
ANNUAL REPORT 1968
ENGELHARD
MINERALS & CHEMICALS CORPORATION

ENGELHARD MINERALS & CHEMICALS CORPORATION

Executive Offices: 113 Astor Street, Newark, New Jersey 07114

DIRECTORS

*Charles W. Engelhard
Chairman

*Alfred G. Blake
Executive Vice President

James J. Casey
Attorney, Casey, Lane & Mittendorf

E. Peter Corcoran
General Partner, Lazard Freres & Co.

*James Deshler II
Chairman, Minerals & Chemicals Division

Kingman Douglass
Consultant, Dillon, Read & Co., Inc.

*Ernst L. Frank
Senior Vice President

*Richard C. Glogau
Senior Vice President

*George A. Helmer
Senior Vice President & General Counsel

*Lawrence Hoguet
Senior Vice President & Treasurer

*Ludwig Jesselson
Executive Vice President

Robert B. Meyner
Attorney, Meyner & Wiley

*Milton F. Rosenthal
President

*Henry Rothschild
Senior Vice President

Maurice W. Rush
Chairman, Hudson Bay Mining and Smelting Co., Ltd.

*Gilbert L. Tugwell
Executive Vice President

Fred W. Wilson
General Partner, Lazard Freres & Co.

William D. Wilson
Managing Director, Charter Consolidated Limited

Robert G. Zeller
General Partner, F. Eberstadt & Co.

Leo Forchheimer
Director Emeritus

*Executive Committee

CORPORATE OFFICERS

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Milton F. Rosenthal, *President*
Alfred G. Blake, *Executive Vice President*
Ludwig Jesselson, *Executive Vice President*
Gilbert L. Tugwell, *Executive Vice President*
Ernst L. Frank, *Senior Vice President*
Richard C. Glogau, *Senior Vice President*
George A. Helmer, *Senior Vice President & General Counsel*
Lawrence Hoguet, *Senior Vice President & Treasurer*
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John F. Thompson, Jr., *Vice President*
A. Calhoun Todd, Jr., *Vice President*
Melvin C. Flint, *Secretary*
Clyde W. Moonie, *Controller*

The 1969 Annual Meeting of Stockholders of Engelhard Minerals & Chemicals Corporation will be held on Wednesday, May 7, at 10 A.M., at the Robert Treat Hotel, Newark, New Jersey

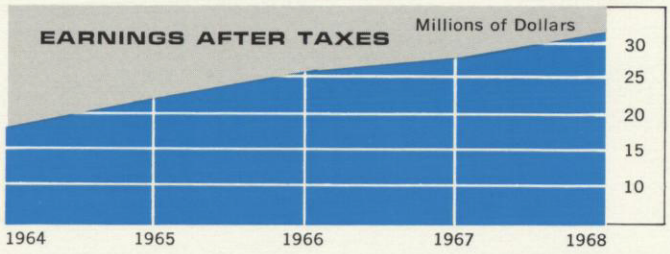
FINANCIAL REVIEW

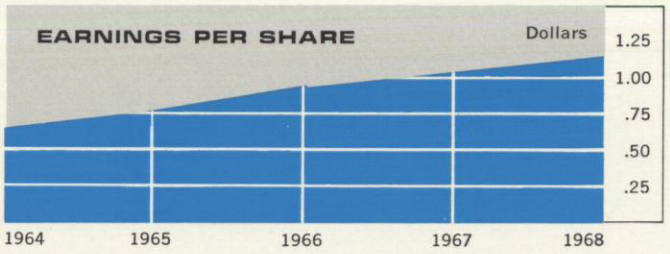
(dollar amounts in thousands except for per share data)

	1968	1967	1966	1965	1964
Net sales	$1,334,463	$1,053,414	$992,318	$814,042	$643,241
Earnings before income taxes	47,399	41,036	38,868	33,882	30,134(b)(1)
Net earnings	31,658	28,381	25,607	21,814	18,750(b)(2)
Cash dividends declared	11,494	9,907	8,538	7,448	5,801
Net earnings retained in business	20,164	18,474	17,069	14,366	12,949
Gross property additions	11,898	19,677	19,255	7,922	7,114
Depreciation and depletion	8,254	7,554	6,142	5,131	4,747
Working capital	178,574	152,569	133,322	96,801	86,808
Net property, plant & equipment	73,061	69,998	58,566	46,090	44,427
Total assets	475,666	459,532	347,881	288,399	253,967
Stockholders' equity	188,057	165,555	146,620	139,264	123,694
PER SHARE OF COMMON STOCK					
Net earnings (a)	1.15	1.06	.95	.76	.64(b)(3)
Cash dividends	.33	.27	.22	.15	.09
SHARES OUTSTANDING (a)	24,562,925	23,320,446	23,322,964	23,747,740	23,575,032

(a) — based on average shares outstanding; all years adjusted for stock splits
(b) — 1964 amounts include the following in respect of special item (gain on marketable securities) (1) $1,375; (2) $1,031; (3) $.04

REPORT TO SHAREHOLDERS





Nineteen sixty-eight was the first full year of operations for Engelhard Minerals & Chemicals Corporation which was created in the fall of 1967 by the merger of Engelhard Industries, Inc. and Minerals & Chemicals Philipp Corporation. The results have been most gratifying. Profits rose much as we had anticipated, and last December, the Directors responded to the continuation of this trend by increasing cash dividends 33⅓ per cent and approving a 2 for 1 stock split. As a consequence, an annual dividend rate of 40 cents per share has now been established for the new shares.

Consolidated net income reached a record $31,658,302, an increase of 11.5 per cent over 1967 results, equivalent to a return on invested capital (the ratio of net earnings to net worth computed on the basis of average annual equity) of almost 18 per cent. Per share earnings after the stock split, but not allowing for conversion of the outstanding convertible preferred stock, rose from $1.06 to $1.15. These results were achieved notwithstanding the imposition of the 10 per cent surtax which reduced earnings by the equivalent of 5 cents per share.

As in the prior year, 1968 was distinguished by the fact that each of the three operating divisions attained new highs in sales and earnings and made an effective contribution to the Company's record levels of activity and profits. With skills encompassing a broad spectrum of industrial and commercial activity ranging from mining, refining and fabrication to finance, marketing and research, the Company is well equipped to handle effectively a steadily increasing volume of business in the expanding markets it serves.

In the normal conduct of its business the Engelhard Industries Division of the Company carries an extensive inventory of precious metals which constitute a particularly valuable asset, especially when economic trends are inflationary. At the end of 1968, the market value of precious metals was $91,055,000, exceeding by $32,784,000 the value at which these assets were carried on the books.

Inflationary pressures and monetary crises characterized 1968. These were clearly reflected in developments associated with precious metals. The most dramatic of these was the decision by the western world's principal central bankers to dismantle the London gold pool and create the so-called two-tier system by which monetary and industrial gold transactions were separated. This decision was announced on March 17th, and the government stopped selling gold to industrial consumers at that time. Two days later, the Company had established itself as the nation's principal seller of industrial gold to licensed consumers. Annual consumption of gold for industrial, artistic and professional purposes totals about 6½ million ounces in the United States and the Company holds an important share of this market.

