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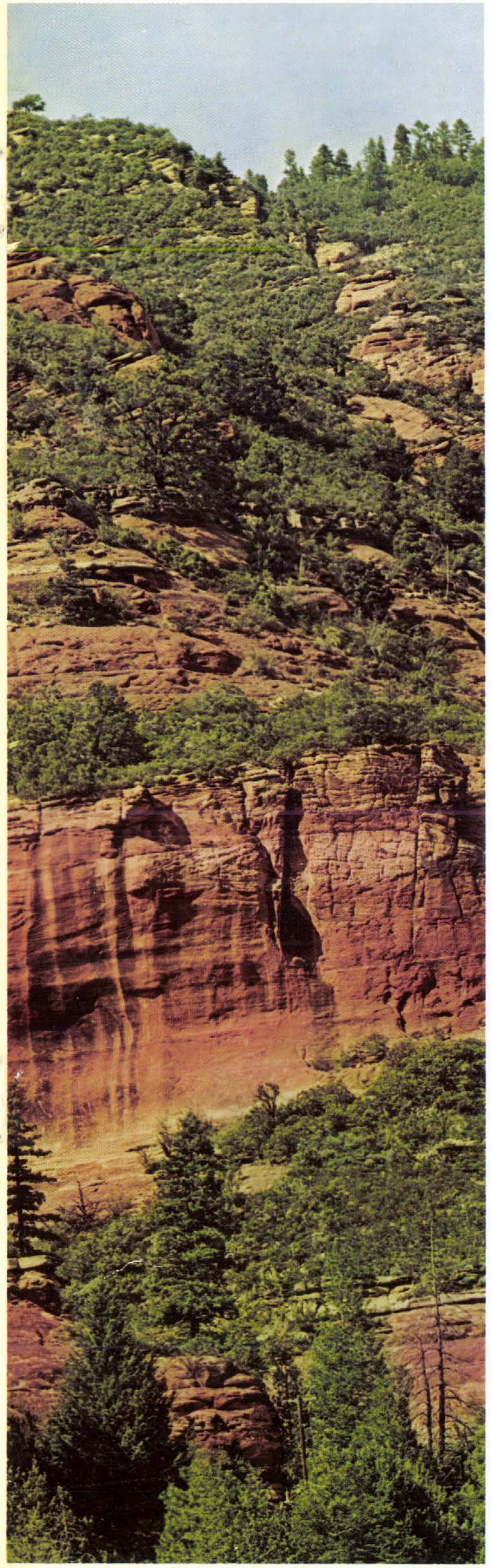
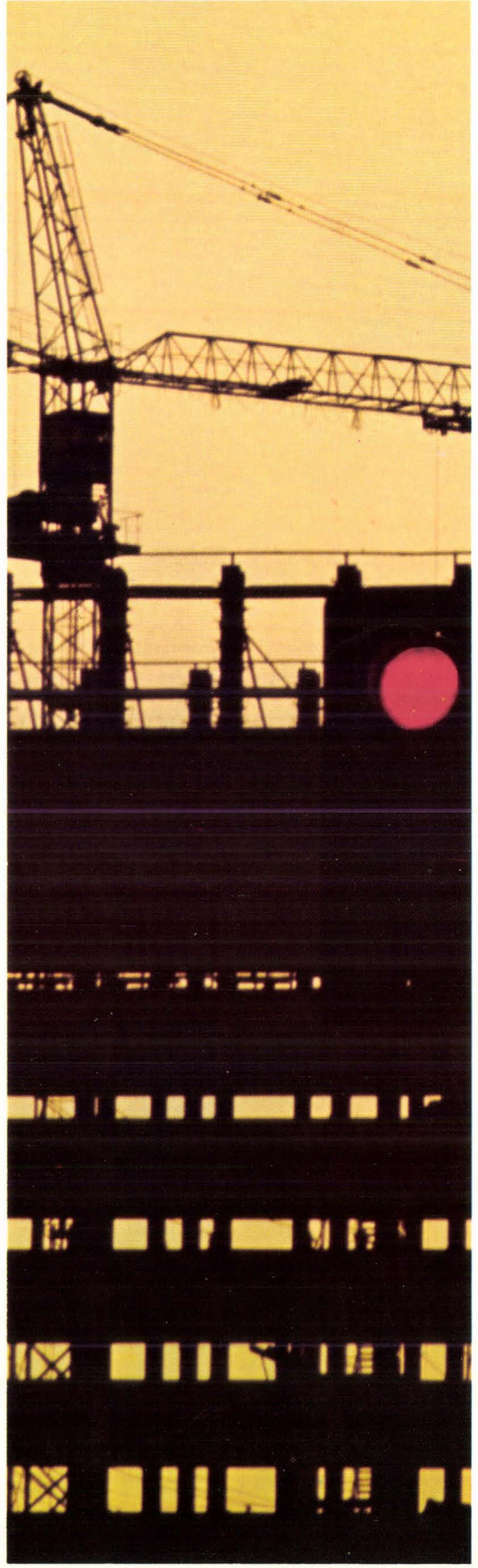
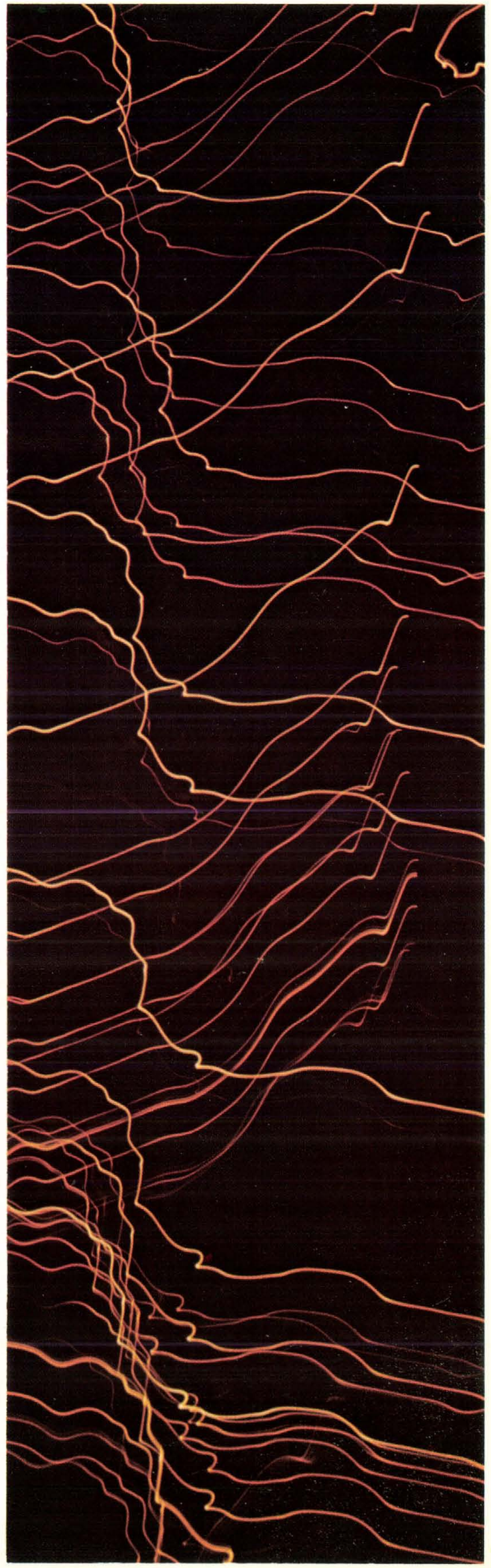
United States Smelting Refining And Mining Company

235 EAST 42ND STREET, NEW YORK, N.Y. 10017

United States Smelting Refining And Mining Company
Annual Report 1970







OFFICERS AND DIRECTORS

DIRECTORS

Term Expires 1971
ELLIOT B. DANIELS
THEODORE W. KHEEL
JEROME KOHLBERG, Jr.
RALPH R. WEISER

Term Expires 1972
HAROLD CAGEN
C. GERALD GOLDSMITH
MARTIN HORWITZ
JACK WILDER

Term Expires 1973
J. GEORGE GANGE
J. V. NEUMAN, Jr.
SAUL SHAPIRO
ROBERT M. TURPIN

Term Expires 1974
EDWIN JACOBSON
EUGENE S. MACHLIN
ROBERT S. PIRIE
I. D. ROBBINS

EXECUTIVE COMMITTEE

ELLIOT B. DANIELS
J. GEORGE GANGE
MARTIN HORWITZ
I. D. ROBBINS
SAUL SHAPIRO
JACK WILDER

OFFICERS

JACK WILDER
Chairman of the Board
MARTIN HORWITZ
President, Chief Executive Officer
J. GEORGE GANGE
Senior Vice President
EDWIN JACOBSON
Executive Vice President
J. V. NEUMAN, Jr.
Vice President of Mining and Oil Operations
BENTON BOYD
Vice President and General Manager of Western Operations
ROBERT M. TURPIN
Vice President and Counsel—Oil Operations
F. L. WARNER
Vice President—Metal Refining
ROBERT C. WEAGEL
Vice President of Southwestern Operations

GENERAL

J. GEORGE GANGE
Secretary and Treasurer
HENRY G. STENBERG
Comptroller, Assistant Secretary and Assistant Treasurer
JAMES B. SENESE
Assistant Comptroller
SEYMOUR HORWITZ
Assistant Secretary and Assistant Treasurer
JAMES R. SHARKEY
Assistant Treasurer
LEONARD M. NELSON
Clerk of the Corporation

TRANSFER AGENT

The Chase Manhattan Bank, New York, N.Y.

REGISTRAR OF STOCK

First National City Bank, New York, N.Y.

TABLE OF CONTENTS

To Our Shareholders:

In 1970 the country experienced a general economic downturn and continued inflation which had an adverse effect on all phases of our business. The Company however, is deeply involved in those sectors of the economy which will benefit from a reversal of the 1970 trend.

Prices of metals including zinc, lead and silver were down in 1970 and the construction market declined as a result in part of the increases in labor costs. The extreme shortage of funds during the year forced interest rates to record high levels, curtailing capital expenditures and construction of all kinds. The Company's copper fabricating subsidiary, Mueller Brass Company, experienced a squeeze on its profit margins in 1970 when there was a severe narrowing in the spread between the cost of copper and the selling price of copper fabricated products.

In 1970 the Company included in earnings its proportionate share of the profits of Federal Pacific Electric, an affiliated Company. This is the first period in which the Company has taken up its share of Federal Pacific's earnings and 1969 has been restated to give effect to this change.

For 1970, the Company recorded net income before extraordinary item of $7,036,106 equivalent to $2.58 per share of common stock after preferred dividend requirements. The extraordinary item in 1970 in the amount of $1,219,000, after tax benefit, represented a provision for estimated cost and expense related to the discontinuance of a subsidiary, whereas the extraordinary credit item in 1969 totaled $10,167,628. The net income after extraordinary item for 1970 amounted to $5,817,106 or $2.06 per share.

Net income for the Company in 1970 before extraordinary item and before discontinued operations amounted to $7,758,598 or $2.89 per share as compared to $11,935,452 or $4.55 per share in 1969.

We have accepted the hard facts of the economy in 1970 and discontinued certain loss operations and unprofitable investments. Since all major operations are oriented to three basic areas of industrial activity: Natural Resources, Housing and Construction and Electrical Energy, the Company is in a unique position to benefit from a general economic upturn.

ANNUAL MEETING

The Annual Meeting of Stockholders will be held at 1 Chase Manhattan Plaza, New York, N.Y. Auditorium "A" on Wednesday, May 19, 1971 at 2:00 PM Eastern Daylight Savings Time

Operating Officials

J. V. NEUMAN, Jr.
Vice President of Mining and Oil Operations
J. B. PEEPLES
Assistant to Vice President of Mining and Oil Operations
ANDREW SATHER
Executive Assistant
W. R. KASTELIC
Industrial Development Director
J. MORROW ELIAS
Chief Geologist, Metal Operations
W. F. WALTHALL
Exploration Manager, Canada
OLIVER W. GUSHEE, Jr., *Attorney —Mining*
H. L. STONESTREET
Division Landman and Attorney —Oil
LELAND D. JOHNSON
Chief Purchasing Agent
FRANCIS WEBB
Traffic Manager
CLYDE GILLAM
Engineer of Mines
A. A. ERICKSON
Division Comptroller
GLEN TREHARNE
Assistant Division Comptroller and Cashier
W. H. AMES
Asst. Division Comptroller
RICHARD S. LUDWIG
Chief Mechanical Engineer
W. A. GLAVINOVICH
Manager Fairbanks Department
DAN F. EAGAN
Assistant Manager Fairbanks Department
ROBERT F. BALDWIN
Division Comptroller
ROBERT C. WEAGEL
Vice President and General Manager Southwestern Operations
RICHARD P. GERWELS
Manager Bayard Operations
GAYLORD E. CUDNEY
General Superintendent, Bayard Operations
EDGAR T. HUNTER
Superintendent, Continental Mine
E. H. AHRENS
Chief Geologist Bayard Operations
HENRY E. SWANSON
General Mill Superintendent Bayard Operations
GORDON T. GLOVER
Superintendent, Continental Mill
KENNETH B. GILLASPIE
Chief Metallurgist Bayard Operations

