroleum Engineer
Estimates of Oil and Gas Reserves
Valuation—Production Problems—Proration
208 Midco Bldg. Tulsa 3, Okla.

Frank Purdum, '30
Subsurface Engineering Company
431 Kress Building Houston, Texas
310 Thompson Bldg. Tulsa, Okla.

J. Ross Reed, '37
Field Engineer
National Electric Coil Company
1751 New York Dr. Altadena, Calif.

Joseph J. Sanna, '41
Christensen Diamond Products Co.
Mining—Petroleum—Construction
Diamond Bits & Supplies
1975 South 2nd West, Salt Lake City 13, Utah

Wm. D. Waltman, '99
325 So. Plymouth Boulevard
Los Angeles 5 California

Elmer R. Wilfley, '14
Wilfley Centrifugal Pumps
Denver, Colo.

John H. Wilson, '23
Independent Exploration Company
1411 Electric Building
Ft. Worth, Texas

John H. Winchell, '17
Attorney at Law
315 Majestic Bldg. Denver, Colo.
ALpine 5251

Harry J. Wolf, '03
Mining and Consulting Engineer
420 Madison Ave. New York 17, N. Y.

CONTRIBUTORS TO PLACEMENT FUND FOR 1950

These contributors to "Mines" Placement Service assure its success and continuous expansion. It makes it possible for "Mines" Men to improve their employment by automatically presenting their qualifications to the employer best suited to make use of their services. Your contribution now may insure your future advancement or that of some other "Mines" Man who has the ability but not the contacts with the better job. Every "Mines" Man takes a pride in watching this list grow.

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M. M. Tongish, '43
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E. E. Fletcher, '45
R. D. Segur, '41
W. A. Elser, '48
E. S. Rugg, '43
R. L. Bradley, '47
F. Clinton Edwards, '41
E. D. Hyman, '48
Nikolai Belaef, '27
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J. N. Wilson, '42
J. S. Phillips, '49
A. F. Beck, '25
F. J. Weishaupl, '49
Victor Bychok, '42
C. F. Fogarty, '42
M. M. Aycardo, Jr., '41

(Continued on page 44)

TECHNICAL MEN WANTED

(Continued from page 5)

thermodynamics. Should have few years experience in concentration of ores. Salary will depend upon the experience and ability of applicant.

(1199) PETROLEUM ENGINEER. A company operating in a southern state has position open for Petroleum Engineer 30 to 40 years of age with experience in natural gas transmission and distribution. Will be necessary to travel approximately 50% of the time. Salary open.

(1200) MINING ENGINEER. Federal position open for Mining Engineer and Technologist who has had experience in coal mine operations, steel plants and gas manufacturing plants. Foreign employment. Probable salary $7600 per month plus travel and living expenses.

(1202) MINING GEOLOGIST. Position open in Mexico for Mining Geologist. Must have at least five years experience. Length of present engagement, six months. May be extended longer. Starting salary, $450 per month, U. S. Cy., plus travel expenses.

(1208) MINING ENGINEER. Position open for Mining Engineer in connection with Greek mining. Applicant must have broad experience in operation, examination and report work in connection with non-ferrous metals. Probable salary, about $9000 per year plus living allowance.

(1209) MINING ENGINEER. Company operating in South America has position open for assistant to Mining Superintendent. Man must have had a few years mining experience, be able to stand high altitudes and report single status. Three year contract. Probable salary, $400 to $500 per month.

(1215) MINE FOREMAN. A South American mining company has position open for Mine Foreman who has had several years experience in metal mining and is a college graduate. Must have working knowledge of Spanish and be either single or willing to go single status for at least six months. Three year contract. Starting salary, $4200 per year plus a bonus of one month salary for each year. Four weeks vacation. Free living quarters.

(1216) MILL SUPERINTENDENT. A well known mining company in South America has position open for Mill Superintendent with several years experience in milling operation. Latin American background is essential. Three year contract with housing provided. Approximate starting salary, $5000 per year.

(1225) ENGINEER AND PHYSICIST. A shipyard has position open for an Engineer and Physicist with experience in the control of sound and vibration. Must be able to develop new techniques for reducing and controlling these elements. Probable starting salary, $5400 per annum.

(1227) SAFETY AND VENTILATION ENGINEER. A permanent well established company has position open with its foreign operations for a Safety and Ventilation Engineer with experience in large underground mines, technical background. Three year contract. Generous vacations. Housing and utilities furnished. Travel expenses paid. Must be in good physical condition. Salary liberal, depending upon experience.

(1228) METALLURGIST. Foreign company has position open for a young Metallurgist with some actual experience in ore beneficiation. Natural aptitude for research important. Salary open.

(1229) METALLURGICAL SUPERINTENDENT. A mining company operating a sulphuric acid plant in connection with copper leeching plant where pyrite roasting is used has position open for a Superintendent of sulphuric acid plant. Should have broad chemical knowledge. Good academic background and practical experience. Three year contract with liberal salary. Housing furnished, traveling expenses paid. Vacation allowed. Applicant must be in good physical condition.

(1230) MINING GEOLOGIST. A well established company with foreign operations has position open for Mining Geologist with broad experience in connection with ore deposits and geological field work. Salary open, depending upon experience and ability.

(1232) GEOPHYSICIST. A geophysical company with headquarters in New York City, has position open for a young geophysical engineer familiar with seismic operations in connection with mining work. Must be willing to travel extensively, both domestic and foreign. Salary open, depending upon experience and ability.

(1233) MINING GEOLOGIST. A mining company has position open for Chief Geologist with good academic background and experience in mine examination work and mine reports. Salary will depend upon experience and ability of applicant.

(1236) REFINERY ENGINEER. A refinery construction company has position open for a Refinery Engineer with several years experience in actual operation, who is capable of developing specifications and requisitions for instrument equipment from working sheets and process data for petroleum refinery units. Salary depending upon experience and ability of applicant.

(1238) REFINERY ENGINEER. A company constructing refineries and refinery equipment has position open for a Refinery Engineer with at least four years experience in actual operation. Must be capable of supervising and inspecting instrument installations during construction, and able to check calibration and adjust control functions. Must be able to assist operators during starting up period. Headquarters in New York but work will be both foreign and domestic. Salary open.

(1239) SEISMOGRAPH PARTY CHIEF. A well known geophysical company has position open for Party Chief in connection with geophysical work in Canada. Applicant should have at least two years experience as Party Chief in seismic field work. Single man preferred. Starting salary $600 to $750 per month, depending upon experience and ability. Good chances for advancement within six months.

(1243) CONCENTRATOR MILL FOREMAN. A copper mining company with 1500 ton milling plant has position open for mill foreman with experience in the flotation of copper ores. Living and climatic conditions are good. Salary open depending upon experience and ability of applicant.

(1244) SMELTER FOREMAN. A foreign operated copper smelter has position open for a smelter foreman, with experience in smelting flotation concentrates in reverberatory furnace with pulverized coal as fuel. Must have had experience with horizontal copper converters and copper casting machine. Good living and housing conditions. Salary open depending upon experience and ability of applicant.

(1245) ASSAYER AND CHEMIST. Employment is offered to experienced assayer and chemist who is interested in foreign work. Must be able to assay copper ores and make analysis for various base metals and also rare metals. Salary open.

(1246) JUNIOR MINING ENGINEER. Position open with a well established mining company for young mining engineer who can handle underground surveying, mapping and other work that he may be called upon to do in connection with mining. Probable starting salary, around $275 per month.

(1255) JUNIOR MINING ENGINEER. A mining company with operations in Mexico has position open for Junior Mining Engineer. Salary open.

(1257) JUNIOR MINING ENGINEER. One of the large coal mining companies has position open for a young mining engineer as trainee for engineering and operation in one of their coal mines. Salary open.

SOME TECHNOLOGICAL AND ECONOMIC PROBLEMS OF THE STEEL INDUSTRY*

By
R. E. ZIMMERMAN
Vice President,
Research and Technology
United States Steel Corporation
of Delaware

Fact-Finding Conclusions Misleading

Fact-finding is an operation with which metallurgists are familiar. The process as applied within their normal sphere of activity is not simple or easy, and technical data admittedly do require interpretation. Transfer the metallurgical mind to the areas of economics and you will usually find attempts to employ methods of reasoning to which that mind has become accustomed in the regions of a more exact science. The deductions which follow the reasoning may or may not agree in kind with those of the economist, but the chances are that they will not be at variance with the facts, insofar as the facts are ascertainable. Perhaps the formal discussion of economic subjects should be left mostly, if not entirely, to the economists. They are not all of one mind, and engage in lively debates for our enlightenment. However, since the welfare and prosperity of industry is of direct concern to each and every technologist whose livelihood is derived from the practice of his profession, there is no reason why the metallurgist should not think about all pertinent economic factors and crystallize his views in regard to them. They are of immense importance to him as a member of industry, and as a good citizen of the country.

A few months ago, an able fact-finding board reported that a wage increase in the steel industry, which presumably would cost the employer about ten cents per man-hour, was inadvisable, as it would operate as an undesirable and harmful inflationary factor in the national economy. At the same time, the granting of pensions and social benefits which would cost the employer about the same ten cents per hour was recommended as favorable and immediately desirable.

Now may we go to the metallurgical field and see whether we can apply an analogous line of reasoning. Suppose the metallurgical fact-finding board in a fabricating plant stated that a proposed heat treatment of a certain steel product at a temperature of 1832 degrees Fahrenheit for a period of fifteen minutes would be undesirable, but that a procedure calling for a temperature of 1000 degrees Centigrade for a quarter of an hour would be favorable, would you consider the recommendation reasonable and valid?

This instance is cited only to illustrate the contrast in methods of reasoning and of drawing conclusions from data, as employed by different minds which have different objectives, as well as different training. The accent, most likely, is on the different objectives.

Thus it happens that the so-called economic problems of an industry may be more difficult to handle rationally than its technical problems. There are economic considerations which do not involve much metallurgy, but there are few technological problems which do not involve a deal of economics.

Future Supply of Iron Ore

In the steel industry, one of the very interesting current problems which is weighted with both technology and economics is the matter of providing for an adequate and continuing supply of iron ore, long into the future. Our remaining domestic deposits of high grade low-cost ore are being consumed at a rate which prescribes an earnest search for replacements, sufficient to meet requirements as they develop.

The great furnaces, mills, and auxiliary producing facilities now in existence in the United States, and which have cost many billions of dollars, must somehow be assured of an ample feed of raw materials, if they are to function and maintain any reasonable portion of their value. This easily recognizable fact has prompted various units of the steel industry to attack the problem in good time, with the substantial expenditure of thought, talent, and money, so that practical answers to the question of an ore supply may be forthcoming.

Enterprises on a large scale are afoot in Canada, South America, and Africa, to contribute a consequential share of the answers. Such projects require money, — large sums of money, — for they involve not only exploration, testing, and the development of brand new mines "out of face," but extensive facilities for transportation as well. In the aggregate, the companies engaged in prosecuting these activities must be prepared to multiply one hundred million dollars in outgo many times over to arrive at the eventual fulfillment of their plans and purposes.

There are good and sufficient reasons for developing these distant high grade ore bodies, which promise to augment increasingly the normal needs of the industry. There are compelling reasons for doing more than that. Strategically, or from the standpoint of national security and self-sufficiency, it is prudent, and little if any less than imperative that our immense reserves of lower-grade iron ore be brought into the position of ready availability. If, through any unhappy turn in world affairs, conditions should eventuate which would impair the delivery of imported ores, full recourse to domestic supplies would at once be indicated.

Taconite Creates Complex Problem

Therein lies another aspect of an important technical and economic problem, of critical concern, which has been receiving serious attention from the steel industry. The much discussed taconite deposits constitute our enormous reserve of relatively low grade iron ore, and must be beneficiated prior to ready use in orthodox metallurgical equipment. Were taconite a uniform substance both physically and chemically, instead of a mixture varying widely in structure and composition from place to place, the task of producing usable iron ore from it would be greatly simplified.

As the matter stands, however, a vast amount of research work is being done and must continue, in order that the most economical methods of concentration and utilization of this irregular material may be found. Present indications are that one single method of beneficiation will not meet all of the different requirements, and that one type of plant for the treatment will not answer the needs of all sections of the extensive deposit. So here again the steel industry, if it is to function effectively as a major element of national strength and service, is faced with a heavy expense for the

(Continued on page 43)

*An address before a Meeting of the Calumet Chapter, American Society for Metals, Hammond, Indiana, February 14, 1950.

Mineral Industries Make New Safety Record

Climaxing the twenty-fifth anniversary of the National Safety Competition, the country's mineral industries attained in 1949 the best safety record in the history of the contest, the U. S. Bureau of Mines has announced.

In naming the silver anniversary winners of the coveted Sentinels of Safety trophies to the plants that achieved top honors in safety, the Bureau of Mines reported that 202 mines and quarries had injury-free records last year.

The National Safety Competition was started in 1925 by the Bureau of Mines upon the recommendation of former President Herbert Hoover, then serving as Secretary of Commerce. In commending the 1949 winners Mr. Hoover states:

"I have never ceased to be proud of the National Safety Competition ever since I had a hand in the matter twenty-five years ago.

"The annual trophy has given mark and distinction to the winners. But of even more importance is the stimulation the award has given to accomplishment in safety.

"I consider it a great privilege to congratulate each of its winners. You have done an outstanding service to your fellow workers."

Beginning this month mineral operations with the best safety records in each of the six groups in the competition will receive national recognition as leaders in mine and quarry safety. The 1949 winners achieving top safety honors in their respective groups will be awarded bronze Sentinels of Safety trophies and the Sentinel of Safety flags by the Explosives Engineer magazine. An individual Certificate of Achievement of Safety will be presented by the Bureau of Mines to each man in the winning plants.

The 1949 winners of the Sentinels of Safety trophies are:

Anthracite Mines: Stevens Shaft Mine, Kehoe-Berge Coal Company, Exeter, Pennsylvania.

Bituminous-Coal Mines: Reliance No. 7 Mine, The Union Pacific Coal Company, Reliance, Wyoming.

Metal Mines: No. 2 Mine, American Zinc Company of Tennessee, Mascot, Tennessee.

Nonmetallic Mines: Bellefonte Mine, National Gypsum Company, Bellefonte, Pennsylvania.

Open-Pit Mines: Embarrass Mine, Pickands Mather & Company, Biwabik, Minnesota.

Quarries: Dolonah Quarry, Tennessee Coal, Iron and Railroad Company, Bessemer, Alabama.

The increased interest in these annual safety competitions is indicated by the record enrollment of 646 mines and quarries in the 1949 contest, Forrest T. Moyer, of the Bureau of Mines, states. Mr. Moyer is chief of the Accident Analysis Branch of the Bureau. "This entry list was more than triple the enrollment in the first competition in 1925," he reports. "Also, it represents an increase of 137 plants over the number that participated in the previous year, 1948."

The worktime at the 646 plants enrolled in the 1949 contest totaled more than 146 million man-hours. Last year's injury-severity rate of 5.56 days lost per thousand man-hours of work was more favorable by a wide margin than in any other year since the competition began in 1925. It was 18 per cent better than the previous low record of 6.79, achieved in the 1948 contest. The injury-frequency rate was 33.21 per million man-hours of competition, almost equaling the record low rate of 33.02, attained in the competition of 1940.

Members of the 1949 Committee of Award include: Ned H. Dearborn, president, National Safety Council; Julian D. Conover, secretary, American Mining Congress; William Green, president, American Federation of Labor; J. D. Battle, executive secretary, National Coal Association; A. T. Goldbeck, engineering director, National Crushed Stone Association; A. J. R. Curtis, assistant secretary and safety director, Portland Cement Association; and Dan Harrington, consulting engineer.

PERSONAL NOTES

(Continued from page 3)

Frederick L. Wuetig, '49, resigned his position with Union Pacific Coal Company in Rock Springs, Wyoming, to accept one as Metallurgist with Reynolds Metals Company at Phoenix, Arizona. His mailing address there is 1613 West McDowell Road.

Lewis E. Young, former member of *Mines'* faculty and now Consulting Mining Engineer, has moved his offices in Pittsburgh, Pa., to 2138 Oliver Building.

William C. Aitkenhead, former professor at *Mines* and, since January 1948 head of the Mica Research project at the school, has accepted a position in the Mines Experimental station at Washington State college, Pullman, Washington, and will report for duty there August 1. He left the faculty at *Mines* in 1943 to enter the service; he was sent overseas in January 1944 where he served until November 1946 when he was separated from the Army and placed in civilian service in Germany with the Department of Commerce, Mines and Metals division, Field Information Agency Technical.

Mr. Aitkenhead's only son, William, Lt. (j.g.) in the Coast Guard, recently received a three-year scholarship to the Massachusetts Institute of Technology, where he will study for a degree in Naval Engineering. This is a Coast Guard assignment, the scholarship having been awarded on the basis of his rating in the

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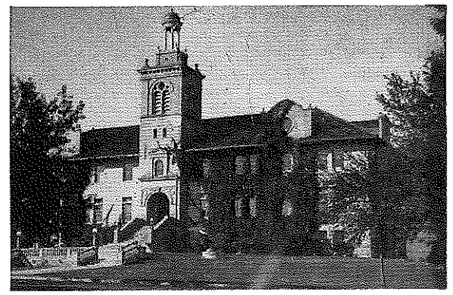

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Mr. A. C. Harding, '37, General Manager, Black Hills Bentonite Company, inspecting Bentonite being loaded by Caterpillar equipment. Courtesy—Caterpillar Tractor Company.

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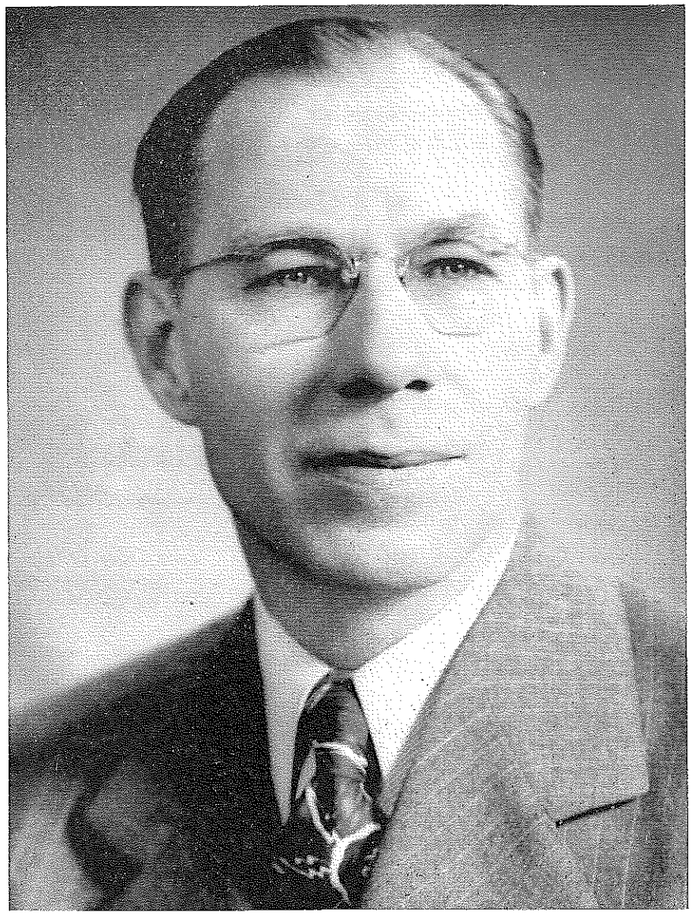
WORLD NEEDS GOLD AND SILVER MONETARY STANDARD

*Mining Industry Vital to Maintain American Living Standards**

By
WALTER W. JOHNSON,
Governor of Colorado



GOV. WALTER W. JOHNSON

The American Magazine contains an article entitled "High Silver," by Jerome Beatty. This article is headed by the statement, "For every silver article you purchase, from a roll of film to a loving cup, you pay tribute to six Western states in the silver bloc. Here is a report on a legalized national holdup that hits the pocket of every taxpayer and consumer." As this heading indicates, the article is propaganda in behalf of Eastern silverware manufacturers who want cheaper silver at the expense of the Western metal miner.

Last month, Harper's Magazine contained a similar article by Dr. Morris E. Garnsey, an economist at our own University of Colorado. Both articles assume the United States is paying the silver miner more than his product is actually worth. Both articles imply the United States should dump its silver reserves on the market, and cease buying silver. *Neither article informs the readers that this has been common practice throughout the world whenever selfish interests were desirous of artificially breaking the price of silver. Imagine what would happen to the price of wheat, dried eggs or butter, which the government now has in storage, if the government were suddenly to offer all of that wheat or eggs or butter for sale.*

Only last summer, the price of silver in India rose to $1.55 an ounce: whereupon, fifteen million ounces of the silver reserve of the government of Hyderabad were dumped on the market to break the price of silver to 95c an ounce.

Mining Industry in Desperate Condition

I could devote an entire evening in answer to Dr. Garnsey and Mr. Beatty, but silver is only a part of the picture. It is high time the desperate condition of the American mining industry was squarely placed before the people of our Western states. In the last ten years, 933 or 80% of all the producing metal mines in Colorado have been closed down. Only about 2000 of the 8200 metal mines which were operating in the eleven Western states in 1940, remain open. Many of these will soon be compelled to close.

The 1950 convention of the Colorado Mining Association truly called the condition of the industry a national disaster. It pointed out that metal mining would soon be finished in this country. In the future, in times of peace, we will be compelled to pay high prices for foreign copper, lead, zinc and other base metals, without which our present standard of living cannot be maintained. *Since there will be little or no competition from domestic metal mining, and since there is no world-wide anti-trust law, foreign dictatorships, cartels and trusts will demand high prices for the metals required for making automobiles, radios and the host of other gadgets and appliances we now use and enjoy.* Out-

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* Address delivered by Honorable Walter W. Johnson, Governor of Colorado, to his radio audience Saturday, June 17, 1950. (KOA)

DEVALUATION AND THE LEAD AND ZINC MINING INDUSTRIES*

By
FELIX E. WORMSER,
Vice President
St. Joseph Lead Company
New York, New York

Devaluation is a two-dollar word for a 20th Century refinement of "coin clipping." You may recall how, in olden times, kings used to shave gold coins so as to acquire sufficient gold with which to replenish their depleted treasuries, and to keep up the standard of living to which they felt royalty was entitled. Expenditures of royalty in those days were not, be it noted, on "social welfare." They were more apt to be expenditures on the royal establishment itself. Strange how persistent is the habit of government extravagance! But I am digressing.

Devaluation is a lot more subtle than coin clipping, for there is no visible mutilation of a devalued currency. Devaluation is a devilishly ingenious invention of the European planners and comparatively recent as well. In fact, I looked through our large office copy of Funk & Wagnalls' dictionary for a definition of the term, and, to my astonishment, could find no trace of the word "devaluation." I noted the age of the dictionary and found it was a 1937 edition. Apparently recognition of this new banking term occurred sometime during the last ten years.

Devaluation & Effects

How is devaluation distinct from coin clipping? Mainly, in that devaluation relates particularly to the external exchangeability of a currency, rather than to its internal value. A country on a paper standard, as most countries are nowadays, may devalue simply by announcing that the exchange value of its currency in relation to the dollar, as of a certain moment, is officially altered. That is what England did on September 19, 1949, when it officially declared that the pound would henceforth be worth $2.80 in U.S. dollars instead of $4.03. Instantly, many other countries devalued their currencies, and to exactly the same degree, namely 30½%. This was especially true of nations comprising the British Commonwealth — Australia, New Zealand, Burma, India and South Africa, all of which devalued 30½%. Canada, however, only devalued 10%. Its currency is influenced more by the dollar than by the pound Sterling. Like a chain reaction, devaluation then spread to other countries such as Norway, Sweden and Denmark.

Now, why did England do it? Chiefly because it wished to use the instrumentality of currency devaluation to stimulate export trade to us and thereby procure more dollars. The action was directed at us, and, as I read press accounts, was even encouraged by some of our government authorities. Inasmuch as devaluation of a country's currency cannot readily be done so that only two countries participate, but has to be done on a unilateral basis whereby everyone is affected, it must be obvious that the reason other European countries immediately took action after British devaluation was because they did not wish to be flooded by British merchandise to the detriment of their own domestic economies. Their own devaluation was merely self-protection so far as they were concerned.

Devaluation is peculiar, because its effects cannot be clearly foreseen. No one can predict with any certainty that devaluation will bring about the results its proponents proclaim. Therefore, we must avoid too much simplification in trying to analyze the probable results, but I think we can develop a few facts which will indicate that devaluation is a serious blow to the mining and agricultural interests of the United States.

The first thing to be noted is the fact that devaluation does not immediately affect the *domestic* purchasing power of a devalued currency. The people of Great Britain go about their business the day after devaluation with the same currency in their pockets as they had before, and will probably find that the items that have increased in cost quite materially are only those imported from countries that have not devalued, like the United States. For example, American typewriters, automobiles, and apples will cost them more. This naturally discourages the importation of merchandise from the United States—which is exactly what devaluation is intended to do. Inasmuch as England has to import heavily in order to live, and some of its raw materials must come from areas that have not devalued, their internal manufacturing costs must slowly rise, and ultimately the intended effect of devaluation will wear off.

Gain by Sterling Area Countries

In the meantime, Great Britain and all the Sterling area countries have benefitted themselves greatly by devaluation, because any natural resource produced locally, such as agricultural commodities and minerals, can be produced for some time to come with little or no increase in the cost of production, and can be sold in the United States at prices which will provide a handsome return. Let me illustrate with a simple example. Consider South Africa, an important mineral producing region, (the same principle applies to Australia, Burma and to other mineral-producing areas of the British Empire):

The old Sterling rate for the South African pound was $4.03.

The new South African Sterling rate is $2.80, or 30.5% lower.

In a 12¢ lead market, the net New York price to a foreign producer is 12¢ minus the duty of 1.06¢, or 10.94¢ per lb., which is equivalent to $10.94 per hundred.

On the old basis, $10.94 was worth £2.7 South African. On the new basis, $10.94 is equivalent to £3.9 South African.

Gain for Foreign Miner — Loss for U.S. Miner

This corresponds to an increase of roughly 42% in the income of a South African lead producer who sells his output in the United States.

No one can blame the South African mineral producer for being gratified at such a handsome increase in his proceeds, and, consequently, for directing his production this way.

Now let us examine the manner in which the South African producer appraises the effect of devaluation upon his own operations. Assume he has the same cost of production before and after devaluation — a reasonable assumption — then he gets more of a return in a 12¢ lead market after devaluation than in a 15¢ market before devaluation. Here is the simple arithmetic involved:

In a 15¢ New York lead market:
15 — 1.06 = 13.94, or $13.94 per 100 lbs. = £3.5 at the $4.03 rate for Sterling
(The tariff is 1.06¢)
In a 12¢ New York lead market:
12 — 1.06 = 10.94, or $10.94 per 100 lbs. = £3.9 at the $2.80 rate for Sterling.

* Address delivered before the annual meeting of the Colorado Mining Association, Denver, Colorado, February 3, 1950.

The proceeds are therefore greater in a 12¢ lead market than in a 15¢ market, thanks to devaluation, and indicate why the favored foreign producer can mine competitively lower-grade ore than we can.

