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ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: CALUMET AND ARIZONA

ALTERNATE NAMES:

PINAL COUNTY MILS NUMBER: 547F

LOCATION: TOWNSHIP 8 S RANGE 18 E SECTION 10 QUARTER N2

LATITUDE: N 32DEG 45MIN 30SEC LONGITUDE: W 110DEG 29MIN 21SEC

TOPO MAP NAME: OAK GROVE CANYON - 7.5 MIN

CURRENT STATUS: UNKNOWN

COMMODITY:

UNKNOWN

BIBLIOGRAPHY:

ADMMR MAGMA CHIEF MINE FILE

KUHN, E., ECONOMIC GEOLOGY VOL. 36, 1941,

P. 512-538

CALUMET & ARIZONA MINING COMPANY

USGS Bull. 213 p. 152

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ABM Bull. 125

ABM Bull. 129

Arizona Mining Journal 5/1918, p. 15

" " " 8/1918, p. 20

" " " 9/1918, p. 14, 20

" " " 12/15/22, p. 10, 19

See: Mineralogical Record, Page 266 "Bisbee" ARIZONA-III

Production of Copper Queen and Calumet & Arizona 1-1916

As previously stated the production of these two properties for 1915 was approximately as follows:

Copper Queen, 125,000,000 pounds.
Calumet & Arizona 75,000,000 pounds.
These figures are substantial increases over last year.
Both companies treat custom ore.

CALUMET & ARIZONA

The Calumet & Arizona Mining Co. has made plans for the expenditure of a million and a half in new construction work the present year. This work entails the building of new plants and additions to plants in and about Douglas, Ariz. The work will be undertaken as soon as possible and will be rushed. A sulphuric acid plant, with capacity of 100 tons, the product of which will be 60 per cent sulphuric acid, will go up. The purpose of erecting this plant is to recover the sulphuric acid from the smelter fumes and will mean the saving of many thousands of dollars each year to the Calumet & Arizona. The plant is to be built in the vicinity of the smelter at Douglas. The acid recovered will be sold to the New Cornelia Copper Co., which will use sulphuric acid in considerable quantities as soon as mining operations are gotten well under way.

On account of the erection of the acid plant it will also be necessary to build a large addition to the power plant at the smelter and it is likely that another reverberatory furnace will also be added. There are four of these furnaces at the present time. The fifth furnace will be constructed expressly for the treatment of low-grade ores. Calumet & Arizona has a very large tonnage of low-grade ores which cannot be profitably treated with copper at 12 cents or below but on which a considerable profit can be made with the metal market as it is a present. The company has not capacity required for treating these ores now, however. The installation of an electric pump at the Junction shaft is also contemplated. This pump will receive its power from the Douglas smelter's power plant.

April 1916

Calumet & Arizona

This company produced in 1915 65,688,910 pounds of copper; 1,331,017 ounces of silver and 35,263 ounces of gold.

April 1916

An official of the Calumet & Arizona Mining Company in writing to a stockholder of the company has the following to say of the New Cornelia Copper Company: "If you will refer to the annual statement of New Cornelia Copper Company for the year ending December 31, 1915, you will find that the time therein fixed when it is expected the leaching plant of that company will be in operation is June 1, 1917. While we may have had hopes that we might anticipate this time, you cannot expect that under the manufacturing conditions of the present year and the transportation difficulties, that the plant can be in operation as early as in February, and I believe that we should all feel well satisfied if it is not deferred to a date later than June 1. From the commencement of operations, the recovery should be not less than 3,000,000 pounds of copper a month. Regarding the possible absorption of New Cornelia Copper Company by Calumet & Arizona Mining Company, it is impossible to say what the policy may be. Should the tax on corporations continue to increase and especially on that part of their income received from dividends of other corporations, which now pay a double tax, it may be a matter of economy to transfer all property to Calumet & Arizona Mining Company and dissolve New Cornelia Copper Company. This matter has not been considered. Calumet & Arizona Mining Company owns approximately 76 per cent of the stock of New Cornelia Copper Company and about the same proportion of the bonds. The stockholders of Calumet & Arizona Mining Company will, therefore, benefit by three-quarters of the earnings of that company."

The Shannon Copper Company is now earning better than \$3 per share per annum on its 300,000 shares. For the first 9 months of this year profits were \$625,000, which is more than sufficient to meet a full year's dividend requirements. At current market prices of around 9 for the stock, earnings are at the rate of over 33 per cent on the selling price and on the basis of dividends now being paid, Shannon yields 22 per cent on the investment. The company recently had on hand \$1,200,000 in cash and receivables. The bulk of the earnings can therefore be paid out in dividends. Shannon's position has also been strengthened by the reduction of bonded debt. There now remains in the hands of the public only about \$125,000 Shannon Arizona Railway bonds out of the original issue of \$600,000.

March 1916

CALUMET & ARIZONA

The Calumet & Arizona company has declared a quarterly dividend of \$2 a share.

The company paid \$1.25 three months ago.

The property is now on an \$8 per annum dividend basis against dividends paid in 1915 of \$3.25 a share. Considering that actual earnings of the company for the 1915 year were in the vicinity of \$10 per share and the prospect for the current year is that earnings will

be materially larger on each share of the company outstanding, it is obvious that an approximation to the substantial dividends paid in 1907 will be made. In 1907 \$13.50 was paid in dividends, which was the last year that the company has declared anything over \$5 per share.

On 25-cent copper it is estimated that Calumet & Arizona has an earning power of not far from \$17 per share per annum. This is based on an estimate of 65,000,000 pounds of copper produced during the year. As production during 1915 amounted to 62,500,000 pounds it would not be a great surprise to see the 65,000,000-pound mark passed during the present year, which of course, would increase the earnings per share.

The market, apparently, has not taken into consideration the earning power of the New Cornelia mine in which Calumet & Arizona has an equity of 76 per cent. This property is expected to produce 30,000,000 pounds of copper per annum at a cost of about 7 cents. On the present market for the metal the earnings of the company will play no small part in materially increasing the earning power per share of Calumet & Arizona.

The New Cornelia mine was purchased and developed entirely out of earnings of the Calumet & Arizona company, which is a factor that has an important bearing on the dividends to be received from Calumet & Arizona in the future.

Calumet & Arizona 6-1916

It is reported that the Calumet & Arizona recently authorized expenditures for improvements at the smelter at Douglas, Ariz., which will involve a large sum of money.

The most important addition will be the construction of an acid plant that is to be located east of the present roasters. This acid plant will have a capacity for producing daily 200 tons of sulphuric acid and it will consume a large amount of sulphur fumes.

The operation of this plant will materially lessen the sulphur gases which have previously come from the Calumet & Arizona smelter and alleged to be injurious to certain vegetation and trees in that vicinity.

Two reverberators will be provided to the east of the three reverberators now in use. This will greatly increase the present capacity.

The roasting plant is to be doubled in size, 12 new roasters being provided in the new plans for enlargement.

The power house was planned to be enlarged. A new blower engine will be added and the electric plant increased.

One new converter will be added to the eight now in commission.

Thirty per cent additional capacity will be provided in the sampling works and a like increase is planned for the storage bins which receive the ores when they arrive from Bisbee and from other districts from which custom ores are received.