The government sold 104,000,000 ounces of silver from its stockpile in 1968. We were the largest purchaser, and obtained 30,953,000 ounces from this source. Additional quantities were purchased from producers to meet record levels of demand for fabricated and chemical products. We expect the government's inventory of silver to be available to domestic industrial consumers for at least two years. While the eventual exhaustion of the government's stockpiles will put an upward pressure on the price, newly mined production is expected to increase. In addition, large quantities will become available from above-ground resources here and abroad.

The demand for platinum continued to exceed supply in 1968. However, on December 9 the Company announced that one of our wholly owned foreign subsidiaries had signed another long term contract with a group of South African mining companies for the supply of platinum and associated metals in increasing quantities commencing in January, 1969. These added supplies, coupled with our present intake from Canadian sources, will enable the Company to offer its customers increasing amounts of metal beginning this year, and we expect to be able to fulfill all their requirements by early 1972.

Non-metallic minerals operations reached a new high in sales for the nineteenth consecutive year. The HZ-1 petroleum cracking catalyst was a spectacular performer with sales and earnings exceeding forecasts. Although in

production for only two years, HZ-1 has gained a clear majority of the available market. Meanwhile, sales of other kaolin-based petroleum catalysts also increased significantly. These products complement the precious metals catalysts marketed by the Engelhard Industries Division.

Ultraflotation, a proprietary process for the industrial utilization of kaolin clays, contributed substantially to results. Appropriations have been approved for the expansion of kaolin production again this year, to meet the growing needs of the paper, printing ink, paint, rubber and plastic industries.

A key to the Company's success in the world-wide marketing of ores, minerals and metals has been the development of long term sources of supply. Further progress in this direction was made this past year. In mid 1969 production is scheduled to begin at the Matilde mine in Bolivia which we are developing in partnership with the U.S. Steel Corporation. It is estimated that production, in the form of concentrates, will reach the equivalent of 55,000 tons of zinc and 5,000 tons of lead per annum.

The Company has joined with the Anglo American/ Charter Consolidated Group in investigation of several mineral prospects. With that group providing its extensive technical skills and this Company its marketing expertise, it is hoped that projects of mutual benefit will result from the combined efforts.

Another example is our participation with four well known firms in NEWAIM, a recently formed Australian consortium. Its purpose is to take part in new and existing mineral projects in Australia and Southeast Asia. The other members of the consortium are the Australian Mutual Provident Society, The Bank of New South Wales, the Imperial Chemical Industries of Australia and New Zealand and Newmont Proprietary Limited.

It is also noteworthy that in 1968 we began marketing our own brand of lead, the availability of which is based upon smelter contracts. It is expected that this business will increase sharply in the current year. Meanwhile, we continued to develop long term contracts with our customers, especially for ores and concentrates.

LOOKING AHEAD

We contemplate capital expenditures of some $12,000,000, this year, approximately the same as 1968. By far the largest portion of this investment will be for additional plant and equipment. This program will be financed internally, since the Company's anticipated cash flow should comfortably exceed our outlays for such expenditures and dividends.

Over the years the Company has been particularly successful in the research and development programs it has funded to perfect new products and to help our customers use them more effectively. With these results in mind, we intend to increase such outlays and broaden our programs in order to expand the business internally and provide increased services to our many customers.

It is manifestly impossible to predict economic developments in 1969, or the ways in which they will affect our business. However, we believe that, barring unforeseen circumstances beyond our control, our shareholders can reasonably expect a year of satisfactory progress.

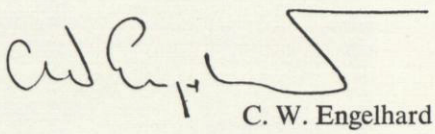
MANAGEMENT

Effective January 1 of this year, Gilbert L. Tugwell became President of the Engelhard Industries Division, replacing Dr. E. F. Rosenblatt, who has retired. Richard C. Glogau was appointed Executive Vice President of the Division, a member of the Executive Committee, and a Director of the Company.

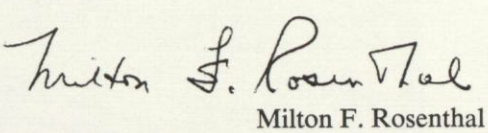
Dr. Rosenblatt has contributed enormously to the success of the Company through the years by his devotion and initiative, particularly through imaginative and constructive research, and for this reason it is particularly fortunate that he will continue with us in an advisory capacity for the next several years.

EMPLOYEES

We are ever mindful of the contribution made to the Company's progress by its 7,700 employees, here and abroad.



C. W. Engelhard
Chairman



Milton F. Rosenthal
President

In petroleum technology, Engelhard's octafining process utilizes a platinum catalyst to produce xylenes in Corpus Christi, Texas refinery.

PRECIOUS METALS

The Company continued to broaden its position during the past year as the world's foremost supplier of precious metal products and components to modern industry.

Precious metal catalysts, which play critical roles in the process technology of the petroleum, petro-chemical, chemical and pharmaceutical industries, are among the principal sources of income. Continued expansion is foreseen in this area since extensive research is now underway to broaden the market by improving the catalysts and processes in which they are used. One such example is Magnaforming, which was developed by the Company to provide petroleum customers with a new, economical high octane reforming process. It has been field tested in a 30-thousand barrel a day reformer which has been on stream for over a year. Test runs at this rate during the past six months have indicated a potential savings of more than a million dollars a year as compared to yields obtained from conventional methods at that rate of output. At present the Company's petroleum catalysts and processes are installed in about 25 per cent of the free world's high octane gasoline reformers.

In the future, some of the focus on anti-air pollution measures may shift from the internal combustion engine, itself, to the fuel it burns. Should this come to pass, construction of refineries to produce lead-free gasoline can be anticipated. Such installations would require substantial additional amounts of platinum catalyst.

In the chemical industry, promising new markets have been uncovered which the Company hopes to enter in 1969 with products which it has perfected in recent years. One of these is a new anode for the chlorine industry.

Printed circuits for computers are gold plated with the Company's new E-70 solution.

Ultra-modern clean room for testing and processing aerospace thermocouples and critical industrial instruments.

Chlorine makers appear to be on the verge of a major changeover from graphite anodes to precious metal-coated titanium anodes in their manufacturing processes. Success in this endeavor will add a significant new item to the Company's line of electro-chemical products.

Sales of electroplating salts and solutions increased in 1968 because of an expanded sales effort, especially in the electronics industry, and a broader range of products. Platinum, palladium, rhodium, gold and silver are all marketed as salts or solutions. In addition to such electronic applications as printed circuits, switches, terminals, contacts, tubes and reflectors, they are, of course, widely used for decorative purposes.

As world population grows at an accelerating rate, increasing food production becomes of vital importance, especially in the underdeveloped countries. One of the chief ways to increase crop yields is through chemical fertilizer. The manufacture of chemical fertilizer requires vast amounts of nitric acid. This is manufactured via a catalytic process which utilizes a platinum-rhodium gauze, of which the Company is the largest supplier.

The output of silver nitrate doubled during the past year, when the Company became a major supplier to two of the nation's largest x-ray and photographic film makers. As a consequence, output is expected to rise again in 1969. Silver nitrate, which is delivered to customers in the form of extraordinarily pure crystals, is manufactured in a highly automated plant which has been operating at increasingly higher levels of output ever since it first went on stream about six years ago.