There is still another way of looking at the result, which I have not yet seen developed in devaluation comments, but it is the fact that the British devaluation is equivalent not only to a complete eradication of the reduced tariff protection accorded lead of 1.06¢ per pound, but to a bonus of roughly 2¼¢ additional to the South African producer. I will show you how this is brought about.

The difference between the proceeds from the sale of 100 pounds of lead at 12¢ per pound New York on the new Sterling basis, as compared with the proceeds on the old Sterling basis is 1.2 pounds Sterling, South African, which is equivalent to approximately 3-1/3¢ per pound. In other words, 3-1/3¢, less the tariff of 1.06¢ is 2.27¢, or roughly 2¼¢. Here is tariff reduction with a vengeance, and explains succinctly why the International Monetary Fund was organized only a few years ago. It was established mainly to discourage or prevent the use of international currency juggling, or devaluation, as a commercial trade weapon, and the reason must be clear to you from our own experience. Doesn't it seem strange that only a few years after the Fund was founded, it openly tolerates such international monetary manipulation?

If we were now to determine the effect of devaluation on the domestic zinc market, we would reach a conclusion similar to that for lead, i.e., devaluation goes far beyond the effect of complete tariff elimination, and that the recent British devaluation—as for lead — is equivalent to a subsidy to some foreign producers of about 2¼¢ per pound, in addition to the elimination of the tariff of .875¢ per pound. Already a sizeable tonnage of zinc is moving to our shores from a country that has devalued to the same extent as Great Britain, but which normally would go to Europe.

U. S. Producers Need Protection

These brief analyses show you why I feel it is desirable and necessary for both the lead mining and zinc mining industries, and others, to raise their voices in emphatic protest over the unfair treatment they receive under devaluation, and to request compensatory relief.

Now the pity of it all is that devaluation is simply not a cure for the disease of trade maladjustment (and for the so-called "dollar shortage"). A good many phoney words have been coined these days by very clever people, and one must penetrate below the surface to grasp their significance. One of these terms is "dollar shortage." No one ever heard of such a thing as dollar shortage a few years ago. It makes us appear as mean and stingy Americans, to be so inconsiderate as to let any one country be short of dollars.

It used to be that currencies were traded in wide open or free markets, just as lead is today. People could judge real currency values accordingly. Nowadays, however, with rigid foreign exchange control, multiple exchange rates, blocked currencies, export quotas, import quotas, and all the other paraphernalia of 20th Century economic planning, the good old free market has been thrust aside for most foreign exchange. Instead, many foreign governments so regulate foreign exchange rates that their currencies will be maintained at whatever rates the governments dictate. Then, if other countries and merchants in international trade won't fall in line and recognize their rates, they are accused of creating a dollar shortage or other currency shortage.

The system is part of a managed currency arrangement, developed in Europe in the 20th Century, that was alleged to be far superior to the gold standard. All it seems to have done is to create more confusion and to require more international conferences in order to pass more rules and regulations to cure artificially created commercial situations such as the inability of England to do all the exporting it wants to do, at the price it wants to obtain. Managed currencies might be all right if there were any brain sufficiently wise to make the difficult decisions of management—but it is beyond human capacity. But, more important—I don't think the vast power of currency management should be put in the hands of any one person or group. I have given you enough of my ideas to indicate that I am a strong believer in a free market, for I think that a great many of our national and international ailments can be cured much quicker by a free market than by any government regulatory commission.

Do you remember the lead shortage a year ago? A lot of people were campaigning for continued suspension of the lead tariff, and a few suggested direct government intervention in our industry to bring about a cure. Some of us in the East felt this was not only unnecessary, but objectionable, and that a free market alone would bring about a cure speedier than any expedient. That is exactly what happened.

Subsidy Means Government Regulation

One reason why in my previous appearances before you I have counselled caution in rushing to the government for subsidy assistance, is that I felt subsidies would be accompanied by severe compulsory curtailment of our liberty of operation, mild at the start, but growing steadily tighter. I am convinced more than ever that this is so.

One has only to look at what is happening to agriculture to see the handwriting on the wall. The farmers may have had a fine time of it for a few years through the operation of government regulations which have purchased their surplus production and have kept the price of farm products very high. Only now are they going to begin to pay the price the government must exact, because the government possesses huge, unwieldly and embarrassing surpluses. Production curbs, mild to strict, are reported certain to be slapped on seven major crops, possibly nine: grain, wheat, cotton, tobacco, peanuts, rice and potatoes—crops that accounted for about 55% of all farm and field acreage last year. Soy beans and dry edible beans may also get the axe. I read recently that cutbacks on the major seven crops may add up to 32,000,000 acres, which is a vaster area of farm land than was planted in 1949 for the entire national cotton crop. It is twice as big as the total farm acreage in all New England.

Already, four billion dollars of the taxpayers' funds are tied up in troublesome farm surpluses which nobody has the heart to destroy, especially after our experience with the little piggies in Wallace's day. If the government tries to "dump" them abroad, it will depress foreign markets and generate hostility. What a mess! And yet many of the mining industry want subsidies for metals. Incidentally, four billion dollars is bigger than the National Government's entire budget for many years between the two world wars. Well, maybe the farmers will get out of the government vise that is inexorably clamping down on them. After all, they can plant uncontrolled crops and create more surpluses in other directions. They can do more intensive fertilizing on their reduced acreage. But I notice at least two great farm bureaus—also cattlemen in Texas—have become a bit fed up in the direction in which farming is going and have declared themselves opposed to the present system, and well they might, for the end result will be to tell each farmer in the country what he can plant, how he shall plant it, and what he shall get for it. Perhaps the farmers like that sort of system. To me, the system is abhorrent.

The confusing aspect, however, is the action of the government in subsidizing agriculture on one hand, at terrific expense to us all, while, on the other hand, the government is spending millions of taxpayers' funds on research to increase our production of crops, or building new reclamation projects to create more farming land. It simply does not make sense.

Change in Tariff Structure Needed

Maybe you would like to see a system whereby ultimately every one of you are told how much to mine, where to mine it, how to mine it, and what price you shall get for it. I don't like that system, for I think it is completely unnecessary, and that we in the mining industry can solve our problems without government intervention, by procuring government relief, when needed, in those two directions which have proved traditionally sound, namely, (1) in taxation, and (2) by a change in our tariff structure. *A request for an emergency tax or tariff against the unfair competition our mineral industry is receiving from metal imports from countries that have devalued currencies, is my conception of one thing that should be done immediately.*

When all is said and done, what we in the metal mining industry want is a satisfactory price for our product, one that will keep our men employed and our stockholders happy. We realize we cannot hope to travel along a road without any turning — there are bound to be ups and downs in the market, periods in which we shall be prosperous, and periods during which we will suffer. But that is part of a free enterprise system, much to be preferred over one in which an omnipotent government directs all the energies of the people to give security, as in Russia. I do not know of any better system than the American competitive system which uses a free market to decide who can operate and who cannot—do you? It is non-discriminatory and liberty preserving. We ought to guard it jealously.

I recognize, however, the legitimate complaint which we have, as miners, in protesting various government policies that adversely affect the market for metals. I refer, for example, to the subsidizing of foreign mining operations and to devaluation, which I have already described at length.

Now what can we as an industry do in a constructive manner which will preserve our free markets and promise us some relief? For one thing, as I have already intimated, we should press Congress for emergency relief to protect us against the unfair competition we are today receiving from imports of lead and zinc from countries that have devalued their currency, with which we are in competition. Because of the gradual undermining of the country's tariff structure and the emphasis on free trade, some of you may feel that there is no prospect of improvement in that direction. I can not agree with this point of view, for devaluation has introduced a new factor in international trade that was not contemplated by the Tariff Act of 1930. That law provides for countervailing duties, which, you may recall, are designed to protect American industries from the actions of foreign governments which subsidize local industries upon the exportation of their products. But 1930 was twenty years ago when the widespread practice of currency devaluation was not foreseen, and when nearly all currencies bore a definite relationship to gold. Certainly we have every right to demand protection against devaluation as an international trade weapon. One means of doing so would be to establish a graduated tax or tariff, whereby the tax on imports is greatest when the domestic market price is lowest, and disappears altogether when the price is above a certain value. To illustrate what I have in mind, suppose we had a sliding scale tax or tariff on imports like this on lead metal:

Price of Lead	*Tax or Tariff*
(In cents per pound)	
	Free
20	.50
19	.75
18	1.00
17	1.25
16	1.50
15	1.75
14	2.00
13	2.25
12	2.50
11	2.75
10	3.00
9	3.25
8	3.50
7	3.75
6	4.00

Even such a rate would not repair the injury we lead miners have already suffered through the devaluation of the pound Sterling. I firmly believe that if the mining industries will unite and advance a proposal similar to this one, they can bring about its adoption.

While I am on the subject, let us look at the comparative tariff status of lead today and yesterday. In a 12¢ lead market, with the reduced protection of 1.06¢ per lb., the duty amounts to only 8.75 per cent. When the lead price ranged between 4 and 6 cents, the tariff amounted to 2.125¢ per lb. —roughly 30 to 50 per cent.

We are having it dinned into our ears by high government officials and economists that the United States must import more. Maybe so. But I submit that any industry which formerly required no imports and now has to contend with imports equivalent to its entire domestic output—like the lead mining industry—is certainly doing more than its share. It is being imposed upon. We are entitled to relief in the same way it has been historically given, i.e., through a tariff, or import tax.

I realize that, because some of you feel it hopeless to procure tariff assistance, you have gone all out for subsidies and have done so just as sincerely as I have taken the traditional approach. The latest result of subsidy thinking is found in S.2105, which passed the Senate and is now in the House. I understand some of you are already planning a victory celebration if it becomes a law. Before you go too far in that direction, I suggest tempering your jubilation a while to see how the bill works, because, in my humble opinion, it can only lead ultimately to disillusionment. The most damning criticism I have of the bill is that, besides promoting inefficiency, it *would impair our priceless free market.* If you have any doubt about this, think a moment what the bill is intended to do. It provides "conservation" payments and wisely locks up the metal resulting from these payments so that it cannot be pressed for sale in the open market to cause a price decline. In that respect, it protects our free market. But the bill is also designed to stimulate production — to bring marginal properties in operation, and even to encourage those that are now active to greater output; otherwise, it has no purpose. This means more metal production. The resultant output, big or little, will press for a market. What happens when the supply of a commodity is more than the market can absorb? The price goes down. That is exactly what may happen here, *for no provision is made in the bill to prevent subsidized production resulting from exploration payments, from competition with unsubsidized.* More output than a free market can consume means lower prices, for the custom smelters can not stockpile unless they wish to speculate.

It is quite conceivable that prices may decline so much that even the exploration or development subsidy becomes unattractive. Then where are we? Is the answer more subsidy? Of course not, but, doubtless, that would

(Continued on page 16)

POLITICS AND POLICIES

By
ROBERT S. STOCKTON, '95
Consulting Engineer, Spokane, Washington

The Engineer devotes most of his energies to his profession, but should of course, also use his trained mind as a citizen whose duty it is to help preserve our liberties and support sound economies in the administration of government.

For years a great many people, particularly those under union domination, have been fed a diet of unsound economics and socialistic error presented plausibly by selfish and unscrupulous leaders and politicians, but I am convinced that the great mass of voters will support honest government and sound policies if the truth can be presented to them in simple terms and convincingly with all the facts and reasons therefor.

The Democratic platform of 1932 contained a good program of sound economy and forward looking policies, but after the election, practically all its provisions were ignored and discarded. In their place there evolved demagogic propaganda and extravagant waste for political expediency.

Socialistic experiment and bland pronouncement that black is white, has seemed to be successful under Roosevelt, Truman and Labor leaders, just as such policies are the mainstay of Russian diplomacy, but nothing is permanently successful not founded on truth and righteousness. *The government by minorities with a ruthless and cynical disregard for the rights of the people as a whole or the preservation of our liberty is causing more and more people to discredit such policies and look for truer leadership.*

Just now as a practical matter the Republican party would seem to be our main hope for a return to a relatively honest and economical administration. I am one who agrees that the Republicans in the last two campaigns have made the mistake of bowing too low to the powerful labor unions with their selfish and unsound programs, but even so, they would not have had very far to go to win.

It is useful to consider some things that we should advocate and work for in both major political parties. In the first place we should use every endeavor to send honest and capable men to Congress and then see that they are properly supported and encouraged in constructive statesmanship and independence of pressure groups.

It is most important that the cost of government should be reduced by strictly limiting the services of government and the resulting army of government employees. There is no sense in taxing ourselves to death to support a bureaucracy for the relatively small handouts we get back. The Hoover Commission has proposed a reorganization to eliminate many unnecessary and overlapping administrative bureaus, commissions, etc., and thus same money and promote efficiency. I am strongly for this reorganization and a similar plan would be useful in many of our states.

I am for a unified defense force and a reasonable preparedness for war but think present expenditures can be reduced keeping in mind that a sound economy and financial stability are essential.

When the Marshall plan is completed I think I will oppose further gifts to bolster the cartels and monopolies of Britain and Europe, however, we should continue to promote world trade and cooperation on a democratic and business basis and support the United Nations.

I am not in favor of further generous gifts to veterans, which have been popular for political reasons and am definitely against national medical care or federal aid for schools.

I favor the Taft Hartley Labor Law and think further that nationwide unions should be forced to settle their claims in court and not be allowed to strike. The process of forcing wages higher and higher by the too powerful unions has raised prices and reduced the value of the dollar to the great detriment of all fixed dollar income, general business, construction and industry and the people as a whole.

There should be a balance between the returns to capital, the profits of business management, prices for farm products, and the wages of workers, so as to support a stable dollar value. This balance plus a large reduction in public expenditures and some reduction in taxes are most essential for the reduction of our public debt and for preserving the soundness of our financial system.

I favor a flexible support for the prices of farm products, set not high enough to produce unmanageable surpluses and for just so long as the labor monopoly is in power but hoping both can be done away as soon as practicable.

I think double taxation of stock dividends should be done away with and favor subjecting federal, state and municipal bond interest to income tax levies in order to help replace many unfair and uneconomic taxes. It might help clear up the tax tangle if the states should use a sales tax but no income tax, the federal government to retain the income tax but use no sales tax and leave local communities to use the property tax.

In conclusion I would advocate sufficient research on the matters discussed and many others important to our liberty and progress, so that each one can state his faith and the reasons which support it on every appropriate occasion and thus spread what we regard as the true faith and support constructive political action to preserve our liberties and our country.

DEVALUATION AND THE LEAD AND ZINC MINING INDUSTRIES

(Continued from page 15)

be the cry. When I last spoke to you in Denver, I tried to tell you that metal prices are set in a world market, so far uncontrolled, and not by a few people conniving in Wall Street, or selfish interests gouging the public. One of my friends makes the interesting suggestion that the way to be rid of the prejudice against Wall Street is to change the name to "Alexander Hamilton Street." The best protection we miners have is to keep our markets completely free. We should understand better how they operate, and the indispensable role played by the custom smelter and his difficult marketing problems.

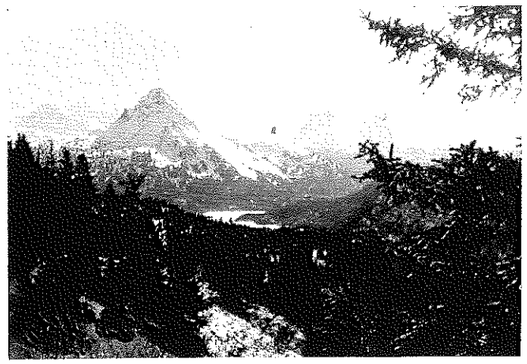
Do you really feel that the distribution of some government funds as provided in S.2105 is sufficient compensation for any impairment of your free or competitive metal markets?

Comments on Subsidies

I am supposed to be speaking about devaluation, not subsidies, but my excuse is that they have a relationship, as you can see. Devaluation intensifies the demand for subsidies, and upon the general subject of subsidies, one great American commented recently as follows:

"The U. S. could not meet the threat of dictatorship if we turn this country into a wishy-washy imitation of totalitarianism, where every man's hand is out

(Continued on page 22)



▼ Back from our bay

▼ Coast, from ridge behind cabin

ALASKA FISHING INDUSTRY CLAIMS A "MINER"

By
JOEL M. MOSS, '42
Seldovia, Alaska

Many Mines Men have diverged into business fields, far removed from the mineral industries. No doubt, my case is typical and, in a brief fashion, I'd like to tell a little about our work up here. For several years, I had moved around the Territory on field examination of mining ground and on production work in both hard rock and placer. Much of this time being spent in coastal areas where travel was by chartered fishing boats. Their way of living with its short concentrated work period and the resulting long period of free time, appealed to me. Thus, my brother and I ended up homesteading a small Bay across from Homer in lower Cook Inlet; and we now are getting deeper into the fishing business every season.

▼ Cook Inlet on a nice day

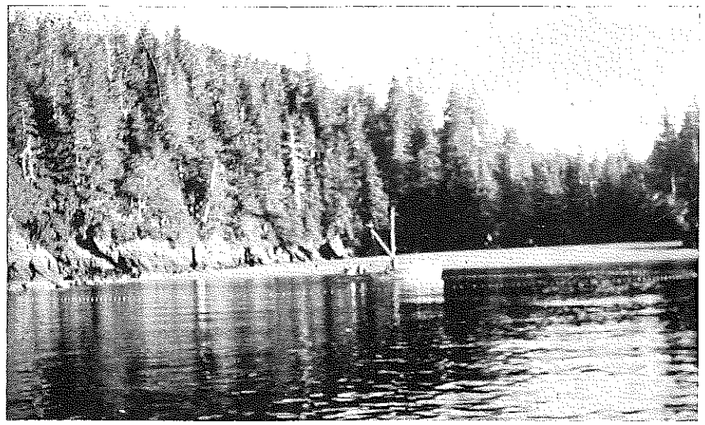
We have a nice location with a very good deep water anchorage. So far, we have found the long period of free time elusive, as the "off-season" has been spent in the construction of housing, a dock, a two story warehouse, setting up a sawmill, working on boats and gear, and, at the present time, setting up a small hand cannery. Some of the local fishermen specialize in one particular type of fishing. However, with the tendency toward shorter seasons, fewer fish, and more new fishermen like ourselves, we find it safest to fish for halibut, gill-net for red salmon, and beach-seine for pink salmon. All three take place at different times and involve different fishing methods.

Halibut fishing, for the local small boats, has developed since a cold storage plant was set up in Seldovia two years ago. Its importance is rather limited to us as our local boats, with usually a two man crew, are designed for salmon fishing and not off-shore halibut fishing. However, for a month before the July red drifting, better than expenses can be made at this fishing. As we do very little with the halibut, I won't mention it any further, but instead will discuss the drifting and seining in some detail.

The drifting with gill-nets is, at present, the most profitable; while seining in early August tops off the season. The local boats gross widely varying amounts for the summer with some making only expenses and others twenty thousand dollars, in a good season. Probably twenty per cent of the boats each year, usually the same ones, catch eighty per cent of the fish.

Our drifting here, is done with 1200 feet of linen gill-net. The top is fastened to a ½ inch line with floats; while a ¼ inch line with lead weights is fastened to the bottom. This net is let out over the stern of the boat and both net and boat drift with the tide. As the water is quite dirty with glacial silt, the red salmon are unable to see the net and are gilled in it. A large number of tenders from the different canneries travel back and forth

▼ My brother and I (on lower side) with some halibut



▼ Seine out on a beach set

picking up the fish from the boats and delivering supplies. A few pay cash, although the general procedure is to give slips for the number of fish received. These are cashed, after the season, at the respective canneries.

Where we drift is considered hard fishing because Cook Inlet has the second largest tides in the world, lots of wind, and little shelter. Normally, we fish from three to twenty miles off shore but in a six hour tide, a boat will drift thirty or forty miles. This same tide often sets two boats together and then both have to tow their nets apart or pick them up. Usually this has to be done in a hurry as the two nets will tangle and can easily be lost.

Most of the boats fish twenty four hours a day and catch up on sleep during the week-end closed period or when it "blows." As we have a better than average sea-worthy boat, we generally ride out the "blows" with the nets out as a sea anchor, getting extra fish in the process.

The fish travel in schools that are hard to spot, especially when it is rough. A lot of time is spent watching other boats with glasses to see how they are doing or contacting friends on the radio to see if there is a better spot. The tenders also give information but theirs is not always reliable. They are often interested in getting rival boats off on a wild goose chase and out of their way.

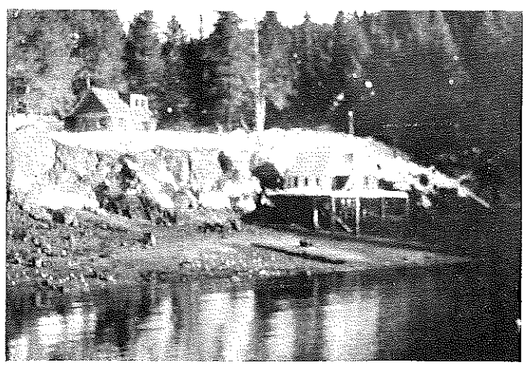
During the main run of fish, which lasts only a few days, it is not at all unusual to catch two thousand or more fish in a few hours. I might add picking them out of the net takes much more time and skill. During the light fishing, we pick the fish from a skiff, going back along the net. However, when they come in heavy, we bring the fish, net and all, aboard to keep the net from sinking. At the current price of seventy to eighty cents a fish, some boats will try anything to get in on the heavy fishing. This often causes a lot of trouble and friction among the boats.

Beach seining, which winds up the season in early August, is real sport. All fishing is in sheltered waters and consists of spotting a school of salmon; running the seine around the

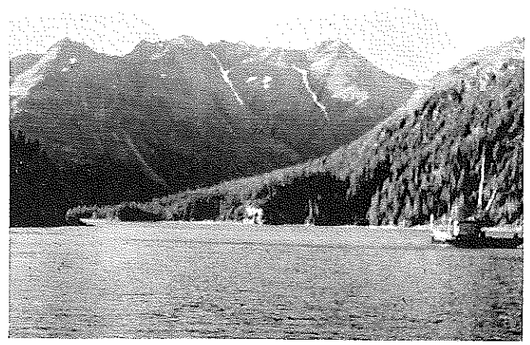
(Continued on page 36)

▼ Nets full!! About 1600 red salmon

▼ Hold full and deck load of "reds"



▼ Cabin, with tide out



▼ Port Dick seining grounds

BIGNESS IS A RESULT*

By
CRAWFORD H. GREENWALT,
President, E. I. du Pont de Nemours & Company

There is a story to the effect that the first head of the Du Pont Company, when he came to Wilmington just about 150 years ago, got lost. Because of his French accent, the people of whom he inquired directions had trouble understanding him. Finally, both he and they became hopelessly confused, and by the time rescue arrived in the shape of a French compatriot, Irenee du Pont had missed his lunch.

I am happy to say that I found my way here today with no difficulty at all.

Wilmington and the Du Pont Company have been together so long now that each has become a part of the other, and the early barriers of an alien tongue and a little-understood occupation have long since been dissipated. We value that close association and the confidence it has brought, and so today and every day the Du Pont Company is just as interested in having the full understanding of Wilmington and its citizens as its founder was when he lost his way on the cobbled streets of 1801.

There is no need for me to recite the long association of Du Pont and its home city. Many of you who grew up here have experienced that intimate relationship at first hand. Many of you who knew the mills along the Brandywine in your boyhood have watched the growth and development of the Du Pont Company from a medium-size maker of explosives to a large and diversified chemical enterprise. This transformation has taken place within the lifetime of many of us in this room. Powder was made in the old mills as recently as 1916, and many who recall it well are still regarded as young men.

Along with this growth and progress have come problems—the peculiar and very special problems that face a large company in the United States today. They are problems that affect Du Pont—they are problems that affect the communities in which we operate—and pre-eminently they affect Wilmington. Therefore, I hope you will allow me to discuss them with you in the way of close neighbors and friends, for, again, I would like the Du Pont Company to have your understanding and support.

Politicians Want Government Control

You who have watched this company grow to its present size and position have witnessed the growth also of a thought-pattern which places large enterprise in an unfavorable light. *There are people, in government and elsewhere, who believe that something is wrong with our business system, particularly the part of it that is conducted by large firms.*

Unfortunately for us, they are more vocal and perhaps more articulate in attack than business men have been, in defense, so we hear much of "monopolies," of "concentrations of power," of the "heartless and selfish" conduct of big business. It is said that political power should be used to restrict corporate activities, to bring corporations under the control of the government and, in some cases, to break them up.

I have no doubt that these people are sincere in their views. The problems we face today are troublesome and it is easy to be misled. But no matter how sincere those views may be, it seems to me that they are greatly in error, and we subject ourselves to serious consequences if we allow them to go unchallenged.

There is a simple truth that business critics seem not to recognize. Any business, whether it be big or little, to be successful *must* serve the public interest; and if a business grows it does so because the quality and price of its products or the superiority of its services have won public confidence. Its ultimate size is then dictated only by the aggregate demand of its satisfied customers.

The Du Pont Company *is* successful and it *is* big, and in saying that I am merely reciting cause and effect. Those of us who are responsible for its management are thoroughly and painfully aware that that success comes about through public acceptance of the goods and services we offer. Should we ever fail in maintaining that acceptance, we will lose business and someone else will gain it. And that, gentlemen, will bring about a breakup of what has been called the "Du Pont industrial empire" far more quickly and far more devastatingly than any outside attack.

Meaning of Monopoly

You have heard much in recent times about "monopoly," and on occasion you have heard this term linked with Du Pont in unflattering connection. Let's see what we mean when we say "monopoly." Unfortunately, it is a word which is much used, and much abused. There seem to be any number of definitions and interpretations. We have a legal interpretation that says "monopoly" is the manufacture of a large share of any product by any one company regardless of how competitive that product may be with other materials doing the same job. To add to the legal confusion, the word "share" appears to mean anything between 30 per cent and 100 per cent depending upon circumstances which are also as yet undefined.

The political interpretation of "monopoly" seems to be that anyone who is big has it, and very recently we have been given the concept that if as many as three or four companies have a majority of a market they are said to be monopolists, or "oligopolists" as the erudite call it, regardless of how intense the competition be between them.

Actually monopoly means "one seller," and the test of monopoly is whether the buyer of any article has freedom of choice in fulfilling his requirements. If he can make his purchase from only one source, then a monopoly exists, even though that monopoly may be a perfectly legal one, such as the purchase of electricity from our friends at Delaware Power and Light. But if he can select from among several materials, each of which will to a greater or less extent relieve his need, then monopoly in any real sense exists. The choice becomes that of the customer and he can buy or refuse to buy without compulsion and according to his best judgment.

The term "monopoly" has also been given the implication that it is intended to smother or to exclude competition. The chemical industry is popularly depicted as a haven of monopoly, yet it is in fact one of the most competitive industries in the world.

There are something like 9,000 companies engaged in the manufacture of what the Census Bureau describes as "chemical and allied products." As a corporation, the Du Pont Company is the largest of these and has roughly 8 per cent of the trade in this segment of American industry. Individually, however, few of our products lead their fields. In most instances our leading competitors are more important factors than we in many of our markets.

