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PRINTED: 09/06/2002

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: WENDEN MINE GROUP

ALTERNATE NAMES:  
COPPER CHIEF

LA PAZ COUNTY MILS NUMBER: 48

LOCATION: TOWNSHIP 7 N RANGE 13 W SECTION 11 QUARTER C  
LATITUDE: N 33DEG 57MIN 50SEC LONGITUDE: W 113DEG 35MIN 00SEC  
TOPO MAP NAME: SALOME - 15 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:  
COPPER OXIDE  
COPPER SULFIDE  
GOLD LODE  
SILVER

BIBLIOGRAPHY:  
KEITH, S.B., 1978, AZBM BULL. 192, P. 145  
ADMMR WENDEN MINE GROUP FILE

WENDEN COPPER MINING COMPANY

AKA Copper Chief

Yuma County  
Ellsworth District  
T7N, R13W Sec. 11

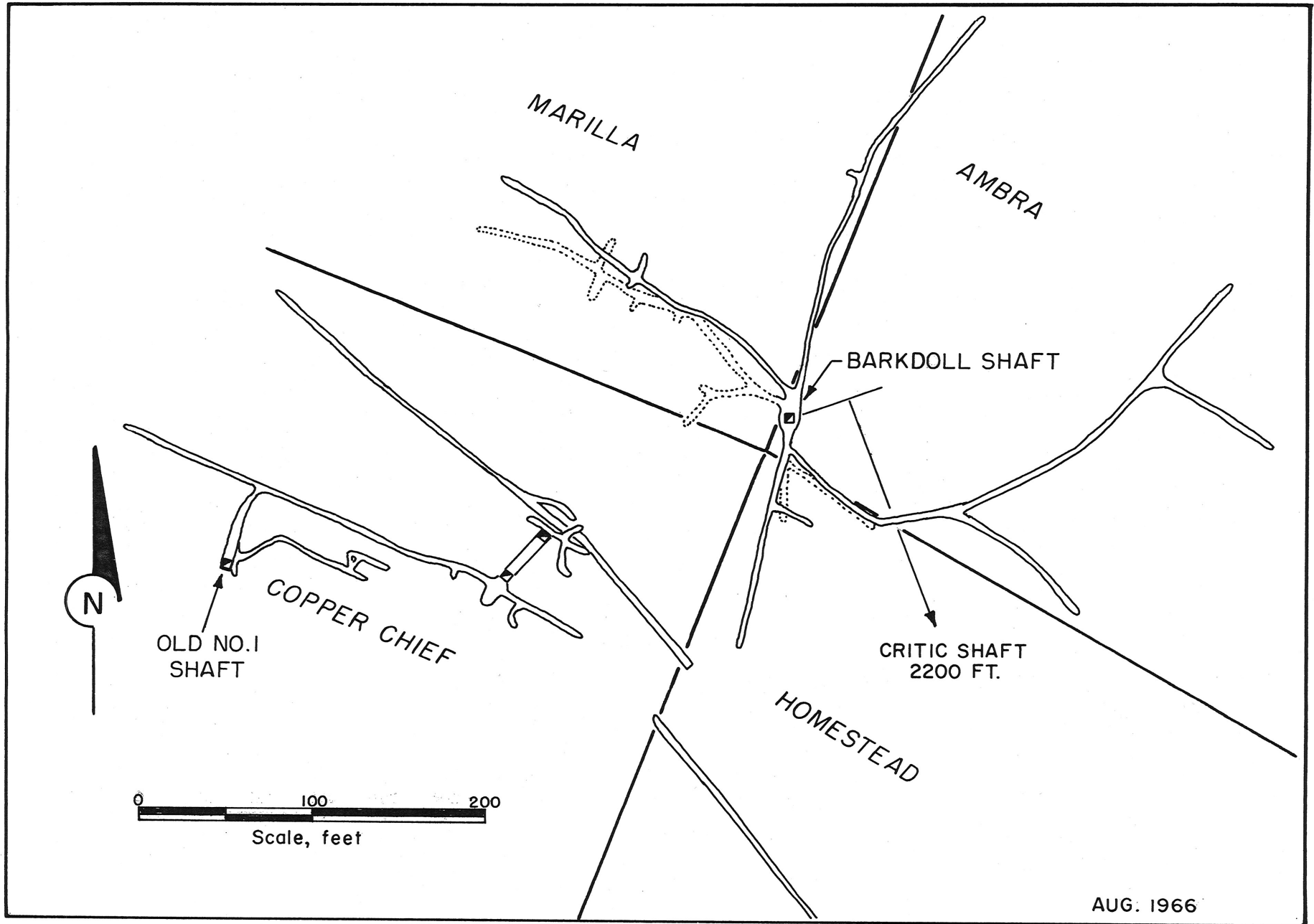
ABM Bulletin #129, page 72 & 73

ABM Bulletin #192, page 145

Centroid Consolidated Company (file) for additional information on mines in area.

The Geology File for Cunningham Pass District also has report by W. Tovote.

P. 6



AUG. 1966

FIGURE 5.- Plan of Workings, Wenden Mine.

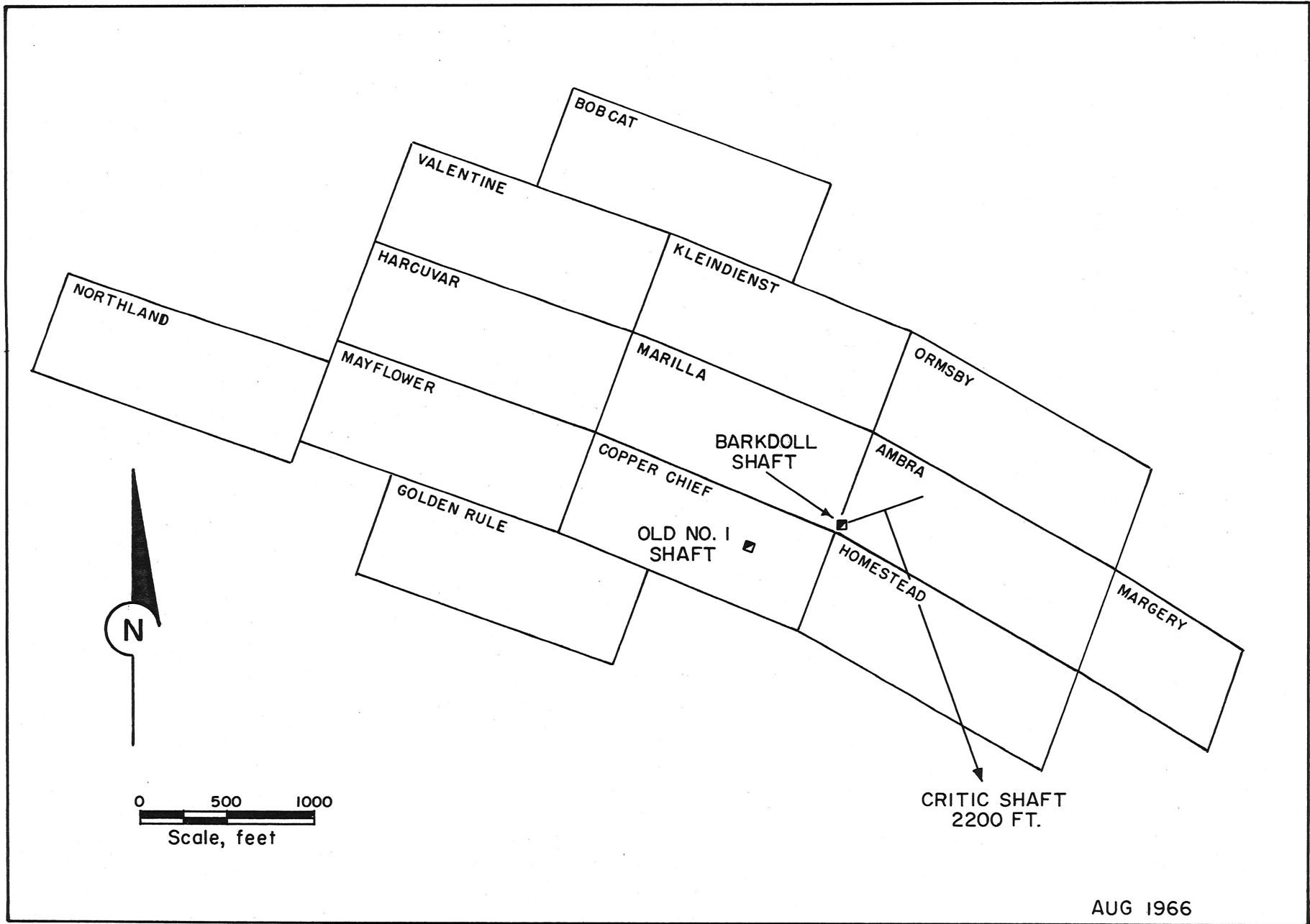


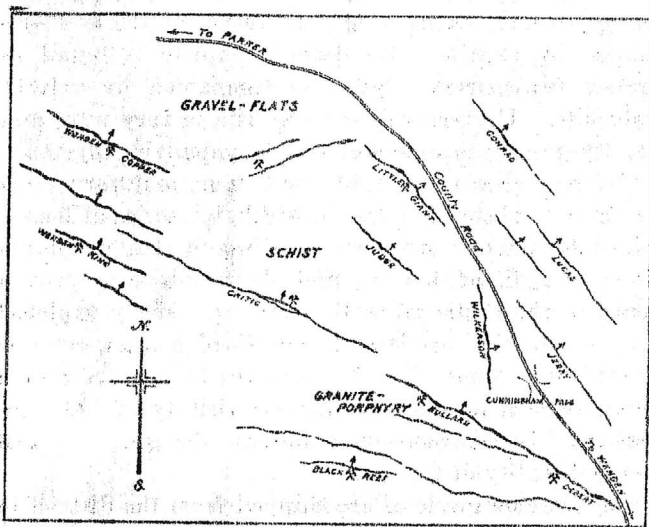
FIGURE 3.- Claim Map, Wenden Mine.