Precious metal refining makes a major contribution to income. Since the U.S. Government became the world's principal seller of silver to industrial consumers, and most of this silver had to be refined, a significant increase in this business resulted. It is anticipated that this higher level of activity will continue in 1969. The output of

Gold-surfaced contacts are readied for welding to aerospace vehicle relay.

Platinum is induction melted and poured into ingots before wire drawing operations.

refined gold doubled in 1968. The government discontinued its sales of high purity gold to industrial consumers. These consumers then sought out commercial supplies. This gold had to be refined to bring it up to the higher standards of purity required for today's sophisticated technological uses. The Company was successful in capturing a large share of this business. The installation of facilities to increase refining capacity for platinum bearing matte from South Africa has been completed and they are presently being operated on a three-shift basis.

Engelhard Minerals & Chemicals supplies highly sophisticated complex parts and components to the aerospace industry. A unique example can be found in the package of instruments which American astronauts will take to the surface of the moon. The Apollo Lunar Surface Experiments Package (ALSEP) will have a thermoelectric power unit, fueled by Plutonium-238. This power unit will be shielded from the instruments by a titanium shield with gold plating over a diffusion barrier developed and made by Engelhard.

Because of improvements in the art of precision form rolling super-alloys, the Company today is producing complex shapes with greater accuracy than ever before possible. As a result, jet engine, aircraft and equipment manufacturers are expanding their use of form rolled parts formerly produced by conventional drawing, extrusion and machining processes.

The Company does an extensive business with the electrical, electronic and communications industries. Palladium metal contacts, for instance, are used throughout the nation's telephone system in relays, switchboards and other equipment. Other precious metal contacts are used in the electrical systems of automobiles, appliances and other durable goods, as well as in military and aerospace systems. In a growing number of these areas, the Company is delivering clad-metal components. Such economies have

Left: Fabricating platinum units to be used in glass melting operations.

Below: Platinum catalyst creates unique ignition action for new line of flameless campers' heaters.

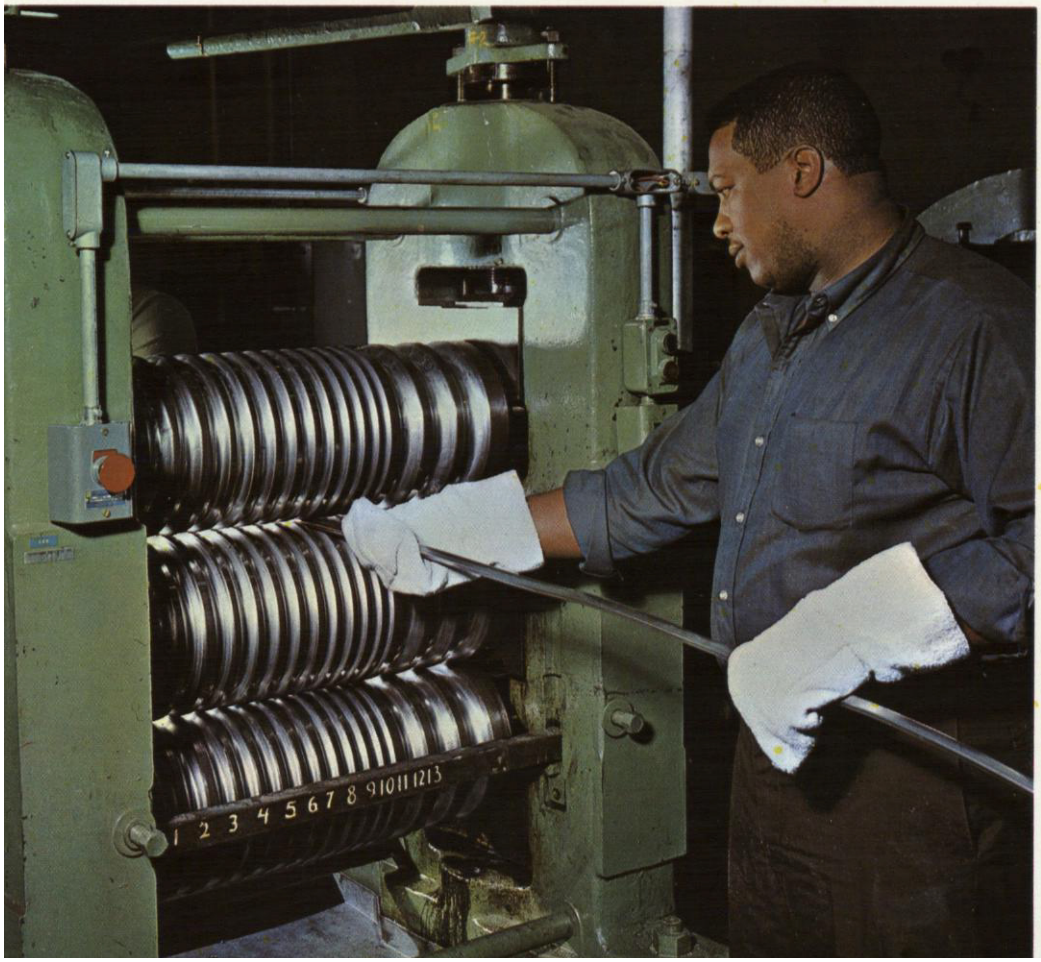
long been known in the precious metals business, but have received added impetus since the Company pioneered the cladding of silver on copper for the United States Mint, which strikes the Kennedy half-dollar from this special composite metal.

High temperatures – up to 2,000 degrees centigrade in space vehicles – are measured with thermocouples. These devices employ platinum, rhodium and iridium in a variety of combinations. These precious metals have exceptionally high melting points and other physical attributes that enable them to continue operating in such environments. During the past year, the Company completed the installation of a "clean room," for the manufacture of sheathed thermocouple conductors under a contract with NASA. Another aspect of this business – sales to jet engine manufacturers – is growing at a gratifying rate. Each jet engine may require as many as 10 thermocouples to measure operating temperatures at critical points.

The Company enlarged its role as a supplier of fabricated platinum equipment to the glass industry. Glassmakers have found that in most instances their new techniques and products require platinum for furnace liners, rods, stirrers and special fabrications. These include special optical glass, new compositions for the manufacture of glass, and fiberglass, which is finding new uses in a wide range of markets.

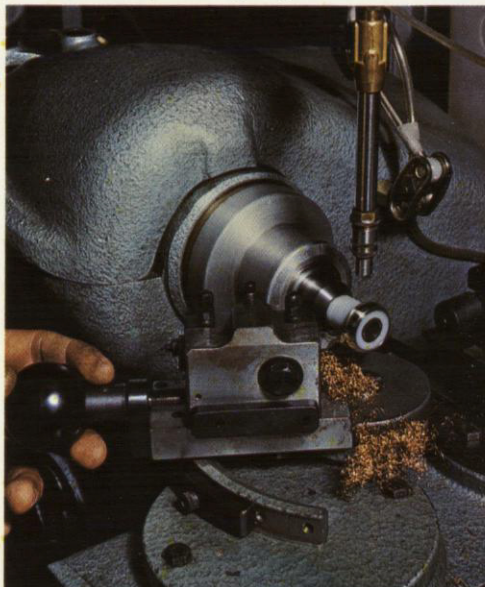
Liquid precious metals, primarily gold, have penetrated the electronics market. Until recent years they were used exclusively for decorating china and glassware. The development of micro-circuits for computers and related uses opened up new areas where reliability depends upon precious metal circuits fired onto a ceramic backing. Sales in this field rose substantially in 1968, and similar results are again anticipated.