* Address before combined meeting of Rotary, Lions, Kiwanis, Exchange, and Optimist Clubs, Wilmington, Delaware, October 27, 1949.

In the paint field, Sherwin-Williams is bigger than Du Pont and both of us fight for business among nearly 1,200 active competitors. American Viscose is larger than we in viscose rayon; Celanese in acetate rayon, and there are about 15 other important companies in those fields. Union Carbide is bigger than we in plastics; Allied Chemical in nitrogen products; Eastman Kodak in photographic film; Dow in chlorine products and also in insecticides.

I say that without shame,—because it comes about as a matter of deliberate policy—a policy of diversification which I believe has operated in the interests of the consumer, of the Du Pont Company, and of the public at large. With limited resources for capital expenditure, we have no wish to strive for a fixed percentage of any market. To do so would prevent us from exploiting to the full the new developments produced in our research laboratories, and that I think is our greatest challenge and our greatest responsibility. Any success we might have in excluding competition in viscose rayon, in paint, or in sulfuric acid might very probably make us miss a neoprene synthetic rubber, a cellophane, or a nylon, and that would be advantageous neither to us nor to the public.

For the Du Pont Company, and I believe this is also true for the chemical industry, I can say categorically that our present size and our present success have *not* come about through a process of stifling competition by absorbing competitors.

It has come about through the new products and new processes that have been developed in our laboratories, and the proof of that statement is in our sales figures. Sixty per cent of Du Pont sales in 1948 consisted of products that were not in commercial production in 1928—just two decades ago.

Experience in other countries has shown that the hand of monopoly is a dead hand indeed. It profits no one, least of all the company that attempts to practice it.

The Du Pont Company has existed for nearly a hundred and fifty years in an atmosphere of free and vigorous competition. We have done well under that system and we like it. Competition is a prod that keeps us continually on our toes. We think we are stronger because of it; we think we would be weaker without it. The opportunities for growth and service in our industry through the development of new things are limitless. It is utter foolishness to think that growth in any of its varied phases can be brought about only by the elimination of other manufacturers.

Big Business Essential

It should be obvious to anyone that big businesses are essential in the complex economy in which we live today. *A business is simply a pool of people's resources—the resources of a group of employees, of a group of investors to accomplish a given task. Since there is a limit to what any one man will risk, the larger the task the bigger the pool must be.* If we want low-priced automobiles, low-priced radios, low-priced television sets, we must have a large team of people to work and venture so that the benefits of mass production can be applied to those products.

It follows also that big business has its own peculiar responsibility—*that is to devote itself to those tasks that require its full resources of manpower, of finance, of talent.* So far as Du Pont is concerned we have endeavored over the years to tackle the difficult projects that make full use of the resources we enjoy. I would like to cite a few examples out of many in which that policy has been successfully employed.

Millions Spent to Develop New Products

The United States had no dyestuffs industry worthy of the name prior to the First World War and was dependent on Germany even for the dyes with which to print stamps and money. Du Pont was one of the pioneers in instituting dyestuffs manufacture in this country. What that venture cost like-minded chemical manufacturers I do not know. I do know that it used to be said here that Deepwater Point across the river was well-named, for there seemed to be no bottom to its demands for money. *Du Pont invested more than 43 million dollars there before profits offset losses.*

In the early twenties we built a plant in West Virginia to manufacture ammonia and other chemicals by the application of pressures unheard of commercially up to that time. That was another long and expensive trip since it was more than ten years and many millions of dollars before that department began to show black ink on its profit and loss statement.

Nylon, in which I hope you in Wilmington share our pride, is at the same time one of our greatest successes and one of our greatest gambles. Basic research leading to this development began here in Wilmington in 1928 but it was not until 1940 and the expenditure of about 27 millions of dollars that we were able to sell the first pound made in a commercial unit.

Some of you may have heard that we have a new textile fiber in the making which we have called "Orlon" acrylic fiber. We are building the first commercial unit for its manufacture at Camden, S. C. We have hopes for that new product but I must admit that we do not yet know whether it will be a sheep or a goat. Before we find out, sometime in 1950 or 1951, we will have gambled $7 million in research and $15 million in plant investment.

Employees and Stockholders Share In Benefits with Consumers

Nylon, ammonia, dyestuffs have been profitable items for Du Pont. But don't think for a minute that Du Pont stockholders were the only gainers. There were thousands of men and women who got jobs that never existed before. There were millions of consumers whose standard of living was raised by each such success. There is the country itself, stronger both in peace and in war. When these gambles pay off, everybody benefits.

And research itself is perhaps the greatest gamble of all. The public hears only about the successes. They hear nothing about the failures—the brave new ideas that don't pan out. I speak with deep feeling because as a research man I had lots of those brave new ideas myself that ended in the trash can.

Statistics on failures are difficult to come by but it is a fair approximation to say that not more than one out of five research dollars pays off. That means simply that if the direct cost of nylon research is say five million dollars, there is perhaps twenty-five million dollars worth of research that has to be paid for by that one successful development. We are playing with very blue chips indeed.

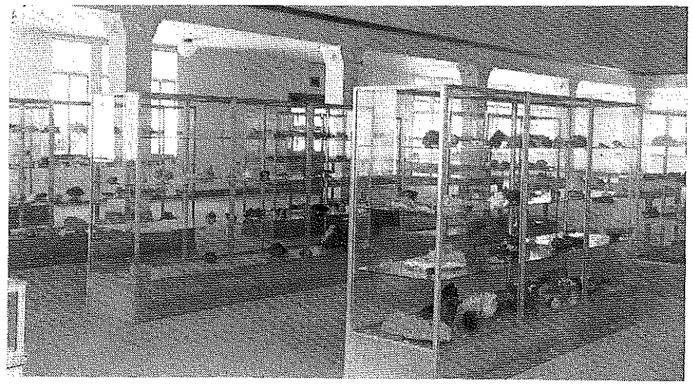
And our success in the future, if we are fortunate enough to have it, will come not because we have taken business from someone else, but because we are able to keep that stream of new products and improved processes continually flowing.

On many of these developments we have for seventeen years the sole right of manufacture by virtue of patents granted us under the laws of the United States. Nylon is one of those developments. But let me assure you that while we are the only manufacturer of nylon, we have in no sense a monopoly of the applications for that product. Nylon competes for the customer's dollar with every synthetic and natural textile fiber. Your wives may have their stockings, dresses and

(Continued on page 39)

THE GEOLOGICAL MUSEUM AT "MINES"

By
J. HARLAN JOHNSON, M.Sc. '23
Professor of Geology and Curator of the Geological Museum
Colorado School of Mines



▼ Showcases at Geological Museum.

Period December 1949 to April 1950

The museum was fairly busy during the winter and spring. Gradually it is assuming its intended place as a useful adjunct to the geology department. It furnishes illustrative material for many of the courses taught in the department, stimulates student interest, and furnishes exhibits of interest to the visitor.

New Exhibits

During the period two new exhibition cases were acquired and several new exhibits were placed on display. These include:

1. Recent publications of the Colorado School of Mines of interest to the geologist.
2. A large suite of spectacular crystallized minerals from England.
3. Professor Mateer has completed work on a large exhibit to illustrate features and types of sedimentary rocks.
4. Fossils to illustrate the marine invertebrates of the Jurassic Period.
5. Fossils illustrating the marine invertebrates of the Cretaceous Period.

Non-Exhibition Reference and Research Collections

These collections are for the use of graduate students and as reference material. They are not on exhibition but are kept in drawer cases in special rooms where they may be studied. At present they include (1) the type mineral collection which is designed to contain specimens of every mineral from as many different localities as possible; (2) paleontological collections, and (3) limestones and carbonate sediments. During 1948 a new collection of ores was commenced.

During the year 816 specimens were added to the Type Mineral Collection. This collection is designed to form a sort of reference "library" of minerals, including specimens of as many minerals as possible from as many different localities as can be obtained. It is designed to answer the needs of visitors who wish to see a particular mineral from some specific locality. In time it will form the bases for graduate studies of minerals or groups of minerals from a wide range of localities. Additions to the type mineral collection during the last seven years:

Year		
1942	number of specimens cataloged	1142
1943	number of specimens cataloged	674
1944	number of specimens cataloged	614
1945	number of specimens cataloged	510
1946	number of specimens cataloged	820
1947	number of specimens cataloged	802
1948	number of specimens cataloged	618
1949	number of specimens cataloged	816

About 300 additional specimens were received but had not been cataloged on May 1.

The Reference Paleontology collection contains the identified fossils. During the year, 108 specimens were added to this collection. Several hundred unidentified fossils were also received. The growth of this collection during the last seven years is shown by the table below:

Year		
1942	number of specimens added	459
1943	number of specimens added	307
1944	number of specimens added	110
1945	number of specimens added	314
1946	number of specimens added	235
1947	number of specimens added	593
1948	number of specimens added	387
1949	number of specimens added	108

Research and Graduate Work

During 1949 there was an increase in the number of graduate students working in the Geology Department. Eight of these worked on problems based on museum collections.

The Curator continued his personal studies on limestones, especially those formed by reef-building organisms and was assisted by several graduate students. Several projects on Tertiary coralline algae were completed and a number are in progress.

Museum Needs

The basic museum needs are:

1. More display cases. The main exhibition hall is only about 90% furnished. Two more of the tall cases and three table cases are needed to complete it. These represent basic permanent equipment. Once the museum is furnished with cases, only a small annual outlay will be needed for equipment.

   Twenty similar table cases are also needed for the paleontological collections on the basement floor.
2. A case and fixtures to complete a fluorescent exhibit on the main floor and to equip a small testing laboratory in the Museum Basement. The laboratory to be used for testing minerals, ores, and petroleum, and for graduate work.
3. Specimens—minerals and fossils. In the past these have been obtained (a) by gift, (b) collected by the Curator and by students on inspection trips, (c) by purchase, and (d) by exchange. In the future, gifts will probably form the main source, but it is hoped that funds will be available for purchasing specimens and to permit some collecting trips.
4. Specimen material particularly needed includes:
   (a) Cambrian, Silurian, Triassic, Jurassic from any localities.
   (b) Graptolites, stromatopora, and ostracods from any locality.
   (c) Oligocene fossils from the Gulf Coast or California.
   (d) Tellurium minerals.
   (e) Minerals from Alaska, Nevada, Arkansas, North and South Carolina, Georgia, and Canada.

(f) Suites of ores and minerals from Mines or Mining districts in Utah, Nevada, and Latin America.

Gifts Received

We welcome this opportunity to acknowledge publicly these gifts and to thank the donors. Such gifts greatly assist the school as they not only keep building up the Museum, but also supply material for class use in the Geology Department.

The gifts received during the period December 1949 to April 1950 are listed below:

December 1949

C. Kuehn '41—a specimen of Siegenite from Missouri.

Edward W. Ely '50—Fossil wood from the Morrison formation nr. Ralston Reservoir, Jefferson County, Colorado.

Joe DuBois '50—Fossil rudistid pelecypod from the Niobrara formation north of Golden, Colorado.

Peter B. Peters '53—Minerals and fossils from Western Wyoming.

Major General C. V. Haynes of Washington, D. C.—Fossil fishes from Greenland.

C. F. Jordan '23—Crystallized lead minerals from San Carlos, Chihuhua, Mexico.

Harrison M. Lavender '16—A specimen of germanite, Tennantite, Enargite, Pyrite, and galena from Tsumel-Mines, Southwest Africa.

Wm. Anderson, Jr. of Butte, Montana—Samples of phosphate from the Phosphoria formation of Idaho.

January 1950

Wm. F. Dukes '50—Splenite, from Palo Duro Canyon, near Amarillo, Texas.

D. G. Little '50—Cretaceous fossils from Ethiopia.

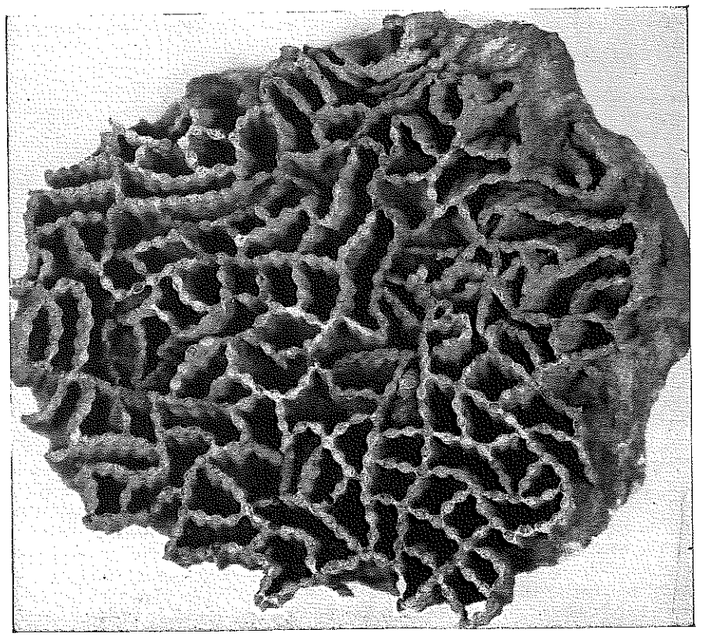
R. L. Boyers '50—Paleozoic fossils from Owen County, Indiana.

L. Toman Jr. '50—Fossil plants from near Golden, Colorado.

A. N. Nelson '26 and *Bob Squires of Fort Wayne, Indiana*—A beautifully preserved Mastodon tooth from northeast, Indiana.

D. I. Andrews '50—Cretaceous fossils from Wyoming.

Joe P. Ruth, Ex-'21—Mineral specimens from the Silver Age Mine, Clear Creek County, Colorado.



▼ Fossil coral—HALYSITES CATENULARIA a Silurian coral from Michigan.

February 1950

Charles T. Baroch '23 *of Boulder City, Nevada*—Specimens of Bastnasite from Mountain Pass, California.

T. A. Hendrickson '42—Graphite from Oregon.

Tom Lawyer of Deming, N. M., and *Marlow Sharpe* '50—Peridot bombs from Dona Ana Co., New Mexico.

I. M. Charles, '21, *of Rock Springs, Wyoming*—Mineral specimens from the Trona deposits of western Wyoming.

E. C. Spalding '50—Micaceous hematite from Boulder County, and silicified dinosaur bones from Fremont County, Colorado.

M. E. Volin '33—Pennsylvanian plants from Afghanistan.

March 1950

E. C. Spalding '50—Fossils from Florissant, Colorado and from western Kansas.

A. Wadman '50—Fossils from Ralston Lake and Wild Horse Park, Colorado.

Prof. Wm. C. Aitkenhead—Specimens of synthetic mica from the research laboratory at the Colorado School of Mines.

J. F. Frost '25—Ore and country rock from Bucans, Newfoundland.

April 1950

Maj. General C. V. Haynes and C. V. Haynes, Jr. '53—Trinotyte (atom bomb glass) from the old bomb crater at Trinity, New Mexico.

Alan Jager '54—A piece of mammoth ivory from the Topogoruk Prospect, Naval Petroleum Reserver No. 4, Point Barrow, Alaska.

Wm. F. Dukes '50—Cretaceous fossils from Texas.

John Hollister '33—Eocene fishes from Wyoming.

DEVALUATION AND THE LEAD AND ZINC MINING INDUSTRIES

(Continued from page 16)

for pabulum, and virile creativeness has given place to the patronizing favor of swollen bureaucracy.

"Dictatorship can compete with dictatorships, and a free virile democracy can outpace any such in the long pull. But a people bent on a soft security, surrendering their birthright of individual self-reliance for favors, voting themselves into Eden from a supposedly inexhaustible public purse, supporting everyone by soaking a fast disappearing rich, scrambling for subsidy, learning the arts of political logrolling and forgetting the rugged virtues of the pioneer, will not measure up to competition with a tough dictatorship."

That is a statement of Vannevar Bush, whose distinguished civilian service in the war as boss of the Government's scientific mobilization, should be known to you all. He is head of the Carnegie Institution of Washington. We can ponder over his disinterested advice to our benefit.

Let me add the remark another great American citizen, General Eisenhower, made to me recently when I lunched with him and told him I was going to Denver, upon invitation, to speak to this gathering. He said subsidies to the mining industry were wrong in principle and would not work out. I asked General Eisenhower, "Can I quote you on that?" He said, "Certainly." So there you have two impartial opinions to add to my own.

I was also interested in receiving the comment of a friend now actively working for the Government, who wrote me as follows:

"If you permit . . . any Federal Agency to run your business we are definitely on the road that leads to nationalization of all industry. The mere fact that shipping, the railroads and farming are subsidized is no criterion for argument in favor of a subsidy for mining. Subsidies have ruined railroads and shipping, the consumer pays through the nose for food.

"There are men in the Government today who see no objection to the theories of Maynard Keynes, men who accept them as the only solution. There are men in my own Department who are convinced that nationalization is the solution. These concepts must be resisted not only by you but by the smaller units of the industry. You must convince these smaller units."

Experience is a great teacher, so we might examine the experience of our

(Continued on page 26)

RESPONSIBILITIES IN ACCIDENT PREVENTION

By
OTTO HERRES, '11, Vice President
Combined Metals Reduction Co.
Salt Lake City, Utah

OTTO HERRES

Introduction

When it comes to telling people about safety, I think of the salesman trying to sell a farmer a book on farming. The farmer said: "What do I want a book on farming for? I don't farm half as well as I know how to now." Accidents on the highways, in the homes and at work could be greatly reduced by using a little more care and effort.

No one can do the thinking for others on safety matters. Consider for example the case of the native railroad agent in India. He was told never to take any action without wiring headquarters for instructions. One day he sent a telegram reading: "A tiger is eating the conductor on the station platform. Please wire instructions."

Or the case of the Chinese foreman who asked for instructions after an accident. He was told first to make sure the victim was dead and then bury him. He reported: "I make very sure he is dead, I hit him over the head with a shovel."

But speaking more seriously; I believe that in one of the great historical dramas there are lines that read: "Out of this nettle, danger, we pluck this flower safety." It seems to me they are particularly appropriate to the progress that has been made in coal mine safety in Utah during the past fifty years. From study of a mine explosion that took place nearly fifty years ago and how to prevent similar disasters there was developed an electrical shot firing system of blasting from the surface after all men were checked out of the mine; also the practice of wetting down coal mine dust by sprinkling.

Following another explosion twenty-five years ago the practice of rock dusting was adopted and closed lights became compulsory in Utah coal mines. These safety measures have saved many lives.

It is unfortunate that sometimes it takes a calamity to bring about progress, but that seems to be the way of the world.

Shifting Responsibilities

Men who follow safety problems carefully believe there is a growing lack of interest in the preservation of life and property. It is advisable therefore to consider the probable causes for this adverse turn of affairs, and thereby perhaps may be found some means to provide a remedy.

What possibly can account for non-activity on the part of people whose business and responsibility it is to promote the good cause of safety? Is it that the endeavor to prevent suffering from accidents and damage to property is becoming a virtue that everyone preaches and all are content to hear, but which no one takes seriously until he himself is affected? Or, is it merely a sign of the times—a shifting of responsibilities from the individual to the group which is taking place in a world that is adjusting itself to revolutionary changes in its way of life?

Complex Problems

People are worried by the complex problems arising from increases in populations and mass civilization. They seem fearful of their dependence on the industrial machine. The waste and destruction of wars have done nothing to lessen their worries. The individual is having a tough struggle to find his place in this stage of an industrial age featured by mass production, group action and the adaptation of atomic energy to the uses of war and peace. But experience tells us the world will continue to improve the living standards of its people. And the records of history indicate human progress is brought about through individual leadership. For every step forward there can be told the life story of some man.

Dependence on Government

But now, with disregard for the lessons of history, a wave of socialism is running throughout the world. Many people of the large industrial areas, and elsewhere, look to a centralized government for the solution of all their problems from the cradle to the grave. It seems that not a few of our people are willing to sacrifice opportunity and individual freedom for a fancied security.

And what has all of that to do with lessening interest and activity in safety? Only this, when responsibility is shifted from the individual to the government, further incentive for individual accomplishment is lost and then interest lags. It is difficult to remold human attitudes, relations and divergent interests. Changeless forces remain active even in changing times. When socialism in the guise of a welfare state takes over responsibility for the social needs of the people and their safety in industry, it will be found that the people will look to the government to solve the problems of safety, welfare, production and trade. And if the experience of the British may be taken as an example, those responsible for the conduct of government will develop many a headache and not a few ulcers in trying to work out these problems. Consider for a moment what is happening in the British nationalized industries, particularly the coal mines and railroads and to the purchasing power of the pound sterling.

Rights of the Individual

Coming back home again, the cause of safety may be said to rest upon the self-evident truth stated at the time this country had its beginning as a nation of free men. "All men are endowed by their Creator with certain unalienable rights; that among these are life, liberty and the pursuit of happiness." In order to enjoy these rights there must be due regard for the health and safety of the people in the places where they work and live.

Russia has little respect for the individual in the Soviet Union and the countries which it dominates. Asiatic Russian Communism holds no belief that a Creator endowed men with the rights of life, liberty and the pursuit of happiness. The individual exists

for the state. Under such circumstances safety lacks humanitarian aspects and is purely materialistic. The worker is worth only whatever value he is to the state.

It is said that the practice of safety arose with the Romans at a time when the people were becoming soft from dependence upon the state and the empire was commencing to weaken. Captives in warfare were condemned to work as slaves in the mines somewhat after the current Russian fashion. When the Roman legions no longer were able to bring back people of the conquered races to do their work it became necessary to take better care of the few that remained. And so the shortage of manpower led to development of safety practices.

Safety by Federal Legislation

Illustrating the trend of the times, legislation has been introduced in Congress to impose additional government controls over the operation of railroads through power "to establish rules, regulations, and practices with respect to operation of trains intended to promote safety." Some people in the government want to run the railroads as well as many other industries from Washington. The American railroads from their record are the safest and the most efficient transportation system known to man. Will bureaucratic controls and government regulations do more to promote further progress than the combined efforts of experienced managements, skilled workers and the reasonable earning power required to maintain a safe plant and equipment?

Legislation also is under consideration in Congress to give the United States Bureau of Mines police power over the enforcement of safety in the nation's coal mines. The Bureau of Mines has a record of successful accomplishment for its activities in safety that extends back through the years to its beginning. The Bureau has brought about great improvements by means of research and education. Progress is made to free men through cooperation, not dictation and force. There is no final solution to safety problems that can be brought about by police enforcement. If it were so the United States of America would soon be surpassed in safety and industrial progress by the police states and dictatorships.

Safety in Competitive Enterprise

Ignorance is the cause of most of our troubles including accidents. The remedy in a free country is education. Disapproval expressed through public opinion is a strong force working to correct unhealthy and dangerous conditions. And competition is another, because safety and efficiency go hand in hand, and efficiency is essential to earning power.

Management of industry is becoming less personal in character. Heavy individual income and estate taxes are bringing an end to family and individual ownerships. Today management in large as well as smaller companies usually represents groups of individuals who have become owners of industry through the investment of their savings in company securities. Often the number of individuals in the ownership group is larger than the number of workers on the company payroll. With passing of the owner-manager the immediate supervisor has to assume more responsibilities as a representative of the company in the eyes of the working force and the public generally. And in most respects when he is working in the right kind of an organization and has proper support from the management he is turning in a pretty good score for safety.

Labor Union Responsibilities

The labor union is not free from responsibility. Accident prevention and property protection require cooperative effort, not class warfare and industrial strife. Labor is an essential part of industry and must cooperate for the common good. It is the business of labor unions to see that the individual worker receives a fair day's pay for an honest day's work under good working conditions with proper consideration for health and safety. Labor unions have gained great power and with power comes responsibility to the public. Labor must promote safety and efficiency in industry if the country is to remain prosperous in a competitive world. If free enterprise is lost for lack of cooperation from those who depend on it for their living, labor will not retain its freedom very long. Labor unions under Socialism or Communism apparently have no important voice in industry. Their business is to carry out orders from the government planners.

Responsibility of the Individual

Over the years many companies have done much to make the work of their employees safer, easier and more pleasant. As a result the worker has come to look to the company to take care of him to an extraordinary degree. Even when he is injured through his own carelessness, or disregard for safety he takes the attitude that the company is responsible. He should realize, however, that the prevention of accidents is an important part of the business of every man. The economic loss from accidents and injuries is carried not alone by industry, but enters into the price of goods and services offered by the company as well. And in addition a portion of it falls on the dependents of injured employees and various social welfare agencies.

The responsibility for a safe and healthful plant, safe machinery and equipment, and safe methods of operation rests with management. Responsibility to cooperate rests with the worker. It would be well if each one of us gave some thought to the other man's problems more often. Experience teaches that the price of working dangerously is more than any industry or individual can afford to pay. Accidents nearly always can be attributed to disregard of the rules, or of good practice. And nature is ruthless to those who disregard the rules.

Safety is merely operating in the proper manner — the application of common sense to the work at hand. Good practice requires the maintenance of equipment and machinery in good condition, employees competent to handle their work in the proper way, good tools, adequate supervision, progressive management and cooperation. A great statesman once observed: "Example is the school of mankind, and they will learn at no other." Where managements by their efforts for safer conditions have convinced the worker they are interested sincerely in his welfare, remarkable accomplishments have resulted through cooperation. When progress is being made what once was exceptional after awhile becomes the regular order of things.

Safety today has an essential place in all we do.

BIRTHS

Mr. and Mrs. John E. Moody have announced the arrival on March 30, 1950, of their second son, third child, whom they have named David Edward. Mr. Moody, '39, is sales engineer for Joy Manufacturing Company and the family home is 9312 So. Tully Avenue, Oaklawn, Illinois.

Bridget Lee, daughter of Mr. and Mrs. John Cowan, arrived at the home of her parents on May 13. Her father, of the class of '49, is roustabout engineer for Trigood Oil Company at Worland, Wyoming.

Mr. and Mrs. Jack Chelius are the parents of a daughter, Susanne Lu, born May 26. Their son, Terry, 10 years of age, is as proud of his little sister as are his parents.

The family reside at 1918 Greenwood Avenue, Highland Park, Illinois, Mr. Chelius is serving as sales engineer for Fansteel Metallurgical Corporation of Chicago.

WORLD NEEDS GOLD AND SILVER MONETARY STANDARD

(Continued from page 12)

side of the United States, it is common practice to stifle competition, parcel out markets, create artificial shortages, and charge the highest possible prices. Until the birth of our synthetic rubber and chemical industries, we had no means of competition with foreign rubber and chemical cartels, which controlled the production and marketing of these commodities and exacted a tribute on every auto tire or chemical we purchased.

We all realize how vital an ample supply of lead, zinc, copper and other base metals is in time of war. We all remember the huge shipping losses of the last war and the dangers in transporting supplies from overseas. Yet, even now, we are destroying our domestic metal mining industry. We are putting our dependence both in war and in peace, solely upon foreign sources of supply. The American metal miner is the victim of world politics, sectional politics and economic politics. These politics transcend party lines.