Calumet & Arizona 11-1916

Calumet, Mich.—Directors of the Calumet & Arizona will leave for the mine this week on an annual tour of inspection. They will also visit New Cornelia. New Cornelia's plant will be in operation by the first of May, next year, if the manufacturers do not delay in furnishing material needed.

Calumet & Arizona, which has applied for listing on the New York exchange, announces that the Bankers Trust Co. will be the New York transfer agent and that the Mechanics & Metals National bank will be the New York registrar. Certificates will be made interchangeable so they can be transferred either in Boston or New York.

Dr. L. D. Rickets, consulting engineer, is now preparing the report on the property. At the mine, new ore bodies, averaging $4\frac{1}{2}$ to 10 per cent copper, have been opened at the 900, 1300 and 1400-foot levels of the Briggs shaft and bodies averaging 7 per cent have been cut at the 900-foot level of the Cole and the 950-foot level of the Oliver shaft. At the 1500 and 1700-foot levels of the Junction shaft sulphide ores running from 4 to 6 per cent copper are being developed.

The roaster and reverberatory plants and the sulphuric acid plant, will be completed by February and in operation by March.—Boston Financial News.

Calumet and Arizona

Calumet and Arizona is reported to have earned \$1,250,000 net in March of this year. This means earnings of about \$2 per share in one month of operations and, figured exactly, means a rate of \$22.40 per share per annum. On the present rate at which dividends are being paid, the company is earning the annual dividend every four months, or is capable of earning dividends this year at the rate of \$8 per share for the next three years.

For the year ended December 31, 1915, Calumet and Arizona produced 65,268,910 pounds of copper as against 52,667,929 in 1914. For the present year it is probable that the company will increase this production by a substantial amount, for the management is taking important steps in this direction now. Most important is the fact that the new smelter at Douglas is to be enlarged by the installation of two reverberatory furnaces shortly.

The investment of the company in the New Cornelia property is a factor that should not be overlooked. Calumet and Arizona owns 76 per cent of the 1,200,000 shares of the New Cornelia outstanding. These shares have advanced lately to 17 and the company is said to be earning better than \$4 per share. New Cornelia should produce 30,000,000 pounds of copper alone this year at a cost of 7 cents a pounds. Considering that this property was paid for and developed out of earnings of Calumet and Arizona, an important factor in the earnings of the latter company is now present which has not existed before. If New Cornelia earns only \$4 per share this year the Calumet and Arizona equity amounts to better than \$5 per share on its own stock.

It was in 1911 that Calumet and Arizona exercised its option on the New Cornelia stock. This stock cost the company \$2.50 per share or about \$2,300,000. At \$17, the present market price, Calumet and Arizona has a paper profit of about \$13,300,000 on its speculation.

Arizona Properties

The Calumet & Arizona will shortly start a new working shaft. It will be sent down between Bakerville and the Cochise siding, 1,800 feet deep, 5 compartments, and will be connected from surface. Sinking the shaft has been contemplated for many months by the management and has become a necessity with the development work of the company and the increasing production. The new shaft will serve as ventilation, development and possibly the hoisting of a large part of the ores from the Junction and Briggs country. Both Junction and Briggs exploratory workings have practically reached a point where the new shaft will be sunk. They are now in the Bakerville neighborhood and some outlet is needed. As to the exact amount of ore found in the lower levels no information is to be had. At present the Junction, which is down 1,800 feet, is unwatering the surrounding country. When the new shaft is down 1,800 feet it will unwater another portion of the surrounding workings and aid the Junction in this work. Just exactly when the initial work will be started on the new shaft is not known but that it will be made in a few weeks appears certain.

SEPT. 1916

Calumet & Arizona

The railroad connecting the El Paso and Southwestern with the New Cornelia property of the Calumet and Arizona company has been completed and the work of mill construction at the New Cornelia will be immediately pushed.

The mine has 42,000,000 pounds of 1.7 per cent ore proven up, which can be steam shovelled, and the New Cornelia will produce 30,000,000 pounds of copper per annum at the start at a 7-cent cost.

The Calumet and Arizona owns 800,000 out of 1,000,000 shares of this stock which, at the present selling price of 12, is the equivalent of \$10,000,000 for the Calumet and Arizona's ownership in that property, equal to over \$16 per share.

The Calumet and Arizona is financing the New Cornelia without the issue of new securities and that explains why only normal dividends have been paid, although it is earning at the rate of better than \$15 per share from its Bisbee properties alone.

The remarkable developments at New Cornelia have certainly not been reflected in the selling price of Calumet and Arizona, notwithstanding that the selling price of the New Cornelia stock indicates an increased value for Calumet and Arizona of about \$16 per share. Therefore Cornelia stock at \$13 ought certainly to be a good purchase.

Feb. 1916

C. AND A. WILL OPEN NEW SHAFT AT BISBEE

9-1916

The sinking of the big new shaft soon to be started by the Calumet & Arizona Mining Company, at Bisbee, Arizona, says Iron Ore, will permit the more ready opening of a large acreage of land in the territory as yet little explored and that lies still further down the great mineralized valley beyond the Junction and Briggs shafts. Here are the many claims purchased from the American-Saginaw Company as well as other located to the northwest of these. Very little exploring work was done on the American-Saginaw location. One shaft was sunk in barren limestone and from this there were no extensions in the way of drifts that were valuable in determining the mineral value of even this particular locality. The ores of Bisbee are held in the limestone pockets of varying size being encountered as the limestones are cut into by shafts and drifts. It is very easy to miss a deposit, and all the valley is not ore, it must be understood. The American-Saginaw lands are certainly very valuable, and were bought cheaply, as were all the holdings of this company.

11-1915 Calumet & Arizona

Including the American Saginaw group and the property of its subsidiary, the Superior & Pittsburg, Calumet & Arizona owns 1829 acres in the copper producing Warren-Bisbee district, adjoining the well known Copper Queen and Shattuck Arizona mines.

The consolidated company has eight working shafts, most of them with four compartments, and has a production capacity much greater than has yet been reached. In 1912, the year after the control of Superior & Pittsburg was secured, dividends amounting to \$1.25 were paid, and Calumet & Arizona shares sold as high as \$3 3/4.

Since that time the company has developed and financed the New Cornelia, a steam shovel project in the Ajo district setting a record of

earnings for the purpose upwards of \$1,000,000.

In addition Calumet & Arizona owns other promising properties in the Copper Creek, Courtland, and Pioneer district of Arizona and in Sonora, Mexico. These appropriations from earnings have kept the dividend rate and the market price of the stock below normal, but the extraordinary expense account is now practically closed.

The mine is now producing at the rate of over 65,000,000 lbs. per year at a cost of under 8 cents and including returns from gold and silver, is making a profit of over \$11 per share. Two new ore bodies have been struck at the Bisbee properties.

Within a few years assured returns from the investment in New Cornelia will add largely to earnings available for dividends.

1915 Calumet and Arizona

The output from this company's smelter at Douglas for June last, was 7,250,000 lbs. of copper. This production establishes a new high record. There were in operation at the smelter to produce this, two blast furnaces, three reverberators and twelve roaster

Calumet & Arizona 1915

The dividend of \$1 just declared, the third for the year, will make a total of \$2 per share, or \$1,234,770 paid to Calumet & Arizona stockholders during 1915. The two previous declarations were of 50c each.