J. W. FULMER, *Open Pit Superintendent*
W. D. CALDERWOOD
Manager Industrial Relations Bayard Operations
BENTON BOYD
Vice President and General Manager of Western Operations
C. C. HILTON
Industrial Relations Manager
ROBERT JOHNSON
Manager Midvale Plant
J. TWITCHELL
Mill Superintendent
A. C. VAUGHAN, *Director of Metallurgical Research*
DON O. WILLIE
General Supt., U.S. and Lark Mine
ROBERT L. FOIST
Supt., U.S. and Lark Mine
T. B. GARBER
General Manager, Oil Operations
A. D. SLOVER
Division Geologist
J. I. JOHNSON
Division Geologist, Southern Rocky Mountain Area
C. T. SHELLEY
Division Geologist, Northern Rocky Mountain Area
ARTHUR E. OWEN
District Geologist Rocky Mountain Area
DON REEVES
Landman

METAL SALES DEPARTMENT
37 Montclair Ave.,
Little Falls, N.J.
J. G. GANGE, Jr.
Manager of Metal Sales

U.S.S. LEAD REFINERY, INC.
East Chicago, Indiana
F. L. WARNER, *Vice President*
ROBERT PULLMAN, *Manager*
JOHN GARRISON, *Assistant Plant Manager*
R. D. STEELS, *Plant Engineer*
GEORGE WHELAN
Chief Accountant

UNITED STATES FUEL COMPANY
Salt Lake City, Utah
BENTON BOYD
President and General Manager
MAX A. ROBB
General Manager
K. P. BURBIDGE
General Sales Manager

UTAH RAILWAY COMPANY
University Club Building
Salt Lake City, Utah
O. K. CURTIS, *President*
L. Q. JONES, *Vice President*
M. D. RODGERS
Secretary and Treasurer, Auditor

MUELLER BRASS CO.
MARTIN HORWITZ
Chairman of the Board
EDWIN JACOBSON
President
ROLAND G. KRUPP
Executive Vice President
J. GEORGE GANGE
Senior Vice President
JACK WILDER
Vice President
ALEXANDER T. FORREST
Vice President Central Engineering
JOHN M. LORENZEN
Vice President—Sales
JAMES R. SHARKEY
Vice President—Finance Secretary and Treasurer
A. W. BRIAN WATSON
Vice President and Group Manager—Standard Products
JOHN P. WILLIAMS
Vice President—Industrial Relations
ROBERT D. MacLEAN
Controller
HENRY G. STENBERG
Assistant Secretary
IRENE KNOX
Assistant Secretary

STREAMLINE COPPER & BRASS LTD.
MARTIN HORWITZ
Chairman of the Board
A. W. BRIAN WATSON
President
EDWIN JACOBSON
Vice President
PETER AARTS
Vice President and General Manager
JAMES R. SHARKEY
Secretary and Treasurer

Natural Resources

The Company is engaged in the mining of copper, zinc, lead, coal, silver and gold in the United States and Alaska. It has a significant exploration program seeking new ore bodies, and the oil and gas producing properties in the United States and Canada.

Your management is convinced that the time is not too far ahead when our national interests will have been sufficiently redefined to place greater value on those companies with investments in domestic natural resources. The fountainhead of an industrialized society has always been and continues to revolve around availability of these resources. The traditional value placed on natural resource companies has evolved from a concept of limitless supply. We believe that time and events are in the process of changing this concept. As the instability of investments in the natural resources of foreign countries continues to become more evident and foreign governments continue to move toward more ownership of their mineral wealth, the value of natural resources within the United States is apt to become correspondingly greater.

Housing and Construction

Mueller Brass and Federal Pacific Electric have annual sales aggregating approximately $268,000,000, a substantial portion of which are directly or indirectly related to the housing and construction industry.

A comprehensive description of the products and operations of Mueller Brass and Federal Pacific Electric is given elsewhere in this report.

As the country achieves its announced goals, one objective that all economists and political leaders of whatever persuasion uniformly agree upon is that there must be an upsurge in housing construction. The Federal Government has recognized the critical condition of housing and the crises in the cities which must be met with positive programs for urban renewal and development. Steps have been taken by the Department of Housing and Urban Development, to encourage the design and construction of innovative housing prototypes. The National Housing Act of 1968 set the national housing need at an annual average of 2.6 million units in the 1970's. Approximately 1.5 million dwelling units were completed in the year 1970. The availability of money for construction has been enhanced by the decrease in interest rates and early reports indicate a significant increase in housing starts during the year 1971. One cannot predict at what point in 1971 or 1972 this program will fully materialize. However, the ultimate direction is not debatable. As the predicted increase in construction materializes and the spread between domestic producer's price for refined copper and the selling price of fabricated copper and brass widens, the Company's earnings will reflect a significant improvement.

Electrical Power Equipment

The Company's investment in Federal Pacific Electric Company represents a major commitment and alliance with a company that is directly involved in the manufacture of electrical equipment and the distribution and use of electrical energy.

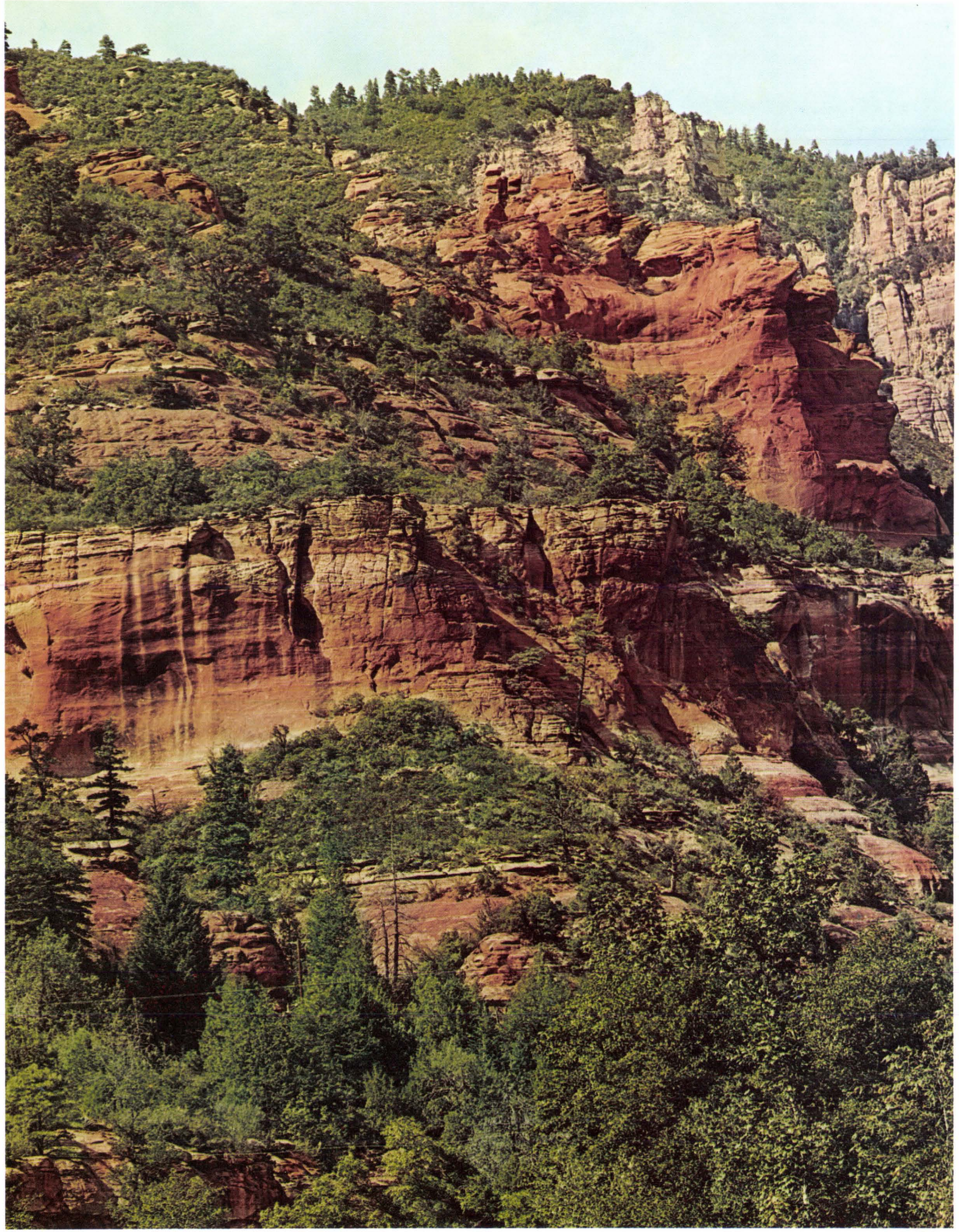
There is no construction program whether it be industrial or residential which does not use the type of products manufactured by Federal Pacific. Among the crises in the year 1970 experienced in many industrial centers of the country was the growing shortage of required electrical power. The unprecedented demand for additional electrical power has outpaced existing facilities and has required the updating and acceleration of programs for additional capacity. Federal Pacific Electric will participate in the expansion program of the utility companies to meet this demand.

It appears from all forecasts that we are returning to an improved economic climate in 1971. It may come later than the initial projection. In any event, we anticipate a corresponding improvement in the Company's earnings. We have built a base for more integrated operations — one which is inherently related to the national interests and to those areas of our economy which must participate in the growth forecast for the Seventies. The Company is confident that this growth should be on a profitable basis for our shareholders, our employees and society as a whole.

JACK WILDER
Chairman of the Board

MARTIN HORWITZ
President

March 22, 1971



NOTES TO FINANCIAL STATEMENTS

9. The $5.50 Cumulative Preferred Stock is redeemable, at the option of the Company, at $102 per share to October 31, 1972 and at decreasing amounts thereafter, but at not less than $100 per share.

10. In March, 1970, the Company declared a 3% stock dividend pursuant to which 69,707 shares of Common Stock were issued on April 22, 1970. In 1970, the Company purchased 94,300 shares of its Common Stock for $2,193,336 and delivered 32,500 of such shares (cost, $755,625) for acquisition of fixed assets.

11. Under the Company's qualified stock option plan 167,092 shares of Common Stock of the Company are reserved for issuance to key employees at amounts not less than the market price at the date of grant. Options for 109,124 shares are outstanding at December 31, 1970 at prices ranging from $24.25 to $62.44 per share. Options are granted for five-year periods and are exercisable when granted, except for options outstanding for 19,109 shares which are exercisable only to the extent that previous options for the same number of shares are not exercised. No options have been exercised under the plan and 77,077 shares are available for future options.

The following table summarizes the changes in the number of shares under option during 1970:

Outstanding, January 1, 1970	87,947
Granted	88,332
Expired or cancelled	(67,155)
Outstanding, December 31, 1970	109,124

12. In January, 1969, the Company declared a distribution to common stockholders of one ten-year warrant to purchase a share of Common Stock at $66.00 per share for every two shares of Common Stock held. A total of 1,178,029 warrants was issued on February 4, 1969 and a similar number of shares of Common Stock has been reserved for issue upon exercise of the warrants.

13. Transactions in additional paid-in capital were as follows:

	1970	1969
Balance at beginning of year	$68,530,844	$50,855,469
Fair market value of warrants issued to common stockholders		17,670,435
Excess of $100 liquidating value per share over $5 par value per share of $5.50 Cumulative Preferred Stock issued, (52 shares.)		4,940
Excess of market value over cost of 32,500 shares of common treasury stock issued in connection with the acquisition of fixed assets	24,375	
Excess of market value over par value of 69,707 shares of Common Stock issued as a stock dividend	2,400,708	
Balance at end of year	$70,955,927	$68,530,844

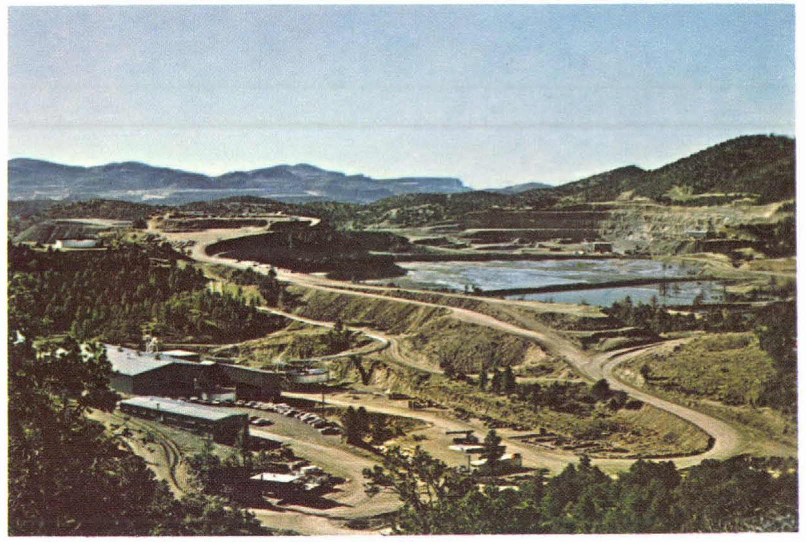
14. The Company and its subsidiaries have several pension plans, principally noncontributory, covering substantially all of their employees. Aggregate pension expense for both the years 1970 and 1969 amounted to approximately $1,340,000 which included amortization of prior service costs over thirty to forty years periods.

The actuarially computed value of vested benefits for certain of the plans as of the date of the latest actuarial valuation exceeded the total of the pension funds by approximately $9,500,000

15. Fully diluted earnings per share were computed on the assumption that the Company's 5¾% convertible debentures, stock options and warrants were converted or exercised at the beginning of the year or at the time of their issuance and that average outstanding Common Stock was adjusted accordingly. It was assumed that the proceeds from the exercise of stock options and warrants were used to repurchase up to 20% of the Company's outstanding Common Stock. Any remaining proceeds were assumed to have been used first to retire outstanding debt and then to invest in commercial paper.