During the past year, the Company successfully marketed to the small boat industry its cathodic protection system



Left: Rolling platinum ingots for wire drawing.

Below: High diamond finishing of precious metal wedding rings.



for preventing the corrosion of underwater metal hulls and other metal parts. Broader penetration of this market is anticipated. Meanwhile, a larger version of the system is being installed on an increasing number of cargo ships and on metal piers and other fixed installations.

Marketing skills of a particularly high order characterized international precious metal operations during the past year. The English company, whose volume rose considerably, developed export outlets for gold and fabricated silver. Higher levels of activity are expected in the present year. Sales of silver-based chemical and metallurgical items — particularly brazing alloys, anodes and salts — are expected to contribute in a larger measure to this upsurge.

Export sales were also an important aspect of the Canadian operation and plans have been drawn to seek more such business. Although faced with sharp competition, this Company expects to expand its share of the electrical contact market in Canada. And the forecast here is also for increased sales of the same silver products cited for the English company.

Facilities for recovering precious metals from spent petroleum and chemical catalysts were enlarged at the Company's Italian works. Volume from these sources increased accordingly in 1968.

Sanchez, Ginot y Gamboa, a Spanish silverware manufacturer in which the Company has invested, is operating at capacity. The firm produces a wide variety of silver plated hollow ware and flatware. Demand for these products is strong in the United States as well as in Europe.

A continued increase in business in Japan has resulted in a decision to increase the capitalization of the firm's affiliate there. The new funds will be used to finance the expansion of facilities to produce and refine precious metal catalysts.

Left: High speed weaving of platinum gauze catalyst for production of nitric acid.

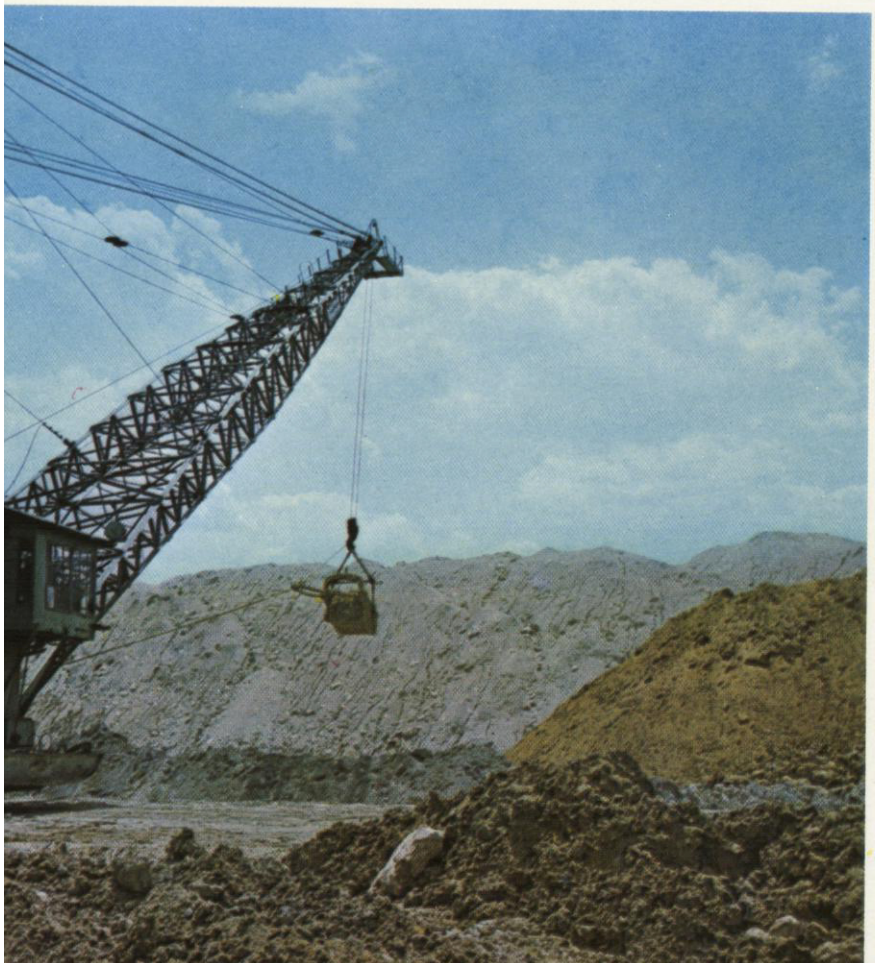
Below: New electric range-top warming shelf utilizes a continuous silver circuit to supply electrical resistance for temperature control.

NON-METALLIC MINERALS

The paper on which this report is printed has been filled and coated with kaolin, one of the Company's major non-metallic mineral products. Kaolin is a fine white clay mined and processed at several locations in Georgia. It is used to fill and coat paper in order to obtain the best possible print and picture reproduction. The improved health of the United States paper and paperboard industry, together with continued growth of the Company's export market in 1968, resulted in a significant increase in total kaolin sales for the year.

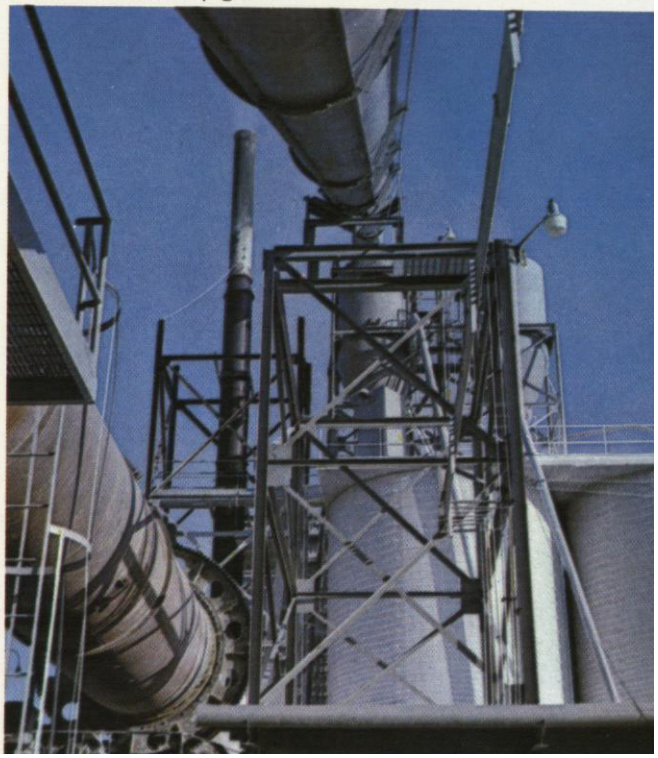
Kaolin has always contributed substantially to corporate income, and prospects for the future continue to look encouraging. During the past year, the firm's capacity for producing its Ultra White 90 kaolin pigment was increased by 10 per cent. This was the fourth in a series of planned expansions during this decade which has increased capacity for this product by a total of 400 per cent. A new high glossing pigment, Ultra Gloss 90, was introduced commercially during the year, and has met ready acceptance among paper and carton manufacturers. This complements the Company's leading premium paper pigment, Ultra White 90, which continues to dominate the quality paper and paperboard markets. Other new products, which also utilize the Company's patented Ultraflotation process, have reached the large-scale pilot plant stage.