Production for the eight months now passed must have been at least 40,000,000 lbs. of copper, at a cost of about 8c., and an average selling price of around 16c., giving profits of \$3,200,000, or thereabout. Surplus over dividends therefore, amounts to more than \$1,900,000 for the first two-thirds of the present year.

In 1914 the final surplus over dividends was \$1,234,527 or a total for 20 months of over \$3,100,000.

This amount covers, approximately, the company's \$3,000,000 subscription to the coming issue of \$4,000,000 in convertible bonds by the New Cornelia Copper company.

Calumet & Arizona owns about 75 per cent of the outstanding shares of New Cornelia, and since 1911 has spent \$5,000 to \$20,000 per month in developing this promising property, and in

11-1915 Calumet & Arizona

The directors of the Calumet & Arizona will meet on Dec. 7 to take action on the quarterly dividend. A dividend of \$1 was paid in the last quarter making \$2 for the first nine months of the year and it is expected that the dividend for the last quarter will be an increase over the previous dividend of \$1 per share.

It is estimated that Calumet & Arizona had set aside sufficient for the company's subscription to \$3,000,000 convertible bonds to be issued for financing the development and equipment of the New Cornelia property and that the treasury is now in shape for dividends more nearly approximating the earnings.

Taking the price of copper at 18c and the company is believed to be earning at the rate of \$12 per annum so that with the metal market firmly established on a 20c basis, dividends on Calumet & Arizona should be far larger than those declared so far.

Calumet & Arizona Dividend

The Calumet and Arizona has declared a quarterly dividend of \$1.25 a share.

In March and June Calumet and Arizona paid 50 cents and \$1 in September.

The Calumet and Arizona dividend is payable Dec. 20 to holders of record Dec. 10.

The Superior and Pittsburg Co. declared a dividend of 38 cents a share, payable Dec. 20 to holders of record Dec. 10.

With the dividend just declared the Calumet and Arizona will have paid a total of \$78 a share or \$22,963,264.

CALUMET & ARIZONA

According to the Bisbee Review the Calumet & Arizona has opened the Oliver shaft, with full equipment installed and will begin shipping ore at once. The company is now active in all its main shafts and more men are on the payrolls now than ever before. The Calumet office of the company reports that the company is doing a little better than the normal of before curtailment because of the war last fall. No trouble is experienced in getting rid of the metal at top prices.

11-1915 Calumet and Arizona

The report that the Shattuck-Arizona has blocked out vanadium ore to the value of millions in its 120 acres is of interest to Calumet and Arizona and to Copper Queen, both extensive properties surrounding the Shattuck.

The Bisbee ore body dips slowly from Shattuck-Arizona, where it is found at a depth of a few hundred feet, into Calumet and Arizona ground through which it continues for over two miles to a maximum depth of 200 feet. It is probable that ores in the Shattuck-Arizona will persist down the incline of the mineral zone into Calumet and Arizona territory, which is fifteen times larger.

Calumet and Arizona
The directors of this company met last Monday to consider dividend disbursements which will be made before Christmas and the amount is expected to be one dollar. The railroad from Gila Bend to the New Cornelia property is expected to be completed by March next.

CALUMET & ARIZONA

Producing Over 65,000,000 Pounds of Copper Yearly, at Cost of Around 8 Cents, Is Earning \$12 Per Share

Producing at the rate of over 65,000,000 lbs. of copper per year, with costs around 8c, taking into account gold and silver values, Calumet & Arizona is earning \$12 per share on its 617,000 shares.

The recent quarterly dividend paid was but 50c, due to conservatism on the part of the directors, who had in mind the financing of Calumet & Arizona's proportion of the New Cornelia 12-year convertible 6 per cent bonds which are about to be issued. As the Calumet & Arizona owns about 89 per cent of the New Cornelia stock, its share of the \$4,000,000 in bonds will amount to over \$3,000,000.

In the opinion of many large eastern owners of Calumet & Arizona shares, who include interests connected with the United States Steel and other great corporations, the financing of New Cornelia should be undertaken by Calumet & Arizona stockholders, not by the company alone.

Calumet & Arizona has since 1911 furnished men and money for the development of New Cornelia, now a well-opened mine which will benefit stockholders of the parent company for years to come. There is no reason why present shareholders should be deprived of dividends in so large a measure for the purpose of adding a permanent producer. Efforts are now being made by influential interests to bring about the announcement by the management of definite plans for giving Calumet & Arizona stockholders the right to subscribe for their proportion of New Cornelia bonds. Convertible bonds of the successful porphyry mining company constituting a call upon the stock secured by a mortgage, are now a popular form of investment. The Utah and Chino bonds have practically all been converted.

Ray Consolidated 6s are selling around 117. Inspiration 6s at 128. New Cornelia is a steam-shovel proposition with ores that require both concentrating and leaching.

Calumet & Arizona has large holdings in the Bisbee district adjoining the Copper Queen and Shattuck-Arizona, besides mines in the Copper Creek, Contriland and Pioneer districts in Arizona, and in Sonora, Mexico and the stock is regarded as selling far below its real value.

Calumet & Arizona
The directors of the Calumet & Arizona met in Duluth on August 31st for dividend action and it was decided to declare a dividend of \$1 per share.

The Calumet & Arizona Mining company's smelter at Douglas, Ariz., established a new record for a month's production in June. The total output was 7,321,000 lbs. of blister copper. The plant, which is comparatively new, and the last word in modern smelter construction, is meeting every expectation. The ores of the Shattuck company are smelted at this plant, and ore from some other mines are received besides those of Calumet & Arizona and Superior & Pittsburg.

11-1915 Calumet and Arizona

The strength of the Calumet and Arizona in the market is due to a growing realization of the present and prospective value of the property and the probability of increased dividends. In the Bisbee district, Calumet and Arizona owns 1839 acres, opened by eight shafts, compared to Shattuck and Arizona's 120 acres and one shaft. Shattuck has 350,000 shares and Calumet and Arizona 617,000.

Mining men not connected with the Calumet and Arizona company, are impressed with the possibilities of New Cornelia, a steam shovel proposition lately financed by the sale of \$4,000,000 convertible bonds. Calumet and Arizona owns about three-quarters of the stock of New Cornelia and has already set aside out of earnings \$3,000,000, with which to take up its share of the bonds to be paid for during 1916.

The exploration of this property at Ajo was carried out systematically, as follows:

Seventy acres of land was laid off in regular 200 foot squares and 84 diamond drill holes were put down on the corners of these squares. These bores yielded ores and cuttings; the latter showed the geological and petrographical nature of the rock and the former were assayed. Samples were taken every five feet and a total of 9,300 were taken. Besides the drilling of 23,097 feet, about 4,000 feet of test pit work was done, which also was sampled every five feet, making 800 samples more. The pits were put down on the same co-ordinate points as the drill holes in order to check the accuracy of the drill samples. Nothing was left to chance; 1,115 samples were taken altogether to prove the value of the ore body. In the 70 acres drilled an ore body covering 61 acres was found varying from 1,500 to 2,000 feet long, 650 to 1,500 feet wide and 120 feet and over in depth.