Natural Resources

Nature provides the source of energy which man developes and distributes to build and improve society.



Continental Mine and Mill, Fierro, New Mexico.

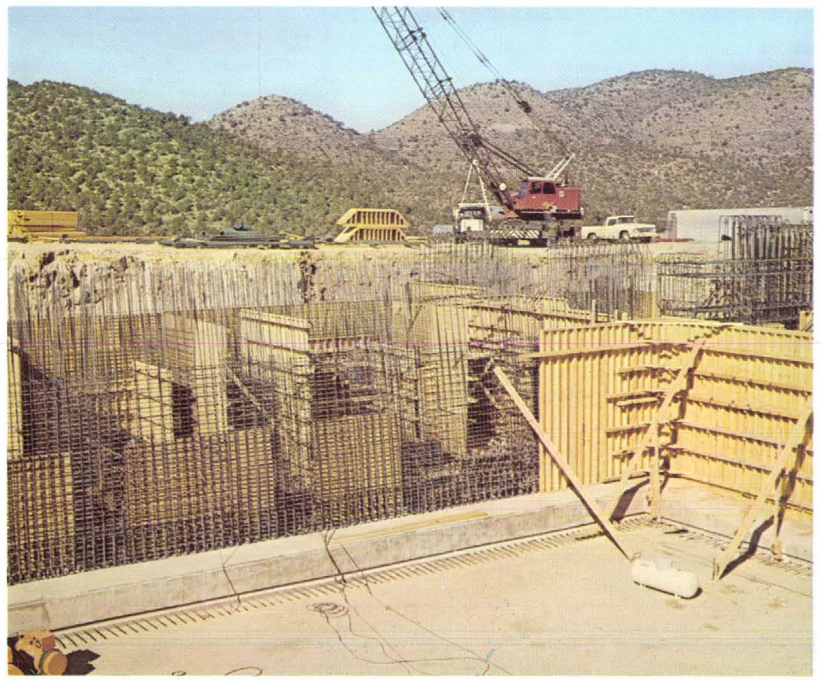
The country's rate of economic development is influenced by the needs of an expanding population and our continuous efforts to improve the quality of living conditions. The fulfillment of these objectives is dependent on natural resources which must be discovered, preserved and used effectively.

The Company participates in this effort through its production of — copper and copper products for residential and industrial construction — oil and gas for power and heating and — electrical equipment, manufactured by our affiliated Company, Federal Pacific Electric for the distribution and control of electric energy.

An aggressive exploration program is being pursued to increase our capability to develop existing properties as well as to find new mineralized areas.

Through an acquisition and construction program the Company significantly expanded its capacity to process copper ore in Bayard, New Mexico.
In late 1967 the new Continental Mill was completed with a capacity to process approximately 3,000 tons of copper ore per day from underground and open pit operations. In August 1970 the Company purchased the mill facilities, the mining properties and claims of New Jersey Zinc contiguous to our copper properties in Bayard. By the end of 1970 the construction of a second mill at an estimated cost of approximately $12,000,000 which is designed to more than double our capacity to process copper ores, was proceeding on schedule. The completion of this mill in early 1972 will be a major step towards developing the potential of our copper ore body and integrating the mining and fabricating facilities. A large stockpile of low yield ore extracted from the open pit will be available for treatment at the new mill. The higher yield ore is produced from the underground mine and will continue to be processed at the existing Continental Mill.

Natural Resources



Construction Site of New Mill.

In 1970 approximately 1,020,000 tons of copper ore were milled, and 587,000 tons of lower grade material were stockpiled for future processing. The expanded Bayard facilities will greatly increase our capacity to produce copper for our copper fabricating subsidiary, Mueller Brass Company.

The ore from the Company's Lead-Zinc operations at the U. S. and Lark mine in Lark, Utah is processed at our flotation mill in Midvale, Utah, which produces a concentrate that is then treated under a toll arrangement with other companies. Lead bullion is returned for refining at our wholly-owned subsidiary, U. S. S. Lead Refinery, Inc. at East Chicago, Indiana and refined zinc is returned to the Company. Corroding lead, antimonial lead and various grades of refined zinc, together with bismuth, cadmium, tellurium, gold and silver are produced and sold by the Company.

Prices of almost all metals were down in 1970. An upturn in the demand is likely to have a corresponding effect on prices of prime metals and the results of operations.

The Company maintains an active exploration program for the discovery of minerals in the United States, Canada and Alaska. Alone and in conjunction with other major companies, the search for copper, zinc, lead, silver, gold, tungsten, molybdenum, gypsum and uranium ore bodies is being pursued. The exploration work includes geologic mapping, geochemistry, geophysics, aerial photography and drilling.

The Company is currently engaged in exploration projects in Arizona, Nevada, Utah, California, Montana and Alaska.

(b) Each unit consists of two shares of common stock and a warrant to purchase one share of common stock for $8.00.

4. The major classifications of properties, plants and equipment at December 31, 1970 were as follows:

Depreciable properties:		
Mills, refinery buildings and equipment		$ 20,845,446
Mine buildings and equipment and oil and gas equipment		34,991,531
Fabricating plants and equipment		57,367,001
Other		3,991,731
		117,195,709
Depletable mining properties and oil and gas interests		42,604,623
Amortizable oil and gas well intangible drilling costs		3,096,646
Other capital assets		7,127,808
		170,024,786
Less, Accumulated depreciation	$55,351,102	
Accumulated depletion and amortization	23,530,938	
Reserve for losses on capital assets	3,524,820	82,406,860
		$87,617,926

Depreciation is based on the estimated useful lives of the respective assets. For the metal-mining and oil properties, depreciation is computed either on the basis of unit of production or a straight-line method. Depletion and amortization of intangible drilling costs are based on estimated recoverable units.

5. The deferred credit resulting from the acquisition of Mueller Brass Co., representing the excess of net assets acquired over the Company's investment, is being amortized over a seven-year period ending in 1972.

6. Long-term debt at December 31, 1970 comprises:

5% and 5½% notes payable, due 1971-1976	$ 4,900,000
5⅝% subordinated debentures, due 1995, less $3,280,000 in treasury	17,439,900
5¾% convertible subordinated debentures, due 1993	60,000,000
Long-term lease relating to Industrial Revenue Bonds, 5.3%-6¼%, payable 1973-1993	35,000,000
Other	74,032
	117,413,932
Less portion included in current liabilities	700,000
	$116,713,932

Repayments on the 5% and 5½% notes aggregate $700,000 annually in 1971 through 1974 and $1,050,000 annually in 1975 and 1976.

The 5⅝% debentures provide for annual payments to a purchase fund, in cash or debentures, of the lesser of $500,000 or 10% of consolidated net income through 1975, and, thereafter, for an annual sinking fund of 5% of debentures outstanding in 1976.

The 5¾% convertible debentures issued in February, 1968, are convertible into Common Stock at $67.33 per share and accordingly 891,134 shares of Common Stock are reserved for such conversion. Commencing in 1976, the Company will be required to make annual sinking fund payments of $3,333,000 in cash or debentures.

In December 1968, Industrial Development Revenue Bonds were issued by the City of Port Huron, Michigan and the County of Itawamba, Mississippi in the aggregate principal amount of $35,000,000 for the purpose of financing plant expansion at Mueller Brass Co., a wholly-owned subsidiary. Approximately $7,000,000 of the proceeds were paid to Mueller Brass Co. in connection with the sale and leaseback of certain existing properties; the remaining proceeds, which were deposited with a trustee, are restricted to the payment of construction costs and related financing expenses. Mueller Brass Co. has entered into long-term lease obligations with the municipalities, which are guaranteed by the Company, and which for accounting purposes have been recorded as a purchase. Accordingly, the principal amount of the bonds has been reflected as long-term debt and the buildings, machinery and equipment to be constructed will be recorded as capital assets and depreciated over their useful lives. The leases provide for rentals sufficient to service bond interest and debt retirement.

Under the terms of the 5¾% convertible subordinated debentures, there are certain restrictions as to payment of cash dividends and repurchase of stock. At December 31, 1970 the Company's retained earnings unappropriated is free of such restrictions.

7. Provisions for federal income taxes reflect benefits from investment credit of $1,165,000 in 1970 and, in both years, the benefits resulting from the deduction for tax purposes of (a) additional depletion, (b) intangible oil and gas drilling costs, capitalized on books, and (c) expired or abandoned mineral lease costs charged to reserve for depletion on books.

8. The extraordinary items comprise:

	1970	1969
Provision for loss on investment and estimated expenses relating to the discontinuance of a subsidiary's operations, less related tax benefit of $1,181,000	($1,219,000)	
Gain from sale of investment in Clevite Corporation, less related tax of $4,645,592		$10,863,852
Settlement of civil antitrust actions, less related tax benefit of $4,545,592		(696,224)
	($1,219,000)	$10,167,628

NOTES TO FINANCIAL STATEMENTS

2. Inventories comprise:

	1970	1969
Ores, metals in process and on hand	$21,665,915	$17,088,526
Fabricated finished products, in process and raw materials, at lower of cost (principally last-in, first-out method) or market	24,343,007	21,667,805
Supplies, at cost	4,748,205	4,320,687
	$50,757,127	$43,077,018

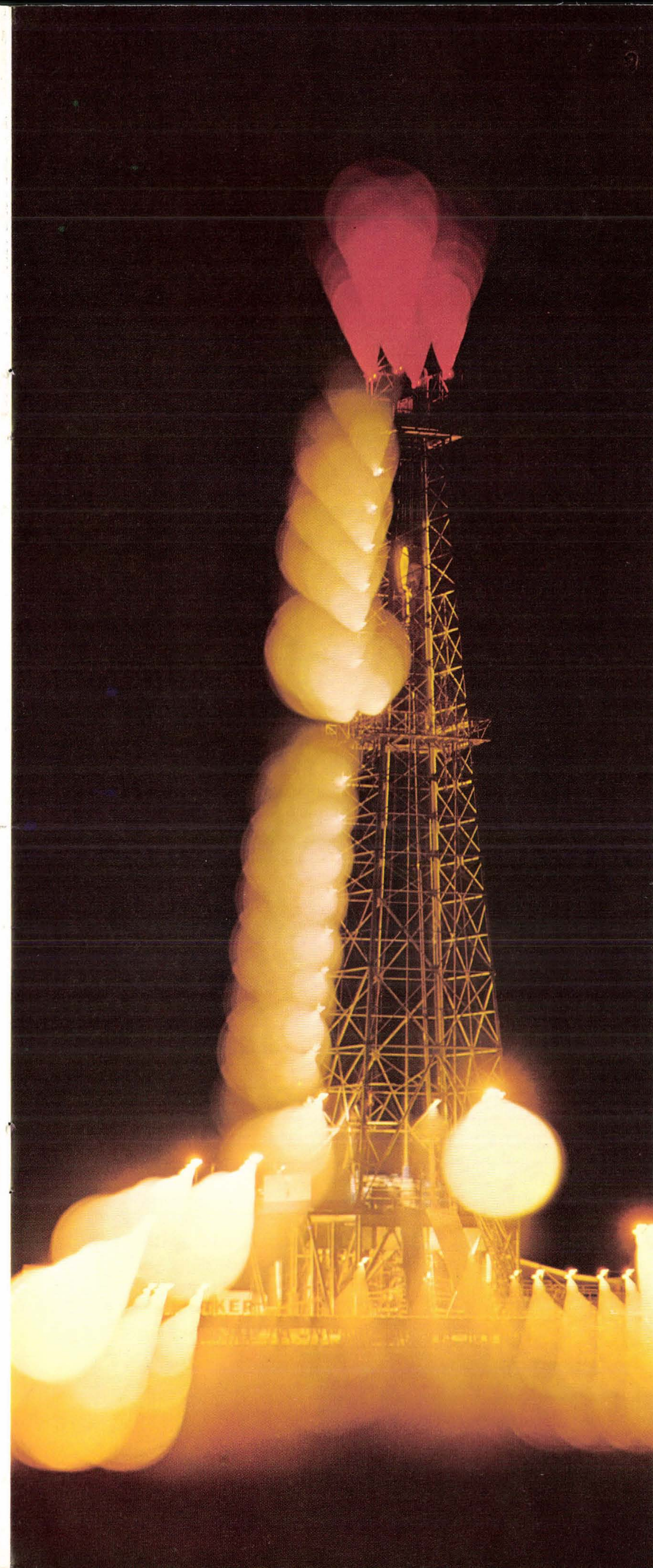
Company mined ores, metals in process and on hand, principally from production at the U. S. and Lark Mine, are carried at the average market prices of the respective metals at the time of production at the mine or at market price at the end of the period, whichever is lower, less the estimated cost of further reduction processes. From this segment of the operations, the gross value of production rather than gross sales has been used in the determination of income. Under this method of valuation, such metal inventories include an indeterminable amount of unrealized profit. Gains or losses resulting from the sale of such metals at prices different from the average price of the respective metals in inventory, including losses arising from any reduction to market at the end of the period, are shown separately in the consolidated statements of income. An amount equivalent to accumulated net gains from metal price fluctuations has been appropriated from retained earnings as a reserve against possible future declines in metal prices.

Ores and concentrates from the Continental Mine and Mill at Fierro, New Mexico, and purchased ores are stated at the lower of cost or market.