# Cunningham Pass District, Arizona

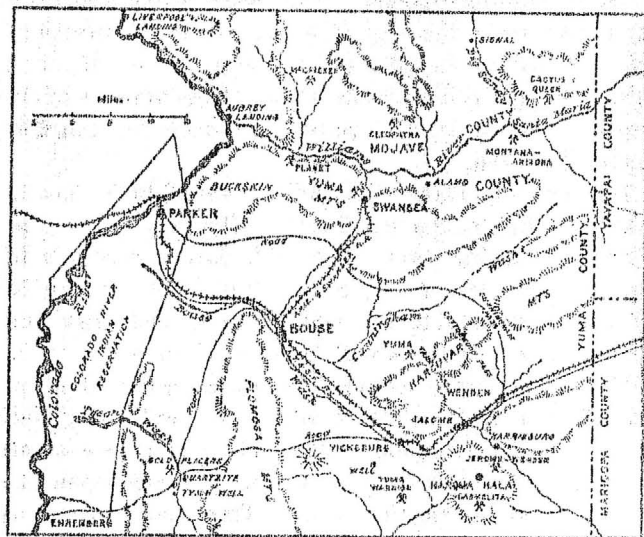
By W. TOVOTE

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SKETCH SHOWING PART OF VEIN-SYSTEM NEAR CUNNINGHAM PASS



SKETCH OF THE PARKER CUT-OFF DISTRICT IN YUMA COUNTY

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Cunningham pass is a low saddle in the Harcuvar mountains. The main traveled road from points in central Arizona to Parker used to lead through this pass, but in recent years a new highway has been constructed along the railroad, which now takes most of the through-traffic. The country is a typical semi-desert. Water is scarce and wells supply most of the drinking water. Small towns and settlements have grown wherever water has been found in sufficient quantity. Vegetation is scanty, the mesquite and palo verde being the principal shrubs, and some ironwood is found along the arroyos.

Mining near Cunningham pass dates back at least 20 years. The Critic and the Bullard mines were started on rich surface-ores, and both produced for awhile. The Critic is credited with an output of \$500,000 and the Bullard with \$150,000. The Bullard was opened by four short tunnels, the longest being 320 ft., with a maximum depth of about 225 ft. vertically. Ore was also developed in two shafts. The ore-shoot in the tunnels was partly stoped and the mine closed because the owner did not

Two years ago H. Barkdoll, superintendent of the Old Dominion Copper Mining & Smelting Co., at Globe, and his associates, acquired the Wenden Copper mine, sank a shaft 200 ft. deep, shipped ore and then closed. Adjoining the Wenden are the Conrad claims, which were purchased by El Paso people who organized the Wenden King Mining Co. Considerable money was expended without much to show for the expenditure, and the enterprise came to grief. Activity lagged again, until recently a rather remarkable showing was made in the Little Giant mine. Here two lessees had stoped out a small surface-shoot of high-grade copper ore, ranging from 2 to 15 in. wide. At 35 ft. this gave out, but the new owners acquired a lease and option and continued sinking. At 75 ft. the vein suddenly widened to about two feet, and was followed for about 70 ft., yielding ore assaying from 15 to 20% copper. Sinking was resumed and the ore improved in value. A new level at 125 ft., driven for over 100 ft., revealed excellent ore, in some places being 40 in. wide. About 200 tons of ore was shipped from development work alone, which returned more than \$50 per ton net. This new development has

widely advertised and a number of new companies lessees are entering the district.

**GEOLOGY.** The Cunningham pass country is worn down to the old gneiss or schist basement of pre-Paleozoic age. The schist is apparently derived mostly, if not exclusively, from intrusive rocks. Acid and semi-acid rocks, like biotite-gneiss and granite, prevail. The schist strikes N.60°E. and dips 25 to 30° to the north-west. Contorted and folded areas interrupt the uniformity. Paleozoic strata do not appear within five miles of Cunningham pass. The schistose complex has been invaded by intrusives. Two of these are prominent in the mineralized area and have probably influenced the ore deposition. They are: A granitic intrusion of the quartz-monzonite type, sending out numerous pegmatitic and aplitic dikes; and a semi-basic to basic intrusive, ranging from coarse hornblende-diorite to dense porphyritic dikes, resembling diabase. The latter strike generally north-west, while the pegmatite dikes lie in all directions and are irregular in outline, forming a network of dikes, sills, and penetrations in the schist. Both systems of intrusives are cut by the veins and sometimes are distinctly displaced.

The most important veins strike about 60 to 70° north-west and dip to the north-east. Flat and steep dips alternate, varying from 30 to 90°. Even reversals of dip have been found at places. Cross-veins striking N. 30°W. are similar to the main-veins in character and mineralization. Others with a course from north to N. 10°W. seem to carry more gold and less copper. Bedded veins with a strike about N.60°E. are ore-bearing, but likely to prove irregular. The chief importance of all the smaller veins is their enriching influence upon the main veins at intersection-points. Enrichment occurs as well in strike-intersections as in dip-crossings.

Composite stringer-veins predominate, usually with one fissure that is likely to persist over considerable distances. From the evidence available the veins must have been re-opened several times, and the principal fissure appears frequently in several displaced sections, joined by a network of stringers, giving the impression that the main mineralization shifted from one branch of an intricate fracture-system to another abruptly. The displacing fractures had a course about N.30°E.

The mineralization indicates two distinct periods. The principal gangue of one period of mineralization is quartz, while the other period is characterized by iron, principally as hematite. Both are associated with copper and gold. The strong influence exerted upon the veins by the pegmatite dikes leads me to consider the pegmatite as responsible for the acid mineralization. The iron mineralization I attribute to the semi-basic intrusives. Seams and veinlets of hematite are frequent in the pegmatite dikes, from which it appears that the pegmatite antedates the basic mineralization in the veins, and that considerable replacement of quartz by hematite must have taken place. The hematite has been altered to limonite superficially, but not to any large extent. It occurs massive and in its micaceous variety. The latter is considered a more favorable sign of ore. It is probably

due to stress and pressure and is coincident with areas of folding and contortion along the veins. These frequently have produced a false secondary schistosity, and often make the veins appear to conform to the schistosity, where they actually do not. Other gangue-minerals found are siderite, dolomite, and ankerite. Of these siderite is the most important and is closely associated with chalcopyrite. Possibly the hematite has been derived from siderite by metamorphism. Apparently post-mineral barite is common; less frequent is calcite, which is probably secondary. The metallization introduced chalcopyrite and pyrite with accessory gold. Silver is found, but seldom exceeds two ounces per ton, while the gold ranges from \$2 to over \$50 per ton. The copper has undergone considerable secondary concentration. Chalcocite, cuprite, and malachite are the principal products, while native copper, azurite, and chrysocolla are rarer. The ore generally assays higher than would be judged by its appearance, owing to a penetration of the hematite gangue by cuprite. Exceptional cuprite is found in perfect transparent crystals, accompanied by velvety malachite. The primary chalcopyrite is very pure and usually greatly in excess of the accompanying pyrite.

The orebodies are roughly lenticular, and vary from stringers to about four feet in width. A series of lenses, joined by narrow stringers, has produced a maximum stopping-length of 450 ft., and about the same proven depth in the Critic mine, the most extensively explored property in the district. The Bullard has an ore-zone about 150 ft. long. Favorable places for ore are folded areas, pegmatite-contacts, and the vicinity of basic intrusives. Intersection-zones increase the grade as well as the quantity of the ore.

The average grade of ore shipped from the district in the past was about 18 to 20% copper with about \$10 gold per ton. Chalcocite-stringers only a few inches wide are mined, and on being followed they will widen suddenly to several feet of solid ore and then contract again. While careful sorting is required where the vein is narrow, the ore breaks remarkably clean in the bigger shoots. The number of men employed is small. A mine employing 10 men and shipping 200 tons per month should make a good profit, as the net smelter returns are from \$50 to \$70 per ton. The haul to Wenden costs about \$4.50 per ton by team, but is now being done for less by trucks. The roads are fairly good and the grades not heavy. The Jerome scale of wages prevails, but labor is not very satisfactory, because many people dislike the hardships of the desert. The Bullard has shipped over 100 tons per month, working only two to three men, and the same ratio would be possible in most mines, if they were properly opened and employed power drills. The ore commands a ready market on account of its self-fluxing quality. The Clarkdale, Humboldt, Hayden, Saseo, and Douglas smelters have been receiving ore from the district. Cunningham pass is one of the few 'poor man's' copper districts in Arizona.