The MINES

This department is under the direction of Mr. W. E. Defty, the well known mining engineer, who will carefully scrutinize all matters relating to mining in order that only reliable information regarding legitimate enterprises shall find a place here.

The Republican would be pleased to receive information from any part of the state regarding the development of the mining industry. All communications should be addressed: Mining Department Arizona Republican.

Mining Conditions in Arizona

The resumption of the copper mines to their full capacity, has effected a very satisfactory and beneficial effect in every branch of the community. More men are at work and the increase and demand for material is very important. Outside of Arizona the beneficial effect is also being felt, as is evidenced by the shipment of lumber to the Arizona mines and mentioned as a separate item in these columns. Labor has also benefited by the high price of copper. The differences at Ray have been settled and the men return to work at an advanced scale. Five thousand employees of the Copper Queen and Calumet & Arizona companies benefit by the increase, which amounts to about \$18,000 per month. Advancement of the other large plants are in similar ratio. At Douglas there was an advance of 2½ per cent owing to the increased prices of copper. In fact the raise has brought the wages of miners and smelter men in Arizona to the highest rate ever paid in the southwest. This condition has already aroused great attention to possibilities in Arizona not only in copper properties but also in other minerals. The high price of lead and zinc as noticed elsewhere is resulting in development work on many old properties, that ceased operations years ago. The higher prices enables lower grade areas to be explored and this will undoubtedly lead to increased production. The gold mines are in splendid condition and are sustaining their output to the highest standard with others following in development that assures them being in the producing class in the very near future. The conditions in Arizona are surely

of ARIZONA

and it cannot help but attract attention from every quarter outside of the greatest copper producing area in the world

THE STORY OF
CALUMET AND ARIZONA
MINING COMPANY



A TESTIMONIAL TO
MR. CHARLES BRIGGS
FOR TWENTY YEARS ITS PRESIDENT

1922

To Mr. Charles Briggs, for twenty years President of Calumet and Arizona Mining Company and its Associated Companies, and whose financial aid, personal advice and encouragement were so valuable in the success of the undertaking, this little work is respectfully dedicated.



Charles Briggs

FOREWORD



The pages devoted to the mining industry contain many accounts of effort and accomplishment, many that tell of failures resultant from the best-laid plans and opinions of those skilled in the mining profession, and a few that recount how some great bonanza was missed and afterward located a few feet from where former shafts or drifts had penetrated.

Mining is one of the chief industries of our country, and, while chances must be taken by those who seek mineral values it is by taking these that the reserves of ores and metals are maintained in such quantities as the needs of the world demand.

To discover new mines necessitates much money, energy and courage, and there is that associated with the trial that ever finds those who are willing to make the venture. The lure of the game is very strong. The many failures are totally eclipsed and forgotten by the comparatively few successes.

This little pamphlet has to do with the history of one of the latter—CALUMET & ARIZONA MINING COMPANY, it being the object to bring together some of the main facts regarding its conception, organization and operation that these may be preserved for the information of those who may be interested, and while they may be secured from those who were chiefly instrumental in making the enterprise possible, or who have knowledge of the acts of the principals in this highly-creditable mining development.

—G. A. N.



James Hoatson

IN the year 1899 there was organized under the Laws of West Virginia, by Charles Briggs, James Hoatson, James Milligan, Norman Macdonald, John H. Holman, Joseph L. Lathrop, John Graham, Gordon R. Campbell and W. Arthur Phipps, the Lake Superior & Western Development Company.

The capital stock was \$200,000.00, represented by 20,000 shares, each having a par value of \$10.00.

The officers were:

CHARLES BRIGGS,	President,
JAMES MILLIGAN,	Vice-President,
NORMAN MACDONALD,	Treasurer,
W. ARTHUR PHIPPS,	Secretary.

The object was to acquire and develop mining claims believed to contain commercial copper-bearing ore bodies.

The plan was to sell same, when developed, to a mining company, to be organized later, with sufficient capital to own, equip and operate on a commercial scale.

Sufficient of the stock—all of it if necessary—was to be sold to develop the property.

The promoters were to manage the operation without salaries, and were to receive as compensation for their services, stock in the development company remaining unsold, when the mining company had been organized. This was with the exception of Graham, who was sent as a scout to Arizona to get in touch with favorable prospects and do preliminary work, and who was to receive a small salary in addition, to cover expenses. Graham had worked as a miner in the properties of Copper Queen Consolidated Company at Bisbee and at the time of the organization of Lake Superior & Western Development Company was employed underground in the Tamarack copper mine in Calumet, Michigan. He had given information to the gentlemen named that there were undeveloped properties in the Warren Mining Dis-



J. H. Cole

trict, Arizona, and was sent to Bisbee to learn what he could concerning these properties and to report his findings to the officers of the development company. He performed this work well, and in the Spring of 1899, advised them that the Costello properties were open to purchase and were worth examining.

James Hoatson was selected to make the examination. He had for many years been associated with copper mining in the Butte, Montana field, as well as in the Michigan Copper Country, and his judgment accordingly would be based on experience with conditions such as would probably be encountered in the Warren District. He made the examination and reported that, according to his belief, the Costello properties would prove very valuable, and recommended that every effort should be made to secure an option to purchase them. At that time the titles to the mining claims being considered were in litigation and the owner, Costello, refused to sell, or to name a price, until his titles were confirmed by the Supreme Court of the United States. For six months or more they waited patiently and finally, when titles had been cleared, Costello presented an offer to sell.

The claims were divided into three groups and the officers of the company immediately wired that they accepted the Irish Mag group and the Hope and Wagner group, subject to agreement upon time, terms and titles, which were concluded satisfactorily. The price asked for these undeveloped groups was \$500,000.00. No stock had been offered to the public in the development company up to this time.

Gordon R. Campbell was sent to Arizona to examine titles, he, as an attorney, being well qualified for such service. At the same time stock was offered the public with the understanding that if the enterprise proved successful, the returns to the investors would be several times the cost of the shares, but if no ore were found, it would be a total loss.

The stock met with ready sale and the little company



George E. Finner

seemed to be provided with ample funds for its operations.

Messrs. Briggs and Milligan went to Arizona to examine the properties and assure themselves that they were well located, and of probable value, and to make the first payment of \$50,000.00 required by the contract. They found everything as represented, were assured the titles were clear, and made the payment. Preparations were made for sinking a prospect shaft, and on November 1st, 1899, the first pick was struck into the ground. A small hoist was purchased, and, as fuel was scarce, for some time after its installation the boilers were fired by "nigger heads," the dried-up yucca cactus which abounded in that district.

In the meantime rumors began to disturb some of the stockholders and certain influential men secured information that led them to believe the properties had no value. These men desired to withdraw their payments and subscriptions for stock, and they influenced their friends to do the same. The directors and promoters of the company assured them that they believed the project a meritorious one with good prospects for large profits, but that a total loss would result if ore were not found. They stated that they did not desire any person to remain a stockholder who was dissatisfied or unwilling to take the necessary risks, and that they would cancel their subscriptions and return their money. This was done in so many instances that it became necessary to seek funds outside of the Michigan copper district where, up to this time, the stock had practically all been placed.