3. Other investments at December 31, 1970 comprise:

	Shares, Warrants or Units	Percentage of Outstanding	Cost	Market Value (a)
Cyclops Corporation, Common	38,400	1.9	$1,669,598	$ 926,400
Cudahy Co., Common	280,980	11.5	2,877,804	5,163,000
Cudahy Co., Preferred	1,200	.3	28,819	25,200
Phoenix Steel Corporation, Units (b)	300,000	14.7	3,065,000	1,800,000
Gould, Inc., Warrants	98,702		1,974,040	629,225
Total investments			$9,615,261	$8,543,825

(a) Determined on the basis of prices at December 31, 1970 as quoted on the major stock exchanges or over-the-counter. Such market value does not purport to represent amounts realizable from sales of such large blocks of stock, warrants or units.



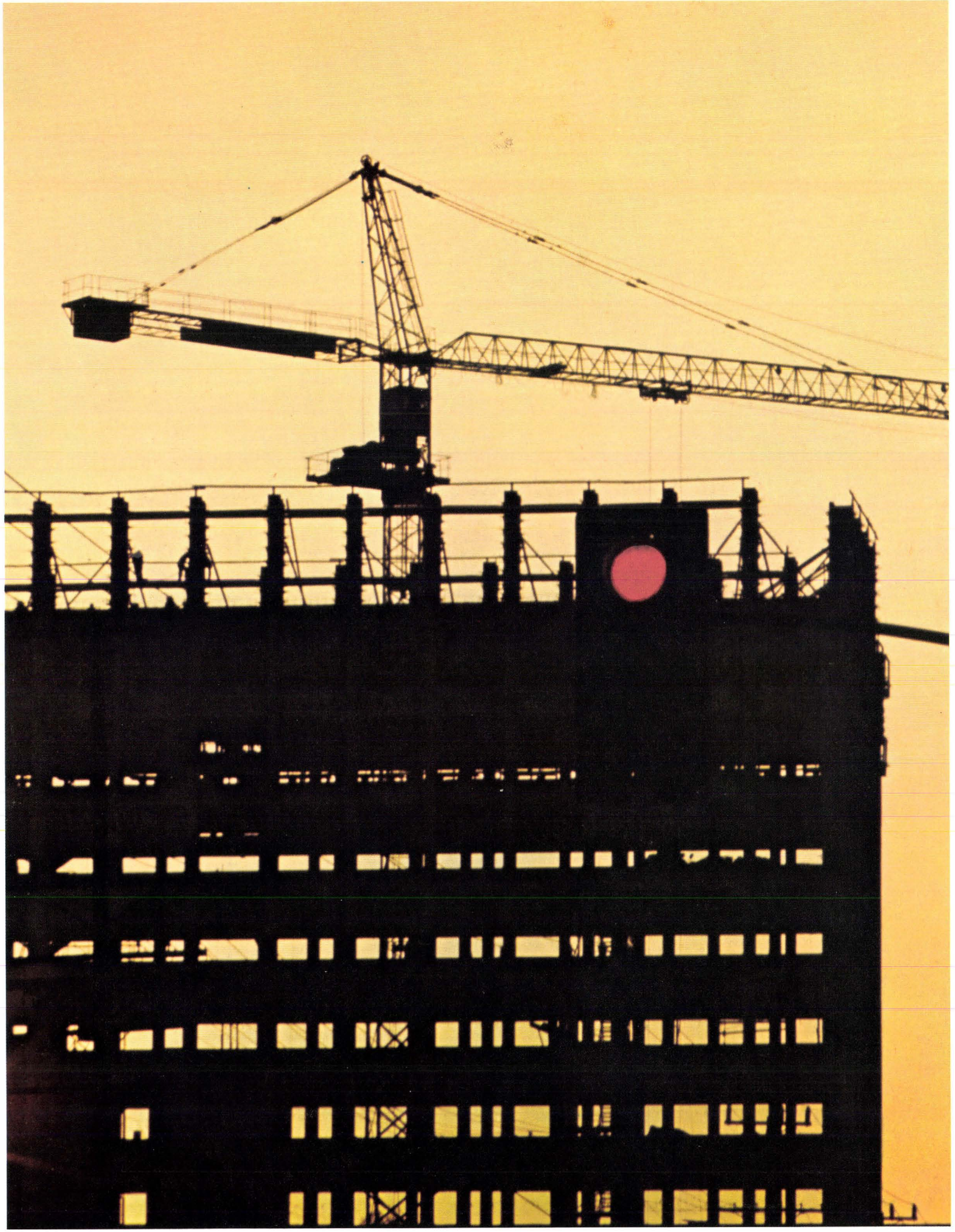
Oil & Gas

The Company has under lease in the United States and Canada approximately 742,350 undeveloped acres. It is on undeveloped acreage that the Company pursues a drilling program, a major part of the funds for which are obtained from outside sources. Most of the undeveloped acreage under lease is located in many diverse areas. However, in late 1969 and in 1970 the Company acquired interests in two large tracts of land on which drilling programs are in progress.

One area in Richland County, Montana, consists of more than 18,000 acres (approximately 28 square miles) in which the Company owns approximately a 50% working interest. Since starting this venture in late 1969 the Company participated in drilling three wells, two were producers and one was dry. Development in this area has been relatively slow because of the depth of the wells and difficulties encountered by the previous operator. The Company has recently taken over as the operator of this joint venture. Work is underway to evaluate and confirm additional drilling locations.

The second area is in Martin County, Texas and consists of approximately 21,000 acres of oil and gas leases (approximately 33 square miles) in which the Company has about a 37.5% working interest. Three wells have been completed in this area, although not conclusive the results are encouraging and the Company has a continuous drilling program underway to fully evaluate the area.

At the year-end the Company owns varying percentages of working interests in 152 producing oil and gas wells, which is an increase of 39 wells or 34.5% over December, 1969. The Company also has royalty or mineral interests in 1,371 oil and gas wells, which is 32 wells more than those held at the end of 1969. The total production of oil and gas equivalent attributable to the Company in 1970 amounted to approximately 1,169,000 barrels as compared to 1969 production of approximately 1,081,000 equivalent barrels.



Notes To Financial Statements

1. The consolidated financial statements include the accounts of the Company and its majority-owned subsidiaries except as hereinafter stated.

Effective December 31, 1970 the Company decided to discontinue the operations of Stereodyne, Inc., a majority-owned subsidiary purchased in March, 1969. The result of such subsidiary's operations for the year ended December 31, 1970, net of a related tax benefit, are shown as a separate item in determining the consolidated income before extraordinary items. The write off of the remaining investment and advances to this subsidiary and the provision for additional estimated costs and expenses to be incurred in phasing out such operations, net of related tax benefit, has been charged to 1970 income as an extraordinary item. (See Note 8). The consolidated financial statements at December 31, 1969 have been restated to reflect the accounts of such subsidiary on the equity method, and its net loss has been set forth separately. Net sales of discontinued operations were $2,745,000 in 1970 and $3,095,000 in 1969.

On April 23, 1969, the Company acquired approximately 22% of the voting stock of Federal Pacific Electric Company (FPE) and as of October 15, 1969 had increased such ownership to approximately 40%, gaining effective control through a majority representation on the Board of Directors of FPE. At December 31, 1970 the Company owned 1,385,994 common shares representing 50.2% of the outstanding common stock of FPE, and 42.8% of the outstanding voting stock.

An evaluation of the assets of Federal Pacific Electric Company and subsidiaries was made as of the date of effective control for purposes of determining the Company's underlying equity in the net assets of FPE at such date. Accordingly, FPE's net assets were reduced by $6,023,000, representing losses incurred by FPE in its fiscal year ended June 30, 1970, as follows: (1) write offs of obsolete inventory and accounts receivable ($3,018,000, net of tax benefit), (2) losses on discontinued operations ($742,000, net of tax benefit), (3) losses on abandonment of a product line and liquidation or sale of subsidiaries related to discontinued operations ($1,899,000, net of tax benefit) and (4) other write offs and provisions accruable as of October 1969 ($364,000, net of tax benefit). The consolidated income statements reflect the Company's equity in the net income of FPE (adjusted for such losses) since October, 1969. The consolidated financial statements at December 31, 1969 have been restated to reflect such equity in net income from the date of control (October, 1969) to December 31, 1969.

The carrying value of the Company's investment in FPE is in excess of the Company's share of the underlying equity. Such excess amounted to approximately $18,200,000 at December 31, 1970, and is not being amortized because this represents intangible assets which are considered to have continuing value over an indefinite period.

Summary consolidated financial information related to FPE and its subsidiaries as of their fiscal year end June 30, 1970 and for the 6 months ended December 31, 1970 and 1969 follows:

	As of June 30, 1970 (In Thousands)
Current assets	$105,221
Property plant and equipment, net	31,114
Other assets	10,417
	$146,752
Current liabilities	51,364
Long term debt	32,635
Other liabilities, minority interest, etc.	10,833
	$ 94,832
Net assets	$ 51,920

	Year Ended June 30, 1970	Six Months Ended December 31, 1970 (Unaudited)	Six Months Ended December 31, 1969 (Unaudited)
	(In Thousands)		
Revenues	$160,833	$82,060	$78,047
Income (loss) from continuing operations	$ (306)	$ 2,526	$ 1,810
Loss from discontinued operations	(742)		(235)
Income (loss) before extraordinary loss	(1,048)	2,526	1,575
Extraordinary loss	(1,899)		
Net income (loss)	(2,947)	2,526	1,575
Preferred stock dividends	641	317	324
Net income (loss) applicable to common stock	$ (3,588)	$ 2,209	$ 1,251

CONSOLIDATED STATEMENTS OF SOURCE AND APPLICATION OF FUNDS
for the years ended December 31, 1970 and 1969

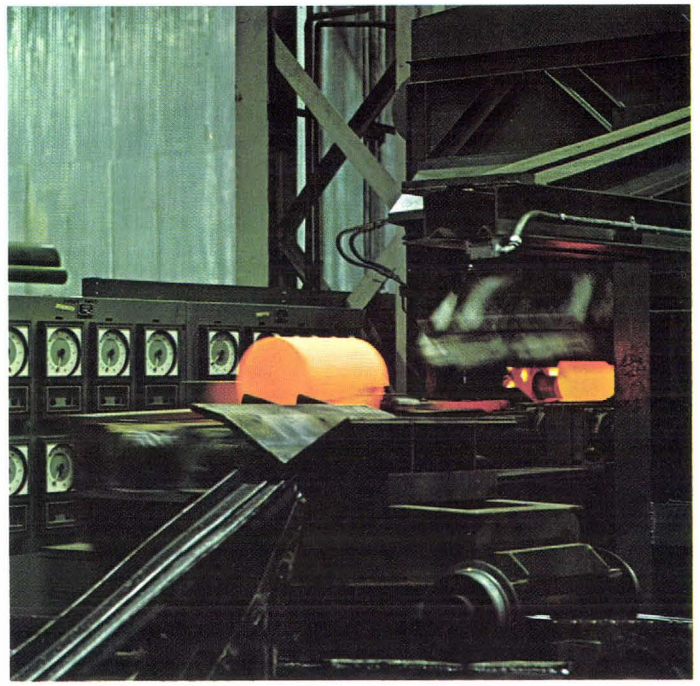
	1970	1969 (Restated Note 1)
SOURCE:		
Net income	$ 5,817,106	$22,097,351
Equity in earnings of Federal Pacific Electric Company	(1,539,788)	(391,644)
Losses of and write-off of investment in discontinued subsidiary	2,583,173	
Depreciation, depletion and amortization	3,986,387	3,815,172
Amortization of mine development costs	995,649	1,469,512
Amortization of deferred credit	(670,016)	(670,016)
Provision for deferred federal income taxes	4,000	1,873,000
Disposal of capital assets	440,970	521,964
Disposal of investments	4,400,000	30,354,580
Issuance of treasury stock for fixed assets	780,000	
	16,797,481	59,069,919
APPLICATION:		
Additions to properties, plants and equipment, net of transfers from construction fund deposits	6,341,458	5,293,844
Expenditures for mine development	1,589,056	3,586,610
Additions to investments	4,014,350	48,095,721
Decrease in non-current portion of long-term debt, exclusive of additional debt issued	3,203,968	1,948,500
Purchase of treasury stock	2,193,336	1,529,489
Cash dividends	3,297,938	3,314,804
Other, net	1,719,640	1,223,863
	22,359,746	64,992,831
Increase (Decrease) in working capital comprising:		
Increase (Decrease) in marketable securities, time deposits and certificates of deposit	(17,086,252)	11,311,923
Increase in inventories	7,680,109	1,172,370
Decrease in receivables	(1,190,276)	(16,627,409)
Decrease (Increase) in federal income and other taxes	6,596,275	(3,359,674)
Other	(1,562,121)	1,579,878
	($ 5,562,265)	($ 5,922,912)

See notes to financial statements.