New production techniques developed within the Company have enabled it to market several improved calcined aluminum silicates. They are utilized in the manufacture of paper, paint and electrical wire insulation. Other kaolin products are marketed to makers of paints, printing inks, adhesives, rubber, plastics and fiberglass.



Left: Dragline removing overburden at LaCamelia Mine, Attapulgus, Georgia.

Below: Calcining plant for production of aluminum silicate pigments.



Demand for the Company's HZ-1 petroleum cracking catalyst for moving bed refining units has been excellent. Within 18 months after its commercial entry into the market, this new catalyst has gained a dominant position and is presently used in 30 different units throughout the world. In the Company's HZ-1 plant at Attapulgus, Georgia, improved techniques have made it possible to produce a catalyst with unusually high thermal stability. This enables refiners to take full advantage of HZ-1's excellent activity and selectivity. Reports from the field confirm that these improvements have resulted in increases of as much as 50% in gasoline production.

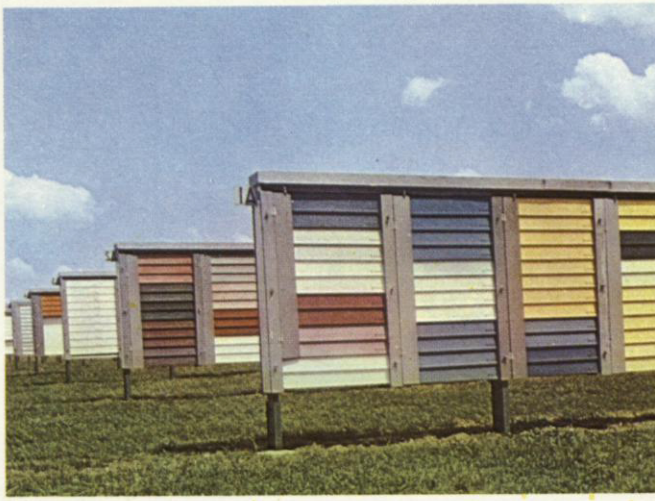
Sales of attapulgite, another non-metallic mineral mined in southwest Georgia and northern Florida, increased for the fifth successive year in 1968. Major gains were registered by specialty grades used in paint, fertilizer, and adhesive applications, and growth continued in petroleum refining, floor absorbents, and pet litter markets. Absorbent litter for household pets is sold under a wide variety of private label brands in supermarkets, pet stores and other retail outlets throughout the country. Other rapidly increasing uses are for absorbing grease and oil in plant, garage and airport maintenance and safety programs, and in turf renovation projects. The soil additive developed for turf renovation improves surface drainage while also improving sub-surface moisture retention. The attapulgite plant expansion, begun in 1967, was completed in 1968, thus providing the capacity to meet increased demand.

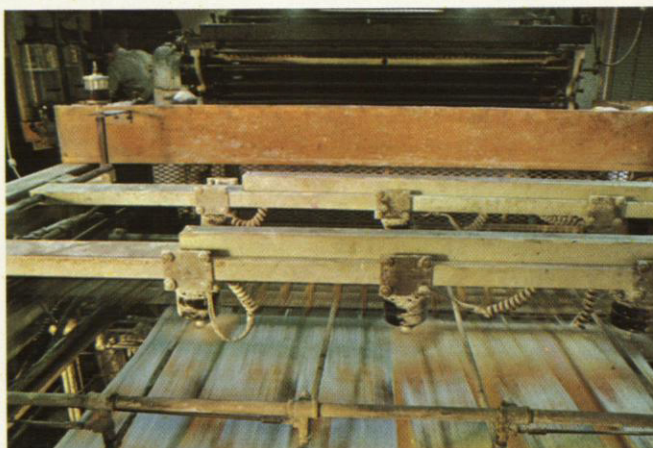
Stepped-up rates of steel production in 1968 greatly increased the demand for high quality lime from the Company's plants at Cleveland, Ohio and Strasburg, Virginia. Both plants operated at record levels and close to their capacity. Continued conversion by the steel industry to the basic oxygen furnace production method, which requires three to four times as much lime per ton of steel as did the older, open hearth method, is expected to in-

Top: Testing alkyd paint thickened with Attagel, a company product.

Bottom: ASP 600 pigments are vital to production of colored inks used in boxboard printing operations.

Sol-Speedi-Dri is a "must" to eliminate oil or grease on floors in this big jet hangar.

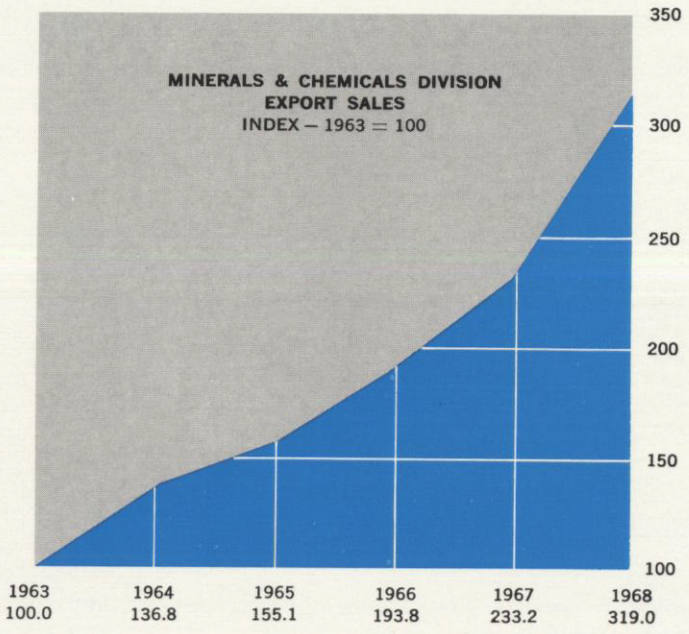




crease the demand for lime in the areas served by both plants. In anticipation of this potential, new lime producing facilities are now under construction.

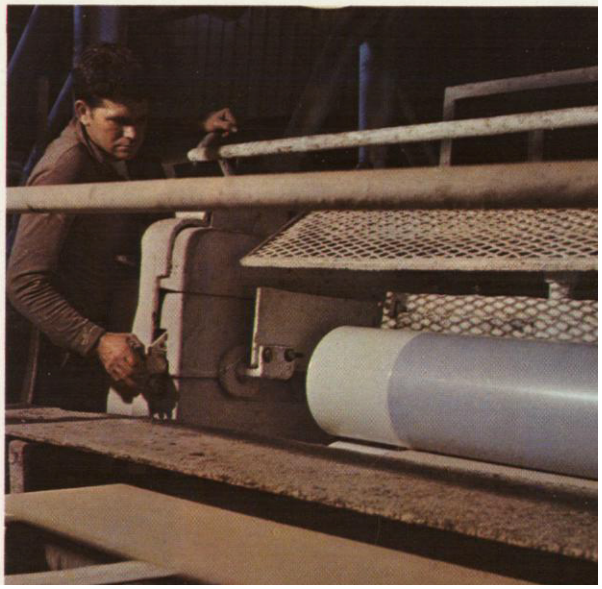
Eastern Magnesia Talc Company completed its first full year of operation under Engelhard ownership in 1968. This subsidiary operates a talc mine and plant in Vermont which was acquired late in 1967. The talc produced at this facility has several unique natural properties that add to its intrinsic value. The paint, paper, and rubber industries are among the principal customers. An interesting and growing market is in auto body putties, where these talc compounds provide better adhesion and smoothness.