The American Magazine article presents a current example of sectional or economic politics by which Eastern silverware manufacturers are attempting to have Congress repeal the Silver Purchase Act so they may buy silver more cheaply. In this they are supported by Republican and Democratic congressmen from Eastern states, while most Western congressmen, both Democrats and Republicans, oppose them. Obviously, a decrease in the price of silver would bring further hardships to an already crippled mining industry since most ore bodies contain silver along with other metals. As an example of adverse world politics, we see the huge shipments of mining michinery, loans and grants our nation has made to foreign countries in recent years. It is true these loans and shipments were made to bolster the economies of foreign countries, but, they aided in wrecking our own mining industry.

Managed Currency Causes Great Damage to Metal Mines

The brand of world politics which has caused the most damage to our metal mines is the system of managed currency, or paper money, which has been adopted by many nations, including our own. Managed currency deprives the people of gold or silver, or both, it forces them to use paper or token money, which has no value of itself. Managed currency can be, and frequently is, manipulated by the nation which prints it. When this country places a tariff on foreign metals to protect our domestic mining, foreign nations which produce these metals, can and have devalued their paper money so as to nullify the effects of that tariff. As a result, American metal miners have been forced to compete with cheap foreign mines all over the world. Most American miners earn as much in a day as a foreign miner does in a week. Cheap mining costs and devalued paper money enable the foreign mine owner to undersell his American competitor right here in the United States. To make matters still worse, our national government has deliberately kept down the price of metals—often below their cost of production, and at the same time, has increased the cost of metal mining.

Most metallic veins contain gold and silver. Formerly the price the miner received for this gold and silver helped to pay the cost of mining and treating the lead, zinc, copper and other metals in his ore. Since 1935, federal and state governments have greatly increased taxes, new forms of taxation have been imposed, and wages and supplies have increased. *The costs of metal mining have doubled in the last fifteen years. At the same time, silver has been increased only twenty or thirty cents an ounce, while the national government has forbidden any increase in the price of gold.*

The American metal miner is confronted with ruinous competition from foreign producers of lead, zinc, copper and other base metals. He is compelled to sell gold to the United States Mint, at a price fixed by the Mint fifteen years ago. He is faced with an uncertain future for the price of silver because of the selfish demands of silverware manufacturers and silver price manipulations by foreign governments. One after another of our Colorado metal mines has been forced to close down. The price these mines received for metals was far below their cost of production. Prosperous towns have become ghost towns, millions of invested capital have been lost. Mine employees have moved away; their know-how and practical experience have been dissipated. *There are roughly fifty thousand people in Colorado directly interested in or dependent upon metal mining.* At least twenty thousand individuals in this state own metal mining properties. A great industry is lost; but the loss to the nation is even greater.

You cannot open a new mine or reopen an old mine in a day. It requires months, and even years, to install equipment, open up ore and train employees.

Safety of Country Rests On Mining Industry

In the event of a sudden emergency, such as war, demanding huge tonnages of lead, copper and other metals for bullets, shells, planes and tanks, we would not have the metals to win that war. We would not have the time to re-open closed mines, or search for new ones. We would be dependent upon foreign supplies and ships. We would be sunk along with those ships. No words can adequately describe our present stupidity or foolishness. It is of the utmost importance that we remedy this condition, and pray we be given the time in which to do it. Let us have no illusions about the task ahead of us. We in Colorado can do very little here. The solution lies in Washington but no one of us can longer remain silent. This is not a party political matter. All of us, not only in Colorado, but throughout the West, must join in the demand that the federal government stop the discrimination against domestic metal mining and take the positive actions so necessary for its restoration. Superficial measures will not be sufficient. Subsidies will give temporary relief but they will not provide a lasting remedy. Subsidies mean increased taxation and government regulations. No miner wants a subsidy as a permanent cure.

Tariffs Useless Without World Monetary Standard

Increased tariffs are useless. They simply invite more foreign currency devaluation. The solution lies in a secure domestic economy and a stable world trade and commerce based upon a uniform and objective standard of value over which no nation has absolute control.

I have referred to our policy of managed paper money. I now say that, in my opinion, it is the cause of much of the turmoil and unrest that afflicts the world.

Whether it be the money of France, England, Germany, China, or the United States, paper money provides no stability nor security. Show me one single nation which has adopted managed paper currency and has successfully maintained the value of that money. I remember when the French franc and the Italian lira were each worth around twenty cents. Today they are worth only a fraction of one cent. The British pound is now worth about one-half of what it was only twenty years ago. In the twenties, Germany adopted a paper currency. This was followed by wild inflation and nazi domination. In the thirties, China abolished its silver money,

which was followed by a terrible inflation and communist conquest. Even our own dollar is now a sixty cent dollar.

Gold Standard Needed to Protect Investments

Today millions of Americans invest in bonds, social security and insurance to sustain them in times of need or old age. *Paper money can render these investments worthless.* The dollar you invest today buys about ten loaves of bread. Tomorrow, that paper dollar may not buy even a slice of bread. We cannot expect labor to stop striking for higher wages and more security in the face of mounting costs of living. No government can balance its budget or reduce taxes; no business can plan a stable future in the face of constantly increasing costs of operation. Prices never stop rising in an economy based on printing press money. Our federal constitution grants Congress the power to coin money and regulate its value. It forbids the states to make anything but gold and silver coin a legal tender. *I am not a lawyer, but I leave it to you whether we are obeying the plain provisions of the Constitution of the United States. We must return to the American people their natural and constitutional right, to buy, own and sell gold.*

We must find the true price of gold in relation to other commodities. We should remonetize gold at that price and return to the Gold Standard. I know the Gold Standard has not been perfect, but it is far superior to paper money. It provides a relatively stable and permanent measure of value. Under the Gold Standard, our money will keep its value, just as the gold coins of ancient Rome and Greece have kept their value. With the Gold Standard, the money we use to buy bonds, social security and insurance will buy as much when we cash those bonds or need that security or insurance.

Finally, we must insist the other nations of the world also return to the Gold or Silver Standard, or both. We must end the fiction of pegged exchanges whereby the paper monies of the world are given an artificial value in relation to each other. Surely we can insist upon this as part of our foreign aid program.

It is only through these means that American metal miners can receive an equitable price for their gold and silver. When world currencies are stabilized and valued in terms of gold or silver, then American producers of lead, zinc, copper and other base metals can be given the tariff protection necessary to preserve their operations and the high standards of living in this country.

We citizens of Colorado have a huge stake in metal mining. On my last trip East, a prominent official of a nationally known mining company told me Colorado was sitting on top of the biggest mining boom in the history of the State. We must use every means to remove the unfavorable conditions which now prevent the realization of that boom.

In conclusion, I wish to again thank Mr. Lloyd Yoder, Manager of Station KOA, for making this time available. It has been a pleasure to report to you on the activity of your State Government. So, *from* the people of Colorado *to* the people of Colorado—may I wish you all good luck, good health, good government.

DEVALUATION AND THE LEAD AND ZINC MINING INDUSTRIES

(Continued from page 22)

good friends in Canada, who have been operating under an Emergency Gold Mining Assistance Act, which furnished them with a gold mining subsidy. Here is what The Northern Miner of January 19, 1950 says about the operation of this Act.

"We think that most people will agree that the Act has been fairly enforced with a minimum of interference to the private affairs of the recipients. Nevertheless, there is not one of them, with the possible exception of those few who were destined to suffer considerable financial loss, who did not rejoice when last fall's devaluation prompted the government to suspend assistance payments to the extent of the increase in the price of gold. Actually, the inconvenience which these mining companies had been made to suffer was not too great. They had had to accept a bigger than usual dose of paper work. They had had to open their books to government auditors and, in some cases, had to set up duplicate or revised accounting systems to conform with the requirements of EGMA. But, all in all, those extras were no more than might reasonably have been expected.

"For all the tact and consideration displayed by the Federal Investigators, the operators got an unpleasant taste of what business would be like under a socialistic regime. Freedom is a precious thing and it is cheap at almost any price. Anyone in management knows that the people who are putting up the money have a right to say how the business should be run and, furthermore, they are in a position to enforce that right should it be in any way disputed. We can understand the plight of the marginal operator but we feel that any who might be blinded by the sparkle of government gold should not forget that it comes at a price—and the price is mighty high."

Even if you don't accept my argument, I hope you will ask yourself this question. Have you honestly sought the best advice and leadership possible in determining what kind of assistance you need from government? Individuals, corporations and nations pay terrific penalties for poor leadership, or poor management, and I think it will always repay the mining industry handsomely to seek out and follow the best.

The sound advice that we should not use government compulsion to lick our problems was noted even in George Washington's time, for he said: "Government is not reason, it is not eloquence—it is a force! Like fire, it is a dangerous servant and a fearful master."

Must Have United Effort and Constructive Program

In conclusion, I would like to see the mining industry united on those constructive programs which are undeniably for the benefit of all the people. If our energies are diverted to programs on which there is wide difference of opinion, such as subsidies, we shall be at the mercy of those who would do us injury, intentionally or unintentionally. Divide and conquer applies to us, as well as to others.

So I say to you, let us press home to our friends in Congress two subjects which afford prompt and sound relief to us all:

(1) *Emergency taxes or tariffs, preferably on a graduated scale, on lead and zinc imports from countries that have devalued their currencies—call it an emergency tariff if you like; and*

(2) *Changes in our tax laws to stimulate mining investment, yes, and speculation, to make the long shots attractive.*

The National Minerals Advisory Council, an officially appointed committee of the Department of the Interior, has done much painstaking work in the tax field, and I think if all of us support its conclusions and educate our representatives in Congress to the importance of mine incentives to our country, that here again is an opportunity to bring constructive improvement to the mining industry. There are others on the program for this Convention to enlighten you on taxes. I don't want to trespass on their time.

Such a program would mean much to Colorado and the West and our Nation. We would like to help put it across.

PERSONAL NOTES

(Continued from page 9)

upper tenth of his graduating class, active duty and a year's preparatory work in steam and diesel engineering.

Edward W. Anderson, '43, is now being addressed in care of Rosario Club, San Juancito, Honduras, where he is employed by the New York & Honduras Rosario Mining Company.

(Continued on page 36)

WITH THE *Manufacturers*

Equipment News

In these columns the latest in equipment of interest to our readers is reviewed. Many readers request additional information and prices. For their convenience each article is numbered. Fill in the number on the coupon at the bottom of the page and mail your request to Mines Magazine, checking information requested.

Automatic Controls for P.I.V. Variable Speed Drives Announced by Link-Belt (735)

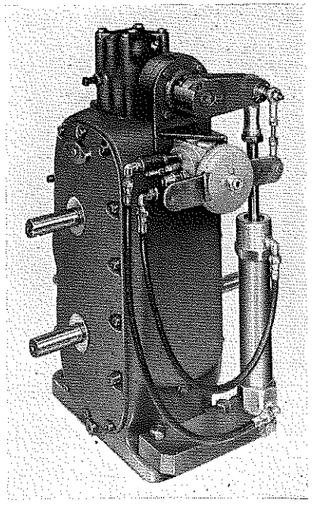
A new line of Automatic Speed Controls for the Link-Belt P.I.V. Variable Speed Drive is announced by Link-Belt Company, to meet the growing demand for positive, quick-acting, automatic control of rotary motion throughout the industries.

These new controls are job-engineered for automatically controlling the output speed range of the P.I.V. and are available in four basic types—Electronic, Hydraulic, Pneumatic, Mechanical.

The uses for these automatic controls are many, such as the following examples:

(A) Separate machines must be kept in accurate synchronization, often over a wide range of operating speeds.

(B) Beams, feed rolls, take-up and pay-off reels must be driven at ever-changing, infinitely variable speeds to keep tension constant in drawing, coating, impregnating, extruding and laminating materials of many sizes and kinds.



(C) Operating cycles of differing lengths must be precisely timed and accurately maintained over varying periods without interruption.

(D) Temperature, velocity, pressure, liquid levels and flow of materials must be held to narrow limits despite variations in operating conditions.

Book No. Z349 giving details on all 4 types of controls may be obtained by writing Link-Belt Copmany, 307 N. Michigan Ave., Chicago 1, Ill.

Barber-Greene Announces the Redi-Fab Series of Belt Conveyors (736)

A new conception of Belt Conveyors is unveiled with the announcement of the Redi-Fab Series by Barber-Greene Company, Aurora, Illinois. Interestingly presented in a new 40-page catalog, the Redi-Fab Series rolls back the mystery of selecting and laying out belt conveyors.

Available in forty-nine lengths, three widths, and with numerous other variables, and many accessories, the Redi-Fab Series covers the range most frequently required in Permanent Belt Conveyors.

The Redi-Fab Series includes five new drives to give the greatest flexibility. These drives include partial reductions for the user who wishes to drive the conveyor from a power take-off shaft of some other piece of equipment, such as a crusher.

The new series of Belt Conveyors also includes three new feeders: Reciprocating, Apron and Belt. All three feeders are driven from the footshaft of the conveyor.

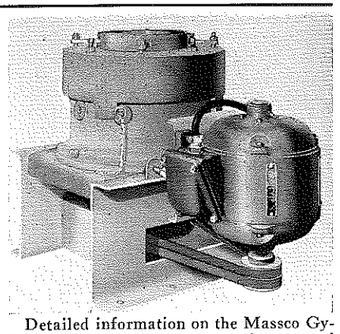
Copies of the catalog describing Redi-Fab Series may be had by writing direct to Barber, Greene Company, Aurora, Illinois, or their representative, Frobes Company, 156 W. 4th St. South, Salt Lake City, Utah.

Massco Gy-Roll Reduction Crusher (737)

A laboratory or pilot plant reduction crusher designed to reduce ½" feed to as fine a product as 10 Mesh, single pass. Provides an operation and product comparable to that obtained by commercial reduction crushers. Product is ideal feed for Ball or Rod Mills; Laboratory Pulverizers; Gravity concentration operations such as tables, jigs, sink float, or spiral concentration; Sizing analysis and Sampling.

This machine developed by Dr. Fahrenwald of the University of Idaho replaces such bulky and unhandy equipment as rolls and the coffee mill. It is compact having extremely high capacity and very low power consumption.

Manufactured in two sizes, 6" and 10", requiring ½ and 1 H. P. respectively.



Detailed information on the Massco Gy-Roll Reduction Crusher may be secured by writing to the Mine and Smelter Supply Company, P. O. Box 5270, Denver, Colorado.

MINES MAGAZINE,
734 Cooper Building,
Denver, Colorado

Please have copies mailed to:

Referring to Equipment News, please send as checked:

No. Prices ☐, Bulletins ☐; No. Prices ☐, Bulletins ☐;
No. Prices ☐, Bulletins ☐; No. Prices ☐, Bulletins ☐.

Name..... Position.....

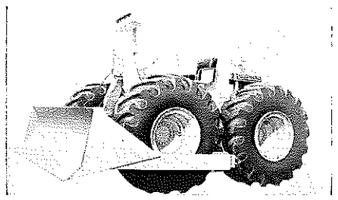
Company.....

Street.....

Super D Tournadozer Available (738)

To meet the need for a speedy, rubber-tired, four wheeled tractor dozer to handle jobs which do not demand the use of the larger, standard size Tournadozer, R. G. LeTourneau, Inc., Peoria, Illinois, manufacturer of earthmoving and construction equipment, has introduced the smaller size Model Super D Tournadozer.

Some 3500 pounds lighter and equipped with a smaller capacity bowl than the Super C Tournadozer, the Super D is powered by a 122 h.p. Diesel engine. Capacity of the Super D's bowl is 1.8 yds. . . . the Super C's capacity is 2.5 yds. The smaller model Tournadozer retains the advantage of high speed, having four speeds forward up to 19 m.p.h., with two reverse speeds.

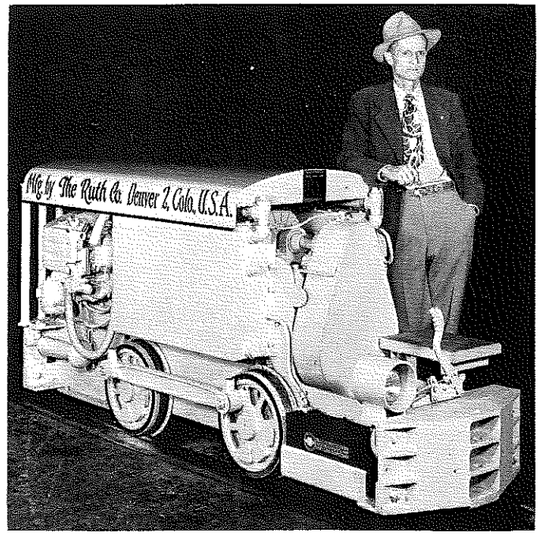


Like the larger model, the Super D is mounted on big rubber tires. These are available in two sizes — 21 x 25 or 56" wide base rim. These tires permit operation in soft going at reduced air pressures. Complete detailed information on request.

New Cartridge Respirator (740)

American Optical Company announces that their newest twin cartridge respirator, the R5055, providing protection against low concentrations of organic vapors and all dusts (nuisance, toxic, pneumoconiosis-producing), has received Bureau of Mines approval BM-2305. It is the first such respirator so approved, the company announces.

No longer is it necessary for people exposed to both types of atmospheric contaminants to change respirators, the company pointed out. In addition, other cartridges for use with this same basic respirator face piece, protect against acid gases, combined acid and organic gases, ammonia and metal fumes.



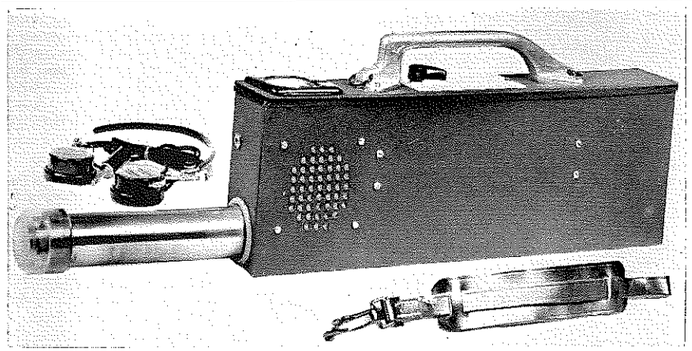
Ruth Two-Ton Trammer (739)

This new Diesel Trammer shown in the accompanying illustration is powered by air-cooled Diesel engines which factory tests show will meet the rugged requirements of mine service. One of these engines has been running in the Onan factory for 24 hours a day for one year, and nine months without stopping.

The Twin Disc balanced impeller fluid coupling transmits the full torque of the engine without shock. All gears are precision helical cut spiral bevel, alloy steel, heat-treated and mounted on Timken bearings. All axles are also mounted on Timken bearings. The side rod drive insures maximum draw bar pull per pound of locomotive weight.

Separate braking discs using opposed asbestos brake block shoes are a successful part of this equipment. Exhaust gas conditioning insures removal of harmful gases which enables this locomotive to operate with the approval of mine inspectors.

Maintenance costs and costs for diesel fuel are extremely low considering the loads which can be handled. Quotations and full information will be furnished by the Ruth Company, Denver 2, Colorado.



New Uranium Prospecting Instrument (741)

The Spinlab Prospectoscope is a portable, battery operated, Geiger tube survey meter for precise measurement of low intensity gamma radiation.

The Prospectoscope has been specifically designed for the location of Uranium ore deposits. Not just another survey meter, the Prospectoscope is unique in its ability to detect deposits reliably at great distances.

The combination of an exceptionally large GM tube and a carefully engineered circuit renders this precision instrument approximately 30 times as sensitive as the ordinary Geiger counter.

This means that readings may be obtained to the same degree of reliability in one thirtieth of the normal time.

Five ranges (1, 2, 5, 10, and 20) allow the Prospectoscope to measure a wide variation of radiation intensity with easy readibility. Normal background produces a deflection of two-thirds of full scale on the first range.

For convenience of operation a speaker is built into the case. Headphones are provided for use in planes and other noisy locations.

Additional information may be obtained from Special Instruments Laboratory, Inc., 1003 Highland Ave., Knoxville, Tennessee.

New Microscope Speeds Examination Of Ore Specimens (742)

A new microscope designed to enable mining engineers and geologists to make accurate, on-the-spot quantitative analysis of ore samples as they are taken from the mine has been developed by Bausch & Lomb Optical Company, Rochester 2, N. Y.

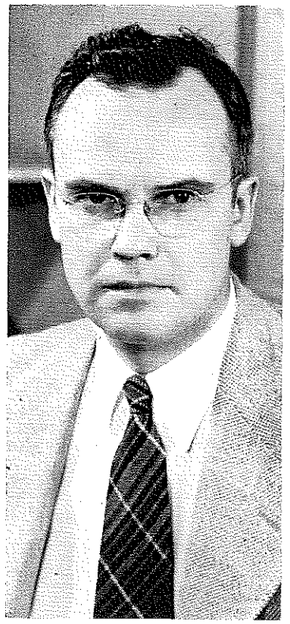
Opaque specimens measuring up to four inches square may be examined with polarized or non-polarized vertical illumination with the microscope which utilizes the phenomena resulting from the action of polarized light vertically projected on the polished surface of an ore sample.

Other features of the Ore Microscope are its strain-free coated objectives that provide maximum light transmission, and its extra wide tube that houses and protects the rotatable analyzer from dust and dirt, even when it is withdrawn from the optical path.

PLANT NEWS

Denver Equipment Company Appoints General Sales Manager

Douglas E. Newton has been appointed General Sales Manager in charge of sales and sales promotion for Denver Equipment Company, manufacturers of ore dressing and process equipment.



DOUGLAS E. NEWTON

Mr. Newton joined Denver Equipment Company in 1939, and has worked variously with the Engineering, Order, Ore Testing, Advertising and Sales Divisions of the company. He became manager of the Western Sales Division, and for the past two years has been in charge of the Denver Equipment Company manufacturing plant in Colorado Springs, Colorado.

Before assuming his new duties, Mr. Newton completed a tour of Europe, Africa, South America and Canada, to meet many of the company's foreign customers and to familiarize him with the operations of Denver Equipment Company's branch offices and subsidiary companies.

Mr. Newton is a graduate of the Colorado School of Mines, with a degree in Metallurgical Engineering.

Hardinge Will Feature Tricone Mill And Heavy-Media Separator at Mining Congress Show

Hardinge Company, Inc., 240 Arch Street, York, Pa., will feature a movie of its new Tricone Mill in operation at Tennessee Copper Company, in its display at the 1950 Metal Mining Convention and Exposition, sponsored by the American Mining Congress, Salt Lake City, Utah, August 28-31.

Hardinge personnel in attendance will include: G. A. Wallerstedt, (in charge) western district manager; R. L. Baldwin, assistant western district manager; H. Hardinge, president; and R. J. Russell, secretary.

Harlowe Hardinge Returns From 25,000-Mile Trip Through Europe and Africa

Harlowe Hardinge, president of the Hardinge Company, Incorporated, York, Pa., recently returned from a 60-day, 25,000-mile business trip, 23,000 miles of which was by air, through Europe and Africa, during which he contacted key industrial personnel in England, France, Belgium, Germany, Belgian Congo, Northern Rhodesia, and South Africa.

G.E. to Feature Trammer Locomotive at Metal Mining Exposition

A 1½-ton storage-battery trammer locomotive will be the feature attraction in General Electric's exhibit at the Metal Mining Exposition of the American Congress to be held at the State Fair Grounds, Salt Lake City, Utah, August 28-31. Visitors will be able to operate this baby locomotive.

Also exhibited will be an operating, transparent plastic, 10-hp, Tri-Clad pump motor, equipped with a time delay switch and the new design magnetic starter.

A G-E two-shoe magnetic d-c brake will be on display. Brakes of this type are commonly used on cranes and hoists.

Other equipment which will be shown includes a G-E flotation motor; a high-voltage air-break contactor such as used on large motors for voltages between 2300 and 4800. Such motors are common on hoists, ball and rod mills and many other mining applications.

An operating exhibit of the motor-generator battery charging sets of the type used with the trammer will also be on display.

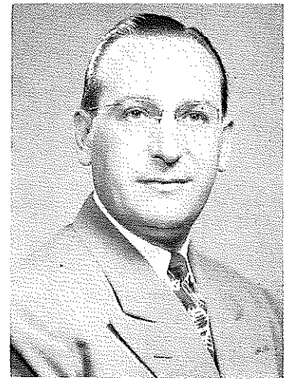
Panels showing the various types of mining lighting equipment and the many different types of cables manufactured by General Electric for the mining industry will also be exhibited.

H. D. Beale Appointed Manager G-E Renewal Parts Division

Harrison D. Beale has been appointed manager of the Renewal Parts Division, Industrial Divisions, of the General Electric Company's Apparatus Department, according to an announcement by K. H. Runkle, divisions manager.

Goodyear Single Disc Brake Sales Department

C. A. Hulsemann has been appointed manager of Industrial Brake Sales department, Aviation Products division, Goodyear Tire & Rubber Company.



C. A. HULSEMANN

This new department was established to handle increasing demand for the revolutionary industrial disc brake, adapted in 1948 from the company's airplane-type, single-disc brake for industrial use.

An experimental program with a prototype of the single-disc brake on a shuttle car in a southern Illinois mine resulted in reduction of more than 50 per cent of maintenance costs.

Overall mine down-time, because of brake failure, after installation on the mine's other shuttle cars, was reduced by more than 80 per cent.

Goodyear technicians are presently designing brakes, using the single-disc principle, for many other types of machinery and equipment, such as: fabric, glass, paper, oil field and steel mill machinery; sugar centrifugals; metal farming presses; hoists and towing winches; continuous miners and mine locomotives.

Goodyear Retires Los Angeles Plant Manager After 40 Years Service

Forty years of service in the manufacturing of tires and other rubber products will be climaxed on September 1, with the retirement of Frank A. Steele, plant manager of the Los Angeles factory of The Goodyear Tire & Rubber Company.

Steele will be succeeded by Robert W. Maney, who is now in charge of the Plant 2 tire division in Akron, Ohio.

Announcement of Maney's assignment was made at Akron by W. S. Wolfe, manager of Goodyear's domestic factory operations.

International Minerals & Chemical Corporation Declares Quarterly Dividends

The board of directors of International Minerals & Chemical Corporation has declared a regular dividend of seventy cents (70c) per share on its common stock, thereby increasing the annual dividend rate from two dollars ($2.00) to two dollars eighty cents ($2.80) per share. The board also declared the regular quarterly dividend of one dollar ($1.00) per share on the four per cent (4%) preferred stock, both dividends payable June 30, 1950 to stockholders of record June 16, 1950.

Rawleigh Warner Elected Director of International Min. & Chem. Corp.

Rawleigh Warner, Chairman of the Board of Pure Oil Company, was recently elected a member of the Board of Directors of International Minerals & Chemical Corporation, to fill the unexpired term of John E. Bierwirth, President of the New York Trust Company, who recently resigned from International's board.

Hewitt-Robins, Inc., Declared Quarterly Dividend

Directors of Hewitt-Robins Incorporated has declared the regular quarterly dividend of 25 cents per share on common stock, payable September 15, 1950, to stockholders of record August 29, 1950.

Allis-Chalmers Changes in District Managers

Announcement has been made of the appointment of three new district office managers, effective July 1, for Allis-Chalmers general machinery division. They are J. H. Burrus, manager of the Milwaukee district; U. E. Sandelin, Portland district, and Stephen C. Bacon, Seattle district.

Burrus, since 1949 manager of the Portland district, succeeds H. A. Balding, who is retiring from active management of the Milwaukee district.