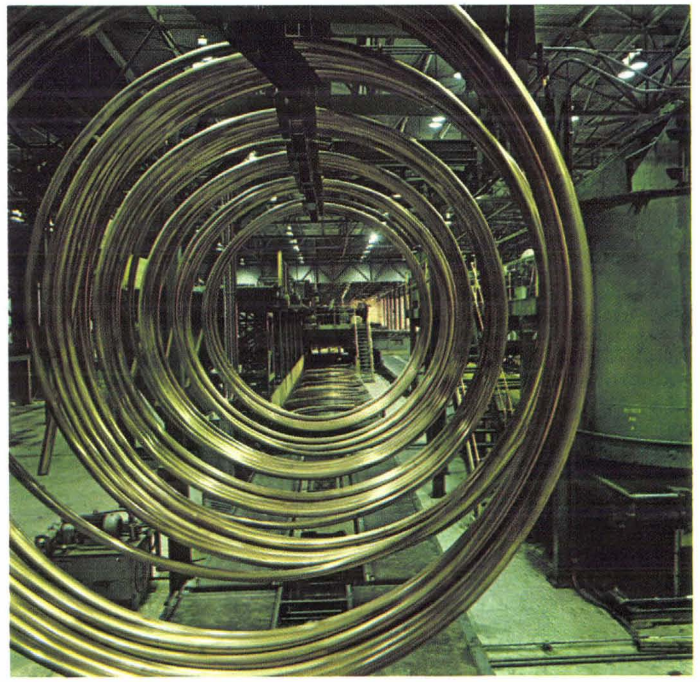
Housing & Construction

The Mueller Brass Co., a wholly-owned subsidiary, is one of the leading and most diversified fabricators of brass, copper and aluminum products. Originator and major manufacturer of copper solder type fittings, it is a principal producer of copper tubing, valves and related products which are widely used in plumbing, heating, refrigeration and air-conditioning for residential, industrial and commercial construction. Mueller is one of the prime producers of brass rod, forgings, screw machine products, bronze castings, aluminum forgings and impact extrusions which are used in a wide range of commercial and industrial applications.

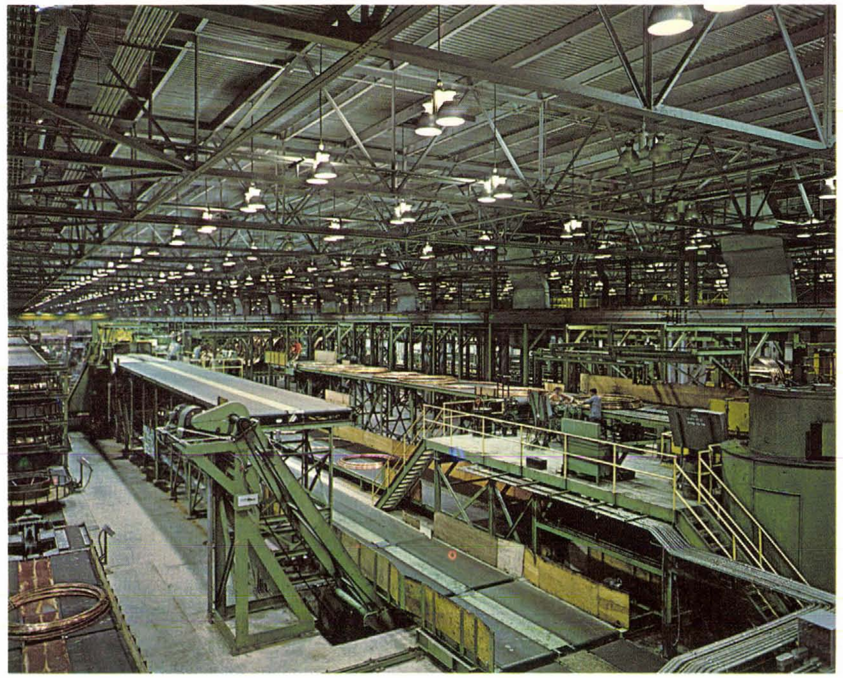
To offset the economic pressures caused by a narrowing of the spread between the cost of copper and the fabricator's selling price, Mueller Brass carried out major programs to reduce all types of operating expenditures and intensified its efforts to improve operating efficiency and productivity.



Hot Billet Being Placed in Position for Extrusion.



Housing & Construction



Fulton, Mississippi Tube Mill.

Significant operating improvement will be realized in 1971 with the completion of the brass rod mill expansion program in Port Huron, Michigan late in 1970 and the start of production at the Company's new copper tube mill in Fulton, Mississippi. This new tube mill is one of the largest and most efficient of its kind in the world and will make it possible for the Mueller Brass Co. to significantly increase its tube production while making substantial reductions in manufacturing costs. This program will enable the production of a more comprehensive range of tubular products and permit the entry into markets which are expected to expand substantially as the pent-up demand for housing and related construction materializes.

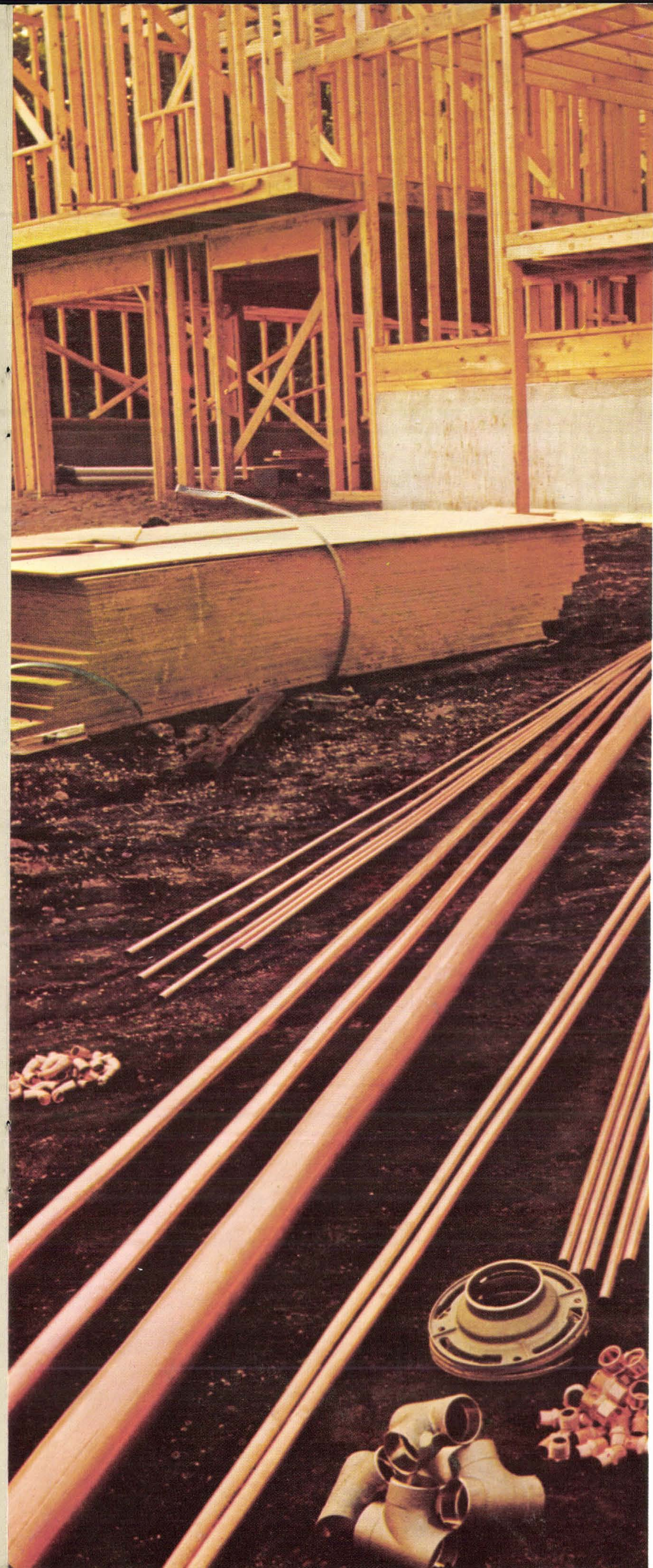
In Port Huron the brass extrusion billet-melting and casting system, one of the largest in the world was put into operation late in 1970. This installation is five times the size of any of Mueller's existing units and is capable of melting 60,000 pounds of brass chips an hour, and casting, at one time, five 12 inch diameter, 35 foot long logs. Billets from these logs are processed through automatic gas-fired billet heaters to a 6300 ton extrusion press which by mid-1971 will be producing up to one ton of brass rod per minute. Additional finishing equipment has been installed which operates at speeds up to 240 feet per minute, automatically straightening, polishing, cutting and chamfering rod up to 1½ inch in diameter.

LIABILITIES	1970	1969 (Restated Note 1)
Current Liabilities:		
Accounts payable	$ 7,717,581	$ 8,817,982
Accrued salaries and wages	2,765,214	3,052,144
Federal income and other taxes	3,695,704	10,291,979
Current portion of long-term debt (Note 6)	700,000	700,000
Other current liabilities	4,574,703	3,024,254
Total current liabilities	19,453,202	25,886,359
Deferred credit resulting from acquisition of Mueller Brass Co. (Note 5)	837,521	1,507,537
Long-term debt (Note 6)	116,713,932	119,917,900
Deferred federal income taxes (Note 7)	5,257,933	5,286,324
STOCKHOLDERS' EQUITY		
Preferred Stock, par value $5 per share, 500,000 shares authorized, issuable in series: $5.50 Cumulative Preferred Stock, $17,875,900 liquidating value ($100 per share), 178,759 shares issued (Note 9)	893,795	893,795
Common Stock, par value $1 per share, 10,000,000 shares authorized; 2,425,765 shares issued (Notes 6, 10, 11 and 12)	2,425,765	2,356,058
Additional paid-in capital (Note 13)	70,955,927	68,530,844
Retained earnings:		
Appropriated (Note 2)	2,879,277	2,654,714
Unappropriated (Note 6)	27,759,870	27,935,672
	104,914,634	102,371,083
Less, Treasury stock, at cost (Common Stock: 1970, 94,300 shares; 1969, 32,500 shares; Preferred Stock: 1,200 shares in 1970 and 1969) (Note 10)	2,967,200	1,529,489
Total stockholders' equity	101,947,434	100,841,594
	$244,210,022	$253,439,714

CONSOLIDATED BALANCE SHEETS, DECEMBER 31, 1970 AND 1969

ASSETS	1970	1969 (Restated Note 1)
Current Assets:		
Cash	$ 3,189,423	$ 4,566,823
Time deposits and certificates of deposit	6,973,762	2,395,000
Marketable securities, at cost (market value, December 31, 1970, $1,814,000)	2,137,183	23,802,197
Due from construction fund trustee (Note 6)	1,306,281	1,935,189
Accounts and notes receivable, less allowance for doubtful accounts, (1970, $935,366, 1969, $309,397)	24,936,754	25,498,122
Inventories (Note 2)	50,757,127	43,077,018
Other current assets	790,397	812,000
Total current assets	90,090,927	102,086,349
Investments:		
Federal Pacific Electric Company (Note 1)	39,582,460	36,848,891
Discontinued subsidiary (Note 1)		1,497,203
Other, at cost (Note 3)	9,615,261	12,280,662
	49,197,721	50,626,756
Properties, plants and equipment, at cost (Note 4)	170,024,786	153,695,734
Less, accumulated depreciation, depletion and amortization and reserve for losses on capital assets	82,406,860	79,583,828
	87,617,926	74,111,906
Bond and construction fund deposits (Note 6)	1,798,838	13,376,999
Deferred charges and other assets	15,504,610	13,237,704
	$244,210,022	$253,439,714

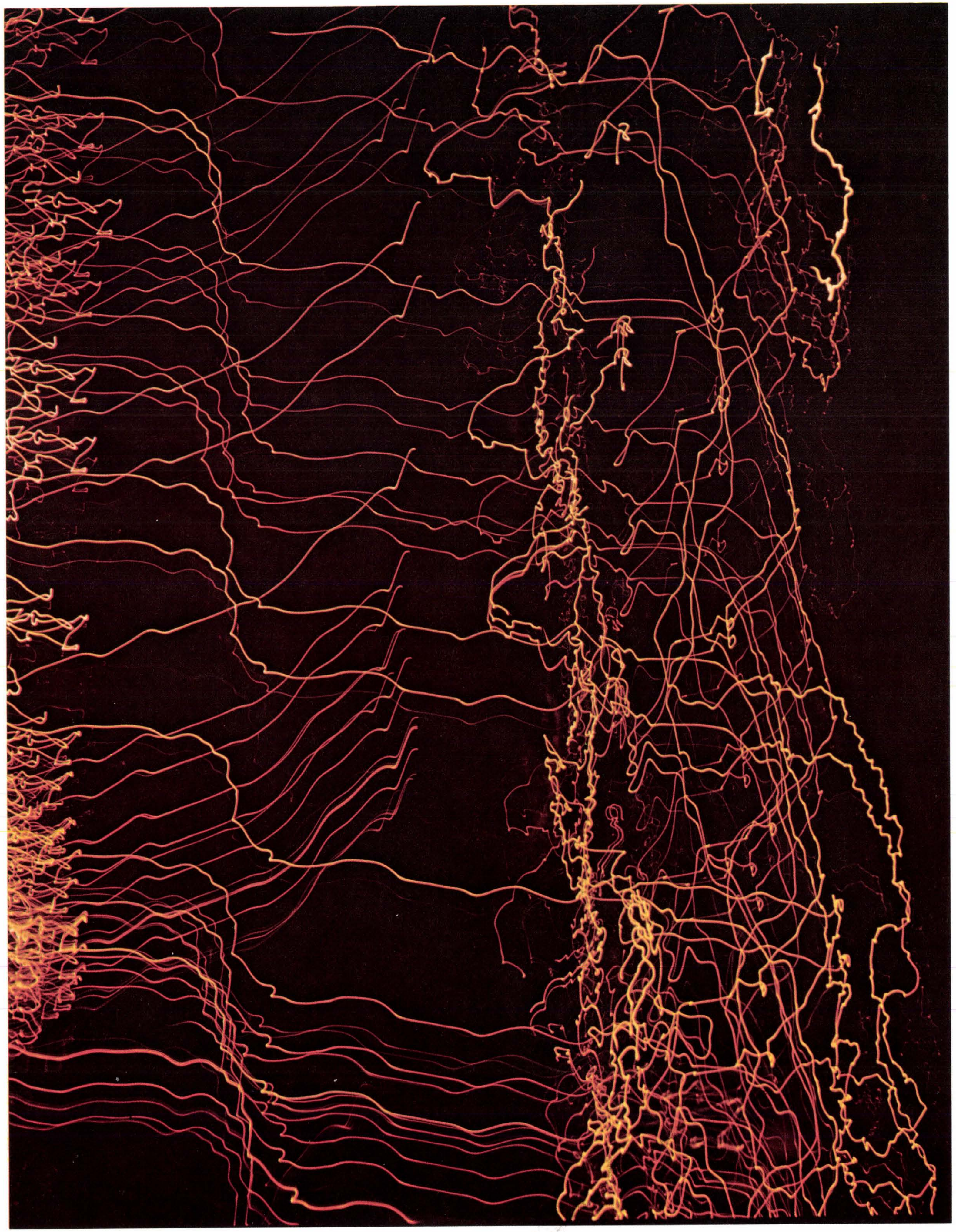
See notes to financial statements.