During 1968, export sales of non-metallic mineral products continued their dramatic climb. Undoubtedly, heavy advance buying in anticipation of the longshoremen's strike contributed to this growth. Currently, the Company's products are used in paper, paint, chemicals, plastics, petroleum



Left: Big tractors pull earth scraping units to remove overburden from kaolin clay beds.

Below: A prime coat of aluminum silicates is applied to acoustical tiles.



and agricultural applications in 67 foreign countries. To facilitate large volume ship load movements of bulk kaolin clay to foreign paper mills, the Company began using at mid-year a new terminal at Port Royal, South Carolina, under a long term lease.

Capital expenditures for non-metallic mineral facilities totalled $3,600,000 in 1968, and $4,850,000 is budgeted for this purpose in the current year. Most of this is for the expansion of plant capacity. Over the past eight years, more than $27,000,000 has been invested in the improvement or expansion of the Company's kaolin, attapulgite, catalyst, lime and talc mines and plants in the United States.

Both kaolin and attapulgite reserves were expanded during the year. The Company estimates that its deposits are sufficient to last well into the next century. It owns outright or has negotiated long term leases for more than 26,000 acres of mineral-bearing land.

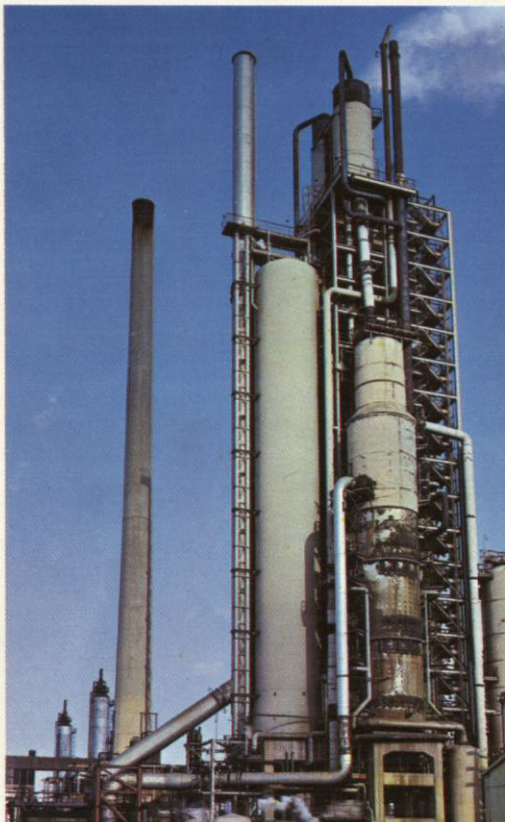
MARKETING OF ORES, MINERALS AND METALS

Philipp Brothers maintained its position during the past year as one of the world's leading suppliers to industrial consumers of basic ores, minerals, ferrous and non-ferrous metals and alloys. There was a substantial increase in the volume of business accompanied by a gratifying increase in earnings.

This business is highly diversified. With a staff of approximately 1,000 persons in more than 40 offices located throughout the world, Philipp Brothers markets well over 100 commodities, including virtually every ore or metal used in material quantities by world industry. Following the pattern of recent years, more than 30 industrial materials made significant contributions to earnings in 1968.

Left: Processing HZ-1 catalyst pellets at Attapulgus, Georgia plant.

Below: HZ-1 cracking catalyst on stream at leading refinery.



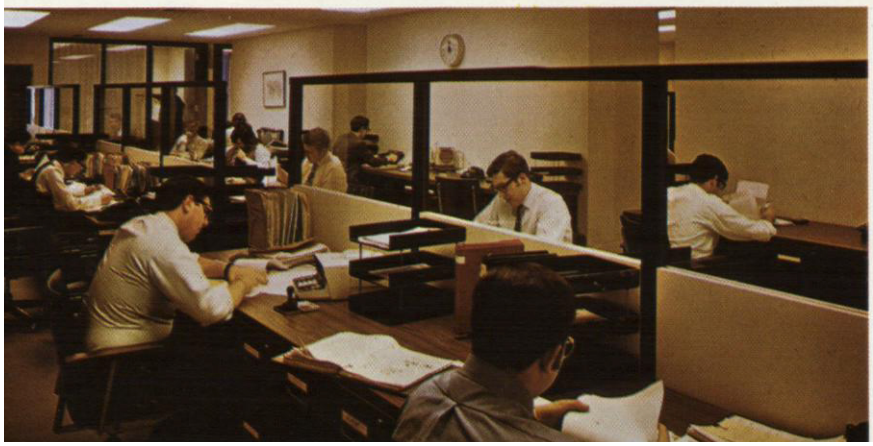
In addition to the base metals of copper, lead, tin and zinc, they included, among others, aluminum, bismuth, chrome, columbite and tantalite, ferroalloys, iron ore, manganese, mercury, pig iron, tungsten, titanium and vanadium.

The magnitude of the Division's operation can best be described by illustration. In the past year the Company handled ores, concentrates and metals with a content of approximately 200,000 tons of zinc. So, also, it increased the tonnage of tin it marketed, which represented a substantial portion of world production. The Company is probably the world's largest tin merchant, with established outlets for this product in many countries. In this past year, the Company also became a regular domestic supplier of its own brand of lead as a consequence of a contractual arrangement with a domestic smelter. Thus, both lead and zinc are now marketed under the "Phibro" brand.

This trend toward developing long-term sources of supply, either through contractual arrangements such as these, or by assisting in the development of primary production facilities, has been vital to the growth of our marketing operations.

For example, while the current price structure of vanadium is relatively weak, we continue to do an extensive business in this mineral and related items because of the availability to us under long term contract of the ore from which it is obtained.