CREOSOTE has advanced to \$2.10 per pound. The demand is active.

Wenden Copper Mining  
Company

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1929 Report



# WENDEN COPPER MINING COMPANY

GENERAL OFFICE: SUITE 204, FIRST NATIONAL BANK OF ARIZONA BUILDING  
PHOENIX, ARIZONA

MINES: ELLSWORTH MINING DISTRICT  
CUNNINGHAM PASS, VIA WENDEN,  
YUMA, COUNTY, ARIZONA

## OFFICERS AND DIRECTORS

PRESIDENT—NED CREIGHTON  
PHOENIX, ARIZONA  
VICE-PRESIDENT—A. W. SYDNOR  
GLOVE, ARIZONA  
DIRECTOR—ARTHUR C. LUHRS  
PHOENIX, ARIZONA  
DIRECTOR—G. P. LEE  
PHOENIX, ARIZONA  
SECRETARY-TREASURER—WAYNE HUBBS  
PHOENIX, ARIZONA

REGISTRAR AND TRANSFER AGENTS  
SECURITY TRANSFER & REGISTRAR COMPANY  
39 BROADWAY, NEW YORK CITY, NEW YORK

## ATTORNEYS

BAKER & WHITNEY  
LUHRS TOWER  
PHOENIX, ARIZONA

MINE SUPERINTENDENT  
W. A. BUCHANAN  
WENDEN, ARIZONA

## To Stockholders of Wenden Copper Mining Company:

Herewith is presented a report of the company's operations since last statement to stockholders. The treasurer's report is submitted, exhibiting the financial status of the company. There is appended a series of underground and surface views, showing progress of development. Also there is included with report a claim map of the company's holdings and a sketch map of the mine workings, showing the relation of the development on the 700 foot level with that on the 1000 foot level of the Barkdoll shaft and the relation of the workings of the old No. 1 shaft to the workings of the Barkdoll shaft. In the closing paragraphs there is discussed a future program.

The acreage of mining ground owned by the Wenden Copper Mining Company totals 250.88 acres. In addition, as of this date, the company owns or controls surface rights comprising 165.28 acres, and is negotiating for 39 acres of lode claims.

Development work, which shows dead footage, has, in the main, been limited by the management to what was necessary to intelligent planning of mining procedure, both as regards present and future operations. Development costs have been high, but less than reported costs at other properties similarly located. An effort has been made to apportion fixed and general charges to various headings as will appear from the statement of balances.

The mine property and mining equipment as a whole is in excellent condition for capacity operation. The major improvement of the year past has been the electrification of the mining plant and replacement of prospecting units of machinery with modern equipment of capabilities commensurate with our anticipated needs. The major improvement contemplated for immediate completion is the construction of crushing plant and flotation system, together with power plant for the operation of same. Foundation for power plant is practically complete at this date.

Since last report to stockholders, mining operations have been continued in the workings of the Barkdoll shaft on the 700 and 1000 foot levels. In due course of operations, the work on the 700 level of the Barkdoll will be connected with the 400 foot level of the No. 1 shaft. No work was done in the old No. 1 shaft during the year.

Ore zones of substantial tonnage in excess of the area to which our operations will immediately be directed have been established for future consideration and operation. Of concern to shareholders at this time is that in several locations in our mine there is a disclosed tonnage, the total of which will assure a two-year profitable run for a mill of a capacity of 125 tons a day. The ore areas of low grade in our property which are not fully developed have not been considered in making this statement. Our values are gold, silver, and copper.

In considering factors relative to tonnage, which has been estimated as a two-year supply for a 125 ton mill and zones not fully developed, tests indicate that costs will closely conform to the following: Mining costs per ton, \$2.00; Milling costs, \$1.25; Marketing, \$1.50; General Expenses and Development, 90c, totalling \$5.65.

Analysis of the mining cost figure, based on experience, indicates that the item of \$2.00 per ton of ore is fairly accurate. Labor will consume one half of the estimate, explosives 40c, repairs and replacements 20c, power 15c, and superintendence and overhead 25c.

With a minimum mill operation of 125 tons daily and the current smelter value of copper, the breaking point between profit and loss would require ores with a copper content of 1.75%. Estimated recovery of values would be a minimum of 92%. Purposely, no account has been taken of gold and silver, which would, with copper values in excess of 1.75%, be our profits and chargeable only for taxes and executive administration.

Using our high grade ores and apportioning same to the entire low grade tonnage available for present and future years' milling, we estimate a tonnage that would justify years of profitable operations.

Indicating the content of our high grade ores are the figures appearing on the settlement sheet for the first lot of ore shipped to the Hayden plant of the American Smelting and Refining company, a copy of which is reproduced.

The advisability of shipping such ores in crude form direct to smelter has been considered. The management has determined not to pursue such policy, but to hold same available for use in conjunction with milling of low grade ore not capable of paying shipment costs in crude form.

The directors have heretofore been given authority by shareholders to arrange necessary finances to complete construction of the reduction plant. The total budget for same calls for \$50,000. It provides for crushing plant of 500 ton daily capacity and installation of flotation system of 125 tons daily capacity. Flotation capacity could be increased 100% at any time by an additional expenditure of \$20,000.

The auxiliary power plant now in course of construction will care for our immediate power demands. Problems encountered in survey of water available for milling have been solved. In addition to the budget of \$50,000 for the reduction plant, the directors anticipate a cost of \$15,000 to complete power plant and the use of \$70,000 for water development and mining to connect old and new workings.

There has been no change since last report in the number of shares of capital stock outstanding. The management contemplates no difficulty in financing the program outlined through the medium of issuing long-term convertible corporate notes. The borrowing power of the company is utilized only as funds are needed.

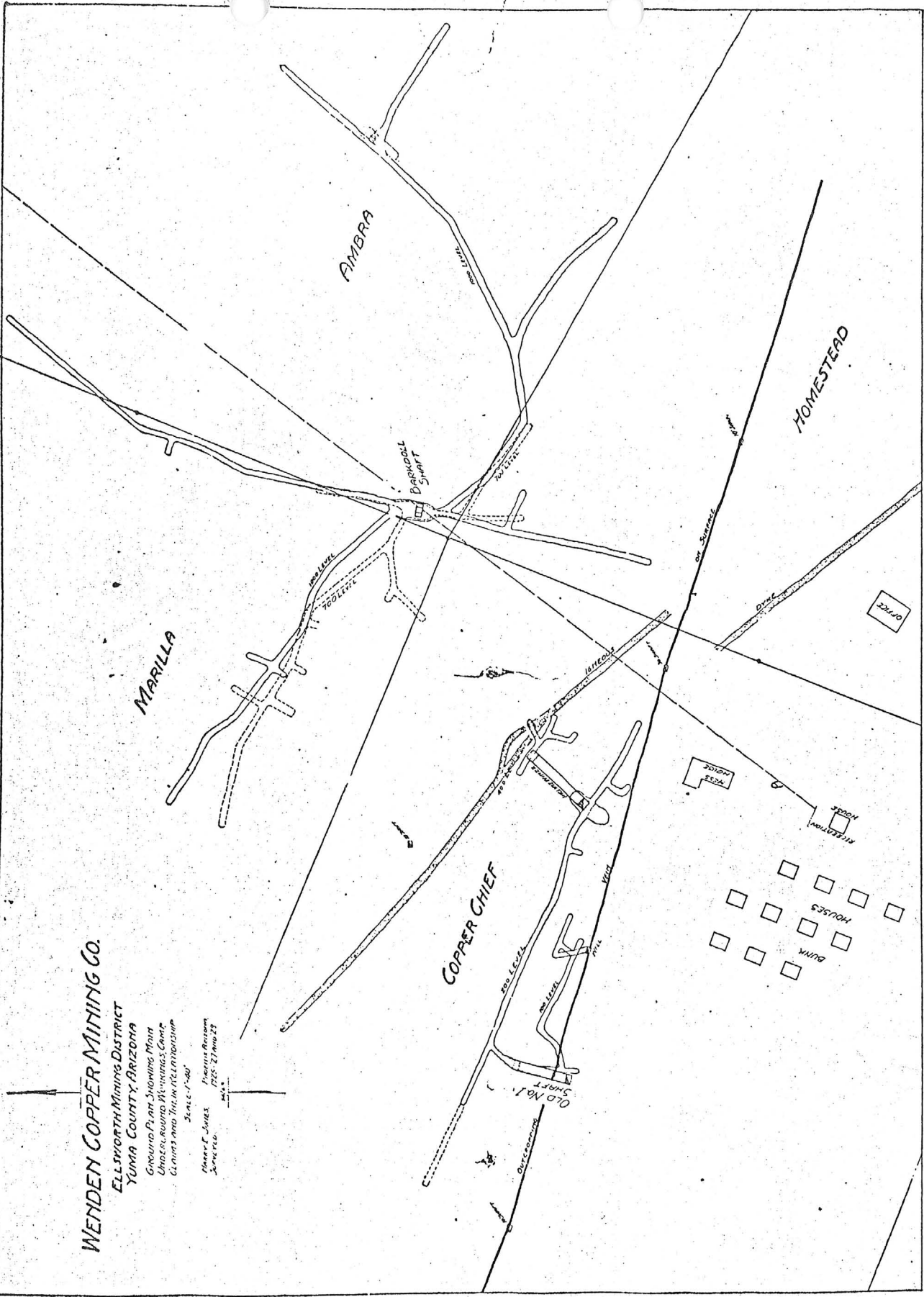
Frequent inquiries from shareholders have urged that we advise concerning the purchase or sale of shares of our capital stock. To all such inquiries, the answer has been made, that a policy was adopted at the time of the organization of our company that no recommendation concerning the purchase of or sale of securities of the company would be made, and there is no reason at this time to deviate from that rule. Company shares are listed on the New York Curb Exchange for convenience of stockholders.