The completion of an automatic coil handling system by mid-1971, coupled with other techniques in material handling will increase capacity and result in an integrated facility that will make it possible for the Mueller Brass Co. to substantially improve its market position. Final completion of this project will also permit Mueller to intensify its efforts to further penetrate the brass and copper alloy tube markets. Market potential, which the company could not achieve previously because of lack of production capacity, exists for alloy tubing used in such diverse applications as heat exchangers, plumbing goods, condensers in utility power plants and shipboard applications, and water desalinization plants.

As demand for Mueller Brass Co. fabricated products declined in 1970, aggressive marketing programs were initiated which resulted in tooling orders for the largest number of new forgings and industrial bronze castings in the company's history. The increased sales developed by this additional tooling as the business climate improves in 1971 will further solidify Mueller's reputation as a leading producer of brass forgings and bronze castings.

With fifteen warehouses and twenty-six sales offices, the Mueller Brass Co. has an effective national marketing and distribution system. With the addition in 1970 of increased production capacity, the company will be in an excellent position to participate in the business that will develop in 1971 from the recovery in housing and the upturn in general business activity that is anticipated.



CONSOLIDATED STATEMENTS OF INCOME AND RETAINED EARNINGS UNAPPROPRIATED
for the years ended December 31, 1970 and 1969

	1970	1969 (Restated Note 1)
Sales and value of production (Note 2)	$152,167,483	$166,957,310
Royalties and other operating income	6,504,645	4,837,252
Interest and dividends	1,685,147	3,472,642
Amortization of deferred credit (Note 5)	670,016	670,016
Gain on metal price fluctuations (Note 2)	224,563	1,505,511
Equity in earnings of Federal Pacific Electric Company (Note 1)	1,539,788	391,644
	162,791,642	177,834,375
Cost of sales, production and operating expense	134,746,924	137,087,608
Selling, administration and general	8,990,525	9,630,405
Exploration, dry holes and delay rentals	1,463,220	1,697,193
Interest expense	4,769,797	4,940,723
Depreciation, depletion and amortization (Note 4)	3,986,387	3,815,172
Provision for income taxes, including deferred taxes of $1,177,000 in 1970 and $1,873,000 in 1969 (Note 7)	1,076,191	8,727,822
	155,033,044	165,898,923
Income from continuing operations	7,758,598	11,935,452
Loss from discontinued operations, net of related tax benefit of $450,191 in 1970 and $5,821 in 1969 (Note 1)	722,492	5,729
Income before extraordinary items	7,036,106	11,929,723
Extraordinary items (Note 8)	(1,219,000)	10,167,628
Net income	5,817,106	22,097,351
Retained earnings unappropriated, beginning of year	27,935,672	28,331,480
	33,752,778	50,428,831
Deduct:		
Cash dividends declared:		
Preferred Stock, $5.50 per share	976,575	981,496
Common Stock, $1.00 per share	2,321,363	2,333,308
	3,297,938	3,314,804
Fair market value of warrants distributed to common stockholders (Note 12)		17,670,435
Market value of Common Stock issued as stock dividend (Note 10)	2,470,407	
Excess of liquidating value over proceeds on Preferred Stock issued pursuant to former Mueller Brass Co. option plan		2,409
Amount appropriated to reserve for metal price fluctuations (Note 2)	224,563	1,505,511
	5,992,908	22,493,159
Retained earnings unappropriated, end of year	$ 27,759,870	$ 27,935,672
Earnings per average outstanding share of Common Stock (adjusted for 3% stock dividend in 1970) after preferred dividend requirements:		
Primary:		
Income from continuing operations	$ 2.89	$ 4.55
(Loss) from discontinued operations	(.31)	
Income before extraordinary items	2.58	4.55
Extraordinary items	(.52)	4.22
Net income	$ 2.06	$ 8.77
Fully diluted (Note 15):		
Income from continuing operations	$ 2.55	$ 3.64
(Loss) from discontinued operations	(.18)	
Income before extraordinary items	2.37	3.64
Extraordinary items	(.30)	2.55
Net income	$ 2.07	$ 6.19

See notes to financial statements.

Accountants' Report

To the Stockholders,
United States Smelting Refining and Mining Company:

We have examined the consolidated balance sheet of United States Smelting Refining and Mining Company and Subsidiaries as of December 31, 1970 and the related consolidated statements of income and retained earnings unappropriated and source and application of funds for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances. We previously examined and reported upon the consolidated financial statements of the Company and Subsidiaries for the year ended December 31, 1969, which have been restated as described in Note 1 to financial statements.

In our opinion, the aforementioned financial statements present fairly the consolidated financial position of United States Smelting Refining and Mining Company and Subsidiaries at December 31, 1970 and 1969 and the consolidated results of their operations and consolidated source and application of funds for the years then ended, in conformity with generally accepted accounting principles applied on a consistent basis.

2 Broadway, New York, N.Y.
March 22, 1971

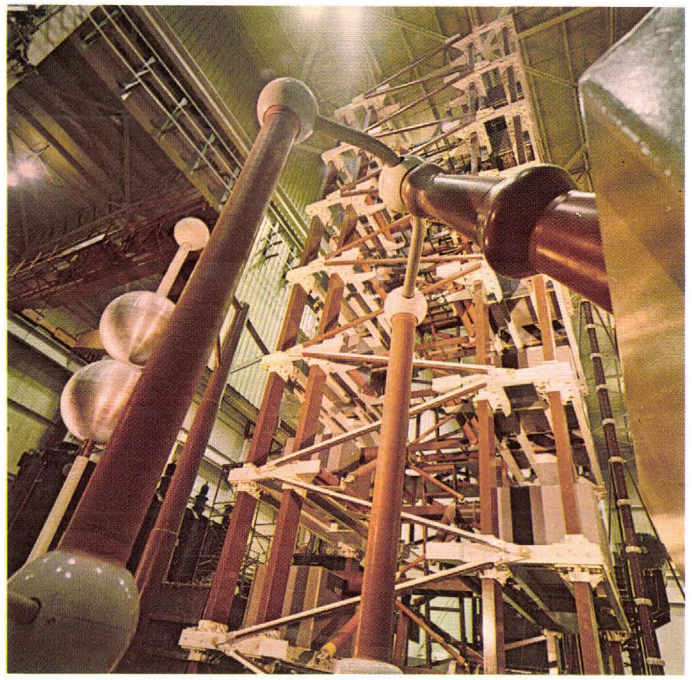
LYBRAND, ROSS BROS. & MONTGOMERY

Financial Section

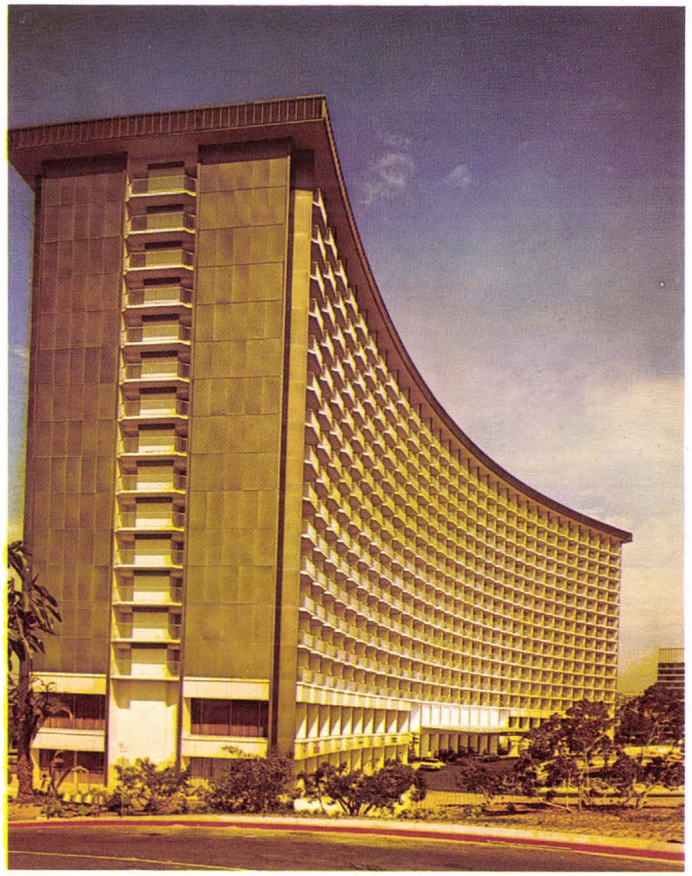
Electrical Power Equipment

The Company owns approximately 50% of the outstanding Common Stock of Federal Pacific Electric Company. Federal Pacific designs, manufactures and markets equipment for the distribution, control and utilization of electric power. Its products range from circuit breakers to protect the electrical circuits in homes to sophisticated electrical distribution and control equipment in use in some of the world's largest buildings. Industrial plants, apartments, hospitals, office buildings—any structure utilizing electric power is a potential customer for Federal Pacific Electric panelboards, fuses, circuit breakers, safety switches, electric heating and cooling equipment, switchboards, switchgear, motor control centers, liquid-filled and dry-type transformers, and power capacitors.

The year 1970 was one in which major changes were made in the organization of Federal Pacific Electric. In order to provide stronger and more effective control of operations, five separate divisions were established — each a rational business unit responsible for marketing, manufacturing, and engineering and fully accountable for operating profits.

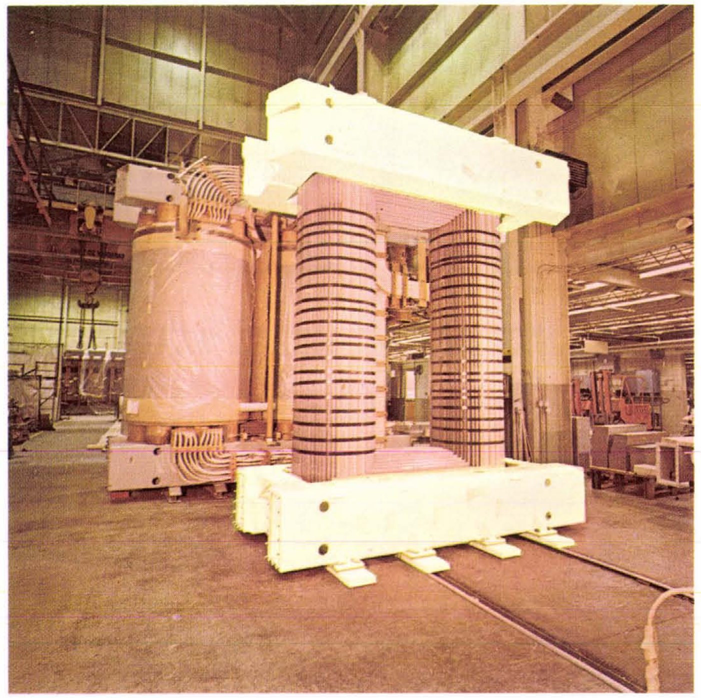


2.8 Million Volt Impulse Generator for Testing Transformers Manufactured by Federal Pacific Electric.



Century Plaza Hotel — Los Angeles — Total Electric Distribution System by Federal Pacific Electric.

Electrical Power Equipment



Core Section of 100 MVA Transformer.

Reductions in personnel at all levels were effected along with the discontinuance of the unsatisfactory operations of Federal Pacific Electric's wholly-owned subsidiary, Machinery Electrification, Inc. The benefits of these changes are already evident and will continue to be realized in 1971 and subsequent years.

The sale of Federal Pacific Electric's interest in its majority-owned Italian subsidiary, SACE, to Brown Boveri Company, Ltd., coupled with a long-term agreement between SACE and Federal Pacific Electric allows Federal Pacific the benefits of ongoing engineering developments and the continuance of a reliable source of certain parts and sub-assemblies now supplied by SACE.