Among those solicited was Thomas F. Cole, a miner and business man of well-known ability, evidenced by the fact that he was president and general manager of the Oliver Iron Mining Company, the iron ore mining subsidiary of the United Steel Corporation. Charles Briggs and Captain James Hoatson called Mr. Cole into an office over the Macdonald Drug Store, in Red Jacket, Michigan, where they displayed to him maps of the Warren Mining District, pointed out those claims on which Lake Superior & Western Development Company



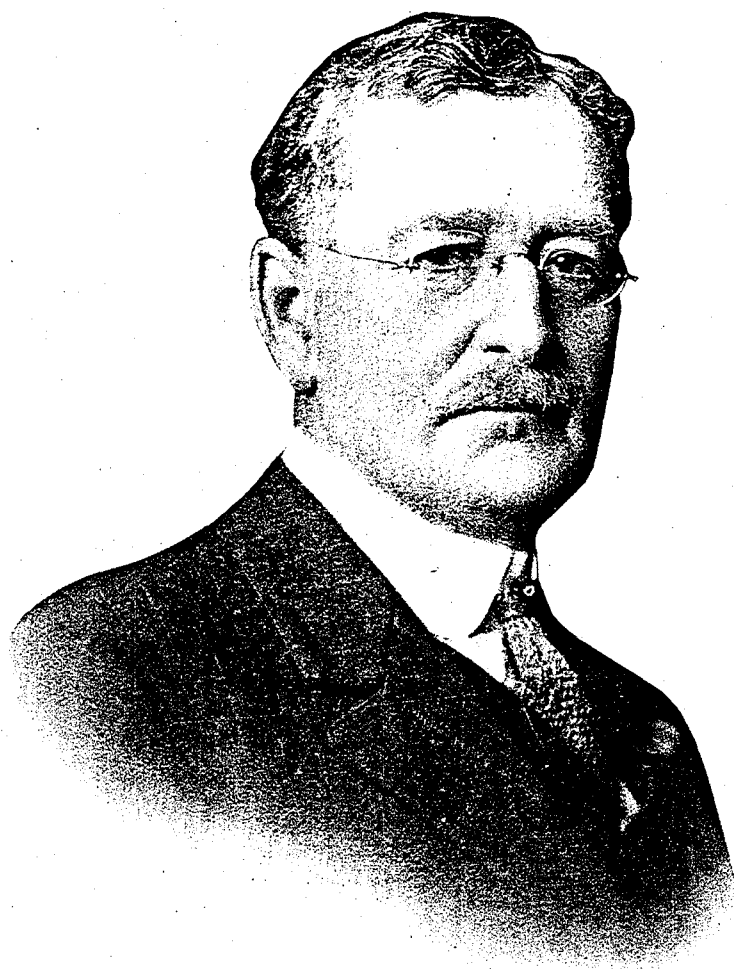
Col. Antremont

held options, and called attention to their proximity to the Copper Queen Company's mine and the trend of its nearest body of ore.

The Copper Queen at this time was the only mining company that was operating to any extent in this district. It entered the field in 1881 and enjoyed great success in its efforts. It earned \$676,252.78 in the first year of its activity, and this with crude equipment but with ores that averaged 16.29 per cent in copper and important values in gold and silver. It had continued to be a big money-maker on ores of lower grade. Such accomplishment by this company would naturally impress the miner that other property in that immediate vicinity would be well worth looking into and developing.

Following the interview with Messrs. Briggs and Hoatson, Mr. Cole put his money into the enterprise and secured subscriptions to the stock of the company from his friends and associates. He induced Mr. George E. Tener of Pittsburgh, Pennsylvania, to visit the property in company with James Hoatson, with the result that additional funds were soon thereafter forthcoming from Mr. Tener and others, and the work of sinking the shaft was prosecuted with great vigor. Costello was solicited for an extension of the option, which he readily granted, as he realized that the little company was doing creditable development work, and treating both him and the public honestly.

The shaft had been located well up on the hill on the Irish Mag Claim, and, while there had been some confusion regarding its location, it proved to be in the very best, as the rock formations proved stable and the shaft was out of the ore deposits. Had it been sunk on lower ground to the north and east it would have encountered the ore-bearing zone from two hundred to three hundred feet nearer surface, and connecting drifts of from five hundred to six hundred feet might have been avoided, but it would have been in ground that would have been difficult to maintain and would have proved a source of constant and heavy expense. The shaft held firmly as



S. Merrill

long as mining was prosecuted in this portion of the company's property and from it ores were taken that yielded in dividends thirty times the purchase price of this group of claims.

In the Fall of 1900, I. L. Merrill was placed in charge of the property and the management and development until the end of 1903 were under his charge.

Such favorable progress was made in the shaft that in the Fall of 1900 it had reached a depth of 750 feet, and instructions were given to drift north-east on the 650 and 750 levels as the most likely to encounter ore. Ore of fine quality was found on both levels in February, 1901, although that on the 750 was much the richer.

After ore had been found and sufficient progress had been made in it to decide as to its probable permanency and value, plans were made for the organization of a mining company, to continue the development and equip and operate the property.

It was decided to incorporate "CALUMET & ARIZONA MINING COMPANY" with a capital stock authorized of \$2,500,000.00 in shares of par value of \$10.00 each, and to issue 100,000 shares of stock to Lake Superior & Western Development Company for its interest in the property, offer 100,000 shares for cash subscriptions at par and retain 50,000 shares in the treasury for the acquisition of additional territory as opportunity offered.

Even with connections in Duluth, Minnesota, and Pittsburgh, Pennsylvania, the raising of \$1,000,000.00 seemed a formidable undertaking. It was not known how kindly those interested in iron ore mining and steel manufacturing might take to copper mining. No copper mine had been floated for several years without assistance from Boston, Massachusetts, where, at that time, copper mining was practically controlled.



J. H. Collins

In March 1901, Messrs. Briggs, Hoatson, Cole, Tener and d'Autremont went to Bisbee to again examine the properties and the developed ore bodies. So rapid had been the progress, and so rich the ore exposed, that they were greatly pleased at the wealth proved up in a few short months. They wired and wrote their friends to subscribe for all the stock they could as soon as it was offered and wired instructions to Calumet to open the stock for subscription at the several banks of Houghton County, Michigan, and Duluth, Minnesota. Mr. Tener and his friends in Pittsburgh subscribed direct for a large block of the stock offered and all the stock was subscribed in one day at par and without commission.

Many of the stockholders of the development company were wage earners in the copper and iron country mines, and they and their friends again became subscribers to the stock of Calumet & Arizona Mining Company and received a rich reward for their confidence.

The result was a complete vindication of the wisdom and integrity of the promoters of the development, and especially of Charles Briggs and James Hoatson, without whom it could not have been instituted and who bore the brunt of the development campaign.

Mr. Briggs, who was a leading merchant and banker for many years in the Michigan Copper Country, had witnessed mining developments in that district which required great courage as well as abundant capital. He had seen shafts sunk nearly 4,000 feet vertically to reach a copper-bearing lode and was fully conscious of what faith meant. He also had implicit confidence in his associates, which was well demonstrated in his financial support of the enterprise at a time when it was most in need of it.