Your President feels fully justified, at this time, in expressing his view, that at no time in the history of our property were prospects brighter for the Wenden Copper Mining Company becoming a regular producer than at this date.

NED CREIGHTON, President,

WENDEN COPPER MINING COMPANY.

December 16, 1929.



**WENDEN COPPER MINING CO.**

ELLSWORTH MINING DISTRICT  
YUMA COUNTY, ARIZONA

Ground Plan, Showings, Mine  
Operations, and Other Information  
Compiled and Issued by the  
Geological Survey

Scale: 1" = 400'

Prepared by  
JAMES F. JONES, District Engineer  
Arizona  
1925. 27 Nov. 29

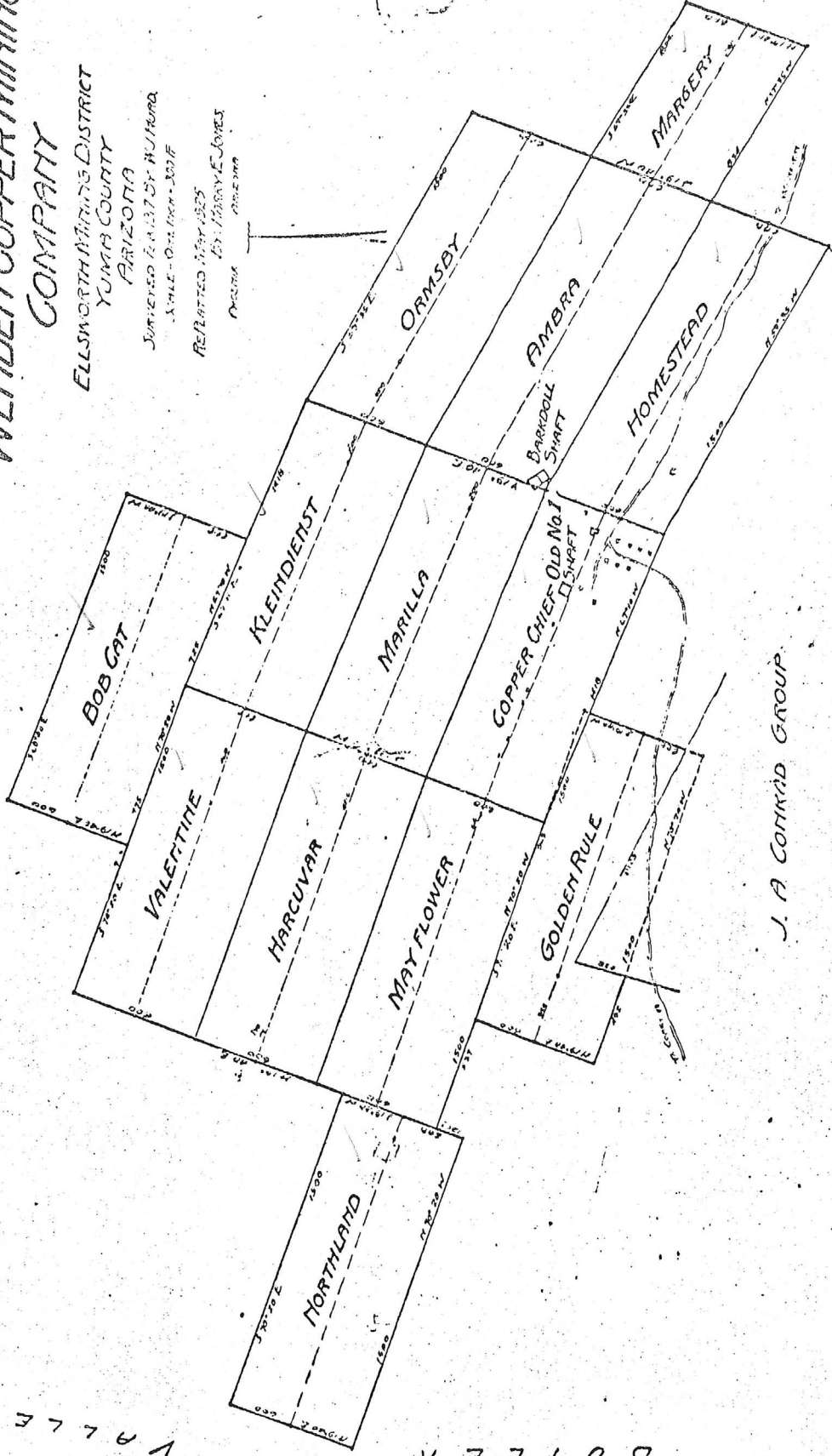


CLAIM MAP  
OF THE  
WENDEN COPPER MINING  
COMPANY

ELLSWORTH MINING DISTRICT  
YUMA COUNTY  
ARIZONA

SURVEYED & PLATTED BY W. H. HARRIS  
SCALE - ONE INCH = 500 FEET

REPLATTED BY J. A. CONNARD  
BY ORDER OF THE  
SHERIFF



J. A. CONNARD GROUP

Circle

V A L L E Y

B U T L E R

Smelter Settlement Sheet

FORM 2A 10M 2-22 P. H. K. TUCSON  
FORM 2A 10M 2-22 P. H. K. TUCSON

AMERICAN SMELTING & REFINING COMPANY  
HAYDEN PLANT

Hayden, Arizona, October 25, 1929

Bought of Zenden Copper Mining Company  
Shipping Point Hayden, Arizona  
Classification Grade  
Smelter Lot 1628  
Shipper's Lot 1

CAR		WEIGHT IN POUNDS					N. Y. QUOTATIONS	
Number	Initial	Gross	Tare	Net	HO	Dry Weight		
81525	A.T.	100400	43200	56900	1.1	55977	Date 10-16-29	
81525	A.T.	100400	43200	56900	1.1	55977	Silver 10-16-29	
							:405553	
							E & M. J. 10-10-20	
							:175.50	
							Copper 10-10-20	
							:702.125	
							Less 10-10-20	
							:175.375	
							Net 10-10-20	
							:175.375	
							Value	

PAYMENT FOR METALS

Elements	Assay Per Ton of 2000 Lbs.	% Deducted	Net Assay	Equiv. in lbs	% Paid For	Net Paid For	Rate	Amount per Ton	Total Amount
Gold	50	0%	50		100	50	10.50	5.25	
Silver		0%							
Lead		0%							
Copper	10.05	0%	9.95	195.0	95%	189.55	147.375	27.92	32.97
Total Payment for Metals									32.97

Charges and Credits

BASE CHARGE E. O. B. HAYDEN PLANT	Debits	Credits
	\$2.29	

Analysis

Analysis	Deduction	Net	Rate
Insoluble			
Silica			
Alumina			
Zinc			
Sulphur			
As Sb Bi			
Iron			
Lime			

NOV 11 1929  
AMERICAN SMELTING & REFINING CO.  
HAYDEN ARIZ.

Total Deductions 5.29  
Net Value per Ton 27.68

Total Value on	Dry Tons @	Wet Tons @	per Ton	per Ton	Debits	Credits
\$7,955.3	27.53	3.15	60,000 Min		94.50	721.94
Less Freight on						
Less Switching						
Less Sampling						
Less Empire Charges						

Balance Due Shipper 677.42

MADE BY 474 CHECKED 474 CORRECT APPROVED

Note:—Smelter treatment charges since date of above statement, as applied to our ore, have been reduced approximately \$1.00 a ton.  
Freight rates applying to our ores from point of shipment to smelter will be checked by the rate department of the Arizona Corporation Commission in connection with our application for reduction of same.