Sandelin has been manager of the Seattle district since 1945.

Bacon has been associated with the Seattle office since 1938.

Allis-Chalmers Will Hydrocone Crusher, Ripl-Flo Screen & Rubber Lined Pump at Mining Congress Show, Salt Lake City

A feature of Allis-Chalmers' display in spaces 401 and 407 at the metal mining show of the American Mining Congress in Salt Lake City August 28-31 will be an operating Hydrocone crusher. The company early this year announced extension and improvement of this line and the crusher to be shown will incorporate the latest design features.

Also part of the display will be a Ripl-Flo screen in operation, a 3 by 3-inch rubber-lined pump for handling liquids with solids of 325 mesh to ⅜-inch diameter, an operating model of a 10 by 8-inch solids pump with automatic Texrope drive demonstrating the difference in capacity and pump rpm obtainable by merely adjusting the Texslied motor base while the drive is in operation, several motor cutaways, an air break contactor and a starter.

Allis-Chalmers representatives expected to attend include F. C. Bond, T. V. Canning, Will Mitchell, Jr., J. E. Dunn, Frank Briber, W. A. Meyer, Arthur Ziehm, H. A. Wright and Alex Schlueter, all of West Allis, Wis.; B. A. Seare and J. R. Olin, Salt Lake City; D. H. Gieskieng, Denver; W. C. Kinnon, Phoenix, Ariz., and H. W. Erickson, New York City.

Electric Machinery Mfg. Company Announces Promotions

R. H. Olson, formerly vice president in charge of sales of Electric Machinery Mfg. Company, Minneapolis, Minn., was recently elected president of the company. He succeeds W. H. Feldmann who joined the Worthington Pump and Machinery Corporation as vice president in charge of sales for the Corporation. Electric Machinery is a subsidiary of Worthington.

A. P. Burris, formerly manager of the New York sales district was elected vice president in charge of sales for Electric Machinery Mfg. Company to succeed R. H. Olson. P. L. Shawley, of the New York office, has been appointed New York district sales manager.

TECHNICAL SOCIETIES AND ASSOCIATIONS MEETINGS

NATIONAL FERTILIZER ASSOCIATION ELECTS OFFICERS

At the annual meeting of the National Fertilizer Association, held recently at White Sulphur Springs, West Virginia, J. E. Potman, President of Summers Fertilizer Company, Baltimore, was elected Chairman of the Board of the Association, Louis Ware, President of International Minerals & Chemical Corporation, was elected Vice Chairman, Russell Coleman, of Washington, D. C., was re-elected President, and Don S. Murph was re-elected Secretary-Treasurer, a position he has held for 14 years.

NATIONAL GOVERNOR'S CONFERENCE AT WHITE SULPHUR SPRINGS, W. VA., JUNE 20, 1950

Governor Roy J. Turner, chairman of the Interstate Oil Compact Commission, reported that a very successful conference was held with governors of member states of the Compact Commission and governors of other oil and gas producing states, or prospective producing states, at White Sulphur Springs, W. Va., June 20, during the National Governor's Conference.

Principal topic of discussion at the conference was the extension of the Compact which will expire Sept. 1, 1951, unless renewed by Congress. Each and every governor present expressed himself as most enthusiastically in favor of the Compact Commission's program, and unanimously expressed a desire to see the Compact extended for an additional period of four years.

A resolution was unanimously adopted that the Interstate Oil Compact Commission should not only invite all nonmember oil and gas producing states to join the Compact but should be active in securing their membership.

It was the opinion of those present that this important and constructive meeting will mean a great forward advance for the Compact.

The following governors were present from member states of the Compact Commission: Roy J. Turner, Okla., chairman of the Commission; Frank Carlson, Kan.; Thomas J. Mabry, N. Mex.; Walter W. Johnson, Colo.; John W. Bonner, Mont.; Fielding L. Wright, Miss.; Gordon Browning, Tenn.; James Folsom, Ala.; Fuller Warren, Fla.; Henry F. Schricker, Ind.; Frank J. Lausche, Ohio; Okey L. Patteson, W. Va.; Allan Shivers, Tex.; and James H. Duff, Pa.

The following governors were present from other states which are not now members of the Compact: Arthur G. Crane, Wyo.; Val Peterson, Neb.; Forrest Smith, Mo.; John S. Battle, Va.; Vail Pittman, Nev.; and Dan E. Garvey, Ariz.

Earl Foster, executive secretary of the Compact Commission, and Lawrence R. Alley, assistant executive secretary, were present.

LEAD HYGIENE CONFERENCE PROCEEDINGS

The Lead Industries Association, active for many years in the dissemination of factual data on lead toxicology, has recently announced the availability of the Proceedings of its Lead Hygiene Conference held in Chicago, Ill. in November, 1948. Among the conferees were outstanding authorities on industrial hygiene from industry, civic and educational groups, insurance companies and consultants.

Subjects covered were "The Co-ordination of Industrial Medical Services," "Solubility and Particle Size in Lead Poisoning," "Air Pollution Regulations in Los Angeles County," "Aluminum and Silicosis," "The Treatment of Lead Poisoning —Past and Present," "Preventive Medical Armor for the Lead Industry," "Medical Control of Lead Workers—A State Viewpoint," "The Production Manager Looks at Industrial Health," "The Effect of BAL on Experimental Lead Poisoning" and "Urinary Porphyrins in Lead Poisoning." A discussion period following each of the papers was led by an outstanding authority. These discussion periods are included in the Proceedings, as well as a summation of the conference as given by Anthony J. Lanza, M.D., formerly Associate Medical Director, Metropolitan Life Insurance Co. and now Chairman, Institute of Industrial Medicine, New York University, New York, N. Y.

The Proceedings, 137 pages and 33 illustrations, are available from the L.I.A., 420 Lexington Ave., New York 17, N. Y. at $1.00 a copy; quantity discounts are available to educational institutions.

COMPACT COMMISSION FRENCH LICK MEETING, AUGUST 3-5

Governor Henry F. Schricker of Indiana and Governor Earle C. Clements of Kentucky will deliver principal addresses before the summer meeting of the Interstate Oil Compact Commission's summer meeting in French Lick, Ind., August 3-5. Governors Schricker and Clements will also welcome the Compact, since the States of Indiana and Kentucky are to be joint host to this meeting.

COMPACT COMMISSION ANNOUNCES PUBLICATION FOR DISTRIBUTION

Publication of a pamphlet "Unitized and Cooperative Projects in the United States" is announced by the Interstate Oil Compact Commission. It was initially distributed at the Commission's spring quarterly meeting held May 4-6 in Biloxi, Mississippi.

This pamphlet was prepared in cooperation with the Research and Coordinating Committee of the Interstate Oil Compact Commission and consists of a report made by that Committee at the May 5, 1948, meeting of the Compact

(Continued on page 36)

CATALOGS AND TRADE PUBLICATIONS

FOR YOUR CONVENIENCE

Send your publications to Mines Magazine, 734 Cooper Building, Denver, for review in these columns. Readers will please mention Mines Magazine when requesting publications from the manufacturer. Readers may order publications from this office by giving index number. These publications are FREE.

(5578) GY-ROLL CRUSHER. A recent circular published by the Mine and Smelter Supply Company, Denver, Colorado, illustrates and describes the new Masseo Gy-Roll reduction crusher for use in the laboratory and pilot plants. This machine reduces ½ inch feed to 10 mesh in a single pass. Table of capacity and power is given.

(5579) "LINK-BELT NEWS," May-June, 1950, by Link-Belt Company, 37 N. Michigan Ave., Chicago, Ill., contains 8 pages of articles describing and illustrating conveying equipment used in connection with various industrial operations. Of particular interest in this issue is an article on mechanized handling at Swift & Company's meat packing plant. Another article of interest describes heavy media coal cleaning at Pittsburgh Company's plant near Imperial, Pennsylvania.

(5580) WEINIG CONCENTRATOR. Bulletin No. 50 by Colorado Iron Works, Denver, Colo., illustrates and describes the details of the Weinig Laboratory Concentrator which is not applicable to ores with finely disseminated minerals in gangue and the best results are obtained when the mineral is completely unlocked at the treatment site. This machine has been developed to bridge the gap between heavy density separation and flotation or other methods treating extremely fine sizes of liberated mineral and gangue.

(5581) BELT CONVEYORS. Catalog RF Belt Conveyors by Barber Greene Company, 650 West Park Ave., Aurora, Ill., contains 40 pages illustrating and describing Barber Greene Sectional Truss Conveyors known as "Redi-Fab" series. This publication contains a great deal of engineering data as well as instructions enabling you to select the proper conveyor to meet your requirements. Sales representative, Frobes Company, Salt Lake City, Utah.

(5582) "DECO TREFOIL," May-June 1950, contains 8 pages for your Engineering Notebook illustrating and describing selective separation of low ash coal by flotation at Crook, Durham County, England. Analysis of production is given together with laboratory control and plant flowsheet. Included in this issue is also flowsheet for tungsten ore with description of plant practice.

(5583) REDUCTION CRUSHER. Catalog Number 07B6006E by Allis-Chalmers Company, Milwaukee, Wisconsin, contains 8 pages illustrating and describing their Type "R" Reduction Crusher. Construction features are shown, also table of capacities and approximate dimensions.

(5584) MINE HOISTS Publication GET—2187 by General Electric Company, Schenectady, N. Y., contains a partial listing of G. E. electrified Mine Hoists, both a-c and d-c. Includes are tables giving general description of equipment and also the name of company and location of mine.

(5585) AUTOMATIC CONTROLS. Book No. 2349 by Link-Belt Company, 301 West Pershing Rd., Chicago, Ill., contains 8 pages illustrating and describing Link-Belt P. I. V. Variable Speed Drives for all industrial uses. Automatically controlled, electronically, pneumatically, hydraulically and mechanically.

(5586) "H & B BULLETIN," May-June 1950, by Hendrie & Bolthoff Company, 1659—17th St., Denver, Colo., consists of 32 pages illustrating and describing the latest in supplies and equipment for use by mines, contractors and automobile service stations. Many new and improved tools are shown in this issue.

(5587) MINERAL JIG. Bulletin J2-B8 by Denver Equipment Co., 1400—17 St., Denver, Colo., contains 16 pages illustrating and describing the construction of the Denver Mineral Jig and its many applications. Tables of dimensions, specifications and shipping weight are included, also a variety of flowsheets from which you may select one to meet your particular milling problem.

(5588) "NEW MEXICO MINER & PROSPECTOR," Albuquerque, N. M., June 1950, contains 16 pages of short articles pertaining to mining activities throughout New Mexico.

(5589) PNEUMATIC CONVEYING SYSTEMS. Bulletin No. 103 by Convair Corporation, Pittsburgh, Pa., contains 12 pages illustrating and describing the Convair Pneumatic Conveying system and its many applications.

(5590) ELECTRICAL SERVICE. "Service Record," Vol. 4, No. 2, by General Electric Co., Schenectady, N. Y., contains 12 pages illustrating and describing efficient methods used in G. E. Apparatus service shops. Included is a list of these service shops.

(5591) "POPULAR HOME" Summer 1950 Edition by United States Gypsum Co., 300 W. Adams St., Chicago 6, Ill., contains 16 pages illustrating methods for construction of resort cabin and methods of furnishing. Methods of economizing space and plans are given for five-room cottage.

(5592) "PAY DIRT" May 1950, by Charles Willis, Phoenix, Ariz., contains 16 pages which include many short articles covering important subjects effecting the mineral industry.

(5593) TRACKWORK Catalog 270, by Bethlehem Steel Co., Bethlehem, Pa., contains 165 pages illustrating and describing light rail trackwork for mines, quarries and industrial plants. The various equipment and accessories are segregated together under headings with a thumb index so that any subject may be immediately turned to. This book contains much valuable information in addition to many illustrations of equipment and tables of data.

(5594) "BAUSCH & LOMB MAGAZINE," Vol. 26, No. 2 by Bausch & Lomb Optical Co., Rochester 2, N. Y., contains 24 pages of short illustrated articles dealing with lenses and their various uses. In this issue optical production of color is explained and the use of interference filters which provides a simplified method. Also an article on Snell's Law of Refraction is included.

(5595) HEAVY MEDIA SEPARATORS Bulletin 39-B by Hardinge Co., Inc., 240 Arch St., York, Pa., contains 20 pages on the subject of wet classification and heavy media separation devices. Flowsheets and operating data are also included.

(5596) Catalog C-1100-A by Dings Magnetic Separator Co., Milwaukee 46, Wisc., contains 8 pages illustrating and describing Dings non-electric Alnico magnetic perma-drum. Construction and operating features are shown together with tables of dimensions and capacities. Typical installation diagrams are shown.

(5597) NICKEL ALLOYS June 1950, "Nickel Topics" by International Nickel Co., 67 Wall St., New York, N. Y., contains 12 pages of short illustrated articles showing many new uses for nickel alloys. Considerable attention is devoted to corrosion problems.

(5598) PULSATOR JIG, Bulletin PJ-3 by Dorr Co., Barry Place, Stamford, Conn., illustrates and describes the Pan-American pulsator jig for use in mills and placer operation. Specifications and drawings showing general dimensions are included.

(5599) CONVEYORS, "Conveyor," Vol. 193 by Stephen-Adamson Mfg. Co., Aurora, Ill., contains 20 pages illustrating and describing many industrial uses for conveyor systems. Included in this issue is a short illustrated description of feeders and conveyors used at Castle Dome Mine, Miami, Ariz., which has handled over 26 million tons in the past seven years.

(5600) GENERAL ELECTRIC REPORT. The 58th Annual Report of the General Electric Co., Schenectady, N. Y., contains 20 pages discussing the activities, policies and future plans of this company.

(5601) FINE PARTICLES. A recent publication by C. H. Wheeler Mfg. Co., 19th and Lehigh Ave., Philadelphia 32, Pa., contains 8 pages discussing the production of fine particles in low and sub-micron ranges. A new fine grinding process is discussed and illustrated together with a table of products to which this new method applies. The flowsheet shows various stages in processing and equipment used.

(5602) LABORATORY CRUSHERS AND GRINDERS A recent circular illustrates and describes Paul O. Abbe Laboratory jar mills, mixers and crushers. A table of specifications is included. Sales representative, Mine and Smelter Supply Co., P. O. Box 5270, Terminal Annex, Denver, Colo.

(5603) "THE BEACON" May 1950, by Ohio Oil Co., Inc., Findlay, Ohio, contains 48 pages principally devoted to personnel activities by those associated with the Ohio Oil Co. and taking part in their various operations.

(5604) "FLUOR-O-SCOPE" June 1950, Fluor Corp., Ltd., 2500 S. Atlantic Blvd., Los Angeles 22, Calif., contains 20 pages covering the activities of this company. This issue contains a special report from England and also Bahrein Island.

(5605) ALUMINUM "Alcoa Aluminum News Letter," May 1950, contains 8 pages illustrating and describing many new and important uses for aluminum. Among these is corrosion resistance piping, aluminum tanks, aluminum roofing and aluminum bolts.

(5606) "MINERAL INFORMATION SERVICE" June 1, 1950, by Department of Natural Resources, Ferry Bldg., San Francisco, Calif., contains information on tungsten deposits in Calif., also sulphur. New publications are listed.

(5607) "PROGRESS NEWS" by Gates Rubber Co., 999 S. Broadway, Denver 17, Colo., contains 28 pages illustrating and describing the personnel activities of this company. This issue is largely devoted to vacation activities.

(5608) "DU PONT MAGAZINE" June-July 1950, by Du Pont Co., Wilmington, Delaware, contains 40 pages of short illustrated articles, much of which is devoted to the use of Du Pont products. Among interesting articles are included "50 Years of Tire Progress," "Chemistry's Squeeze Play" and "The Bazooka that Mines Oil."

(5609) "SOUND BUSINESS" May—June 1950, by United States Gypsum Co., 300 W. Adams St., Chicago, Ill., contains 8 pages illustrating and describing methods of protection against sound. This issue shows Dearborn Street Station, Chicago, Ill., and how methods for sound reduction have been utilized.

(5610) FLOTATION A new technical bulletin by Hercules Powder Co., Wilmington, Delaware, contains 20 pages of mathematical formulas useful in the operation and control of ore-dressing mills, also, general information on the flotation process and flotation reagents including frothers, collectors and modifiers.

(5611) "INCO" Vol. 24, No. 1, by International Nickel Co., Inc., 67 Wall St., New York 5, N. Y., contains 36 pages of illustrated articles describing important uses of nickel and its alloys. Among the articles included is one discussing materials handling in many fields where high temperatures and other difficult conditions must be overcome.

(5612) VIBRATORY FEEDERS A recent 16 page bulletin by Syntron Co., Box 220, Homer, Pa., illustrates and describes many types of vibratory feeders manufactured by this company.

(5613) FOUNDRY SHAKEOUT Folder 2338, by Link-Belt Co., 307 N. Michigan Ave., Chicago, Ill., describes and illustrates the construction features and use of the new heavy-duty foundry shakeout manufactured by this company. Table of general dimensions and other data is included.

(5614) PORTABLE MINE BLOWERS Bulletin J-608 by Joy Mfg. Co., Henry W. Oliver Bldg., Pittsburgh, Pa., contains 8 pages describing and illustrating in detail the complete line of Joy Vaneaxial type blowers from ½ to 5 H. P. Performance graphs are included, also capacity tables.

(5615) "LEAD" Vol. 18, No. 1, by Lead Industries Association, 420 Lexington Ave., New York 17, N. Y., contains 8 pages of short articles showing the important uses for lead.

(5616) "ON TOUR" May 1950, by Union Oil Co., 617 West 7th St., Los Angeles 14, Calif. contains 24 pages. Among the articles included in this issue is one entitled "76 Views of Refining," explaining how atoms and molecules are combined. A digest of the annual 1949 report is given. "A Few Problems Faced in Common" is very enlightening.

(5617) "NICKELSWORTH" by International Nickel Co., 67 Wall St., New York, N. Y., contains 8 pages of short illustrated articles. Many uses for nickel alloys are shown that may find applications in all branches of the industry.

(5618) "FARMING" Summer 1950, by United States Gypsum Co., 300 W. Adams St., Chicago 6, Ill., contains 16 pages with drawings for the manufacture of kitchen furniture. Also drawings and information on the construction of a garage.

(5619) RADIAL ENGINE Bulletin 172 by Nordberg Manufacturing Co., Milwaukee, Wisc., illustrates and describes the new radial oil and gas burning engine. Its main features are described and are especially interesting by the use of sectional drawings and cut-a-way colored photographs. This is the most revolutionary design development in the fifty year history of diesel engines. The Aluminum Reduction Works in Texas has 120 Nordberg Radial Engines with a total potential output of 198,000 H. P.

(5620) WASHING THICKENER Bulletin 3021 by The Dorr Co., Barry Place, Stamford, Conn., illustrates and describes the principles of the

(Continued on page 36)

MINES MAGAZINE
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Alumni Business

MEETINGS

Executive Committee Meetings
3rd Monday of each month, Alumni Office, 7:30 P. M.

Alumni Council Meetings
4th Thursday of each month, Argonaut Hotel, 6:30 P. M.

Publication Committee Meetings
2nd Monday of each month, Alumni Office, 5 P.M.

Capability Exchange Committee, Meetings
Wednesday 7:30 Week preceeding Executive Committee Meeting.

EXECUTIVE COMMITTEE MEETING

The regular meeting of the Executive Committee, Colorado School of Mines Alumni Association, was held in the Alumni office on Moday, June 19, 1950.

The meeting was called to order by President Colasanti at 7:30 P.M.

Roll Call

Members present: James Colasanti, President; Robert W. Evans, Secretary; Malcolm E. Collier, Treasurer; Robert J. McGlone. Committee chairmen: Roger M. Schade, Earl Durbin for H. J. McMichael, Edwin F. White, Lynn W. Storm, Herbert Heckt; Frank C. Bowman, Executive Manager.

Members absent: A. George Setter, Vice President; Harvey Mathews, Carl I. Dismant. Committee chairmen: Allison B. Manning, Charles O. Parker, Harry McNeill, John H. Winchell.

The minutes of May 19, 1950, were read and approved.

President Colasanti called for the Treasurer's report and reports of standing committees, as follows:

Treasurer's Report

Mr. Collier reported the association in a very healthy financial condition, showing a net profit of $5,817.87 for the first five months of the year 1950.

Moved by Mr. Collier the report be accepted; seconded by Mr. McGlone; passed.

Alumni Endowment Committee

Mr. Schade reported an income in May of $165.60, making a balance of $2205.13 as of May 31, 1950.

The Placement fund showed receipts in May of $588.70 and disbursements of $375.05.

Moved by Mr. McGlone the report be accepted; seconded by Mr. Heckt; passed.

Athletic Committee

Mr. Bowman reported for Mr. Manning. During May $12.00 was received in contributions. As of May 31, 1950, the loan fund showed a balance of $889.65 in the checking account, $4,784.17 in the savings account and $528.00 in outstanding loans.

Moved by Mr. Heckt the report be accepted; seconded by Mr. White; passed.

Capability Exchange Committee

Mr. Durbin reported for Mr. McMichael. Calls for men are coming in faster than they can be filled, making an increase in jobs on hand.

The financial position is improved over last year. Receipts stand about 12% ahead of the budget requirements.

Junior memberships have greatly increased. About 75% of the graduating class have been placed. Efforts to place the remaining 25% continue.

During May there were 35 calls for men; 12 recommendations made; 4 placements reported; 1036 letters mailed; 448 men are on the active list; 159 junior members on the active list; and 105 calls for men remain unfilled.

Moved by Mr. McGlone the report be accepted; seconded by Mr. Heckt; passed.

Budget and Finance Committee

No report.

Instruction Committee

No report.

Mr. Bowman stated that personal experiences are coming in.

Lester S. Grant has been added to the committee.

Legislation Committee

No report.

Membership Committee

Mr. Bowman reported for Mr. Setter. During May, one life member and one annual member passed away; 1 new membership received; 2 reinstatements made; 140 renewals were received; and 175 members of the class of 1950 were received.

Membership in the association is looking better now than at any time in the past. Junior members have taken an active interest in the association.

Moved by Mr. Durbin the report be accepted; seconded by Mr. Heckt; passed.

Nominations Committee

No report.

Public Relations Committee

Mr. White reported the Annual Banquet showed receipts of $318.00; disbursements of $426.66; leaving a deficit of $108.66.

It was stated that winners of the prizes at the banquet have never acknowledged these gifts to the donors.

Moved by Mr. Collier that the Public Relations Committee send a letter to each prize winner requesting that he acknowledge the prize by letter to the donor; seconded by Mr. Evans; passed.

Moved by Mr. Heckt the report be accepted; seconded by Mr. Schade; passed.

(Continued on page 33)

Dr. J. Harlan Johnson

professor of geology at *Mines,* accompanied by Mrs. Johnson, sailed June 1 from New York for Europe. They will visit museums and universities in the Scandinavian countries.

This research project is aided by a grant from the Geological Society of America and has as its principal objective the study of type specimens of modern and fossil aigae and various types of organic limestones.

Dr. Johnson has for a number of years held the rank of geologist with the United States Geological Survey, working for the Pacific Geological Surveys and the Military geology branch. He does field work every other summer for the Geological Survey.

Mines ATO Chapter

initiated six men the latter part of May. The new members are Frederick M. Carpenter, assistant professor of mathematics; Thomas Daly, now a sophomore in petroleum production; Franklin Frederick, junior in petroleum refining; Edward Krisher, sophomore in metal mining; Richard Lusk, sophomore in petroleum refining; and John Rademacher, sophomore in metal mining.

A banquet in honor of the new initiates was combined with a house mortgage burning ceremony on May 21.

Elections on the Campus

for officers for the coming year which took place just prior to the closing of last semester resulted as follows:

Scabbard and Blade

John Rairden, now a senior in metallurgy, was elected captain of the honorary military fraternity. He replaces Hugh Bradley as president of the organization which selects its pledges from juniors taking military.

Other men chosen to run the military honorary the coming year are Willie Kinoshita, a geology senior, first lieutenant; Spencer Titley, a mining geology senior, first sergeant; and Edgar Hunter, a senior in coal mining, second lieutenant.

First lieutenant of the organization is vice president; second lieutenant is treasurer; and first sergeant is secretary.

Membership is restricted to men enrolled in the advanced ROTC course.

Publication Board

Roger Richter, in the metal mining option, and John Miller, in the petroleum production option, both now seniors, were elected by the student council as students at large to the student board of publications.

Paul Hodges, senior, who served on the board last year, will remain as the student council member of the publications group.

Athletic Council

David Crawford, petroleum production, and George Ball, in the geophysics option, both seniors, were appointed to the Athletic Council.

Press Club

Roger Richter, metal mining, was elected president of Mines Press Club and Frank Vaughan, metallurgy, was elected secretary-treasurer.

An honorary journalism organization, the Press Club is composed of *Miners* who have done outstanding work on student publications. Richter was assistant business manager of the Prospector last year. Vaughan will continue this year as publications photographer.

Enrollment for Mines Summer Study

shows four hundred seventy men will attend the various courses.

This number includes nine members registered for the intensive English course which runs for fifteen weeks, and 461 for plane surveying on the campus, geology field camp at Pueblo, mining field camp at Idaho Springs, and the petroleum field camp at Rangely. These are 6-week courses.

This year's enrollment figure shows an increase of 26 over the enrollment for the first phase of the 1949 summer session. 196 veterans are included in the number.

ALUMNI BUSINESS

(Continued from page 32)

Publications Committee

Mr. Heckt reported that for the 41 2/3% of the budget period 40.1% of the budgeted income for the year has been earned and 28.5% of the allotted expenditures have been spent; there is an earned credit of $3897.28 more than the budget calls for.

The June special commencement number will carry about 21 pages of advertising. The main features will be the commencement celebration and the annual alumni banquet.

The special petroleum number has been set back to October to allow more time to obtain articles. There are prospects for some very good articles.

Moved by Mr. White the report be accepted; seconded by Mr. Collier; passed.

Research and Investigation Committee

Mr. Storm reported the committee is analyzing every 10-year class, starting with 1900, however it may require studying the classes for every 5 years to show how the graduates turn out. The project is to be rushed through to get some basis for a study for future work.

Moved by Mr. McGlone the report be accepted; seconded by Mr. Collier; passed.

General Report

Mr. Bowman reported that all activities show improvement over previous years; this is a healthy condition.

Special Business

None.

Adjournment

The meeting adjourned at 9:00 P. M.

FROM THE *Local Sections*

ARIZONA

Two meetings in year, second Saturday in April and October. H. Z. Stuart, '36, Bisbee, Vice-Pres.; C. A. Davis, '27, Phoenix, Vice-Pres.; W. W. Simon, '15, Superior, Vice-Pres.; B. G. Messer, '36, Secretary-Treasurer, Rt. 1, Box 40, Globe, Ariz.