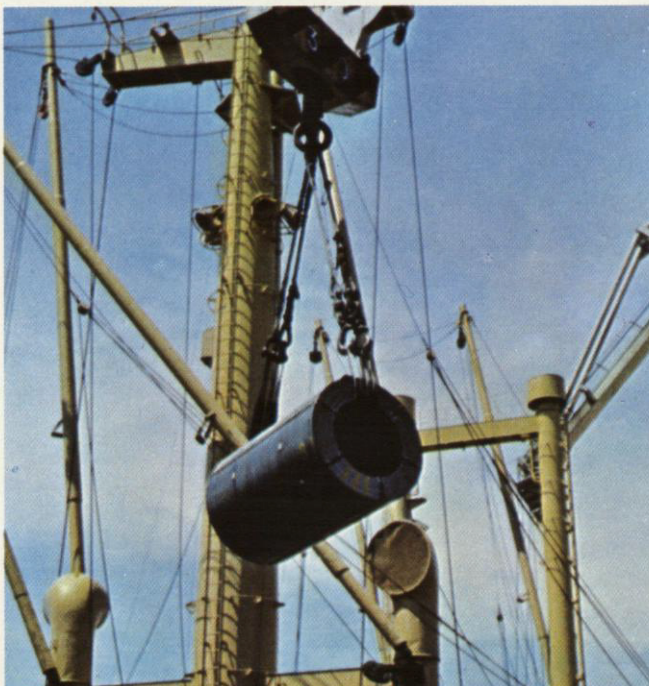
Similarly, the Division has obtained agencies for the sale in North America of a seawater magnesite production, the sale in South America of sulphur emanating from a major Mexican producer and the sale of antimony ore for "Emusa," the largest South American producer. It also obtained the exclusive right to handle a new production of fluorspar, scheduled to commence in 1970, and developed in a Far Eastern country a market for rerollable steel scrap items.



Top left: International communications center in New York maintains contact with Philipp Brothers' world-wide offices.

Bottom left: Transportation Department handles movement and deliveries of metals, ores and raw materials.

Below: Company-chartered freighter loading steel coil in Japan for shipment to Italy.

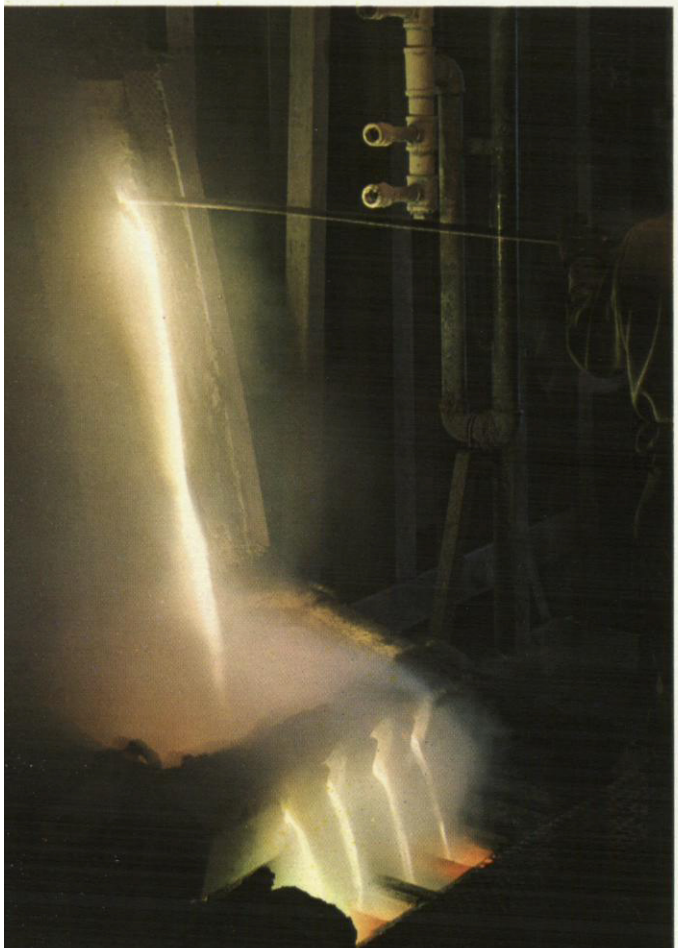


Activity in chrome and manganese ore continued at a strong pace last year. Despite declining prices and severe competition, the Company managed to increase somewhat its volume of business in iron ore. Shipments of pig iron increased, influenced primarily by the boom in the Japanese steel industry. There was a similar increase in aluminum and alumina business. There was gratifying progress in shipments of non-ferrous scrap, with a substantial portion of the material handled originating from sources outside the United States.

The staff for the international marketing of phosphate rock, potash and manufactured fertilizers has been increased and an extension of activity in these products can be anticipated. The Company increased its volume of business in fishmeal, extending distribution activities to United States users.

Philipp Brothers increased its volume of business with the federal government. This included the purchase of surplus metals and ores, upgrading of stockpile inventories, barter activities and the supply of metals and materials to government departments, including participation in A.I.D. financed procurement for foreign countries. These transactions are highly complex. For example, in one transaction last year, the company delivered palladium to the government stockpile. At the same time, the government delivered to the company surplus manganese ore, which was then converted into ferromanganese, and returned to the stockpile. In payment for the palladium and the difference in value between the manganese ore and the ferromanganese, we took delivery of a variety of surplus items from the stockpile, including tin, tungsten ore, manganese, cobalt and other material. Thus, the government, without dollar expenditure, acquired the needed palladium and upgraded some of its raw materials. On the other hand, the Company benefited by obtaining a variety of materials for supply to its customers.

The traffic department of Philipp Brothers receives relatively little public recognition but it performs an essential function requiring extensive experience and expertise. It bears basic responsibility for the myriad of arrangements and documentation incident to the international movement of the raw materials handled by the Division, from original source to final destination. Last year, the department effectively shouldered a sharply increased workload resulting from a substantial increase in numbers of transactions, tonnages and sales volume.



Left: Sixty-ton reverberatory type melting furnace, one of the largest of its kind, used in base metal ingot manufacturing.

Below: One of regular executive and marketing staff meetings.

RESEARCH

Even more than most companies, Engelhard Minerals & Chemicals Corporation depends upon development of new products and new uses of minerals and metals for its continued growth. The Company has always invested significant sums in its own research and development programs, carried out in both the Engelhard Industries and Minerals & Chemicals Divisions. Such outlays were approximately $3.5 million last year and this amount may well be increased this year.

A significant portion of the Minerals & Chemicals Division's earnings was generated by two products developed in its laboratories, and research in this area is being accelerated. Much of it centers on Ultraflotation, the primary process by which kaolin is purified so as to make it commercially desirable. There is good reason to think that work presently under way may lead to the use of this ultraflotation process in purifying metallic minerals as well.

Platinum and the other metals of this group – palladium, rhodium, iridium, osmium and ruthenium – are utilized primarily in the chemical, petroleum, petrochemical and metallurgical industries, all of which are highly research oriented.

Much of the work in the Engelhard Industries and Minerals & Chemicals laboratories is concerned with catalysts. A catalyst is an element or compound which generates a chemical reaction, but which, itself, remains chemically unchanged. The Magnaforming process and the HZ-1 catalyst, both mentioned elsewhere in the report, are examples of successful products developed in the Company's laboratories. Continuing research on catalysis explores the refining of petroleum and petro-chemicals, processing of organic and pharmaceutical chemicals, production and purification of industrial gases, abatement of air pollution, and development of fuel cells.

The Company has been active for a number of years in developing components for fuel cells, primarily catalysts and catalytic electrodes. Part of this effort has been and is being carried out under sponsorship of the government. However, during the past year the Company sponsored program has resulted in the creation of a complete specific fuel cell power system. Prototypes of this new power source will be offered to the field in the coming year.

We are now doing extensive research into the properties of precious metals as they are affected by both extremely high and extremely low temperatures. Potential commercial applications are numerous. For instance, ruthenium and osmium have certain properties which could be highly useful in a number of industries, but at normal temperatures it is impossible to work or fabricate these elements. At high temperatures, under certain conditions, they may be more malleable.