# AMERICAN SMELTING AND REFINING COMPANY HAYDEN PLANT

Shipper.....Rhode Hatch Tobacco.....Hayden, Arizona,.....April 15,.....1912  
 Address.....Critic Mine, Tendon, Arizona.....Smelter Lot.....300  
 Shipping Point.....Tendon, Arizona.....Class.....Grade.....Shipper's Lot.....1

CAR		WEIGHT IN POUNDS					N. Y. QUOTATIONS	
Number	Initial	Gross	Tare	Net	H.O	Dry Weight		
172050	A.T.	109580	35600	24280	1.0	23073	Settlement Date 1-5	
							Bill Lading Date 1-5	
				11457 Dry			Silver 20085	
							Less 235	
							Net 20125	
							Copper 11250	
							Less 200725	
							Net 200775	
			Tons	12.110		11.000		

PAYMENT FOR METALS								VALUE	
Elements	Assay Per Ton of 2000 Lbs.	Deducted	Net Assay	Equiv. in Lbs.	% Paid For	Net Paid For	Rate	Amount per Ton	Total Amount
Gold	.415 Oz.					.415 Oz.	12.51225	13.41	
Silver	.10 Oz.	.5							
Copper	5.44 %	.5	5.04	100.6	95	23.71 Lbs.	200775	2.30	
Total Payment of Metals									25.71

CHARGES AND CREDITS		Debits	Credits
BASE CHARGE: F.O.B. Hayden for Metal Payments, not exceeding \$.....per ton		6.50	
.....% of \$.....7.10.....excess over \$.....35.00.....per ton		7.10	

Analysis			Deduction	Net			
		%			%	@	cts.
Insoluble		7			%	@	cts.
Silica		0			%	@	cts.
Alumina		0			%	@	cts.
Zinc					%	@	cts.
Sulphur					%	@	cts.
Iron					%	@	cts.
Lime					%	@	cts.

Total Deductions	
Net Value Per Ton	

			Debits	Credits
Total Value on	Dry Tons @	Per Ton		
Less Freight on	Wet Tons @	Per Ton		



8.6

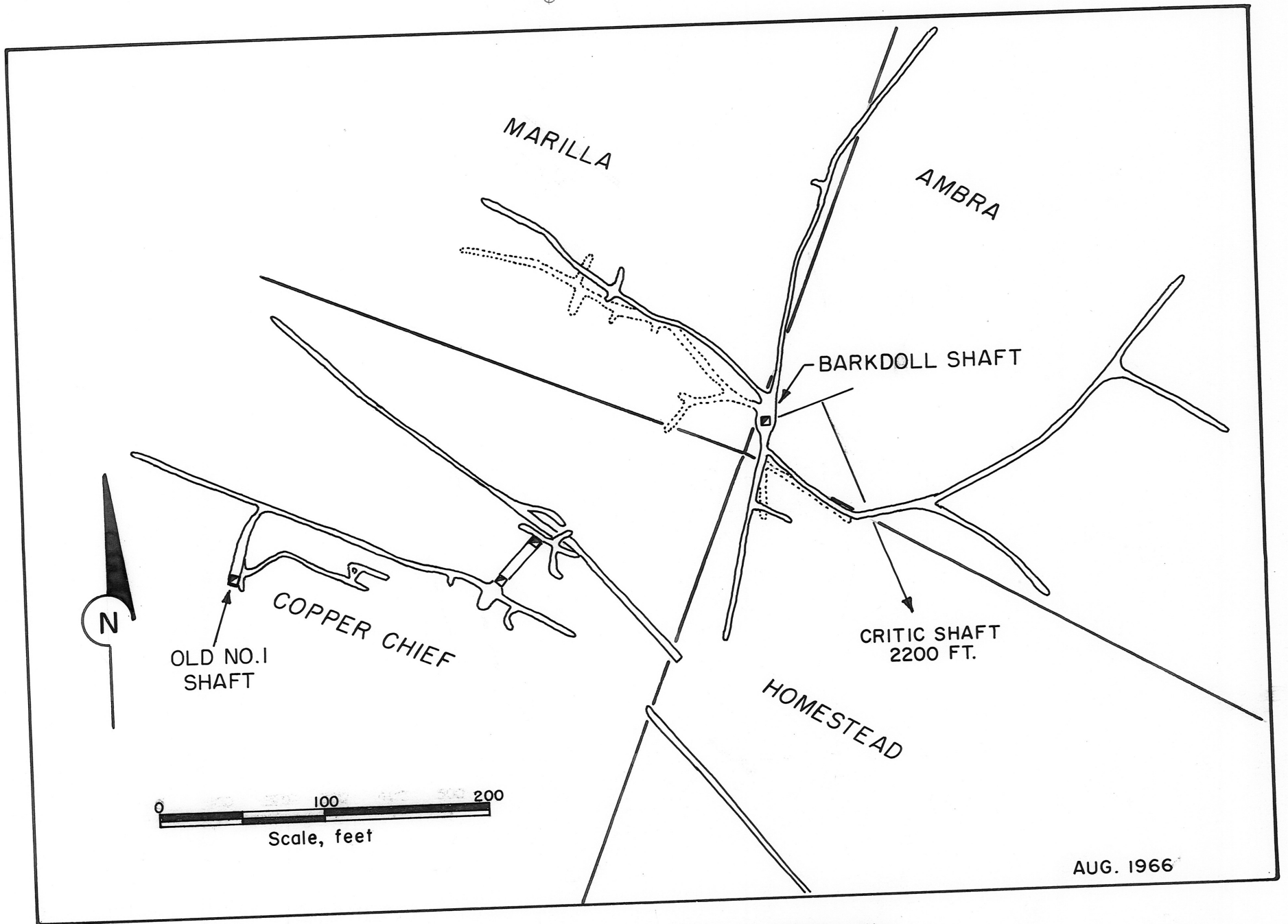


FIGURE 5.- Plan of Workings, Wenden Mine.