On Saturday, May 20th, 1950, a little *"Mines"* get-together was held in Tucson at the Ghost Ranch Lodge. The following grads, ex-grads, wives and guests were present:

Percy Jones, Jr., '08; Harlow D. Phelps, '10; Mrs. Maybelle I. Phelps; F. M. Stephens, '13; Mrs. Ruth W. Stephens; Lincoln A. Stewart, '15; M. B. Mills, '29; Mrs. Dorothy Mills; Gordon T. Brown, '39; Mrs. Betty Brown; Walter E. Heinrichs, Jr., '40; Mrs. Jean Heinrichs; Robert E. Thurmond, '43; Mrs. Margaret Thurmond; A. W. Ruff, Jr., '49; Mrs. Olive Ruff; Robert M. Wallace, Ex-'49; Mrs. Mary Alice Wallace; and Miss Christine Vanderwilt, daughter of *Mines* President Dr. and Mrs. John W. Vanderwilt.

Others in the Tucson area that were unable to attend were:

Dean Montague Butler, '02, of Arizona University; Dr. Burt Butler, '29, former head of the University Geology Department; K. A. von den Steinen, '32, of A. S. & R.; Paul Tyman, '44, of Mammouth Mine at Tiger; E. K. Staley, '35, of San Manuel Copper at Tiger; and Mrs. Corine Parker, daughter of retiring Met. Prof. and Mrs. William Cramer.

Since this meeting one more has been added to the local roster in the name of Allen Rugg, '41, who is now acting director at the U.S.C. and G.S. Observatory. This makes a total of 15 grads holding forth here at the "Old Pueblo." One of these days it is hoped to revive the activities of the Arizona section, maybe with a meeting this coming fall.

BAGUIO

Frank E. Delahunty, '25, President; Luther W. Lennox, '05, Secretary-Treasurer, Benguet Consolidated Mining Co., Baguio, P. I. Meetings upon call of secretary.

BARTLESVILLE

Burt R. Kramer, '42, President; John W. Tynan, '41, Vice President; Richard M. Bradley, '36, Secretary, Cities Service Oil Co., Bartlesville. Luncheon meetings every Friday noon in the Burlingame Hotel Coffee Shop.

BAY CITIES

Louis DeGoes, '48, President; George Playter, '30, Vice President; Clyde Osborn, '33, Secretary; James N. Peros, '38, Treasurer. Visiting Miners contact Secretary, c/o Western Machinery Co., 762 Folsom Street, San Francisco, Calif., Exbrook 2-4167. "Basket Picnic," Redwood Regional Park, Redwood Canyon, Oakland, Calif., Sunday, August 20. Families and friends invited. Phone secretary for further information.

The Bay Cities section called a meeting for June 16, 1950, at the Bellevue Hotel in San Francisco. Only seven members responded to the call: George O. Argall, Jr., '35; W. S. Briscoe, '30; Louis DeGoes, '48; J. C. Mencimer, Ex-'35; C. E. Osborn, '33; James N. Peros, '38; C. K. Viland, '29.

After a couple rounds of cocktails, while waiting hopefully that at least one more *Miner* would show up, a good dinner was enjoyed, following which the meeting was called to order and minutes of the January meeting were read.

The dinner dance held at the Press Club in San Francisco April 21 was the subject of an informal discussion. This pleasant affair was attended by ten *Miners* and six guests, accompanied by their wives. The secretary of the section was so busy enjoying himself he forgot to take notes and failed to write a report concerning it. Those who attended enjoyed a well prepared dinner and special entertainment, and danced to excellent music. The section is particularly indebted to Bill Briscoe for making arrangements with the Press Club for this dance.

The gaiety of the dinner dance was tempered somewhat by the announcement that R. D. (Dick) Moody was being transferred to Los Angeles by Allis-Chalmers. Moody has been the spark-plug of the Bay Cities section. He could always be relied upon for attendance and support. He will be missed in this section, as well as his lovely wife. Our loss will be the Southern California section's gain.

The problem of attendance was discussed and the following steps have been taken to improve the meetings:

Definite meeting dates were established:

Day — Last Friday of the month in September, November, February and May.

Time — Cocktails: 7:00 P. M.
Dinner: 7:45 P. M.

Place — To be announced later.

The next business meeting will be held on September 29, 1950. The place to be announced in 3 or 4 weeks.

In addition to the 4 regular business meetings two or more social meetings will be held to enable *Miners'* wives, families and friends to become better acquainted and to share that inspiring *"Mine's Spirit."*

The first of these events will be a "Basket Picnic" to be held at the Redwood Regional Park in Redwood Canyon, Oakland, California, on Sunday, August 20. This park is in the area on the hills east of 35th Avenue, Oakland. A map showing how to get there will be mailed to all members in the area. Visitors can obtain instructions by calling the secretary of the Bay Cities section. Soda pop, coffee, and other liquids, will be furnished—just bring your lunch. Families and friends invited.

The other social affairs will be dinner dances, date and places to be announced later.

President Louis DeGoes reported on the activity of the Athletic Scholarship committee. Likely candidates have been observed and contacted but, so far, none have necessary scholastic qualifications. More effort and cooperation on the part of members is needed.

DeGoes anticipates being transferred from this area and announced his wish to resign the chairmanship of the local Athletic Scholarship committee. His resignation was accepted and Archie S. MacArthur, '27, was appointed to be chairman of this important committee. His appointment was unanimously approved by those present.

The meeting was adjourned at a late hour in a note of optimism for the future.

BIRMINGHAM

Robert J. Blair, '39, President; Stanley M. Walker, Ex-'11, Vice President; Hubert E. Risser, '37, Secretary-Treasurer, Bradford Mine, Dixiana, Alabama. Meetings held upon call of secretary. Visiting "Miners" please contact secretary.

CENTRAL OHIO

Roland B. Fischer, '42, President; Frank M. Stephens, Jr., '42, Secretary-Treasurer, Battelle Memorial Institute, Columbus, Ohio.

CENTRAL WYOMING SECTION

Herbert Schlundt, '43, President; Lynn D. Ervin, '40, Secretary-Treasurer, c/o Stanolind Oil & Gas Co., Casper, Wyoming. Meetings, first Saturday, March, June, September, December.

The first meeting of the Central Wyoming Section was held at the Henning Hotel, Casper, on Saturday, June 3 with nineteen *Miners* and their dates or wives in attendance. Class representation ranged from '35 to '50.

▼ Back row, left to right—Meade, Low, Hudson, Ervin, Chambers, Hensley, Dolezal, Hulpiau, Zagurski, Van Hook, Schlundt, Torpey, Brennecke, Garrett, Fusselman, Wanner. Front row, left to right—All Mrs.: Meade, Chambers, Low, Dolezal, Hensley, Hulpiau, Zagurski, Hudson, Van Hook, Wanner, Torpey, Garrett, Fusselman, Brennecke.

The guests of honor included Coach and Mrs. Fritz Brennecke and John Masek, Casper High athlete, with Miss Rachael Ikard.

After cocktails, dinner was served and Herb Schlundt, the section president, introduced Jack Torpey who presented the guests. Fritz Brennecke gave an interesting and informative resume of recent changes at *Mines* and summarized the policy regarding athletes interested in attending *Mines*.

Following the appointment of committee members, it was agreed that the next business meeting would precede the social meeting by one week. It was suggested that the next social meeting be a picnic at a time and place to be announced by the Entertainment committee.

The meeting was adjourned and Fritz Brennecke projected the movies of the 1939 Mines-Greeley football game. His running commentary was supplemented by that of Jack Torpey, one of the stand-outs of the game.

Ben Hudson then gave a highly entertaining, professional performance of magic to conclude a successful gathering of *Mines* Alumni. Miners attending were:

J. W. R. Crawford, '48; Geo. Dolezal, '50; J. L. Fusselman, '42; B. R. Hudson, '45; John Hensley, '50; G. E. Hulpiau, '49; H. L. Garrett, '50; W. S. King, '49; F. T. Chambers, '41; L. D. Ervin, '40; D. J. Low, '45; W. F. McNamara, '48; G. N. Meade, '41; Herb Schlundt, '43; J. J. Torpey, '41; F. G. VanStratum, '48; W. A. Van Hook, '35; J. J. Wanner, '48; T. J. Zagurski, '49.

CLEVELAND

Joseph R. Gilbert, '42, Secretary, 14513 Northfield Ave., East Cleveland 12, Ohio. Meetings last Friday of each month at the Carter Hotel, Cleveland.

COLORADO

E. S. Hanley, '34, President; Herbert W. Heckt, '36, Vice President; David Roberts, '40, Treasurer; William J. Holtman, '43, Secretary, 930 Downing St., Denver, Colo. Meetings upon call of Secretary.

EASTERN PENNSYLVANIA

Samuel M. Hochberger, '48, President; Arthur C. Most, Jr., '38, Vice-President, Secretary-Treasurer, 91-7th Street, Fullerton, Penna. Meetings upon call of Secretary.

The third meeting of the Eastern Pennsylvania chapter, held June 14, 1950, was a terrific success with six new faces present and, for the second straight get-together, a total of thirteen.

Much enthusiasm was shown by the members with everyone agreed that a total effort should be made to get *Miners* from Philadelphia and Wilmington to our meetings. An effort will also be made to arrange a big blowout with the New York chapter somewhere between our meeting points.

The next meeting was set for September 20 at 7:15 P.M., in the Fountain House, Doylestown, Penna. Any stray *Miners* are also welcome.

Chapter officers chosen for the coming year are S. M. Hochberger, president, and A. C. Most, Jr., vice president, secretary and treasurer.

Entertainment was provided by Les Worth who showed a half hour film of his trip to Colorado, Utah, and Golden for the 75th Anniversary celebration. Needless to say, all present enjoyed the old familiar scenes that we all knew too well in the past.

Those present were: Sam Hochberger, '48; Tom Foulkes, '22; Duke Gillespie, '29; Alec Jamieson, '43; Gardner Blythe, '40; Lou Hovart, '50; Lou Burr, '53; Les Worth, '38; J. A. Rich, '40; O. H. Wuetig, '32; Walt Gillingham, '47; Chuck Muller, '42; Ernie Bunte, '22.

GREAT LAKES

Francis W. Mann, '43, President; R. D. Fernald, '37, Vice President; Stanley Ohlswager, Ex-'49, Secretary. Meetings: Fourth Friday, January, April, October. Visiting Miners contact President, c/o Standard Oil Co. (Ind.), Pipeline Dept., 910 So. Michigan Ave., Chicago 1.

HOUSTON

Albert L. Ladner, '27, President; McKay G. Donkin, '29, Vice President; W. Bruce Barbour, '37, Secretary, c/o The Second National Bank of Houston, Oil & Gas Div., Houston. Monthly luncheon meetings held on the first Tuesday at Noon, Tenth Floor of the Houston Club. Visitors please contact the secretary at The Second National Bank of Houston.

At the regular monthly luncheon meeting of Houston Section held on May 2, eighteen members were present.

One June 6 twenty were in attendance at the regular place of meeting, the Houston Club.

A. S. Dickinson of this year's class at *Mines* was welcomed. He gave a well-presented account of the employment status of the 1950 class.

Those present were:

Irwin M. Glasser, '43; James L. Ballard, '25; Carl F. Beilharz, '25; Vernon Redding, '40; Glenn E. Bader, Ex-'27; R. K. Tracy, '28; Lester Truby, '48; Stanley A. Wickstrom, '38; Donald M. Davis, '25; McKay G. Donkin, '29; Raymond A. Kerr, '36; Donald T. Gahagan, '27; K. Pat Hurley, '22; Albert L. Ladner, '27; Albert G. Wolf, '07; Lisle R. Van Burgh, '17; Charles E. Redmon, '39; W. B. Barbour, '37; Samuel C. Sandusky, '48.

KANSAS

All activities suspended.

MANILA

John R. Wagner, Jr., '40, President; Ernesto C. Bengzon, '21, Vice-President; M. M. Aycardo, Jr., '41, Secretary-Treasurer, 3rd Floor Soriano Bldg., Manila, P. I. Luncheon meetings second Saturday all even months of the year.

MONTANA

A. B. Martin, '23, President; M. R. Hoyt, Ex-'08, Vice-President; C. B. Hull, '09, Secretary, 646 Galena, Butte, Montana. Meetings upon call of Secretary.

NEW YORK

Russell J. Parker, '19, Rupert B. Lowe, '22, Co-Chairmen; Fred D. Kay, '21, Secretary-Treasurer. Room 2202, 120 Broadway, New York 5, N. Y. Telephone: Worth 2-6720. Monthly meetings.

NORTH CENTRAL TEXAS

E. J. Brook, '23, President; J. W. Peters, '38, Vice President; H. D. Thornton, '40, Secty.-Treas. (Ft. Worth) 506 Neil P. Anderson Bldg., Fort Worth, Texas, Telephone: 3-3058; Henry Rogatz, '26, Secty-Treas. (Dallas) 1215-16 First Natl. Bank Bldg., Dallas, Texas, Telephone: Riverside 4846. Four meetings during year, second Monday of month, February, May, September and November.

OKLAHOMA

Carl R. Holmgren, '38, President; M. E. Chapman, '27, Edgar R. Locke, '28, C. O. Moss, '02, Vice Presidents; Philip C. Dixon, '31, Secretary-Treasurer, Midstates Oil Corporation, National Bank of Tulsa Bldg., Tulsa, Okla.

OKLAHOMA CITY

J. S. "Monty" Montgomery, '31, President; H. M. "Hugh" Rackets, '42, Vice President; M. O. "Shorty" Hegglund, '41, Secretary-Treasurer, c/o Stanolind Oil and Gas Co., First National Building, Oklahoma City, Okla. Meetings, first and third Thursdays of each month at the Oklahoma Club. Luncheon 12:00 Noon. All Mines Men are cordially invited to drop in.

PACIFIC NORTHWEST

A. R. Kesling, '40, President, 2915 Holgate, Seattle; Phone: PR-7392. W. I. Sedgely, '40, Secy-Treas., 6040-36th Ave., S. W. Seattle 6; Phone: AV-8641. Meetings upon call of Secretary.

PENNSYLVANIA-OHIO SECTION

William H. Sparr, '39, President; George G. Yeager, '40, Secretary, 3229 Circle Drive, Pittsburgh 27, Pa. Meetings upon call of officers.

SOUTHERN CALIFORNIA

John Biegel, '39, President; A. J. Heiser, '43, Vice President; C. J. Cerf, '41, Treasurer; Franklin S. Crane, '43, Secretary, c/o Oilwell Supply Co., 934 North Alameda St., Los Angeles. Telephone: MUtual 7311. Scheduled meetings second Monday of January, April, July and October, at Officers' Club, 2626 Wilshire Blvd., Los Angeles, 6:30 P.M. Phone Secretary for reservation.

ST. LOUIS

James E. O'Keefe, '37, President; Floyd M. Belleau, '23, Secretary-Treasurer, 955 Tuxedo Blvd., Webster Groves, Mo.

UTAH

H. J. Vander Veer, '30, President; Wallace W. Agey, '39, Secretary-Treasurer, 852 So. 19th East St., Salt Lake City 5, Utah.

WASHINGTON, D. C.

Marcus G. Geiger, '37, President; Frank E. Johnson, '22, Vice President; Leroy M. Otis, '14, Secretary-Treasurer, Muirkirk, Maryland.

Scheduled evening meetings called for the third Thursday of every other month at the Continental Hotel, Washington, D. C. Special meetings arranged when warranted.

ALASKA FISHING INDUSTRY CLAIMS A "MINER"

(Continued from page 18)

school from the stern of a small, open, power boat; and then pulling it back into the boat. The fish are pursed in one end and then are brailed into the boat with a large dip net, with a time lapse of from ten minutes to over an hour. The boats are beamy, about twenty six to thirty feet in length, and shallow draft in order to get in close to the beaches and flats. Some fishermen prefer illegal "creek-fishing" but plane patrols are discouraging this fast. With anywhere from two to thirty boats in an area, it is always a race to get there first when a school shows. Our average is about one hundred fish to the set, at twenty cents a piece, although we have caught up to three thousand fish in a haul. This sounds like more than it actually is for the equipment involved is expensive and too specialized to be used except for these two weeks each year. However, everyone is always optimistic about a big run and anyway, why be an average boat.

Because of the uncertainty of the salmon fishing for buyers, along with increased fleets, we have been working towards supplementing it with an off-season sea food business. This would be both custom canning and freezing of king crabs and shellfish, as well as smoking fish. At the present time, we have been improving equipment and experimenting. Next year we hope to get into full operation which will extend our season from April until October. Our personal contact in the fishing game up here, where every decision has a direct and immediate bearing on one's income tax, is especially nice. Even if the results are adverse, you can only blame yourself.

I hope I have been able to tell a little about one of the many different businesses that Mines Men end up in and we extend a hearty welcome to any alumni who might find themselves in this area with a little spare time. The after season sport fishing is really fine.

TECHNICAL SOCIETIES AND ASSOCIATIONS MEETINGS

(Continued from page 30)

held in Chicago, a Bibliography on Unit Operation of Oil Pools prepared by the Technical Department of the Tulsa Public Library dated March 16, 1948, and a compilation of the available information on all known projects arranged in Tables I and II with Appendices to each which were assembled through various contributions from members in the industry. These tables contain 29 cooperative projects and 128 unitized projects in 17 states. In addition four maps showing the location of projects in progress are included.

Copies of this report may be obtained by writing the Interstate Oil Compact Commission, P. O. Box 3127, State Capitol, Oklahoma City 5, Oklahoma.

CATALOGS AND TRADE PUBLICATIONS

(Continued from page 31)

continuous counter current washing thickener. The large number of illustrations explain the operation of this equipment. Operating data is included as well as flowsheets.

(5621) "STORAGE BATTERY POWER" May 1950, by Edison Storage Battery Division, West Orange, N. J. contains 16 pages illustrating and describing many operations where storage battery power can be used to advantage.

(5622) CATERPILLAR DIESEL Form No. 12682 by Caterpillar Tractor Co., Peoria, Ill., contains 16 pages illustrating a large number of uses for Caterpillar equipment and good reasons for its long life.

PERSONAL NOTES

(Continued from page 26)

Charles S. Burriss, Ex-'10, Engineer and Geologist, Mike Horse Unit, American Smelting & Refining Company, Mike Horse, Montana, was a Denver visitor the latter part of May, arriving in time to attend the Annual Banquet on May 25.

W. D. Caton, '35, has moved his residence from Denver to 5709 Ammons Street, Arvada, Colorado. He is Engineer for the U. S. Reclamation Service.

C. M. Chappell, '49, has asked that his mail be sent to his home in Denver, 3338 West 14th Avenue, as he will be moving often during the coming year as Seismic Computer for Shell Oil Company.

John W. Chester, '44, was on vacation in Denver last month from his duties with the Miami Copper Company. His mailing address is Rt. 1, Box 39-M, Globe, Arizona.

Will H. Coghill, '03, has moved from the Wellington Hotel, Denver, to Golden for the summer months where he will be

(Continued on page 39)

Book Reviews

These books may be obtained through the Book Department of The Mines Magazine.

Principles of Sedimentation

2nd Edition. By W. H. Twenhofel, Professor Emeritus of Geology, University of Wisconsin, McGraw-Hill Book Co., New York, N. Y. 1950. 673 pages, 6 x 9, illus. $6.50.

In this new edition of an outstanding text on the subject of sedimentation, the author has maintained the same organization as in the first edition but has added to the material and revised it to conform with information brought out by studies and recent years of marine sediments and sedimentary processes in the sea which have been made possible by many cores and bottom samples of sediments collected over parts of the Atlantic Ocean, the Gulf of Mexico, off the coasts of California, the East Indies and Coral Islands in the Pacific.

The first part of the book is devoted to a discussion of environmental factors, a classification of environments, origin of inorganic sediments, interrelation of organisms and sediments, transportation and deposition of sediments and finally, a classification of sediments, sedimentary rocks and minerals of sediments on a basis of whether the deposition agents were physical or chemical, or both.

A moderate amount of space is given to the discussion of clastic sediments, the result of both physical and chemical rock destruction, while some 200 pages are devoted to the subject of sediments of chemical deposition including carbonate sediments, siliceous, ferruginous, and manganese sediments, carbonaceous sediments, evaporites and phosphatic sediments.

The last 100 pages cover structural features of sedimentary origin, including color and textures. Each subject discussed throughout the book is followed by an extensive list of references. An index of 30 pages enables one to turn rapidly to the subject sought and also to references included.

A Roman Book on Precious Stones

By Sydney H. Ball, Gemological Institute of America, Los Angeles 5, Calif. 1950. 338 pages. $6.75.

This book represents a lifetime of research by the author who, by reason of his education and years experience in connection with a study of geology and mineral deposits, is well qualified to produce this most outstanding book on precious stones. The book is divided into two parts, the first part of which is devoted to Pliny and a discussion covering the gems which were in use at that time together with their resources and the modern equivalent of the minerals from which these gems were produced. An extensive table of identification makes it easy for the reader to make present day comparisons. Also in this chapter are discussed the production and mining of these gemstones in the time of Pliny and a historical summary of ancient commerce in precious stones.

Part II of the book contains Dr. Ball's modernization of Philomen Holland's translation of the 37th Book of the History of the World by Pliny the Elder printed in 1601. Throughout the 77 chapters of this section, marginal notes give Dr. Ball's interpretation of the mineralogical terms used.

Part III contains notes and comments on the 37th Book of the History of the World clarifying minerals discussed and ancient localities including Dr. Ball's explanations based upon his present day knowledge of the subject. An excellent index is provided for easy references.

This book will be an interesting and valuable addition to the libraries of those who are fascinated by the study of gems and their production.

Economic Mineral Deposits

2nd Edition. By Alan M. Bateman, Silliman Professor of Geology, Yale University. John Wiley & Sons, Inc., New York, N. Y. 1950. 916 pages, 6" x 9". 308 Illus. $7.50.

The book is divided into three parts, (1) Principals and Processes, (2) Metallic Mineral Deposits and (3) Non-metallic Mineral Deposits. Following a brief history of the use of minerals, materials of mineral deposits and their formations are discussed, including a list of geologic thermometers.

About one-third of the book is devoted to a discussion of the processes of mineral deposits including Magmatic Concentration; Sublimation; Contact Metasomatism; Hydrothermal Processes, Cavity Filling and Replacements; Sedimentation; Evaporation; Residual and Mechanical Concentration; Oxidation and Supergene Enrichment and Metamorphism. Many examples with illustrations are used throughout the text and a list of selected references are included for further study and research. The important subject of "why ore is where it is" has been covered in the chapter on Controls of Mineral Localization. Folding and faulting of mineral deposits is well covered and includes many illustrations of typical examples. Part I closes with a chapter on geophysical prospecting and exploration showing methods developed and their growing use in the discovery of unknown mineral deposits.

Part II covers Metallic Mineral Deposits, of precious metals, non-ferrous metals, iron and ferroalloy metals, minor metals and related non-metals. Worldwide coverage is made of important mineral deposits and here again as in Part I, selected references are included for research and more complete details.

Included in Part III under Nonmetallic Mineral Deposits are, coal, petroleum, ceramic materials, structural and building materials, metallurgical and refractory materials, industrial and manufacturing materials, chemical minerals, fertilizer minerals, abrasives and abrasive minerals, gemstones, and finally, a chapter on ground-water supplies. Examples of deposits, distribution, occurrence, geological and mineralogical features, production, extraction and uses are included together with much other valuable information.

One of the valuable features of the book is its index of some 40 pages arranged for quick reference to main subjects.

Applied Geology

Vol. 15, No. 1B. Colorado School of Mines Quarterly published as a part of the 75th Anniversary Volume entitled "Mineral Resources in World Affairs." 343 pages. 81 illustrations. Tables and maps. 6" x 9", paper bound. $3.00.

This volume contains papers delivered at the Conferences on Applied Geology September 30 and October 1, 1949, by some of the leading geologists of the country and includes the following: "The Petroleum Geology of Colorado," "Modern Methods in Petroleum Exploration," "Applications of Geology to the Investigation of Our Water Resources," "Applications of Geology in Soil Conservation," "Geology and Irrigation Engineering," "Applications of Geology to Highway Engineering," "A Tribute to the Early Workers in Colorado Geology," "Problems in the Relation of Ore Deposits to Hydrothermal Alteration," "The Fumarolic-Hot Spring and 'Epithermal' Mineral Deposit Environment," "The Geochemistry of Argillic and Related Types of Rock Alteration," "Interpretation of Wall-Rock Alteration at Butte, Montana," "Discussion of Alteration and Its Applications to Ore Search," "Problems of Wall-Rock Alteration in Shallow Volcanic Environments" and "Discussion of Alteration and Its Application to Ore Search."

Included in connection with these papers are important bibliographies and also discussions of the papers during the Conferences.

Encyclopedia of Atomic Energy

By Frank Gaynor, Philosophical Library, New York, N. Y. 1950. 204 pages. 5½ x 8½. $7.50.

This book which has been recently published presents a collection of brief explanations and definitions of terms used in the field of Nuclear Physics and Atomic Energy. All terms and words defined are carried in bold-face type with sufficient indentation to make them easily discerned from the subject matter.

Under each element is given the chemical symbol, group of periodic table, discoverer, date of discovery, atomic number, atomic weight, melting point, boiling point, specific gravity, valance, stable isotopes and radioistopes.

An isotope table is included covering 19 pages. Brief descriptions are given of the best known types of nuclear reactions. A periodic table of elements as well as a great many other tables of important information pertaining to or allied with the subject of atomic energy are also included.

In all, there are 2000 entries, charts, tables and illustrations contained in this book.

Coal Mines in Canada

List No. 4-1. By Department of Mines and Technical Surveys, Mineral Resources Division, Ottawa, Canada.

This circular gives statistical information covering coal production in Canada for the year 1949 with a tabulated listing of operating coal mines, their location and production.

Rapid Traverse Tables

By Leo Jean Goldsmith, Wm. C. Brown Co., Dubuque, Iowa. 1950. 540 pages. $5.00.

This book of traverse tables embodies many of the best features of previously published tables with additional, carefully thought out improvements. The book is arranged for the convenience of the computer. Each page contains sines, cosines, and multiples thereof for five minutes of angle. This arrangement makes it possible to find values for any angle in a minimum of time. The tables are printed in large type, with numbers spaced for ease in reading and to enable one to keep track of his place in the tables. Just as the decimal point is omitted from the ordinary logarithmic slide rule, so it is omitted from these tables. However, the position of the decimal point is always between the two lefthand digits for all values in the tables.

The numerical values in these tables were set from the twenty-first revised and corrected edition of Boileau's traverse tables for the following reasons. (1) Boileau's tables in their twenty-one editions were carefully checked and all known errors were found and corrected. (2) Boileau's tables were calculated from seven place trigonometric functions, rounded off to five places. Careful proof reading of all values in Rapid Traverse Tables means that they should be nearly as free from errors as their source.

The preface contains a complete description of the tables and instructions for their use. A sample problem is solved in detail to illustrate four different ways of using the tables; (1) by itself, the way any other traverse table can be used; (2) with an adding machine; (3) with an electric or manually operated calculating machine; (4) with a device called the Rapid Calculator which is supplied with and designed to be used with the tables.

The preface also contains a discussion of possible uses of the book and the problems it is particularly adapted to solving, such as arise in trigonometry applied to surveying, applied mechanics and other fields such as calculating latitudes, departures, coordinates, areas by double meridian distances, etc.