Calumet & Arizona Mining Company was organized by naming as its first board of directors the men mainly



Chester A. Conydon

responsible for the success of the development and representing the several interests then associated:

CHARLES BRIGGS,	}	
JAMES HOATSON,		
JOHN S. DYMOCK,		
JAMES MILLIGAN,		of Calumet, Michigan.
ERNST BOLLMAN,		
PETER RUPPE,		
THOMAS F. COLE,		of Duluth, Minnesota.
C. d'AUTREMONT, JR.		
GEORGE E. TENER,		of Pittsburgh, Pennsylvania.

The officers of the company were chosen as follows:

CHARLES BRIGGS,	President,
JOHN S. DYMOCK,	Vice-President,
PETER RUPPE,	Treasurer,
GORDON R. CAMPBELL,	Secretary and Counsel.

The directors brought, and freely gave, to the new company from their varied experiences, wise counsel and good judgment. They gave freely of their time, paid their own expenses, and worked unceasingly for the success of the company. Their stockholders and the general public soon conceived such confidence in them and in the company that the stock speedily rose in the market to five times its par value. To this, however, they paid no attention. They were developing the mine and seeking their financial returns from the mining and sale of copper.

So rapidly was ore developed that in a few months plans were being made for a small smelter the erection of which was begun in 1902. This smelter of 200 tons capacity was blown in during November 1902. In its construction, General Manager I. L. Merrill was of great assistance and he was also an important factor in the success of the company during its early operation when he was in charge.

The successful financing of Calumet & Arizona Mining Company and the development of its values did not



James C. Greenway

satisfy the far-sighted men now in control. They had in mind the acquisition of additional territory according to the original plan.

One of the properties they sought was acquired by the Copper Queen Consolidated Mining Company and became one of the richest assets of that mining organization in its Lowell division. These men went beyond that location and in two years' time had acquired group after group of claims in the outlying surrounding district and were busy developing them along plans similar to those observed in the original Lake Superior & Western Development Company, which latter had been dissolved. Thus, in order not to burden the young mining company with the purchase and development of new territory, were successively organized in 1902 and 1903:

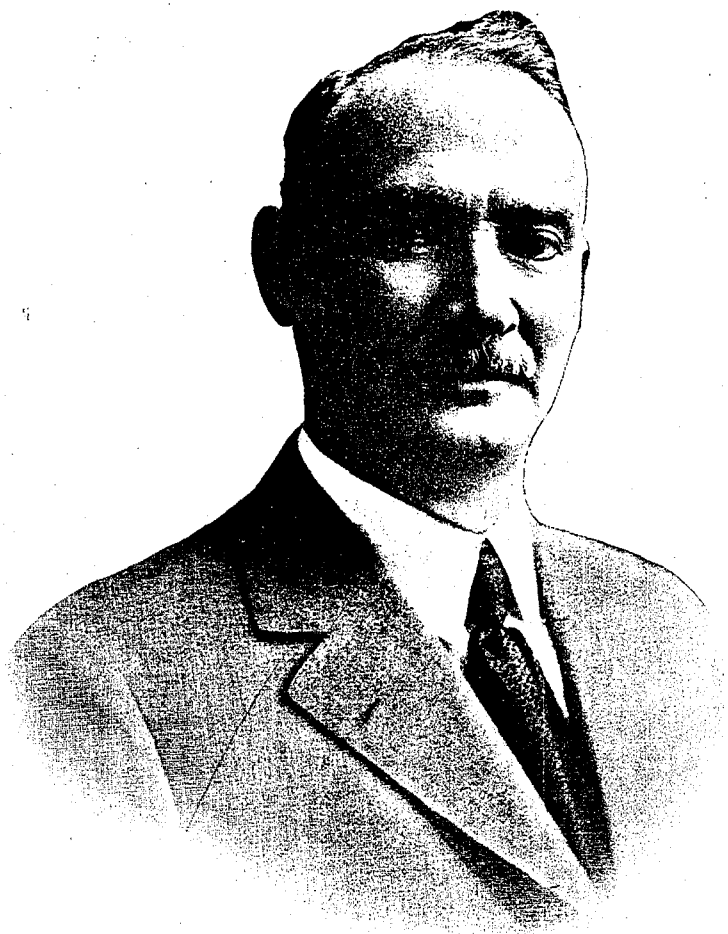
LAKE SUPERIOR AND PITTSBURG DEVELOPMENT COMPANY
CALUMET AND PITTSBURG DEVELOPMENT COMPANY,
PITTSBURG AND DULUTH DEVELOPMENT COMPANY, AND
JUNCTION DEVELOPMENT COMPANY.

In securing the claims that went to make up these various development companies, the greatest efforts were probably put forth in acquiring those that finally formed Junction Development Company. In this work Thomas H. Collins, who had gone from Calumet, Michigan to Bisbee as Chief Clerk of Calumet & Arizona Mining Company, was prominent. With Hoval A. Smith, who was Chief Engineer for this company, Collins spent much time inspecting maps and looking over the geology of the district. They took samples of the limestone where it dipped under the conglomerate in the vicinity of the Bisbee Improvement Company's electric plant, and also procured samples of the limestone where it appeared from under the conglomerate a mile or more to the east. These were sent to the Arizona State University, in Tucson, where slides were made from them from which it was learned that these limes were identical. From this



L. D. Ricketts.

the conclusion was reached that Bisbee was not a contact camp but a basin in which Sacramento Hill had intruded, fracturing the lime, and wherever this occurred, and solutions from this porphyry had flowed out into the lime and dissolved the latter, ore bodies were formed. It is a record that all the principal high-grade ore bodies of the Warren District have been found in the limestone. F. L. Ransome, of the United States Geological Survey, had been in the camp for several months, evidently attracted by the recent sensational ore discoveries. He was offered every courtesy by Messrs. Collins and Smith (Mr. Collins being in charge of affairs in the absence of Mr. Merrill), who conducted him underground and gave him all the data possible to assist him. When he returned to Washington the Survey issued an advanced report which he edited according to his findings and in which the basin theory was concurred in. About this time a mining engineer representing Chester A. Congdon, came into the camp, looked over the report and other data, and agreed that the thing to do was to secure the ground located close to Sacramento Hill and near the ice house, and to obtain it as quickly as possible. Collins advised Thomas F. Cole of his plan and then sought L. C. Shattuck who was interested in nearly all of the ground in the section desired. An option for purchase was requested and Shattuck began to bring the owners together on the terms previously agreed upon and soon had consummated his part of the deal. A few days later Shattuck was approached by the representative of another mining organization who asked him if the deal with Collins had been signed to which he made reply that it had not been but that he had shaken hands on it and he considered this act as binding as his signature. This is mentioned to illustrate western character. Collins wired Cole for \$80,000 which was promptly sent. There was much dis-



Thomas Watson.

cussion with reference to the Junction group by the Directors of Calumet & Arizona Mining Company as well as by outsiders. One noted geologist gave it as his opinion that the limes of that particular locality were too thin to hold ore in commercial quantity. A shaft was in progress of sinking at that time to prove this point, and, to hasten the decision, Collins put a diamond drill at work. After cutting 700 feet of conglomerate the drill penetrated 20 feet into the limestone when ore of high grade was encountered. The point was settled and the worth of the property established.