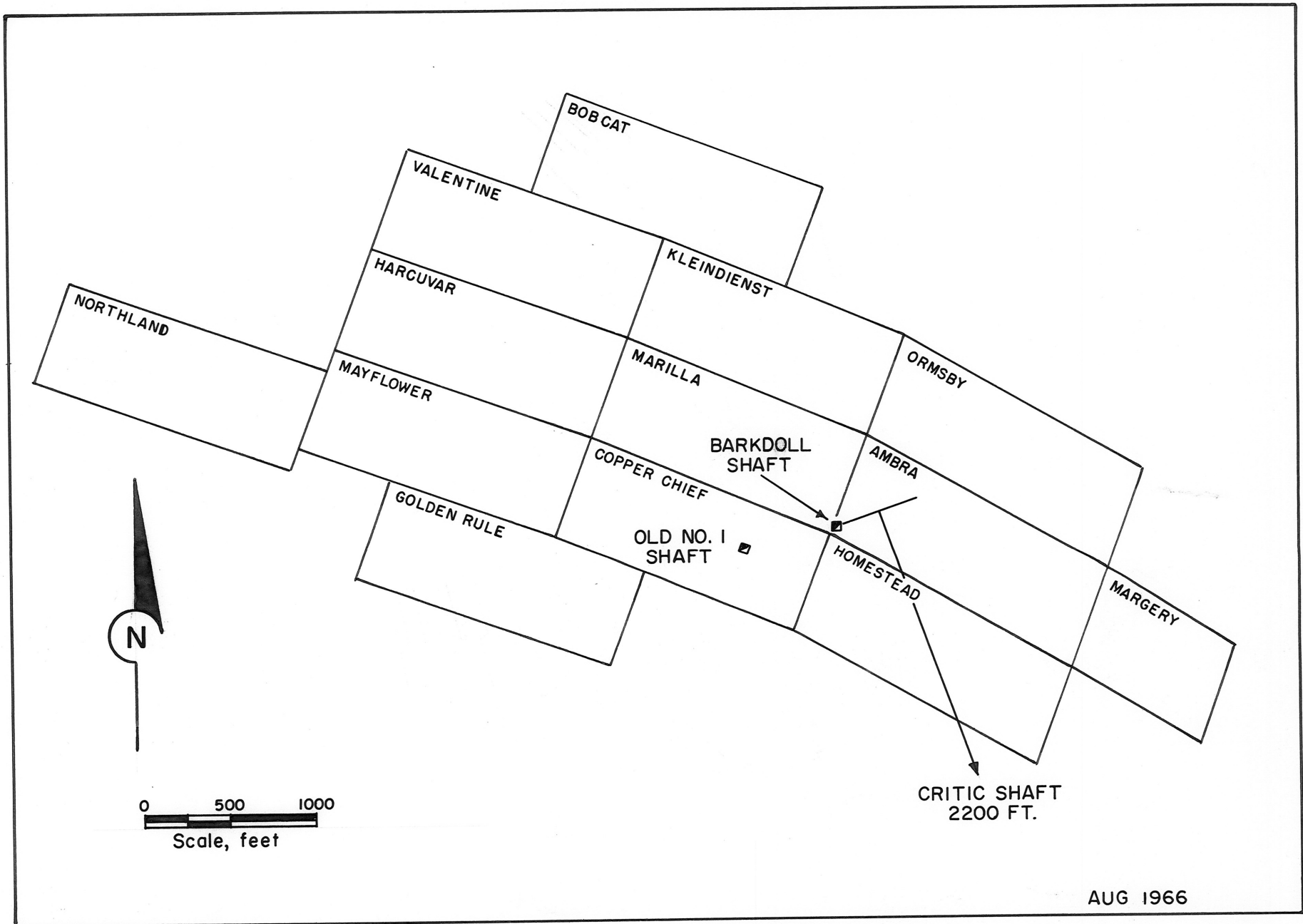


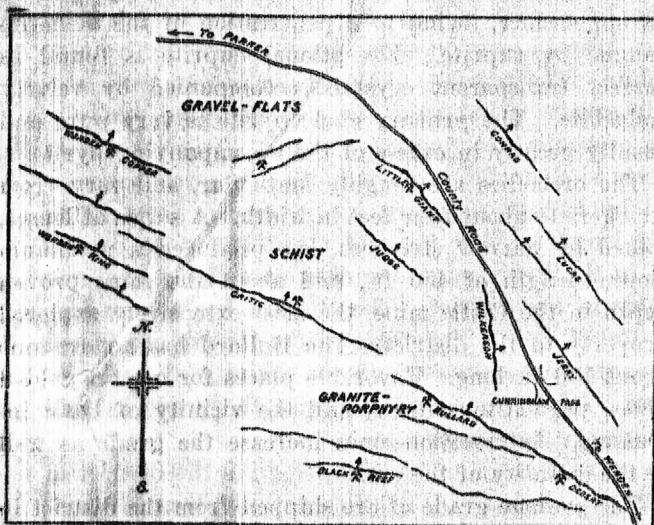
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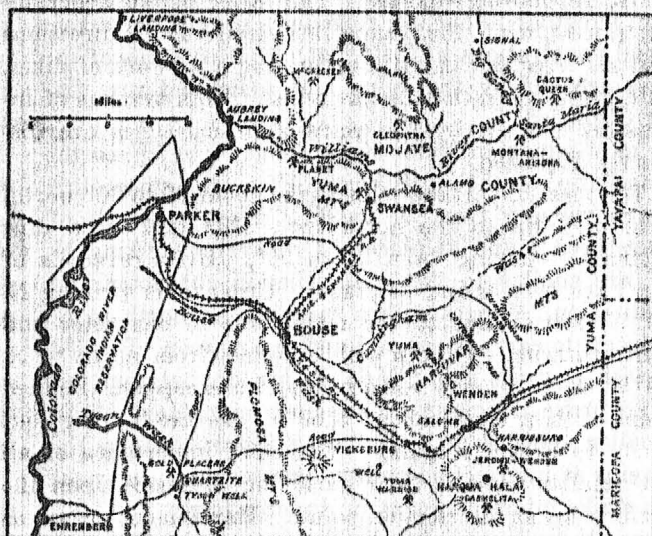
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Two years ago H. Barkdoll, superintendent of the Old Dominion Copper Mining & Smelting Co., at Globe, and his associates, acquired the Wenden Copper mine, sank a shaft 200 ft. deep, shipped ore and then closed. Adjoining the Wenden are the Conrad claims, which were purchased by El Paso people who organized the Wenden King Mining Co. Considerable money was expended without much to show for the expenditure, and the enterprise came to grief. Activity lagged again, until recently a rather remarkable showing was made in the Little Giant mine. Here two lessees had stoped out a small surface-shoot of high-grade copper ore, ranging from 2 to 15 in. wide. At 35 ft. this gave out, but the new owners acquired a lease and option and continued sinking. At 75 ft. the vein suddenly widened to about two feet, and was followed for about 70 ft., yielding ore assaying from 15 to 20% copper. Sinking was resumed and the ore improved in value. A new level at 125 ft., driven for over 100 ft., revealed excellent ore, in some places being 40 in. wide. About 200 tons of ore was shipped from development work alone, which returned more than \$50 per ton net. This new development has

widely advertised and a number of new companies lessees are entering the district.

**GEOLOGY.** The Cunningham pass country is worn down to the old gneiss or schist basement of pre-Paleozoic age. The schist is apparently derived mostly, if not exclusively, from intrusive rocks. Acid and semi-acid rocks, like biotite-gneiss and granite, prevail. The schist strikes N.60°E. and dips 25 to 30° to the north-west. Contorted and folded areas interrupt the uniformity. Paleozoic strata do not appear within five miles of Cunningham pass. The schistose complex has been invaded by intrusives. Two of these are prominent in the mineralized area and have probably influenced the ore deposition. They are: A granitic intrusion of the quartz-monzonite type, sending out numerous pegmatitic and aplitic dikes; and a semi-basic to basic intrusive, ranging from coarse hornblende-diorite to dense porphyritic dikes, resembling diabase. The latter strike generally north-west, while the pegmatite dikes lie in all directions and are irregular in outline, forming a network of dikes, sills, and penetrations in the schist. Both systems of intrusives are cut by the veins and sometimes are distinctly displaced.

The most important veins strike about 60 to 70° north-west and dip to the north-east. Flat and steep dips alternate, varying from 30 to 90°. Even reversals of dip have been found at places. Cross-veins striking N. 30°W. are similar to the main-veins in character and mineralization. Others with a course from north to N. 10°W. seem to carry more gold and less copper. Bedded veins with a strike about N.60°E. are ore-bearing, but likely to prove irregular. The chief importance of all the smaller veins is their enriching influence upon the main veins at intersection-points. Enrichment occurs as well in strike-intersections as in dip-crossings.

Composite stringer-veins predominate, usually with one fissure that is likely to persist over considerable distances. From the evidence available the veins must have been re-opened several times, and the principal fissure appears frequently in several displaced sections, joined by a network of stringers, giving the impression that the main mineralization shifted from one branch of an intricate fracture-system to another abruptly. The dislocating fractures had a course about N.30°E.

The mineralization indicates two distinct periods. The principal gangue of one period of mineralization is quartz, while the other period is characterized by iron, principally as hematite. Both are associated with copper and gold. The strong influence exerted upon the veins by the pegmatite dikes leads me to consider the pegmatite as responsible for the acid mineralization. The iron mineralization I attribute to the semi-basic intrusives. Seams and veinlets of hematite are frequent in the pegmatite dikes, from which it appears that the pegmatite antedates the basic mineralization in the veins, and that considerable replacement of quartz by hematite must have taken place. The hematite has been altered to limonite superficially, but not to any large extent. It occurs massive and in its micaceous variety. The latter is considered a more favorable sign of ore. It is probably

due to stress and pressure and is coincident with areas of folding and contortion along the veins. These frequently have produced a false secondary schistosity, and often make the veins appear to conform to the schistosity, where they actually do not. Other gangue-minerals found are siderite, dolomite, and ankerite. Of these siderite is the most important and is closely associated with chalcopyrite. Possibly the hematite has been derived from siderite by metamorphism. Apparently post-mineral barite is common; less frequent is calcite, which is probably secondary. The metallization introduced chalcopyrite and pyrite with accessory gold. Silver is found, but seldom exceeds two ounces per ton, while the gold ranges from \$2 to over \$50 per ton. The copper has undergone considerable secondary concentration. Chalcocite, cuprite, and malachite are the principal products, while native copper, azurite, and chrysocolla are rarer. The ore generally assays higher than would be judged by its appearance, owing to a penetration of the hematite gangue by cuprite. Exceptional cuprite is found in perfect transparent crystals, accompanied by velvety malachite. The primary chalcopyrite is very pure and usually greatly in excess of the accompanying pyrite.

The orebodies are roughly lenticular, and vary from stringers to about four feet in width. A series of lenses, joined by narrow stringers, has produced a maximum stoping-length of 450 ft., and about the same proven depth in the Critic mine, the most extensively explored property in the district. The Bullard has an ore-zone about 150 ft. long. Favorable places for ore are folded areas, pegmatite-contacts, and the vicinity of basic intrusives. Intersection-zones increase the grade as well as the quantity of the ore.

The average grade of ore shipped from the district in the past was about 18 to 20% copper with about \$10 gold per ton. Chalcocite-stringers only a few inches wide are mined, and on being followed they will widen suddenly to several feet of solid ore and then contract again. While careful sorting is required where the vein is narrow, the ore breaks remarkably clean in the bigger shoots. The number of men employed is small. A mine employing 10 men and shipping 200 tons per month should make a good profit, as the net smelter returns are from \$50 to \$70 per ton. The haul to Wenden costs about \$4.50 per ton by team, but is now being done for less by trucks. The roads are fairly good and the grades not heavy. The Jerome scale of wages prevails, but labor is not very satisfactory, because many people dislike the hardships of the desert. The Bullard has shipped over 100 tons per month, working only two to three men, and the same ratio would be possible in most mines, if they were properly opened and employed power drills. The ore commands a ready market on account of its self-fluxing quality. The Clarkdale, Humboldt, Hayden, Sasco, and Douglas smelters have been receiving ore from the district. Cunningham pass is one of the few 'poor man's' copper districts in Arizona.

CREOSOTE has advanced to \$2.10 per pound. The demand is active.