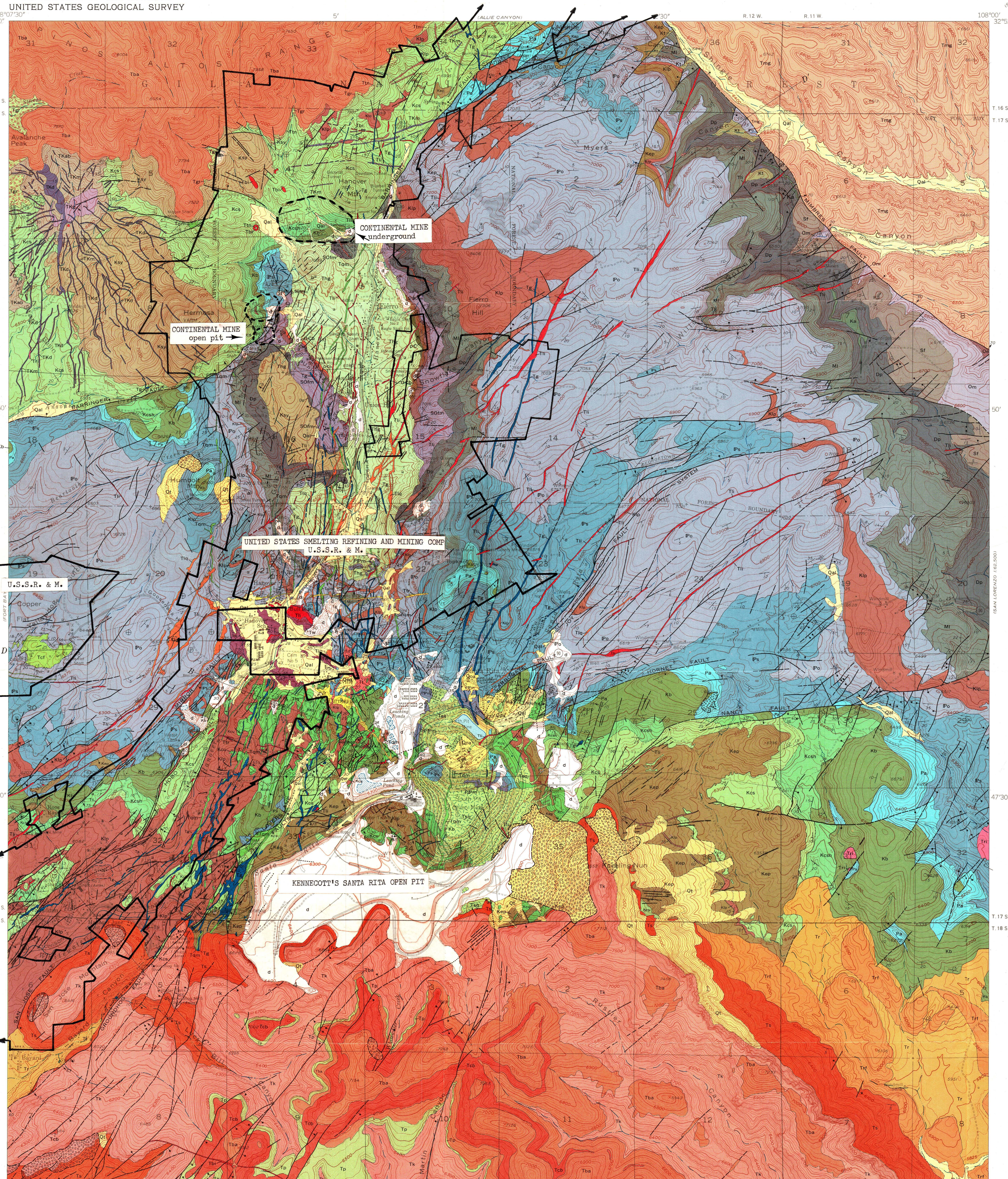
Cornell-Dubilier Electric Co. is a 99% owned subsidiary of Federal Pacific Electric which manufactures capacitors, relays and other components of the electronics industry. In a difficult year for the electronics industry in general, Cornell-Dubilier, profiting by the results of expense control and profit improvement programs, has made a creditable showing compared to the industry. Its Taiwan facility is now in full production and further expansion is planned in the immediate future for this operation.

FPE-Pioneer Electric Ltd. is a Canadian Company, approximately 61.5% owned by Federal Pacific Electric. FPE-Pioneer together with its 100% owned Canadian subsidiaries manufactures substantially the same products as Federal Pacific in six provinces of Canada, and it also has a 100% interest in an Australian subsidiary, FPE-Australia, Pty. Ltd., and in Federal Pacific Electric Caribbean Limited. FPE-Pioneer Electric Ltd. continues to gain stature in a very vigorous electric utility market of Canada and is increasing its ability to respond to the commercial, residential and industrial construction markets of Canada.

It is expected that the demand for Federal Pacific Electric's products will increase substantially as a result of economic factors including, a pent-up demand for new housing which could put the rate for residential construction near 2 million units per year. The impetus for projected growth is being assisted by the efforts of Federal, State, and Local Governments to clean up the blighted areas of our cities and provide adequate, low-cost housing, both of conventionally built houses and also of rapidly growing factory-built houses. Another factor is the increase in preference for electric heating for homes and industrial buildings. An electrically heated home uses about ten times the dollar value of FPE products as does a house heated by other fuel. Finally, we anticipate substantial increased business as a result of capital expenditures that the electric utilities must make in the coming years. It has been reported that the electrical energy requirements of this country for the next ten years will equal the total consumption in the nation since the invention of the electric light bulb.

World Trade Center — New York City — One of the Largest Electrical Contracts Ever Undertaken — Used a Broad Range of Federal Pacific Products.

DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY



Base by U.S. Geological Survey, 1951

APPROXIMATE MEAN DECLINATION, 1964

SCALE 1:24 000

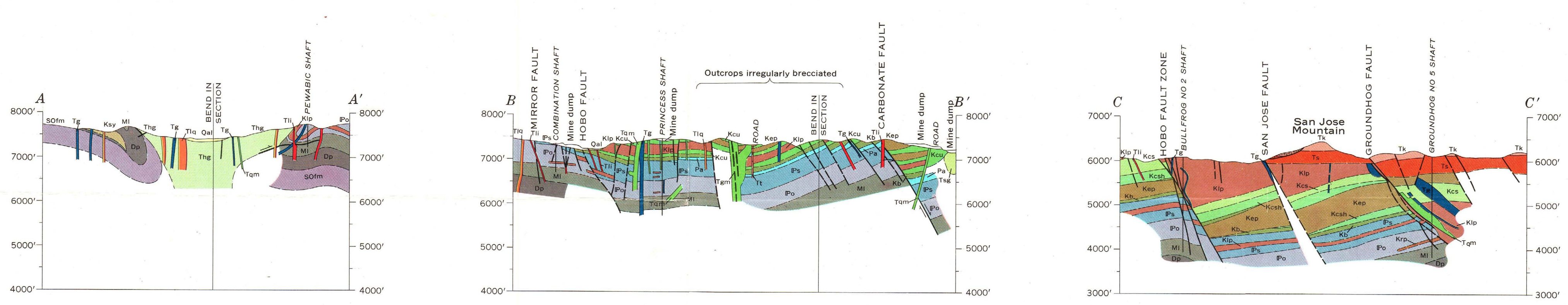
1 MILE

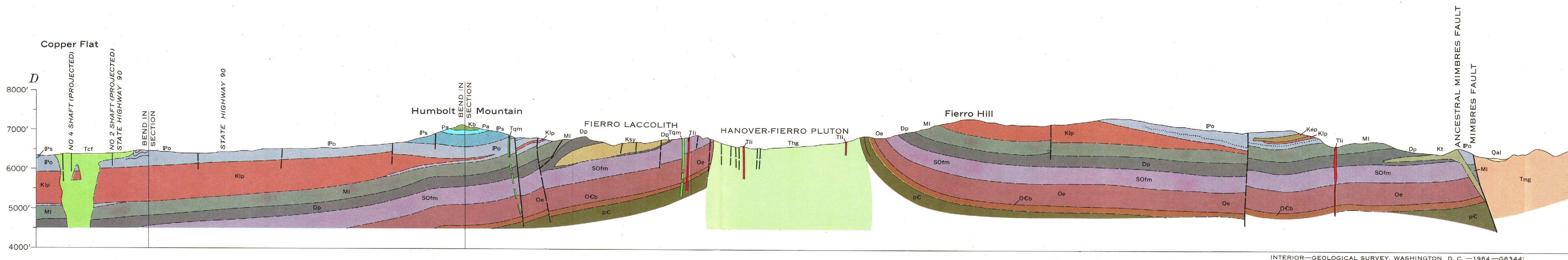
1 KILOMETER

CONTOUR INTERVAL 25 FEET
DATUM IS MEAN SEA LEVEL

NEW MEXICO
QUADRANGLE LOCATION

Geology by R. M. Hernon, W. R. Jones, S. L. Moore, S. G. Lasky, T. G. Lovering, A. F. Shride, G. S. Koch, Jr.; 1931, 1948–53.
Pewabic mine area adapted from Harrison Schmitt, 1939





INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D. C.—1964—G63441

EXPLANATION

QUATERNARY

Recent

Qal — Younger alluvium
Sand, gravel, and soil. Mapped only where significant geologic relations are hidden

Qt — Hillside rubble and talus

Pleistocene

Qoa — Older alluvium
Gravel and sand cemented with quartz and iron oxides

UNCONFORMITY

TERTIARY

Upper Miocene(?) and Pliocene

Tmg — Semiconsolidated gravel deposits in the Mimbres Valley
In part equivalent to Gila Conglomerate

UNCONFORMITY

Miocene(?)

Tba, Tcb — Flows and tuffs
Tba, basaltic andesite flows. Tcb, white pumiceous and massive crystal tuffs equivalent to the Caballo Blanco Rhyolite Tuff of Elston (1957) intercalated between flows of basaltic andesite south of the Chino mine

Tbi — Basaltic andesite plugs and dikes
Probable feeders of basaltic andesite flows (Tba)

Tgr — Gravel and boulder deposits
In northeast part of quadrangle

DISCONFORMITY

Tp — Pitchstone, sandstone, and rhyolite tuff
Indurated tuff at top equivalent to Box Canyon Rhyolite Tuff of Elston (1957). Pitchstone at base, locally overlain by sandstone

Tk — Kneeling Nun Rhyolite Tuff[1]
Massive welded and cemented ash flow ranging in composition from quartz latite to rhyolite

Ts — Sugarlump Tuffs[2]
Thin-bedded pumiceous rhyolite tuffs; brown sandstone containing clinoptilolite locally

Trt — Rhyolite tuff
Underlies basaltic andesite flows (Tba) in northern part of quadrangle; resembles Kneeling Nun Rhyolite Tuff

Trr — Felsitic rhyolite plugs and dike
Relative age not determinable; assumed to be related to extrusion of rhyolite tuffs of Miocene(?) age. Has texture of shallow intrusive

Tr, Trf — Rubio Peak Formation[3]
Tr, conglomerates and gravels; Trf, rhyodacite-quartz latite flows

DISCONFORMITY

Lower Tertiary

Relative ages undeterminable; age relations to andesite breccia (TKab) unknown

Trh — Rhyodacite porphyry plug and dikes
Plug underlies Bull Hill; intrudes conglomerate west of Wimsattville (Tw). Includes quartz latite dikes of Lasky (1936) with sparse phenocrystal quartz

Tql — Quartz latite porphyry dikes and plugs
Quartz phenocrysts abundant. Tt, Treasure plug and apophyses; Tlq, all other dikes and plugs of quartz latite porphyry except that of the Turnerville and Republic dike systems (Ttr) and those at Copper Flat. Not all of exactly same age

Tw — Conglomerate west of Wimsattville
Contains fragments of quartz latite porphyry (Ttr). It is intruded by quartz latite porphyry plug (Tlq) south of Oswaldo No. 1 shaft; it is also intruded by plugs and dikes of rhyodacite porphyry (Trh)

Ttr — Quartz latite porphyry of Turnerville and Republic dike systems
Line pattern indicates southeast facies of Turnerville. Possibly as old as the quartz monzonite porphyry of the Santa Rita stock (Tsq) or the granodiorite porphyry dikes (Tg)

Tqm — Quartz monzonite porphyry dikes

Tg — Granodiorite porphyry dikes
May include apophyses of Hanover-Fierro pluton and Santa Rita stock

Thg — Granodiorite porphyry of the Hanover-Fierro pluton and apophyses

Tsq — Quartz monzonite porphyry of the Santa Rita stock and apophyses

Tcf — Quartz latite porphyry at Copper Flat
One complex pluton and two dikes. Relative age uncertain but between hornblende quartz diorite (Klp) and main epoch of hypogene metallization; that is, before the time of intrusion of the Turnerville and Republic dike systems (Ttr)

CRETACEOUS(?) AND TERTIARY

Upper Cretaceous(?) and lower Tertiary

TKg — Orthoclase gabbro
Small plug in North Star Basin

TKdi, TKd, TKm — Diorite and mafic porphyry dikes
TKd, plagioclase-hornblende diorite porphyry dikes; some are older than the andesite breccia (TKab). TKm, predominantly pyroxene andesite to pyroxene syenite porphyry dikes and a few biotite-plagioclase porphyry dikes. Some are apophyses of orthoclase gabbro plug (TKg). Most are younger than andesite breccia, and one, at least, is older than granodiorite porphyry dike (Tg). Only about 10 per cent of dikes in North Star Basin are shown.

TKab — Andesite breccia
Dark purplish-green indurated volcanic breccia and conglomerate containing blocks and cobbles of older rocks, but mostly of mafic porphyries and dark volcanic rocks. In North Star Basin

CRETACEOUS(?)

Upper Cretaceous(?)