Collins was also instrumental to a considerable degree in bringing the American group of claims into Calumet & Arizona Mining Company. He secured options on the claims that went to make up the American Development Company, which later was consolidated with the Saginaw Development Company under the name of American-Saginaw Development Company and was later absorbed by Calumet & Arizona Mining Company.

In the course of time these four development companies were converted into mining companies, with the same names and in 1906 were consolidated in the Superior and Pittsburg Copper Company.

The faith and confidence of the holders of \$10,000,000 stock in these four mining organizations were shown by their unanimous approval of the plans of the directors so that not a single share of stock in any of these companies remained outstanding a few weeks after the organization of Superior and Pittsburg Copper Company.

Many difficulties were encountered in the development of these properties; ore bodies were smaller and leaner than in the original Irish Mag Claim and in the Junction Shaft and the Briggs Shaft of Calumet and Pittsburg excessive quantities of water delayed the work



Wmmy R. Rea

and rendered necessary expensive pumping plants. As finally installed the pumps have a combined capacity of 4,000 gallons of water per minute.

Only the confidence, wisdom and persistency of the directors, and the confidence of the shareholders, enabled them to continue the development of these properties at times under the most trying conditions. Their confidence has been amply justified as the result of their campaign of development is one of the very large mines of the country.

Calumet & Arizona Mining Company had materially aided in the development of the Superior and Pittsburg properties, and it was felt that the work in this district would not be fully completed and be permanently satisfactory until all the properties were united in one corporation. An attempt had been made in 1906 to include Calumet & Arizona Mining Company in the consolidated company, but earnings and dividends were too large and many stockholders could not see into the future and the ground. In 1910, however, the project of uniting the two companies was again considered and engineers were employed to make a survey of the assets of the two companies with a view to ascertaining their relative values and eventually consolidating them.

The stockholders of the two companies by this time numbered nearly eight thousand and their holdings were so diverse that for a time it seemed it would be impossible to arrive at any basis that would meet with practically unanimous approval.

Among other things it was agreed that Calumet & Arizona Mining Company should add to its mineral resources other promising territory as it could be acquired and on this understanding a plan for the increase of the capital stock of Calumet & Arizona Mining Company and its exchange for stock of Superior and Pittsburg Cop-



Walter B. Longdon

per Company was agreed on and presented to the stockholders of both companies. The reply of the stockholders was gratifying but not unanimous. Much more than a majority of the stock of Superior and Pittsburg Copper Company was exchanged and more was acquired from time to time.

Calumet & Arizona Mining Company also secured the properties of the American-Saginaw Development Company, the Calumet & Bisbee Mining Company, and other adjacent claims.

In July, 1910, John C. Greenway was placed as General Manager over the interests of Calumet & Arizona Mining Company and through his efforts, in 1911 a very favorable option was secured on about seventy per cent of the capital stock of New Cornelia Copper Company, a so-called porphyry property in the Little Ajo Mountains, Arizona, under which an opportunity was given to develop the tonnage of merchantable ore before final payments became necessary.

The tonnage proved satisfactory in quantity and of a satisfactory grade, but a large part of the tonnage was carbonate surface ores, the values of which could not at that time be recovered economically.

The directors retained L. D. Ricketts as Consulting Engineer and authorized Greenway and Ricketts to develop, if possible, a satisfactory process of recovering the copper contents of the ore and thus turn an expense into an asset. The experimental work, while seemingly slow at first, proceeded so satisfactorily that by the Summer of 1915, a 40-ton plant was operating and leaching the carbonate ores so successfully that it was evident that the returns from this investment would be very great and its value as an asset of the parent corporation was assured.



Geo. A. Newell

The completion and successful operation of its leaching plant and its electrolytic plant with capacity of five thousand tons ore daily in 1917, and the acquisition of the adjoining properties of the Ajo Consolidated Copper Company the same year made its success complete.

In 1915 the management felt that the time had come, if ever, to complete the consolidation of the two companies, as with further development of New Cornelia, additional difficulties would be met. In November of that year, therefore, final offer was made to the remaining stockholders of Superior and Pittsburg Copper Company for the purchase of all the assets of that company and its dissolution.

In spite of some opposition these plans were consummated as of December 31, 1915, and since that time Calumet & Arizona Mining Company, with ownership of 2,068 acres of mineral land in the Warren District, its smelter with capacity of 3,000 tons of ore daily, and New Cornelia Copper Company with its leaching and electrolytic plants, completed and operating, with a capacity of 5,000 tons of ore per day, and with a joint capacity of about 100,000,000 pounds of copper annually, stand as the greatest monument of the wisdom, integrity and energy of this group of men under the leadership of Charles Briggs and James Hoatson, ably assisted by Thomas F. Cole, George E. Tener and Chester A. Congdon, and of their faith and foresight and keen appreciation of mineral values.

The first dividend was paid in December 1903, a record not equalled by any other copper company as it was only four years earlier that the first work was done by the development company. Since that time dividends have been paid quarterly, in varying amounts, with the single exception of September 1914, when it was deemed advisable, on account of the uncertain conditions at the



W. H. Augustine

opening of the great war, to pass it. Up to and including December 1921, as a result of the operations thus begun in 1899, there has been distributed from this district in dividends a grand total of \$48,806,994.93 to individual stockholders of Calumet & Arizona Mining Company and its associate Superior and Pittsburg Copper Company, in addition to which New Cornelia Copper Company has also paid dividends totaling \$1,350,000.00.

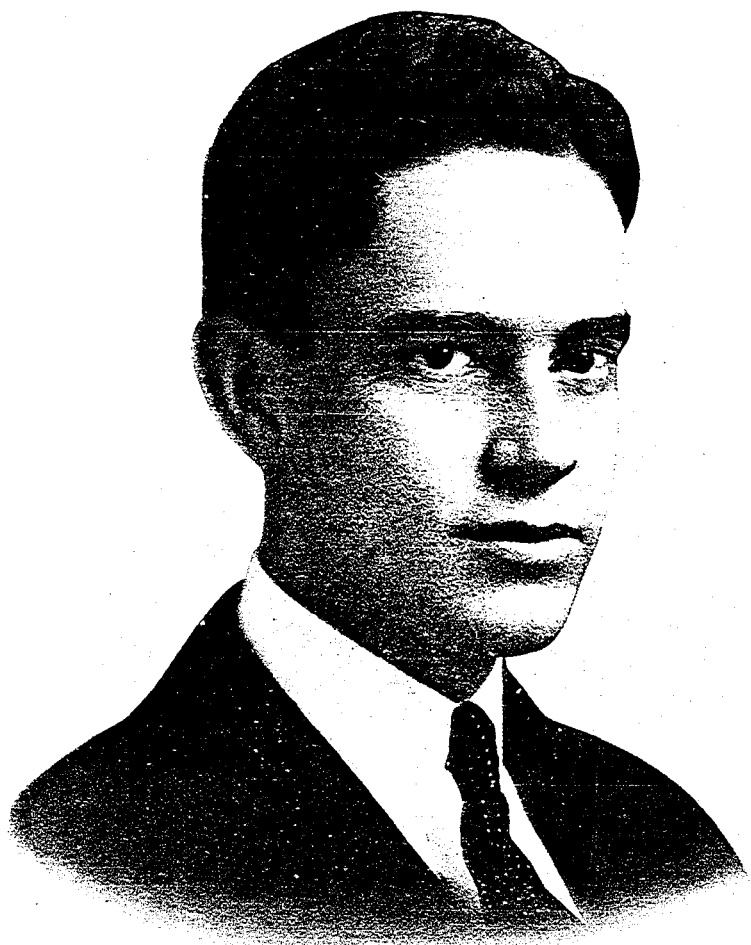
Few changes have been made in the Board of Directors. Chester A. Congdon and Thomas Hoatson were elected directors in 1902 succeeding Ernst Bollman and James Milligan. John S. Dymock was succeeded in 1904 by Gordon R. Campbell and James Hoatson was elected Vice-President in the same year. In 1911 Henry R. Rea and William E. Corey were added to and brought additional strength to the Board of Directors.