Wenden Copper Mining  
Company

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1929 Report

# WENDEN COPPER MINING COMPANY

GENERAL OFFICE: SUITE 204, FIRST NATIONAL BANK OF ARIZONA BUILDING  
PHOENIX, ARIZONA

MINES: ELLSWORTH MINING DISTRICT  
CUNNINGHAM PASS, VIA WENDEN,  
YUMA, COUNTY, ARIZONA

## OFFICERS AND DIRECTORS

PRESIDENT—NED CREIGHTON  
PHOENIX, ARIZONA  
VICE-PRESIDENT—A. W. SYDNOR  
GLOBE, ARIZONA  
DIRECTOR—ARTHUR C. LUHRS  
PHOENIX, ARIZONA  
DIRECTOR—G. P. LEE  
PHOENIX, ARIZONA  
SECRETARY-TREASURER—WAYNE HUBBS  
PHOENIX, ARIZONA

## REGISTRAR AND TRANSFER AGENTS

SECURITY TRANSFER & REGISTRAR COMPANY  
39 BROADWAY, NEW YORK CITY, NEW YORK

## ATTORNEYS

BAKER & WHITNEY  
LUHRS TOWER  
PHOENIX, ARIZONA

## MINE SUPERINTENDENT

W. A. BUCHANAN  
WENDEN, ARIZONA

## To Stockholders of Wenden Copper Mining Company:

Herewith is presented a report of the company's operations since last statement to stockholders. The treasurer's report is submitted, exhibiting the financial status of the company. There is appended a series of underground and surface views, showing progress of development. Also there is included with report a claim map of the company's holdings and a sketch map of the mine workings, showing the relation of the development on the 700 foot level with that on the 1000 foot level of the Barkdoll shaft and the relation of the workings of the old No. 1 shaft to the workings of the Barkdoll shaft. In the closing paragraphs there is discussed a future program.

The acreage of mining ground owned by the Wenden Copper Mining Company totals 250.88 acres. In addition, as of this date, the company owns or controls surface rights comprising 165.28 acres, and is negotiating for 39 acres of lode claims.

Development work, which shows dead footage, has, in the main, been limited by the management to what was necessary to intelligent planning of mining procedure, both as regards present and future operations. Development costs have been high, but less than reported costs at other properties similarly located. An effort has been made to apportion fixed and general charges to various headings as will appear from the statement of balances.

The mine property and mining equipment as a whole is in excellent condition for capacity operation. The major improvement of the year past has been the electrification of the mining plant and replacement of prospecting units of machinery with modern equipment of capabilities commensurate with our anticipated needs. The major improvement contemplated for immediate completion is the construction of crushing plant and flotation system, together with power plant for the operation of same. Foundation for power plant is practically complete at this date.

Since last report to stockholders, mining operations have been continued in the workings of the Barkdoll shaft on the 700 and 1000 foot levels. In due course of operations, the work on the 700 level of the Barkdoll will be connected with the 400 foot level of the No. 1 shaft. No work was done in the old No. 1 shaft during the year.

Ore zones of substantial tonnage in excess of the area to which our operations will immediately be directed have been established for future consideration and operation. Of concern to shareholders at this time is that in several locations in our mine there is a disclosed tonnage, the total of which will assure a two-year profitable run for a mill of a capacity of 125 tons a day. The ore areas of low grade in our property which are not fully developed have not been considered in making this statement. Our values are gold, silver, and copper.

In considering factors relative to tonnage, which has been estimated as a two-year supply for a 125 ton mill and other zones not fully developed, tests indicate that costs will closely conform to the following: Mining costs per ton, \$2.00; Milling costs, \$1.25; Marketing, \$1.50; General Expenses and Development, 90c, totalling \$5.65.

Analysis of the mining cost figure, based on experience, indicates that the item of \$2.00 per ton of ore is fairly accurate. Labor will consume one half of the estimate, explosives 40c, repairs and replacements 20c, power 15c, and superintendence and overhead 25c.

With a minimum mill operation of 125 tons daily and the current smelter value of copper, the breaking point between profit and loss would require ores with a copper content of 1.75%. Estimated recovery of values would be a minimum of 92%. Purposely, no account has been taken of gold and silver, which would, with copper values in excess of 1.75%, be our profits and chargeable only for taxes and executive administration.

Using our high grade ores and apportioning same to the entire low grade tonnage available for present and future years' milling, we estimate a tonnage that would justify years of profitable operations.

Indicating the content of our high grade ores are the figures appearing on the settlement sheet for the first lot of ore shipped to the Hayden plant of the American Smelting and Refining company, a copy of which is reproduced.

The advisability of shipping such ores in crude form direct to smelter has been considered. The management has determined not to pursue such policy, but to hold same available for use in conjunction with milling of low grade ore not capable of paying shipment costs in crude form.

The directors have heretofore been given authority by shareholders to arrange necessary finances to complete construction of the reduction plant. The total budget for same calls for \$50,000. It provides for crushing plant of 500 ton daily capacity and installation of flotation system of 125 tons daily capacity. Flotation capacity could be increased 100% at any time by an additional expenditure of \$20,000.

The auxiliary power plant now in course of construction will care for our immediate power demands. Problems encountered in survey of water available for milling have been solved. In addition to the budget of \$50,000 for the reduction plant, the directors anticipate a cost of \$15,000 to complete power plant and the use of \$70,000 for water development and mining to connect old and new workings.

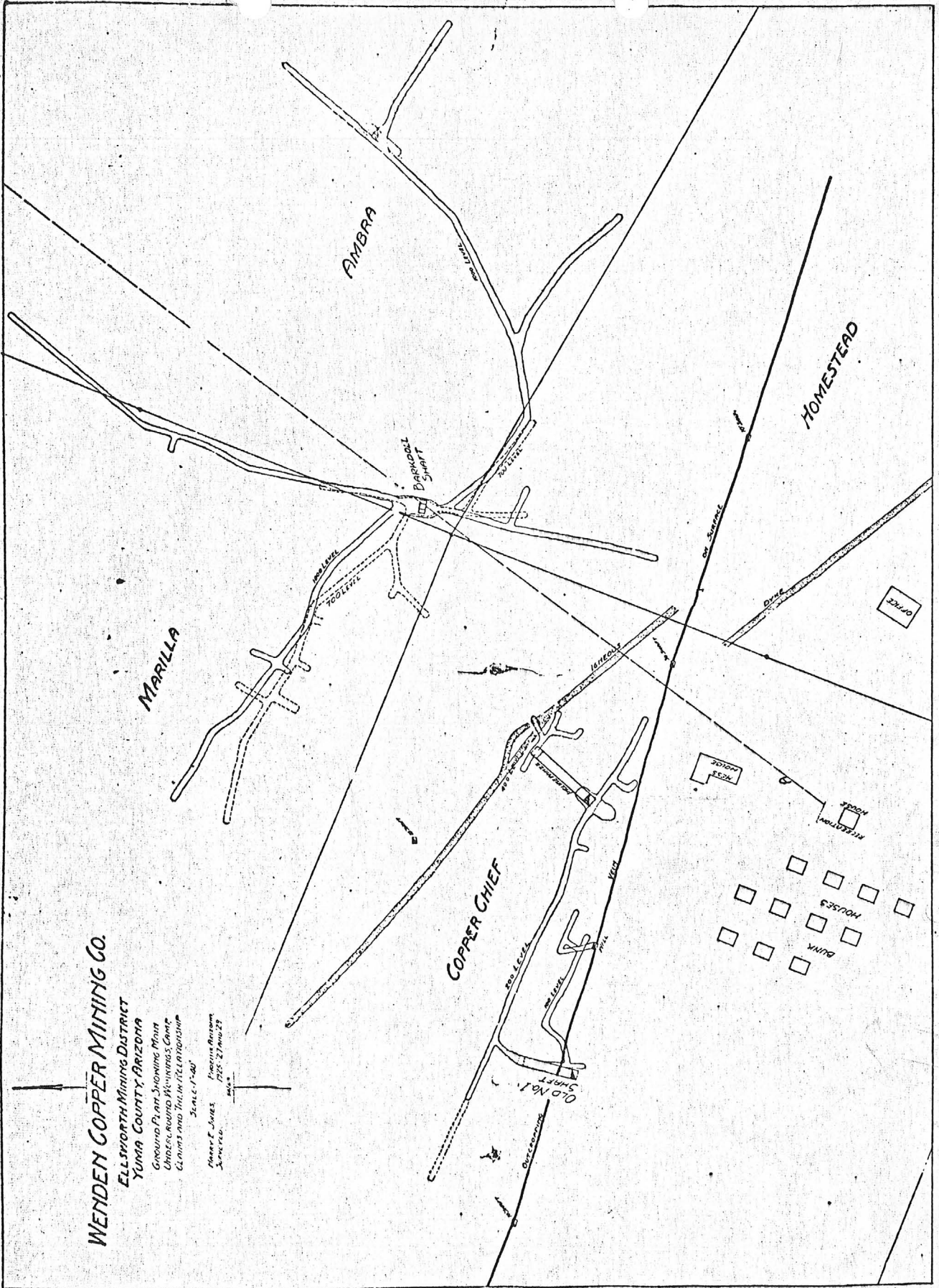
There has been no change since last report in the number of shares of capital stock outstanding. The management contemplates no difficulty in financing the program outlined through the medium of issuing long-term convertible corporate notes. The borrowing power of the company is utilized only as funds are needed.

Frequent inquiries from shareholders have urged that we advise concerning the purchase or sale of shares of our capital stock. To all such inquiries, the answer has been made, that a policy was adopted at the time of the organization of our company that no recommendation concerning the purchase of or sale of securities of the company would be made, and there is no reason at this time to deviate from that rule. Company shares are listed on the New York Curb Exchange for convenience of stockholders.

Your President feels fully justified, at this time, in expressing his view, that at no time in the history of our property were prospects brighter for the Wenden Copper Mining Company becoming a regular producer than at this date.

NED CREIGHTON, President,  
WENDEN COPPER MINING COMPANY.

December 16, 1929.