Metallurgy, Industrial Minerals, and Geophysics

Metallurgy, Industrial Minerals, and Geophysics, numbers 3A, 4B, and 4A, Volume 45 of the Quarterly of the *Colorado School of Mines*. Dept. of Publications, *Colorado School of Mines*, Golden, Colorado, 1950. "Metallurgy," $ .50; "Industrial Minerals" $ .50; "Geophysics" $1.00.

These excellent publications are the latest in the Seventy-fifth Anniversary Volume entitled "Mineral Resources in World Affairs," which will make available all of the papers presented and much of the discussion at the conferences on the occasion of the Seventy-fifth Anniversary of the School, September 30 and October 1, 1949.

"Metallurgy," number 3A, contains the papers delivered at the conference on metallurgy. Comprising 60 pages, with 12 illustrations and 2 tables, "Metallurgy" includes "The Trend of Iron-Ore Concentration in the Lake Superior District" by Edmund C. Bitzer, executive vice president and general manager, Colorado Iron Works, Denver, Colorado: "Utilization of Fuels" by C. E. Lesher, president, the Disco Company, Pittsburgh, Pennsylvania; "Current Research in Physical Metallurgy" by Earl R. Parker, associate professor of physical metallurgy, University of California, Berkeley, California; and "Metallurgical Materials in the Coal-Mining Industry" by C. S. Thomas, chief metallurgist, Jeffrey Manufacturing Company, Columbus, Ohio.

Comprising 44 pages, with 31 illustrations and 9 tables, "Industrial Minerals," number 4B, containing papers delivered at the conference on industrial minerals, includes "Industrial Minerals of Colorado" by George O. Argall, Jr., editor, Mining World, San Francisco, California; "The Consumption of Balls in Wet Ball Milling" by C. H. Knight, manager, Canadian division, and Donald Dyrenforth, manager, North American Sales, the Dorr Company, New York City; "Ground Water in Nevada" by T. W. Robinson, district engineer, ground-water division, United States Geological Survey, Carson City, Nevada; and "Searles Lake Development" by B. W. Dyer, district mining supervisor, United States Geological Survey, Salt Lake City, Utah.

"Geophysics," number 4A, contains the papers delivered at the Conference on Geophysics September 30 and October 1, 1949. It comprises 103 pages with 38 illustrations. Included are "The Relationship of Research and Field Operations in Seismic Exploration" by Cecil H. Green, vice president, Geophysical Service, Inc., Dallas, Texas; "Geological Imagination in the Interpretation of Geophysical Data" by R. Clare Coffin, Stanolind Oil and Gas Company, Tulsa, Oklahoma; "Current Trends and Progress in Mining Geophysics" by Hans Lundberg, president, Lundberg Explorations, Limited, Toronto, Canada; "Recent Developments in Electrical Logging and Auxiliary Methods" by H. G. Doll and Maurice Martin, Schlumberger Well Surveying corporation, Ridgefield, Connecticut; "Recent Developments in Seismic Research" by D. H. Clewell, Magnolia Petroleum Company, Dallas, Texas; and "Recent Developments in Gravity Prospecting" by Sigmund Hammer, Gulf Research and Development Company, Pittsburgh, Pennsylvania.

Technical Handbook on Aerosols

A 147-page HANDBOOK ON AEROSOLS has been published by the United States Atomic Energy Commission in connection with its program for control of radioactive wastes at atomic energy facilities. The HANDBOOK consists of 11 chapters by various authors, originally prepared as part of the Summary Technical Report of Division 10, National Defense Research Committee.

Engineers and others charged with preventing atmospheric contamination by radioactivity need basic knowledge of the behavior of dusts, fumes and mists. The HANDBOOK ON AEROSOLS summarizes present knowledge in this field.

The HANDBOOK ON AEROSOLS may be obtained from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., at a cost of 60 cents per copy.

The Minnesota Geologist

7th Vol. Official Bulletin of The Geological Society of Minnesota.

Contains among other information a proposed 5-year promotional plan for the advancement of geological education in America by Ben Hur Wilson, Joliet Junior College. The plan, together with discussion is well worth the attention and consideration of all those interested in the advancement of geological education.

Welding Handbook—Third Edition

Edited by Simon A. Greenberg. Contributions from more than 250 experts. American Welding Society, 33 West 39th St., New York 18, N. Y. 1950. 1650 pages, illustrated. $12.00 U. S. and Canada. $13.00 foreign.

The Handbook is intended to be equally useful as a text on welding and as a reference book. Twenty-seven chapters are devoted to the more than 30 welding and cutting processes used in industry today. Information on each process covers the equipment used, the basic principles of operation and the application of the process for different metals and different industrial applications.

Thirteen chapters contain information on the ferrous and nonferrous metals commonly welded, including their general properties, how to weld them with the different welding processes and their use by different industries. Metals covered include iron, wrought iron, carbon and low-alloy steels, chromium steels, chromium-nickel steels, manganese steels, aluminum, magnesium, copper and nickel and their alloys, lead, zinc, clad steels and applied liners.

A group of eleven chapters contains information on design, materials, workmanship and inspection requirements for industrial applications such as aircraft, bridges, buildings, railroads, storage tanks, pressure vessels and boilers, ships, automotive products, pipline, industrial piping and machinery.

Additional individual chapters are devoted to data for estimating costs, physics of welding, welding metallurgy, a dictionary of welding terms and definitions, general engineering tables for shop and office use and welding standards, including welding symbols, filler metal specifications and standard tests for welds.

The more than 300 tables included in the Handbook contain reference data on welding procedures, properties of metals, properties of welds, code requirements and test results. The 69 page index makes it possible to readily find specific information and related information contained in the different chapters.

The book is profusely illustrated with sketches and photographs of welding equipment, welding details and specific applications. A bibliography is included at the end of each chapter listing the important codes, standards, books and technical articles on the subject of the chapter for those seeking further information.

New Structure Maps of the Galena, Illinois, Zinc Area

By Illinois Department of Registration and Education State Geological Survey Division, Urbana, Illinois. May 1950.

On May 29, 1950, geologic structure maps, scale 500 feet to the inch, of a large part of the northwestern Illinois zinc and lead mining district will be placed on open file for consultation by any interested persons at the Geological Survey's headquarters in the Natural Resources Building in Urbana and at its field office in the DeSoto Hotel, Galena.

Gypsum Mines in Canada

List No. 3-5. By Department of Mines and Technical Surveys, Mineral Resources Division, Ottawa, Canada.

This circular describes and lists the gypsum deposits in Canada and also milling plants.

IN MEMORIAM

Fred Jones

of the class of '00, passed away April 25, 1950, in Mercy Hospital, Denver, where he had been for three weeks following a heart attack.

FRED JONES

A native of Dallas, Texas, Mr. Jones spent his boyhood in Grand Junction, Colorado. Soon after his graduation from *Mines* he entered the employ of the Portland mine at Victor, Colorado, and continued with them until 1928. For the next three years he was associated with a bolt manufacturing company in Pittsburgh, Pa., then moved to Denver and was engaged in consulting engineering until 1943 when he received appointment of state commissioner of mines, which position he held at the time of his death.

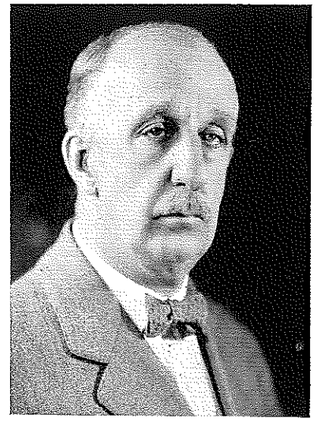
Mr. Jones was a member of the Colorado Mining association, and the Colorado Society of Engineers. He was a thirty-second degree Mason and a member of chapter No. 99, A. F. & A. M., at Victor, Colorado.

Surviving are two daughters, Mrs. Edward Tucker of Victor, and Mrs. W. W. Stephens of Albany, Oregon; three sons, Norman of Santa Cruz, Calif., Dr. Howard Jones of Hollywood, Calif., and Fred, Jr., Ex-'39, of Grand Lake, Colorado.

Henry C. Beeler

passed away at his home in Denver on May 27 after a three-months illness of arthritis of the spine.

Graduating from *Mines* in 1896 Mr. Beeler gained experience in assaying, research work, mine surveying and mine operation before entering the employ of the state of Wyoming in 1901 as state geologist and mine inspector which position he held until



HENRY C. BEELER

1909 when he resigned to do consulting work as mining engineer and geologist.

He maintained his headquarters in Denver while his work carried him throughout the United States, Canada and Mexico.

Mr. Beeler was a native of Pittsburgh, Pa. He was married in 1906 to Miss Nettie Ruff whom he met while on an assignment in Cheyenne, Wyoming. Mrs. Beeler survives him as does a son, Henry S. Beeler, Ex-'34, of Breckinridge, Texas, and a sister, Dr. Margaret Beeler of Denver.

PERSONAL NOTES

(Continued from page 36)

with his family. He is receiving mail through General Delivery there.

Dwayne M. Coleman, '49, Petroleum Engineer for Magnolia Petroleum Company, is, at present, being addressed Box 1550, Alice, Texas.

Milton E. Danitschek, '40, Petroleum Engineer for Utah Oil & Refining Company, receives mail at his home, 3653 South 5th East Street, Salt Lake City, Utah.

Robert P. Davison, '43, completed his course in Law at the University of Colorado this spring and is now associated with the firm of Holland & Hart, Attorneys, Equitable Building, Denver. His home address is 1071 Leyden Street, Denver 7.

Henry C. Estabrooks, '38, Mine Foreman, Tennessee Copper Company, Ducktown, Tenn., accompanied by his wife and children, Elizabeth 5 years of age, and Michael 3, spent a vacation in Denver and Golden last month.

Hugh Evans, Jr., '49, is now being addressed in care of Continental Oil Company, Box 787, Aransas Pass, Texas, where he is serving as Assistant Computer, Geophysical department.

Thomas E. Gaynor, Jr., '48, is employed as Engineer by the Idaho-Maryland Mines Corporation. His mailing address is Box 453-A, Glenwood Park, Grass Valley, Calif.

BIGNESS IS A RESULT

(Continued from page 20)

lingerie made of nylon, but you may be very sure that if price and quality are not competitive, the ladies will turn to silk, rayon, or in fact anything that better suits their fancy and their purse. If we are not successful in meeting the competitive requirements of the market place we may continue to be the only manufacturer, but we will have nothing but red figures on the balance sheet to show for it. And that is cold comfort indeed.

Low Costs Essential to Insure Large Market

With our new products it is essential that we strive for the largest market, not for the highest price or the highest profit. We introduced cellophane many years ago and costs of manufacture by the methods used then forced us to sell it at $2.65 a pound. It was used initially only in wrapping luxury items, such as perfumes, bath salts, and fancy candy boxes. Some purchasers even thought it valuable enough to keep in their safes. Today, as a result of technological improvements and increased volume, cellophane sells for around 50 cents a pound. Because of that low price, cellophane now protects the most commonplace articles and saves millions of dollars annually in eliminating waste and spoilage of food.

And so to strive for the largest market, at the lowest price that yields a reasonable return on our investment, is a policy which serves many ends. It is beneficial to the public in making available to them an ever-increasing flow of the goods and services they desire. It is beneficial also in creating new opportunities for employment, and, finally, it is profitable to us as a corporation and so provides our 100,000 stockholders with a return on their capital.

I have spoken about big business and about monopoly. Let me say a word about the laws that regulate them. We have had on our books for many years the *Sherman Anti-Trust Law.* The Du Pont Company is now and has always been heartily in favor of that law and the safeguards it provides for our system of free, competitive enterprise. *Unfortunately that law states an objective and prescribes no rules so that the ideology of enforcement is left to the shifting winds of political thought. This had led to continuing changes in interpretation as one court decision succeeds another. Unfortunately also, no practical statute of limitations applies,—so business frequently finds itself attacked for acts done many years ago in all good faith*

(Continued on page 46)

Publications For Sale by Superintendent of Documents, Government Printing Office, Washington 25, D. C. Remit by Money Order.

PROFESSIONAL PAPERS
U. S. Geological Survey

Professional Paper 142. The molluscan fauna of the Alum Bluff group of Florida, by Julia Gardner.

(a) Part I, Prionodesmacea and Anomalodesmacea. 1926 [1950]. pp. i-iv, 1-79, i-iii, pls. i-xv. **Price, 75 cents.**

(b) Part II, Astartacea, Carditacea, Chamacea. September 16, 1926 [1950]. pp. i-iv, 81-99, i, pls. xvi-xvii. **Price, 25 cents.**

(c) Part III, Lucinacea, Leptonacea, Cardiacea. September 18, 1926 [1950]. pp. i-iv, 101-149, i-ii, pls. xviii-xxiii. **Price, 40 cents.**

(d) Part IV, Veneracea, September 20, 1926 [1950]. pp. i-iv, 151-184, i-ii, pls. xxiv-xxviii. **Price, 35 cents.**

(e) Part V, Tellinacea, Solenacea, Mactracea, Myacea, Molluscoidea. June 5, 1928 [1950]. pp. i-iv, 185-249, i-iii, pls. xxix-xxxvi. **Price 50 cents.**

(f) Part VI, Pteropoda, Opisthobranchia, and Ctenobranchia (in part). November 1, 1937 [1950]. pp. i-iii, 251-435, i-v, pls. xxxvii-xlviii. **Price, $1.**

Professional Paper 214-D. Petrography of the island of Hawaii, by C. A. Macdonald. 1949. pp. i-iii, 51-96, pls. 11-14, fig. 1. **Price 35 cents.**
Professional Paper 216. Structural geology of the Hawthorne and Tonopah quadrangles, Nev., by H. G. Ferguson and S. W. Muller. 1949. [1950]. v, 55 pp., 15 pls., 10 figs. **Price, $2.**
Professional Paper 219. Geology and ore deposits of the La Plata district, Colo., by E. B. Eckel, with sections by J. S. Williams, F. W. Galbraith, and others. 1949 [1950]. vii, 179 pp., 29 pls. 50 figs. **Price, $2.50.**

Professional Paper 221-B. Larger Foraminifera from the Palau Islands, by W. C. Cole. 1950. pp. i-iii, 21-31, pls. 5, 6, fig. 1. **Price, 25 cents.**

Professional Paper 227. Pegmatite investigations in Colorado, Wyoming, and Utah, 1942-44, by J. B. Hanley, H. W. Heinrich, and L. R. Page. 1950. vi, 125 pp., 17 pls., 34 figs. **Price, $1.50.**

BULLETINS
U. S. Geological Survey

Bulletin 832. The crystal cavities of the New Jersey zeolite region, by W. T. Schaller. 1932 [1950]. viii, 90 pp., 32 pls. **Price, 45 cents.**
This report has been reprinted without change and with no increase in price. It is available only by sale.

Bulletin 944. Contributions to economic geology, 1943-47 [title page, contents, and list of illustrations for volume]. [pp. i-iv.] **Price, 5 cents.**
Bulletin 948-C. Chromite deposits of Boulder River area, Sweetgrass County, Mont., by A. L. Howland, E. M. Garrels, and W. R. Jones. 1949. pp. i-iv, 63-82, pls. 33-38, figs. 7, 8. [Processed.] **Price, $1.25.**

Bulletin 948-E. Preliminary report on corundum deposits in the Buck Creek peridotite, Clay County, N. C., by J. B. Hadley. 1949 [1950]. pp. i-iv, 103-128, i-ix, pls. 45-48, figs. 14-16. [Includes title page, contents, and list of illustrations for volume.] [Processed.] **Price, 60 cents.**
Bulletin 955-B. Structural control of the gold deposits of the Cripple Creek district, Teller County, Colo., by A. H. Koschmann. 1949. pp. i-iii, 19-60, pls. 3, 4. **Price, $1.25.**

The gold deposits described in this report occur as veins within or at the margin of a mass of fragmental rocks of volcanic and nonvolcanic origin of Miocene age. These fragmental rocks occupy a basin in pre-Cambrian igneous and metamorphic rocks that form the southeast end of the Front Range of the Rocky Mountains. The report analyzes the factors that controlled the localization of the known vein fissures and points out probable favorable areas for prospecting in unexplored parts of the Cripple Creek district.

Bulletin 955-C. Phosphate deposits of the Deer Creek-Wells Canyon area, Caribou County, Idaho, by Charles Deiss. 1949 [1950]. pp. i-iv, 61-101, pls. 5-7, fig. 4. **Price, 45 cents.**

Bulletin 958. Bibliography of North American geology, 1946 and 1947, by E. M. Thom, Marjorie Hooker, and R. R. Dunaven. 1949. iii, 658 pp. **Price, $1.50.**

The bibliography of North American geology, including paleontology, petrology, and mineralogy, for the years 1946 and 1947, lists publications on the geology of the continent of North America and adjacent islands, Panama, the Hawaiian Islands, and Guam. In addition to specific papers, it includes textbooks and general papers by American authors and those by foreign authors published in America.

Bulletin 960-C. Geology of tungsten deposits in north-central Chile, by J. F. McAllister and Carlos Ruiz F. 1948 [1949]. pp. i-iii, 89-107, pls. 21-27, figs. 8-10. **Price, $1.50.**

The tungsten deposits described are in north-central Chile near Salamanca in the Province of Coquimbo and around Vallenar in the Province of Atacama. They occur as moderately high temperature replacements in several of the more silicic facies of the Andean diorite complex within a few kilometers of its intrusive contact with the Porfiritica formation of Mesozoic andesitic rocks. Scheelite, in places stained with cuprotungstite, is the only tungsten ore mineral of the deposits with the exception of some wolframite at Salamanca. Gold and copper have been worked at several deposits. The vein minerals associated with much of the ore are black tourmaline, quartz sericite or white mica, pyrite, chalcopyrite, and supergene copper or iron minerals; and more rarely, amphibolite, magnetite, orthoclase, calcite, arsenopyrite, molybdenite, and galena.

Bulletin 960-F. Geology and manganese deposits of the Lucifer district, Baja California, Mexico, by I. F. Wilson and Mario Veytia. 1949 [1950]. pp. i-iv, 177-238, i-v, pls. 37-54, fig. 15. (Includes title page, contents, and list of illustrations for volume.) **Price, $1.75.**

Bulletin 963-A. Some mineral investigations in southeastern Alaska, by W. S. Twenhofel, J. C. Reed, and G. O. Gates. 1949. pp. i-iv, 1-45, pls. 1, 2, figs. 1-19. **Price, 40 cents.**

An introductory statement summarizes the mineral investigations by the Federal Government in southeastern Alaska from 1940 to 1944.
Bulletin 964-A. Manganese deposits of the Serra do Navio district, Territory of Amapa, Brazil, by J. Van N. Dorr II, C. F. Park, Jr., and Glycon de Paiva. 1949. pp. iv-ix, 1-51, pls. 1-4, fig. 1. **Price, 45 cents.**

Bulletin 965-A. Erosion studies at Paricutin, State of Michoacan, Mexico, by Kenneth Segerstrom. 1950. pp. i-vii, 1-164, pls. 1-7, figs. 1-73. **Price, $1.00.**

Bulletin 966-A. Geophysical abstracts 136, January-March 1949, by V. L. Skitsky and S. T. Vesselowsky. 1949. pp. i-iii, 1-93. **Price 25 cents.**

This quarterly serial gives abstracts of world literature on geophysics contained in periodicals, books, and patents. It deals with exploration by gravitational, magnetic, seismic, electrical, radioactive, geothermal, and geochemical methods and with underlying geophysical theory, research, and related subjects.

Bulletin 966-C. Geophysical abstracts 138, July-September 1949, by M. C. Rabbitt, V. L. Skitsky, and S. T. Vesselowsky. 1949. pp. i-iii, 167-251. **Price, 25 cents.**

Bulletin 966-D. Geophysical abstracts 139, October-December 1949, by M. C. Rabbitt, V. L. Skitsky, and S. T. Vesselowsky. 1950. pp. i-iii, 253-333. **Price, 25 cents.**

Bulletin 968. Bibliography of North American geology, 1948, by E. M. Thom, Marjorie Hooker, and R. R. Dunaven. 1950. iii, 309 pp. **Price, 60 cents.**

MAPS
U. S. Geological Survey

Maps are sold by the **Director of the Geological Survey, Washington 25, D. C.,** to whom remittances should be sent by money order. It is requested that, insofar as is practicable, **orders for maps be submitted in duplicate,** especially in the case of long lists. The retail prices are given; on an order amounting to $10 or more at the retail price, 20 percent discount is allowed.

NEW CENTER FOR MAP DISTRIBUTION

Beginning April 1, 1949, topographic and geologic maps of areas west of the Mississippi River may be obtained by addressing requests to the **United States Geological Survey, Denver Federal Center, Denver, Colo.** Maps of areas east of the Mississippi River should be ordered from Washington 25, D. C.

CALIFORNIA

Oil and gas investigations, preliminary chart 34. Lower Tertiary stratigraphy of Mount Diablo, Marysville Buttes, and west border of lower Central Valley of California, by Ralph Stewart. 2 sheets, each 52 by 41 inches. **Price $1 a set; no discount allowed.**

COLORADO

Oil and gas investigations, map 109. Geology and coal resources of the Durango area, La Plata and Montezuma Counties, Colo., by A. D. Zapp. 2 sheets, each 52 by 40 inches. Scale, 1 inch = ½ mile. **Price, $1 a set; no discount allowed.**

Oil and gas investigations, preliminary map 96. Stratigraphy and geologic structure in the Piedra River Canyon, Archuleta County, Colo., by C. B. Read, G. H. Wood, A. A. Wanek, and Pedro Verastegui Mackee. Scale, 1 inch = about ½ mile. 1 sheet, 40 by 49 inches. **Price, 80 cents; no discount allowed.**

KANSAS, COLORADO, AND OKLAHOMA

Oil and gas investigations, preliminary map 101. Pre-Pennsylvanian geology of southwestern Kansas; southeastern Colorado, and the Oklahoma Panhandle, by J. C. Maher and J. B. Collins. 4 sheets, each 34 by 43 inches. **Price, $1 a set; no discount allowed.**

NORTHERN APPALACHIAN BASIN

Oil and gas investigations, preliminary map 100. Early Silurian rocks of the northern Appalachian Basin, by Gordon Rittenhouse. 1 sheet, 33 by 54 inches. Scale, 1 inch = approximately 40 miles. **Price, 40 cents; no discount allowed.**

OHIO

Oil and gas investigations, preliminary map 99. Map of the Berea sand of northern Ohio, by Wallace de Witt, Jr. Scale, 1 inch = 3 miles. 1 sheet, 41 by 52 inches. **Price, 50 cents; no discount allowed.**

OREGON

Oil and gas investigations, preliminary map 97. Geology of the coastal area from Cape Kiwanda to Cape Foulweather, Oreg., by P. D. Snavely, Jr., and H. E. Vokes. Scale 1:62,500 (1 inch = nearly 1 mile). 1 sheet, 41 by 54 inches. **Price, 50 cents; no discount allowed.**

TEXAS

Oil and gas investigations, preliminary map 98. Geology of the Woodbine formation of Cooke, Grayson, and Fannin Counties, Tex., by H. R. Bergquist. Scale, 1:63,360 (1 inch = 1 mile). 2 sheets, each 41 by 54 inches. **Price, $1 a set; no discount allowed.**

WYOMING

Oil and gas investigations, preliminary map 107. Map of Washington showing test wells for oil and gas, anticlinal axes, oil and gas fields, pipe lines, unit areas, and land district boundaries, compiled by E. K. Keefer, J. D. Love, R. M. Larsen, and M. W. Allen. Scale, 1:500,000. 2 sheets, 41 by 53 inches and 41 by 25 inches. **Price, $1 a set; no discount allowed.**

Oil and gas investigations, preliminary map 92. Geology of the Glendo area, Wyo., by J. D. Love, N. M. Denson, and Theodore Botinelly. 2 sheets, each 40 by 49 inches. **Price, 80 cents per set; no discount allowed.**

CIRCULARS
U. S. Geological Survey

Circular 63. The chromograph, a new analytical tool for laboratory and field use, by R. E. Stevens and H. W. Lakin. December 1949. 11 pp., 4 figs. [Processed.] Free on application to the Director, Geological Survey, Washington 25, D. C. This report describes the chromograph, a new device for making confined spot tests on reagent papers, whereby ions in solution may be estimated. The device is used to confine areas of definite size on a strip of reagent paper fed through the apparatus and to control automatically the rate of flow of a measured volume of test solution through the confined spot.

Circular 69. Investigation of bedrock depths by electrical-resistivity methods in the Ripon-Fond du Lac area, Wis., by H. C. Spicer. March 1950. 37 pp., 8 figs. [Processed.] Free on application to the Director, Geological Survey, Washington 25, D. C. Resistivity measurements are here reported for an area in east-central Wisconsin that lies mainly in Fond du Lac County. The geological materials overlying the pre-Cambrian rocks are drift, dolomites, sandstones, siltstones, and limestones. The measurements were made with the Earth Resistivity Apparatus, an instrument of the Gish-Rooney type, and the pre-Cambrian rocks were identified on the apparent-resistivity curves by their higher resistivity.

Circular 73. Training geologists: A United States Geological Survey viewpoint, by H. M. Bannerman and W. T. Pecora. March 1950. 6 pp. [Processed.] Free on application to the Director, Geological Survey, Washington 25, D. C. This report summarizes the requirements deemed essential to a career as a geologist in the United States Geological Survey.

Circular 74. A glossary of uranium- and thorium-bearing minerals, by J. W. Frondel and Michael Fleischer. April 1950. 20 pp. [Processed.] Free on application to the Director, Geological Survey, Washington 25, D. C. This circular, consisting of a list of uranium and thorium minerals, their chemical formulas, and information on series relationships, is part of the work on radioactive materials being done by the Geological Survey on behalf of the Atomic Energy Commission.

U. S. Bureau of Mines

MINERS' CIRCULAR

47. Accident statistics as an aid to prevention of accidents in bituminous-coal mines. Coal-mine accident-prevention course. Section 1, revised February 1948. 42 pp. 13 figs. 15 cents. First of series of miners' circulars designed to help mine officials and supervisors in studying the tools and techniques of accident prevention.

HANDBOOK

Handbook on coal sampling, by N. H. Snyder. 10 pp. 1 pl. 10 cents. Revision of T. P. 133. Directions for sampling coal for shipment or delivery, by G. S. Pope, revised by N. H. Snyder. Describes in detail the various steps necessary in collecting representative samples.

HANDBOOK

Safety course for bituminous-coal miners. A handbook for miners. 253 pp. 58 figs. 75 cents. This handbook describes the principal hazards of coal mining and methods of dealing with each.

MINERALS YEARBOOK, 1947

Copies of the Minerals Yearbook may be purchased for $4.25 (in the United States) from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.
Orders for this publication should be sent directly to the superintendent of Documents, and NOT to the Bureau of Mines.

The Minerals Yearbook, authoritative publication on the production, distribution, and consumption of mineral commodities, present in detail basic data of the mineral industry during its year of peak activity. A limited number of copies are for sale. 1616 pp. 109 figs. 84 chapters.