No further changes were made in the personnel of the Board of Directors until 1916 when the death of Mr. C. A. Congdon deprived it of one of its most valuable and efficient members, who, for years, had given freely from his great legal knowledge and broad business experience to the successful development of its plans. He was succeeded on the Board by Walter B. Congdon.

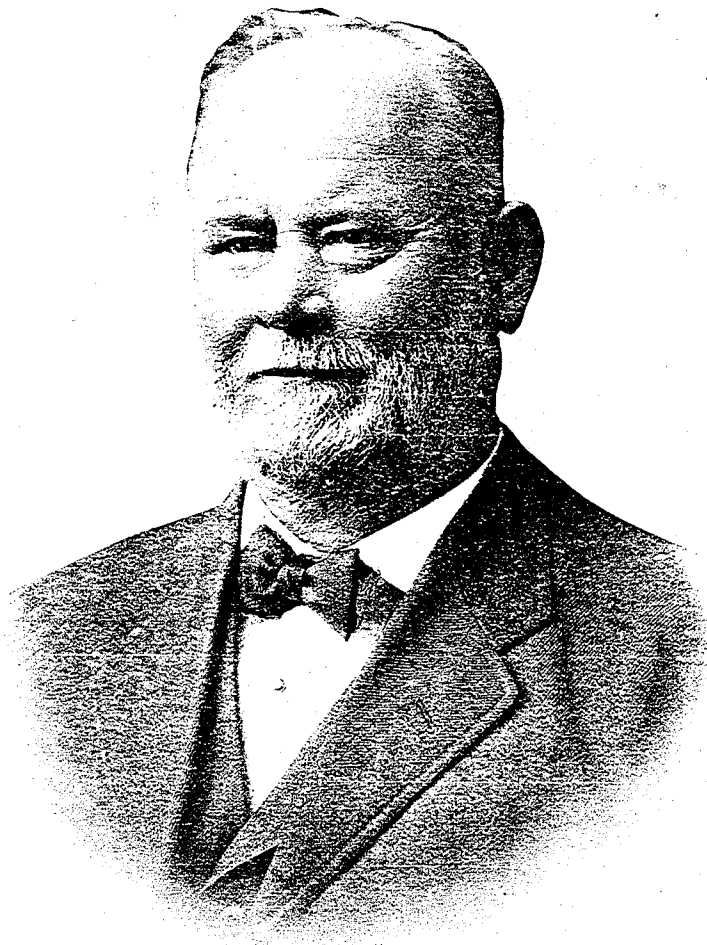
In January 1918, William B. Mershon, formerly president of American-Saginaw Development Company, succeeded William E. Corey, resigned, and in 1920, Thomas H. Collins was named to succeed C. d'Autremont, Jr., deceased.

George A. Newett, editor and publisher of the Iron Ore at Ishpeming, Michigan and a strong friend of the organization from its earliest day, succeeded George E. Tener, resigned, and John C. Oliver was seated in place of Henry R. Rea, deceased.

On the Board of New Cornelia Copper Company, in



Floyd Augustine



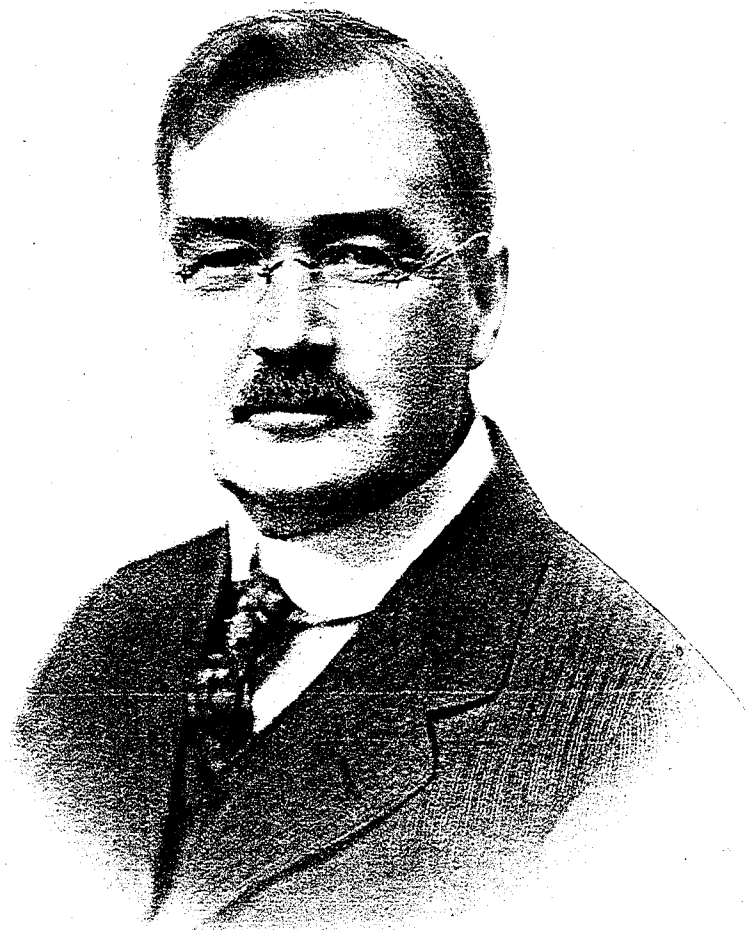
Peter Rupppe



John C. Olson



W. B. Merriam



Gordon R. Campbell

addition to the members of the Board of Directors, Calumet & Arizona Mining Company, George H. Augustine, first president of that company, again became a director in June, 1915, and continued until his death in 1919. He was succeeded by Floyd Augustine. In addition John C. Greenway, L. D. Ricketts and James Phillips, Jr., are valuable representatives on this Board of the minority stock not owned by Calumet & Arizona Mining Company.

At the annual meeting of Calumet & Arizona Mining Company held in Warren in April 1921, Charles Briggs asked to be relieved of the presidency of this organization, a position he had so well filled for the original development company, Lake Superior & Western, and for the mining companies resulting from this, for a period of twenty-two years. The directors of Calumet & Arizona Mining Company and New Cornelia Copper Company, with much regret, accepted his resignation. They, however, insisted on his remaining on the Board and conferred upon the distinction of "President Emeritus Ad Vitam."

As his successor the Board, by unanimous vote, selected Gordon R. Campbell, who had been secretary and counsel of these various companies since their organization, and whose ability and energy for the success of these enterprises were recognized and appreciated.