**WENDON COPPER MINING CO.**

ELLSWORTH MINING DISTRICT  
YUMA COUNTY, ARIZONA

Ground Plan Showing Main  
Underground Veins, Camp  
Buildings and Tailin Retentionship  
Scale 1" = 40'

Henry C. Jones  
Surveyor  
No. 2746429

CLAIM MAP  
OF THE

WENDEN COPPER MINING  
COMPANY

ELLSWORTH MINING DISTRICT  
YUMA COUNTY  
ARIZONA

SURVEYED P. M. 1917 BY W. J. HARRIS

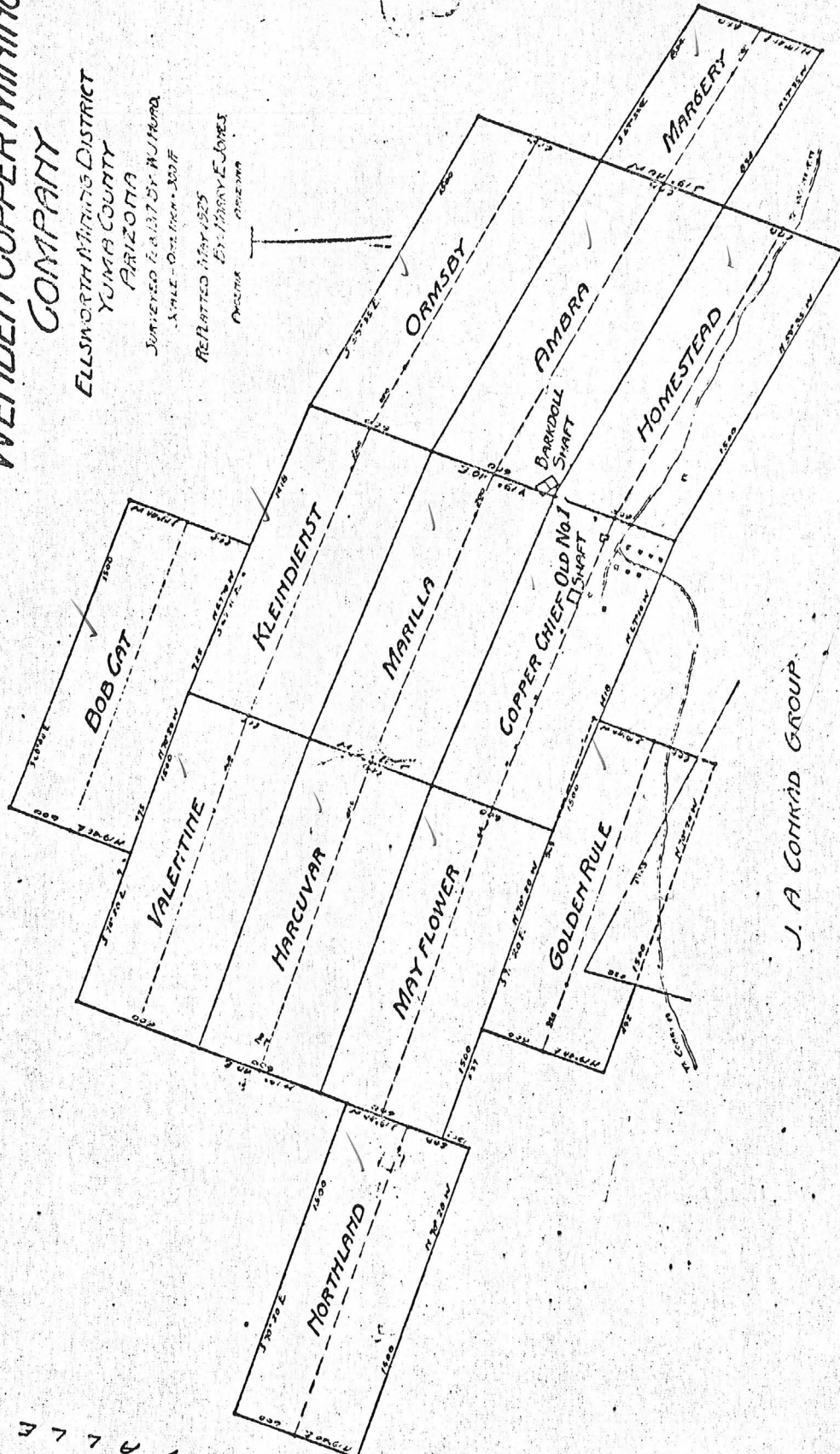
SCALE - ONE INCH = 300 FEET

REPLATED MAY 1925

BY MARY E. JONES

REGISTERED

BUTLER VALLEY



J. A. CONRAD GROUP

Critic

ARIZONA CONSTITUTION  
ARTICLE 18



Smelter Settlement Sheet

FORM 2A 10M 2-22 F. H. K. TUCSON  
FORM 2A 10M 2-22 F. H. K. TUCSON

AMERICAN SMELTING & REFINING COMPANY  
HAYDEN PLANT

Hayden, Arizona, October 25, 1929

Bought of Wenden Copper Mining Company

Shipping Point Wenden, Arizona

Classification Grade

Smelter Lot 1029

Shipper's Lot 1

CAR		WEIGHT IN POUNDS					N. Y. QUOTATIONS	
Number	Initial	Gross	Tare	Net	H <sub>2</sub> O	Dry Weight		
01525	A.T.	100400	43300	56900	1.1	55977		
		TONS 28.300					27,9885	

Rate 10-16-29  
Silver 10-16-29  
:400553  
F & M. J. 10-10-29  
:17550  
:175135  
Copper :625  
Less :175375  
Net :450  
:175375

PAYMENT FOR METALS

Elements	Assay Per Ton of 2000 Lbs.	% Deducted	Net Assay	Equiv. in Lbs.	% Paid For	Net Paid For	Rate	Amount per Ton	Total Amount
Gold	50		50	100		50	12.50	5.05	
Silver									
Lead									
Copper	10.05	8 1/2	9.55	193.0	95	183.55	147.375	27.02	32.87
Total Payment for Metals									32.87

Charges and Credits

BASE CHARGE E. O. B. HAYDEN PLANT

Analysis	Deduction	Net	Rate
Insoluble			
Silica			
Alumina			
Zinc			
Sulphur			
As Sb Bi			
Iron			
Lime			
Total Deductions			5.29
Net Value per Ton			27.58

NOV 11 1929  
AMERICAN SMELTING & REFINING COMPANY  
HAYDEN ARIZ.

Total Value on	27,9885	Dry Tons @ 27.53	per Ton	
Less Freight on	28.50	Wet Tons @ 3.15	per Ton	60,000 Min
Less Switching				24.50
Less Sampling				
Less Umpire Charges				
Balance Due Shipper				677.12

MADE BY *AVL* CHECKED *AVV* CORRECT APPROVED *[Signature]*

Note:—Smelter treatment charges since date of above statement, as applied to our ore, have been reduced approximately \$1.00 a ton.  
Freight rates applying to our ores from point of shipment to smelter will be checked by the rate department of the Arizona Corporation Commission in connection with our application for reduction of same.

# AMERICAN SMELTING AND REFINING COMPANY

## HAYDEN PLANT

Shipper.....Rhoda Hatch Nohlochok.....Hayden, Arizona,.....April 15,.....1912.....  
 Address.....Critic Mine, Hayden, Arizona.....Smelter Lot.....300.....  
 Shipping Point.....Hayden, Arizona.....Class.....Grade.....Shipper's Lot.....1.....

CAR		WEIGHT IN POUNDS					N. Y. QUOTATIONS
Number	Initial	Gross	Tare	Net	H.O	Dry Weight	
172030	A.T.	100880	33460	24280	1.0	23073	Settlement Date 1-3 Bill Lading Date 1-1
				11487 Dry			Silver 20005 Less 315 Net 20125 Copper 11250 Less 200725 Net 200775
				Tons 12.110		11.000	

PAYMENT FOR METALS								VALUE	
Elements	Assay Per Ton of 2000 Lbs.	Deducted	Net Assay	Equiv. in Lbs.	% Paid For	Net Paid For	Rate	Amount per Ton	Total Amount
Gold	.215 Oz.					.215 Oz.	12.51005	13.41	
Silver	.10 Oz.	.5				.10 Oz.			
Copper	5.11 %	.5	5.04	100.6	95	50.71 Lbs.	200775	0.00	
Total Payment of Metals									25.10

CHARGES AND CREDITS		Debits	Credits
BASE CHARGE: F.O.B. Hayden for Metal Payments, not exceeding \$.....per ton		0.50	
.....% of \$.....7.10.....excess over \$.....15.00.....per ton - - -		71	

Analysis			Deduction	Net			
Insoluble	70	7 %			%	@	cts.
Silica	70	0 %			%	@	cts.
Alumina	1	0 %			%	@	cts.
Zinc		%			%	@	cts.
Sulphur		%			%	@	cts.
Iron	3	0 %			%	@	cts.
Lime		%			%	@	cts.
		%			%	@	cts.

Total Deductions	
Net Value Per Ton	

		Debits	Credits
Total Value on	Dry Tons @		
Less Freight on	Wet Tons @		

Made by ..... Checked ..... Correct ..... Approved .....