TECHNICAL PAPERS
U. S. Bureau of Mines

706. Analyses of Iowa coals. 65 pp. 2 figs. 25 cents. Thirty-third of a series of technical papers giving analytical data showing composition and quality of coals. Discusses coal fields, mining methods, and production, distribution, and use of coal.
711. Carbonizing properties of No. 5 Block-bed coal from No. 5 mine, Montcoal, Raleigh County, W. Va., and of Pocahontas No. 6-bed coal from Birdseye mine, Sewell, Fayette County, W. Va., by J. D. Davis, D. A. Reynolds, R. E. Brewer, D. E. Wolfson, and W. H. Ode. 65 pp. 42 figs. 20 cents. Provides data needed to determine the suitability of No. 5 Block coal from Raleigh County, a high-volatile A coal, and Pocahontas No. 6 coal from Fayette County, a medium-volatile coal.
712. Carbonizing properties of Beckley-bed coal from Stanaford No. 1 mine, Mount Hope, Raleigh County, W. Va., by J. D. Davis, D. A. Reynolds, R. E. Brewer, D. E. Wolfson, W. H. Ode, and G. R. Birge. 38 pp. 19 figs. 15 cents. This report gives results of tests at various temperatures.
713. The coal industry of Brazil. Part 1. General economy, production, and marketing, by John E. Good, Alvaro Abreu, and Thomas Fraser. 38 pp. 11 figs. 20 cents.
715. A method of resolving oil-field-waste emulsions, by J. W. Horne and J. Wade Watkins. 47 pp. 23 figs. 50 cents. Describes study undertaken to find a method of recovering a valuable oil from pit-waste emulsions and to discover additional sources of microcrystalline (high-melting-point) waxes.
717. Asphalts from Rocky Mountain crude oils: Laboratory preparation and comparison, by K. E. Stanfield and Rethel L. Hubbard. 77 pp. 22 figs. 25 cents. Discusses the preparation and testing by standard methods of a series of straight-run asphalts prepared from each of 25 different crude oils. In all, 117 asphalts were prepared; each was analyzed by separation into three constituents—asphaltenes, oils, and resins.
718. Chemical and thermomagnetic studies on iron catalysts for synthesis of hydrocarbons, by H. Pichler and H. Merkel, translated by Ruth Brinkley, with preface and foreword by L. J. E. Hofer. 108 pp. 56 figs. 25 cents. Contains many of the data supporting recent German views on the importance of carbides in iron Fischer-Tropsch catalysts.
719. Investigation of coal deposits in the Fairview and Coal City Basins, Coosa field, St. Clair County, Ala.; reserves, petrography, and chemical properties of coals; washability characteristics of coal from Fairview bed; and geology of area, by Albert L. Toenges, Louis A. Turnbull, Theodore R. Jolley, Joseph J. Shields, H. L. Smith, H. J. O'Donnell, H. M. Cooper, R. F. Abernethy, B. W. Gandrud, H. L. Riley, and Howard E. Rothrock. 104 pp. 24 figs. 50 cents.
720. Carbonizing properties of Lower Bunner coal from No. 56 mine, Dante, Russell County, Va., by J. D. Davis, D. A. Reynolds, R. E. Brewer, W. H. Ode, B. W. Naugle, and D. E. Wolfson. 45 pp. 23 figs. 20 cents. One of a series of papers describing the carbonizing properties of coals from American coal beds. This report gives results of carbonization and assay-distillation tests.
721. Reserves, petrographic and chemical characteristics, and carbonizing properties of coal occurring south of Dry Fork of Minnesota Creek, Gunnison County, near Paonia, Colo., and the geology of the area, by Albert L. Toenges, James J. Dowd, Louis A. Turnbull, J. D. Davis, H. L. Smith, and Vard H. Johnson. 47 pp. 17 figs. 30 cents. An area south of Dry Fork of Minnesota Creek, Gunnison County, near Paonia, Colo., was investigated by diamond drilling to determine whether the coal was suitable for the manufacture of metallurgical coke and the reserves of coal in the area.
722. Composition of Petroleum: Properties of distillates to 600° F., by W. C. Holliman, H. M. Smith, C. M. McKinney, and C. R. Sponsler. 55 pp. 16 figs. 20 cents. Presents data concerning the determined properties and computed functions of 10 selected crude oils and their distillate fractions and describes the apparatus and methods of testing.
723. Semi-pilot-plant tests on treatment of manganese-silver ores by the dithionate process, by S. F. Ravitz, A. E. Back, K. E. Tame, W. F. Wyman, and J. F. Dewey. 45 pp. 7 figs. 20 cents.
724. Preparation characteristics of Illinois coals, by William L. Crentz. 112 pp. 63 figs. 30 cents.
725. Investigation of lower coal beds in Georges Creek and north part of Upper Potomac Basins, Allegany and Garrett Counties, Md.: Reserves, petrographic and chemical characteristics of coals, and stratigraphy of area, by Albert L. Toenges, Louis A. Turnbull, Lloyd Williams, H. L. Smith, H. J. O'Donnell, H. M. Cooper, R. F. Abernethy, and Karl Waage. 142 pp. 31 figs. (With maps in box.) $4.75.
726. Carbonizing properties of Thick Freeport and Pittsburgh coals from Pennsylvania, Elkhorn coal from Kentucky, and America and Mary Lee coals from Alabama, by J. D. Davis, D. A. Reynolds, B. W. Naugle, D. E. Wolfson, and G. W. Birge. Application of BM-AGA carbonization test results to byproduct practice, by C. H. Flickinger and J. P. Graham. 58 pp. 27 figs. 20 cents.

BULLETINS
U. S. Bureau of Mines

383. Contributions to the data on theoretical metallurgy. III. The free energies of vaporization and vapor pressures of inorganic substances, by K. K. Kelley. 132 pp. 30 cents.
468. An index of oil-shale patents: A compilation of United States and foreign patents relating to the mining and retorting of oil shale and the recovery of its products, compiled by Simon Klosky. 650 pp. 595 figs. $1.50.
469. The national fuel-efficiency program during the war years 1943-45, by J. F. Barkley, Thos. C. Cheasley, and K. M. Waddell. 100 pp. 16 figs. 35 cents.
475. Burning Washington coals on different types of domestic stokers in the same hot-water boiler; comparison with hand and oil firing, by H. F. Yancey, K. A. Johnson, J. B. Cordiner, Jr., A. A. Lewis, and K. E. Lunde. 96 pp. 18 figs. 30 cents.
476. Contributions to the data on theoretical metallurgy. X. High-temperature heat-content, heat-capacity, and entropy data for inorganic compounds, by K. K. Kelley. 241 pp. 45 cents. Reviews available high-temperature heat-content and specific-heat data for inorganic substances and gives tables and algebraic expressions for their representation.
477. Contributions to the data on theoretical metallurgy. XI. Entropies of inorganic substances. Revision (1948) of data and methods of calculation, by K. K. Kelley. 147 pp. 30 cents. Gives entropy values at 298.16° K. of 800 elements and inorganic compounds, with enough explanation of methods of calculating entropies to make the results comprehensible.
479. Iron blast-furnace slag: Production, processing, properties, and uses, by G. W. Josephson, F. Sillers, Jr., and D. G. Runner. 304 pp. 111 figs. 75 cents. Once considered a waste product of the iron and steel industry, iron blast-furnace slag has been developed into a useful raw material and now is widely used in road construction, for railroad ballast, as aggregate in concrete, and for other purposes.
481. Safety in the mining industry, by D. Harrington, J. H. East, Jr., and R. G. Warncke. 102 pp. 29 figs. 40 cents. Discusses the various causes of fatal and nonfatal accidents in mines and quarries, with known preventive measures.
483. High-sulfur Pittsburgh coal: Upgrading in southwestern Pennsylvania and northern West Virginia, by Thomas Fraser, W. L. Crentz, and A. L. Bailey. 69 pp. 10 figs. 56 data sheets. 30 cents. Deals with upgrading to metallurgical standards of the large reserves of high-sulfur Pittsburgh coal remaining in southwestern Pennsylvania and northern West Virginia.
488. The isosynthesis, by Helmut Pichler and Karl-Heinz Ziesecke, translated by R. Brinkley; technical revision by N. Golumbic. 30 pp. 19 figs. 20 cents. Is a translation of a German manuscript describing an investigation of the synthesis of branched-chain hydrocarbons that was carried out in the laboratories of the Kaiser Wilhelm Institute for Coal Research.
489. Proceedings: Fifth International Conference of directors of mine safety research, compiled by H. P. Greenwald. 223 pp. 100 figs. $1.25. Comprises papers delivered at the Fifth International Conference of directors of mine safety research held at Pittsburgh, Pa., in September 1948.

The following publications are free, only one copy to person applying. Write to Section of Publications, U. S. Bureau of Mines, Washington, D. C.

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U. S. Bureau of Mines

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MMS 1701. Secondary copper and brass in 1947. 5 pp.
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International coal trade, 1949. Supplement 1, No. 4. Index to international coal trade, vol. 17, 1948. 40 pp.
MMS 1741. Metal mining in Washington, 1948—final annual figures. 5 pp.
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U. S. Bureau of Mines

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7492. Hazards of black blasting powder in underground coal mining, by D. Harrington and R. G. Warncke. 29 pp. 3 figs. This circular outlines precautions designed to increase the safety factor in using this explosive.
7493. Major disasters at metal and nonmetal mines and quarries in the United States (excluding coal mines), by John Hyvarinen, Leland H. Johnson, and D. O. Kennedy. 26 pp. Contains a chronological list of accidents since 1869.
7494. Safe electrical practices in two Arizona open-pit mines, by J. Hyvarinen and A. D. Look. 18 pp. 18 figs.
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7497. Mining practices at the Harrington-Hickory mine, Beaver County, Utah, by Paul T. Allsman. 15 pp. 1 fig. Describes how a small lead-silver-zinc mine in Beaver County, Utah, operated efficiently and economically during and after World War II.
7498. Fire-fighting facilities at four Pennsylvania bituminous-coal mines, by G. W. Grove and O. V. Simpson. 17 pp. 34 figs.
7499. Reopening and developing a small red-iron-ore mine, Gadsden, Ala., by John C. Feeley, Jr. 28 pp. 29 figs.
7500. Prospect drilling for phosphates in Florida, by John C. Feeley, Jr. 15 pp. 22 figs. Describes methods used by Florida phosphate-mining companies to determine the size and quality of deposits.
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7502. Mining methods and costs at the Atwood copper mine, Lordsburg mining district, Hidalgo County, N. Mex., by Walter R. Storms. 11 pp. 5 figs.
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7504. Coproducts of coke in the United States, 1919-47, by J. A. DeCarlo and J. A. Corgan. 31 pp. 4 figs.
7505. Report of Petroleum and Natural-Gas Division, fiscal year 1945, by R. A. Cattell and others. 22 pp. 18 figs. Reviews work done by Petroleum and Natural-Gas Division during fiscal year.
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7507. Mining methods and costs at the Kearney zinc-lead mine, Central mining district, Grant County, N. Mex., by Walter R. Storms and Jerry W. Faust. 11 pp. 9 figs.
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REPORTS OF INVESTIGATIONS
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4440. Pilot-plant concentration of Arkansas aluminum ores, by S. M. Runke, E. G. Howe, J. S. Kennedy, and H. Kenworthy. 38 pp. 11 figs.
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4449. Preliminary ceramic tests of clays from seven Pacific Northwest deposits, by Kenneth G. Skinner and Hal J. Kelly. 59 pp. 47 figs.
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4452. Filled-sink iron deposits in Crawford, Dent, Franklin, and Texas Counties, Mo., by Leon W. Dupuy and Homer J. Ballinger. 23 pp. 15 figs.

SOME TECHNOLOGICAL AND ECONOMIC PROBLEMS OF THE STEEL INDUSTRY

(Continued from page 8)

maintenance of its position. More hundreds of millions of dollars will be required.

The Sulphur Problem

In another sector of the field of raw materials there is an additional problem which is requiring attention. It originates in the domain of coal. The sulphur content of many of the good coking coals, upon which the steel industry is coming to depend in increasing measure for its metallurgical coke, is higher than that of much of its earlier supplies. If sulphur is to be held within desirable limits, this means that progressively more and more work must be done to control it somewhere, or perhaps several somewhere along the line of integrated steel production.

Already large sums of money have been spent for the washing or beneficiation of coal, particularly that which comes from mechanized mines, —and treatment in these early stages on a wider scale is indicated. As a part of the over-all attack on the problem, in some instances processes have been installed for the desulphurization of coke oven gas, and methods are on trial for the reduction of the sulphur content of molten iron, and finally of heats of steel. All of these processes entail expenditures and costs, but they are real technical problems which have strong economic implications, and must be resolved. They are being resolved.

Industrial Waste Problems

Anyone who has been following closely the affairs of industry during the past decade or two has certainly been impressed with the variety of problems encountered. They arise in every corner of business, and steel is not an exception. Right now, in the interest of incorporating some of that variety, we mention the formidable task involved in the handling of industrial wastes. The subject is an old one, worn smooth by agitation, discussion, and legislation. But it has new aspects, both technical and economic, and is actively in our midst. For many years, during which municipalities throughout the country generously polluted the inland waters with sewage, the relatively minor share of contamination contributed by industrial wastes, had it been completely eliminated, could hardly have made a dent in the over-all condition.

Regulatory Measures

Moreover, the usual regulatory measures proposed by public authorities were spotty, covered only parts of the field, and would have imposed financial burdens on some parts of industry while others continued unaffected. Such discrimination was considered unfair, as the penalizing of costs in one area, as against those in another, resulted in competitive disadvantage. More recently, however, comprehensive regulations have been promulgated, applying to cities, towns, and industries, so that major as well as minor sources of contamination might be corrected. Under these conditions industry is doing its share, contributing to the general clean-up in step with the others, and paying some very large bills to cover its share of the expense, with more to follow.

Atmospheric contamination has now forged to the front as a very lively subject, not new, but with renewed emphasis. Industry has been taking care of cases falling within this field, however, authorities are requesting that additional attention be devoted to the control of gases and particulate matter escaping into the air. Some enthusiasts have gone to extreme lengths in their recommendations, so much so that water vapor and nitrogen are about the only constituents of off-gases which have not been the objects of criticism. Can you imagine a fully integrated steel plant operating as a closed system? Assuming that the matter eventually will be reduced to a rational basis and held within the realms of reason, industry may still be faced with some formidable projects which will tax severely both its ingenuity and its funds. In the steel industry alone, the handling of all condemned waste products, solid, liquid, and gaseous, could require the expenditure of more than a few hundreds of millions of dollars for equipment intalled, to which would be added the continuing expense of operating costs.

Industrial Pensions

Economic problems other than those which directly involve technology are in ample supply. One of the most prominent at the moment resides in the matter of industrial pensions and social benefits. Here is an economic problem of noteworthy magnitude because of the substantial expense it entails. A large part of the steel industry, following a major labor disturbance a few months ago, negotiated a settlement of the difficulty in terms by which a greatly increased financial burden was assumed.

Pension plans and those relating to social benefits were by no means newcomers to the industrial scene. Many of them had been in effect for long periods of years prior to 1949. Industry was thus not startled by the sudden advent of a noval idea nor by one which it had not long since practiced and endorsed in priciple. There was reason, however, to discuss the merits of contributory and non-contributory pensions, to weigh the respective advantages of both schemes, and to look prudently into the prospective costs as against the ability of industrial resources to carry the load.

At this late date we are not pausing to debate the broad aspects of social security, such as the extent to which the individual American worker, in a spirit of self-reliance, wishes to assume responsibility for his future competence and welfare, or how much of the obligation reasonably rests with his employer, or whether additional recourse in such matters should be taken to the government, in the interest of enlarging measures which bear the brand of state socialism. A decision pertinent to the current aspects of the subject has already been made, certain plans are in process of adoption, and the financial problem has been dealt into the hands of the steel industry.

What sort of complexion does it present? The answers may vary from company to company, depending upon the manner in which the necessary funds are provided. One characteristic of pensions and social benefits is that the obligation to pay them does not disappear simultaneously with lowered earnings or profitless operations, nor does the need become less in periods when business is shrinking.

Any pension plan, to be worthy of the name it bears, must remain solvent and function in good times and in bad. Payments must be made when due. Hence there is the necessity of providing some reserve funds, over and beyond those required for current disbursements under the plan, so that it may remain operative under all conditions. A pension plan has liabilities arising from past, as well as future, service credits of the employes.

It is apparent that the financial problem here posed must be handled with as much wisdom and foresight as can be brought to bear. It is likewise understandable that the amount of money involved, per annum, may depend not only upon the number of employes for which a company is responsible, but also upon the particular measures adopted to assure the continuing validity of the whole scheme.

Pensions Create Heavy Burden

As an example of the order of magnitude of the expense, we mention the proposed method of handling the matter as developed by United States

Steel. It has been discussed recently in open hearings in Washington and has been presented to all of the stockholders of the Corporation. The best estimates, based upon actuarial studies, indicate that the annual cost of the proposed insurance and pension plans will be $78,000,000, which is $67,500,000 more than the yearly amount provided heretofore by United States Steel for insurance and pensions. Without attempting to apply the $78,000,000 sum as a precise measuring stick to the steel industry in this matter, but even by using it as a very rough approximation, one can raise visions of an increased total annual expense in excess of two hundred million dollars for the primary steel producing group alone. Other groups will add their appropriate shares.

The items we have mentioned thus far, namely, the development of wholly new ore mines, the activities involved in the treatment of taconite ores, the beneficiation of coking coal and the control of sulphur, measures for the handling of industrial wastes to minimize contamination of streams and of the atmosphere, and the new plans for pensions and social benefits, add up to an impressive financial total. This is for expenditures which already are under way and must continue into the future as the programs to which they are related come into full bloom. No one can say right now what the appropriate figure is, but a guided guess can easily arrive somewhere between three and four billion dollars. Even at that, the list of economic problems here recounted is far from complete, as there are many other items which demand attention. They too will require funds.

A few months ago, after taking stock of the existing situation and appraising its manifold needs as carefully as possible, various units of the steel industry adjusted and moderately increased the prices of their products. What happened? With inordinate haste a political hue and cry was raised, judgment was passed prior to the ascertainment of facts, and a public hearing by senatorial committee was arranged. The people and the national economy, it was said, must be protected against such unwarranted action! Of what magnitude was the sum of money which caused the outburst? Assuming that the entire finished annual output of the steelmakers carried the average increased price of approximately four dollars per ton, the added gross amount the trade would be asked to pay was of the order of two hundred and forty million dollars. It is amazing that any such figure should attract

(Continued on page 46)

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SOME TECHNOLOGICAL AND ECONOMIC PROBLEMS OF THE STEEL INDUSTRY

(Continued from page 44)

unfavorable attention in Washington, where taxpayers' money by the billion is appropriated for diverse purposes, without serious qualms.

We have been working up to the point of saying we thought that the steel industry needed some additional money to assist in financing the projects which have been cited as examples in this discussion. There are many other items, omitted but of considerable significance, which have increased expenses and added to costs. But there is one more subject which should be added to our present list because of its many-sided importance, including that of its economic bearing. The steel industry, if it is to discharge its obligations to its customers, and likewise function as a major reliance of the nation in periods of great emergency, must be progressive, modernly equipped, of ample size, solvent, and altogether a world-leader in its field.

To Provide For Industrial Expansion

In many quarters, these days, there is earnest discussion of an over expanding American economy and of the necessity for faith in the future. Within recent years the steel industry has spent approximately two and one half billion dollars in rehabilitation, modernization, and expansion. The annual ingot capacity of the country has been brought close to a hundred million tons, and additional finishing, as well as anterior facilities, designed to meet the exacting demands of the trade, have been installed. Such measures, assuredly, have not sprung from a defeatist attitude nor do they indicate a lack of faith in the future. There is more to be done; always the need for more modernization, and, to meet the changing needs of the times the prosecution of rationally determined programs of expansion.

That money is required for such projects, as well as for the others which have been enumerated, is readily apparent. Where is the money to be obtained? The financial people tell us that one of the logical sources, risk capital, as usually furnished by individuals or groups who wish to invest in industrial enterprises so that their savings may produce a reasonable return, is running dry. During fairly recent years, the investment of risk capital through the medium of stock issues has declined to a relatively small portion of its former volume. The heavy burden of taxation laid by agencies of government upon individuals, as well as upon business concerns, has discouraged the investor because he has come to feel that the emphasis is altogether too strongly on the word, risk.

Moreover, policies which persistently attack the idea that a business should make a profit have dampened the enthusiasm of those who normally would be glad to become partners. Advocates of socialistic systems, or the welfare state, along with others who have their own purposes to serve, look with glassy eyes upon profits which represent five, six, or seven cents on each dollar of sales. They profess to consider them, or at least to refer to them publicly as excessive, unconscionable, and fantastic. It would seem that, in accordance with such philosophy, the stockholder, who has helped to make industry and employment possible, should be entirely forgotten in the struggle for the pennies remaining from the corporate sales dollar!

Under the circumstances, the business enterprise which needs funds for its necessary projects may go into debt by borrowing money, if it considers such procedure wise, or it may use what is left of its net earnings. As prudence demands that debt be kept within safe limits, it is desirable that recourse be taken, at least in part, to financing from earnings. The important point in this connection is that there be some earnings with which to work, for otherwise industry has on its hands an economic problem which defies ready solution.

Industrial Welfare National Concern

There is not a citizen of the United States who does not have a deep concern in the prosperity and welfare of our whole industrial organization. It is a national asset of priceless value, in peacetime or in war. Experience within the memory of all of you has demonstrated that fact. An estimated eighteen million stockholders should have an interest in every measure which affects business, and more than that many employes, who are integral parts of the industrial fabric, should be alert to the fact that the problems of industry are likewise their problems.

The industrial structure of the country is not strengthened by having industry serve as a political whipping-boy, nor is the ultimate interest of any individual fostered by making private competitive enterprise weak and ineffective. You, as a select group of employes, citizens, and perhaps stockholders, can do much to assist in the solution of industry's problems, technical and economic, by providing a deal of understanding, and an atmosphere of constructive cooperation.

BIGNESS IS A RESULT

(Continued from page 39)

and with the best legal advice available.

I do not want to leave the impression that business, whether large or small, has never made mistakes. *A business is a group of people, subject to the same human frailties as people in any sphere of activity.* We must not let the occasional error blind us to the overriding benefits our industrial system has brought. That system has made America the greatest nation on earth with the highest standard of living for its people. Its free development will carry us to new heights.

Economic Progress Means Prosperous America

All of us want economic progress. We all want a stronger America—a more prosperous America—an ever better place in which to live. The benefits of our economy are spread among all our people, perhaps not so widely as we would like, but nevertheless more widely than in any other country.

But as a nation we are not content to stay put. We are eager to push ahead — to reach ever higher — to spread the benefits of our productive genius ever farther.

If we are to do so, we must not deny the experience of the past. This nation has grown strong by allowing the forces of the market place to rule —the business laurels falling to whoever is able enough to win them, the law present to insure fair play. I do not see that there is any tenable alternative. *In the national interest no steps must be taken that penalize success, or that discourage the efficient producer from producing.* We dare not hobble the willingness of a business to venture by refusing it the fruits of its success or by holding out the doubtful privilege of government regulation when that success has been achieved. We can preserve competition only by allowing it to operate, and so to make effective the votes of millions of satisfied customers.

It is vital to the strength, happiness and future standard of living of the people of this country that we permit the free exercise of this simple economic function. *Small business, as such, must be encouraged to grow larger. And large business, capable of taking the great risks involved in the difficult industrial tasks, must not have its sinews weakened by political attrition.* We as a nation cannot produce if the means to do so are withheld from us, and when we can no longer produce, we as a nation will lie prostrate before the world.

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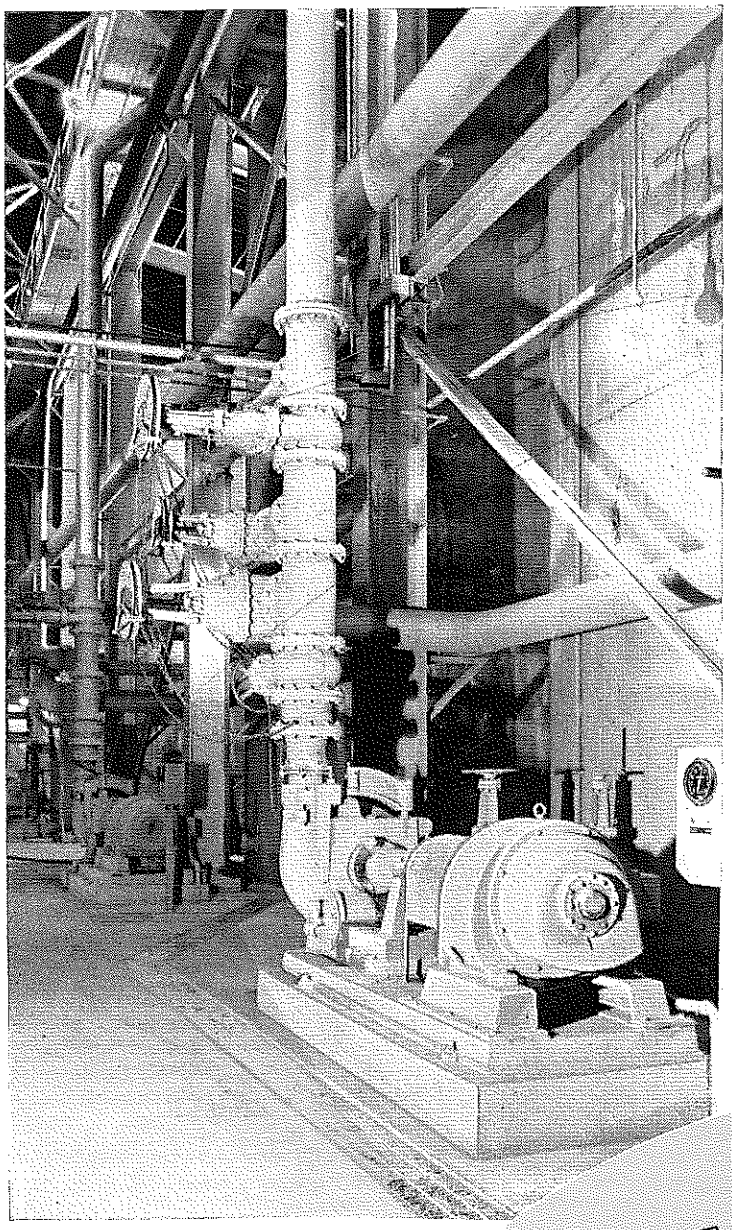

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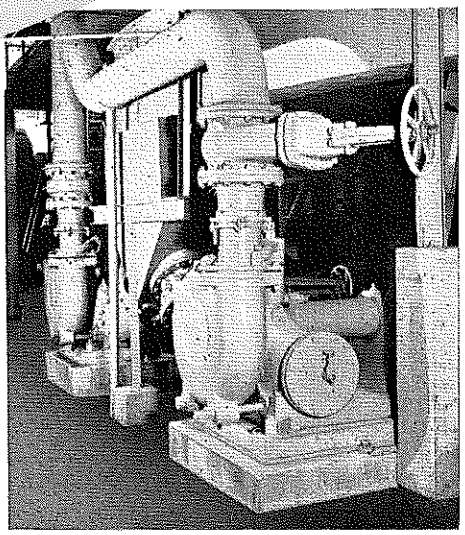

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