Age with respect to syenodiorite porphyry (Ksy) and andesite breccia (TKab) not shown

Kt — Trachyte porphyry
Sills and small plutons; chilled margins along hornblende quartz diorite (Klp) and quartz diorite porphyry (Kqp). Intrudes ancestral Mimbres fault

UNCONFORMITY

Ksy — Syenodiorite porphyry
Sills and laccoliths

Klp — Hornblende quartz diorite
Sills, laccoliths, and few dikes, some in quartz diorite porphyry sills (Kqp). Cut by mafic porphyry dike (TKm) north of Hanover Mountain

Krp — Rhyolite porphyry
Sills. Appears to have blocked the extension of hornblende quartz diorite sill (Klp) in Groundhog mine. Age relative to quartz diorite porphyry (Kqp) indeterminable. Cut by granodiorite porphyry (Tg) and quartz monzonite porphyry (Tqm) dikes. In section C–C′ only

Ka — Augite-hornblende andesite porphyry sills
Near Georgetown. Relative age indeterminable; assumed to have been intruded during time of dominance of the sill form; definitely older than rhyodacite porphyry dikes (Trh) and younger than Percha Shale

Kqp — Quartz diorite porphyry
Sills and laccoliths

CRETACEOUS

Upper Cretaceous

Kcs, Kcsh, Kcu — Colorado Formation
Kcs, sandstone member; alternating beds of sandstone, arkose, and shale. Upper part equivalent to Mesaverde Formation; thin limestone beds in basal 100 feet equivalent to Greenhorn Limestone. Chain of circles is a key conglomerate bed. Kcsh, shale member; black shale except for quartzite 20 feet thick in middle part. Equivalent of Graneros Shale. Kcu, Colorado Formation, undivided. 0–1,000 feet thick

Kb — Beartooth Quartzite
Reddish fine-grained orthoquartzite, minor black shale and conglomerate locally. 30–110 feet thick

UNCONFORMITY

PERMIAN

Lower Permian

Pa — Abo Formation
Red shale, mudstone and limy mudstone, limestone and chert conglomerate. 0–285 feet thick

PENNSYLVANIAN

Magdalena Group

IPs — Syrena Formation
Upper part argillaceous limestone, some shale; lower part limy shale and argillaceous limestone. 170–280 feet thick

IPo — Oswaldo Formation
Limestone, some thin shales; sandstone lenses shown by stipple or line of dots where lens is thin. Siliceous shale 20–40 feet thick at base. 330–420 feet thick

PIPm — Metasedimentary rocks
Chlorite-actinolite-epidote-garnet-diopside-magnetite alteration, cut by stringers of pyrite

DISCONFORMITY

CARBONIFEROUS — MISSISSIPPIAN

Lower Mississippian

Ml — Lake Valley Limestone
Limestones and marly limestone. Upper part pure crinoidal limestone, some white chert nodules. 200–400 feet thick

DEVONIAN

Upper Devonian

Dp — Percha Shale
Box Member of Stevenson (1945), gray shale with calcareous nodules; Ready Pay Member of Stevenson (1945), black fissile shale. 220–315 feet thick

DISCONFORMITY

SILURIAN

Sf — Fusselman Dolomite
Gray massive cherty dolomite. 100–200 feet thick

SOfm — Fusselman and Montoya Dolomites

ORDOVICIAN

Upper Ordovician

Om — Montoya Dolomite
Light-gray dolomite, in part interlayered with dark chert; sandstone 1–10 feet thick at base. 200–250 feet thick

DISCONFORMITY

Lower Ordovician

Oe — El Paso Limestone
Light- to medium-gray, thin- to thick-bedded limestone and dolomite. 300–510 feet thick

CAMBRIAN

Upper Cambrian

O€b — Bliss Formation
Dolomitic and shaly limestone, shale, basal conglomerate locally; hematitic and glauconitic sandstone and quartzite. 140–188 feet thick

UNCONFORMITY

PRECAMBRIAN

p€ — Biotite-granite gneiss

Contact
Dashed where approximately located; short dashed where indefinite; dotted where concealed

Fault, showing direction and amount of dip
Bar and ball on downthrown side. Dashed where approximately located; dotted where concealed; queried where doubtful

Reverse fault
U, upthrown side

Strike and dip of beds

Strike and dip of overturned beds

Horizontal beds

Strike of vertical or near vertical foliation

Mine and mill dumps

Landslide

[1] The Kneeling Nun Rhyolite Tuff was named in a thesis by Elston (1953) for the Kneeling Nun, a prominent landmark near the town of Santa Rita in the Santa Rita quadrangle. The first published mention of the name was by Kuellmer and others (1953), and the first description of the formation was given by Jicha (1954). The formation is a massive partially welded and devitrified ash flow ranging in composition from quartz latite to rhyolite, and in thickness from 200 to 600 feet. It is everywhere conformable with the underlying Sugarlump Tuffs; the upper contact is an erosional one.

[2] The Sugarlump Tuffs was named in a thesis by Elston (1953) for Sugarlump Hill, NE¼ sec. 15, T. 19 S., R. 10 W., in the Dwyer quadrangle, which adjoins the Santa Rita quadrangle to the southeast. The name was first used by Kuellmer and others (1953), and the first published description was given by Jicha (1954). The formation consists of several volcanic and clastic units: well-bedded and massive pyroclastic deposits of latitic or rhyolitic composition, volcanic conglomerates, and sandstones locally replaced by green clinoptilolite. It rests disconformably on the Rubio Peak Formation (Elston, 1957, p. 42) in the Dwyer quadrangle and on early Tertiary and older rocks in the Santa Rita quadrangle. Because it was deposited on an uneven surface, its thickness is quite variable from place to place; the maximum reported thickness is about 1,300 feet, but in the Santa Rita quadrangle the thickness ranges from 50 to about 800 feet. Owing to the lenticularity of the units no section in the Santa Rita quadrangle can be cited as typical.

[3] The Rubio Peak Formation was named in a thesis by Elston (1953) after a prominent butte at secs. 9, 10, 15, 16, T. 19 S., R. 10 W., in the Dwyer quadrangle. The first published description of the formation was given by Hernon and others (1953). The formation consists of andesite and latite flows, conglomerate, welded ash flows, volcanic conglomerate and tuffaceous sandstones. No section can be cited as typical owing to the lenticularity of the flows and other units. The formation was deposited on an irregular surface and is therefore highly variable in thickness. Elston (1957) estimated the maximum thickness in the Dwyer quadrangle to be about 5,000 feet.

On the basis of floral assemblages regarded as most probably of late Miocene or early Pliocene age collected from lake beds overlying rhyolitic tuffs believed to be correlatives of the Kneeling Nun Rhyolite Tuff, and from lake beds within beds believed to be correlatives of the upper part of the Rubio Peak Formation (Jahns and others, 1955; F. J. Kuellmer, written communication, 1960) all three formations described above are tentatively dated as Miocene(?). A major erosional disconformity separates the Rubio Peak Formation and intrusive rocks of early Tertiary age. Flows of basaltic andesite overlying the Kneeling Nun Rhyolite Tuff are older than the Gila Conglomerate of Pliocene and Pleistocene age and parts of the Santa Fe Group of middle(?) Miocene to Pleistocene(?) age.

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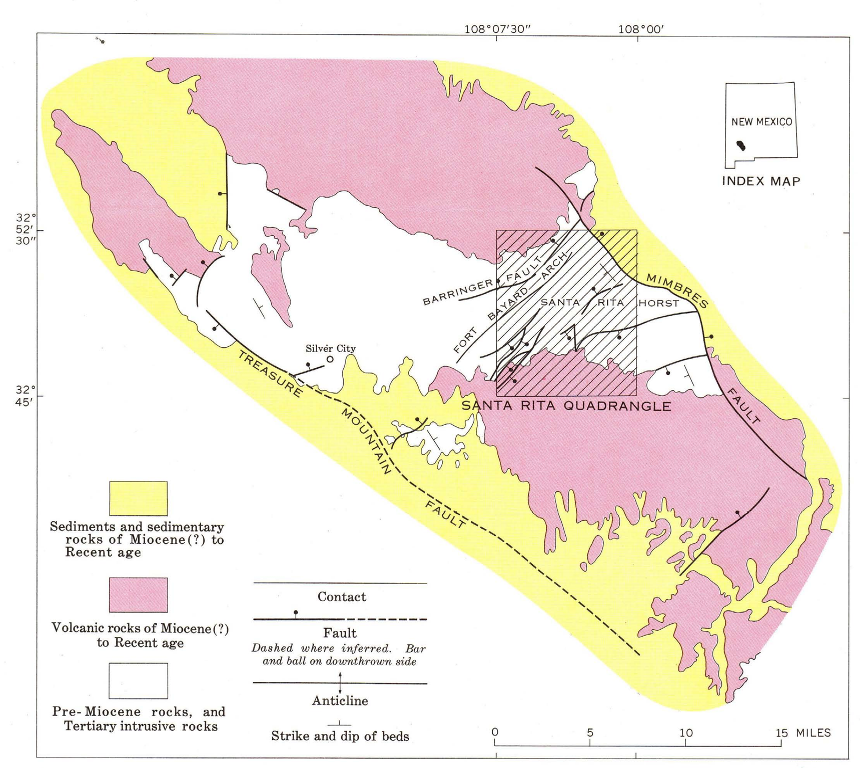


STRUCTURAL GEOLOGIC SETTING OF THE SILVER CITY REGION, GRANT COUNTY, NEW MEXICO

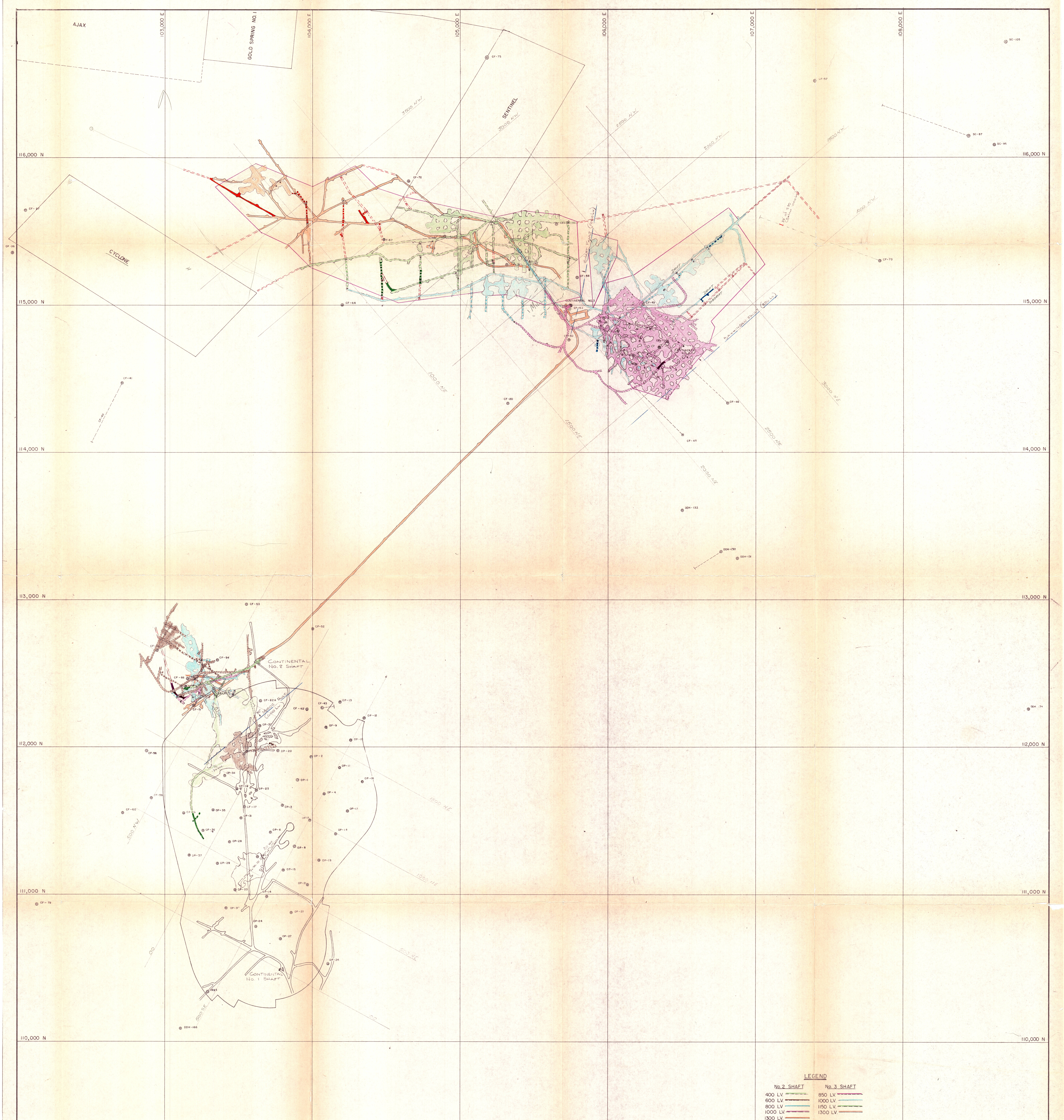
GEOLOGY OF THE SANTA RITA QUADRANGLE, NEW MEXICO

By

Robert M. Hernon, William R. Jones and Samuel L. Moore

1964

GEOLOGY OF THE
SANTA RITA QUADRANGLE
NEW MEXICO - GRANT COUNTY
GQ-306



UNITED STATES SMELTING REFINING & MINING COMPANY
BAYARD, NEW MEXICO

№ 1 - № 2 - № 3 SHAFTS

CONTINENTAL - HANOVER MT. AREA COMPOSITE LEVEL MAP

WITH PIT OUTLINE

Revised	Scale	Date	Drawn By	File No / Print No
	1 in. = 200 ft.	4-1-71	J. Sanchez	