Inquiries in the field of electrodeposition have led to the development of an electroplating bath for the deposition of osmium. Electrodeposits of osmium may find practical application due to the unusual wear resistance and electronic properties of osmium surfaces. Improvements have also been made to gold and bright silver plating.

Another program has commenced to study the recovery of precious metals from nuclear waste streams. This possibility is of long-term significance. With the increase of installed nuclear power over the coming years, fission product waste streams may constitute a significant source of supply for certain precious metals, primarily ruthenium, rhodium and palladium.

ULTRA WHITE 90®, produced by Engelhard Minerals & Chemicals Corporation's patented ULTRAFLOTATION PROCESS, is used as both a filling and a coating kaolin in the paper in this report.

FINANCIAL REPORT

Engelhard Minerals & Chemicals Corporation and Subsidiaries

CONSOLIDATED BALANCE SHEET

December 31, 1968

(with comparative figures for 1967)

ASSETS

	1968	1967
CURRENT ASSETS:		
Cash	$ 34,041,312	$ 31,086,756
Marketable securities, at cost (Note 2)	—	5,730,172
Receivables, less allowance for doubtful items	138,951,008	122,673,230
Advances on materials in transit and for future delivery	20,648,851	24,115,687
Inventories (Note 3)	196,472,024	188,058,901
Prepaid expenses	1,365,804	1,593,640
Total current assets	391,478,999	373,258,386
INVESTMENTS AND ADVANCES (NOTE 1):		
Subsidiaries and affiliates not consolidated	5,470,613	12,652,039
Other	3,421,472	1,791,706
Total investments and advances	8,892,085	14,443,745
PROPERTY, PLANT AND EQUIPMENT, AT COST:		
Land	2,555,368	2,404,683
Buildings and building improvements	30,393,391	28,820,987
Machinery and equipment	87,201,928	80,570,644
Construction and installations in progress	7,047,983	4,979,337
Mineral deposits and mine development	5,131,315	5,097,460
	132,329,985	121,873,111
Less accumulated depreciation and depletion (Note 4)	59,268,598	51,875,307
Net property, plant and equipment	73,061,387	69,997,804
OTHER ASSETS:		
Patents and patent applications, cost less amortization	618,355	503,082
Deferred charges and miscellaneous assets	1,615,116	1,329,224
Total other assets	2,233,471	1,832,306
	$475,665,942	$459,532,241

See accompanying Notes

CONSOLIDATED BALANCE SHEET

December 31, 1968

(with comparative figures for 1967)

LIABILITIES AND STOCKHOLDERS' EQUITY

	1968	1967
CURRENT LIABILITIES:		
Short-term borrowings	$ 92,337,173	$104,053,012
Long-term debt due within one year	588,908	434,212
Accounts payable	54,448,233	44,674,916
Accrued liabilities	12,996,925	11,623,596
Excess of provisional billings over partial costs on incomplete contracts	10,340,501	10,679,249
Liabilities under materials contracts net of marketable securities pledged of $17,875,698 in 1968 and $15,407,386 in 1967, at cost, which approximates market	30,881,948	39,906,143
Accrued U. S. and foreign taxes on income	11,311,724	9,318,433
Total current liabilities	212,905,412	220,689,561
DEFERRED TAXES ON INCOME	6,462,342	5,015,230
LONG-TERM DEBT (NOTE 5):		
5.3% note payable	35,000,000	35,000,000
5.5% note payable	30,000,000	30,000,000
Other	3,830,303	3,706,566
	68,830,303	68,706,566
Less amount due within one year included with current liabilities	588,908	434,212
Total long-term debt	68,241,395	68,272,354
STOCKHOLDERS' EQUITY (NOTES 5, 6, 7 AND 10):		
Preferred stock, without par value — authorized 2,500,000 shares; $4.25 cumulative convertible preferred; issued, 1968 — 805,002 shares: 1967 — 854,621 shares (liquidation value, 1968 — $48,300,120; 1967 — $51,277,260)	4,974,912	2,563,863
Common stock, par value $1 per share — authorized 30,000,000 shares; issued, 1968 — 24,911,126 shares; 1967 — 12,134,095 shares	24,911,126	12,134,095
Additional paid-in capital	39,790,553	52,680,498
Retained earnings	119,289,025	99,125,015
	188,965,616	166,503,471
Less common stock held in treasury, at cost — 1968, 85,780 shares; 1967, 44,950 shares	908,823	948,375
Total stockholders' equity	188,056,793	165,555,096
	$475,665,942	$459,532,241

nsolidated Financial Statements.

STATEMENT OF CONSOLIDATED EARNINGS

Year ended December 31, 1968

(with comparative figures for 1967)

	1968	1967
Net sales	$1,334,462,662	$1,053,414,167
Cost of sales	1,237,712,356	972,607,593
Gross profit	96,750,306	80,806,574
Interest, commissions and other income	4,692,513	5,282,761
	101,442,819	86,089,335
Deductions:		
Selling, administrative and general expenses	42,297,051	36,037,621
Interest	10,755,415	8,412,609
Other deductions	991,082	603,094
	54,043,548	45,053,324
Earnings before income taxes	47,399,271	41,036,011
U. S. and foreign taxes on income (Note 9)	15,740,969	12,655,166
Net earnings	$ 31,658,302	$ 28,380,845
Net earnings per common share (a) (b)	$1.15	$1.06

(a) Based on the average number of shares outstanding, adjusted for two-for-one stock splits in August 1967 and January 1969 and after allowing for dividend requirements on preferred stock.

(b) Assuming full conversion of the preferred stock, the net earnings per common share would be as follows: 1968, $1.07; 1967, $1.00.

STATEMENT OF CONSOLIDATED RETAINED EARNINGS

Year ended December 31, 1968

Balance at beginning of year		$ 99,125,015
Net earnings for the year		31,658,302
		130,783,317
Cash dividends paid:		
On $4.25 cumulative convertible preferred stock — $4.25 per share	$3,486,627	
On common stock — $.325 per share (adjusted for stock split — Note 10)	8,007,665	11,494,292
Balance at end of year		$119,289,025

See accompanying Notes to Consolidated Financial Statements.

STATEMENT OF CONSOLIDATED ADDITIONAL PAID-IN CAPITAL

Year ended December 31, 1968

Balance at beginning of year		$52,680,498
Excess of option price over par value of 118,285* shares of common stock and assigned value of 16,154 shares of $4.25 cumulative convertible preferred stock issued under stock option plans		2,116,132
Excess of proceeds over cost of 2,060* shares of common stock in treasury sold		18,448
		54,815,078
Deduct:		
Adjustments in connection with conversions of $4.25 cumulative convertible preferred stock (Note 6)	$ 9,056	
Par value of 12,455,563 shares of common stock issued in two-for-one stock split and related increase in assigned value of $4.25 cumulative convertible preferred stock (Note 10)	15,015,469	15,024,525
Balance at end of year		$39,790,553

*Before stock split mentioned in Note 10.

See accompanying Notes to Consolidated Financial Statements.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

December 31, 1968

(1) Principles of consolidation:

The consolidated financial statements include the accounts of all wholly-owned domestic and foreign subsidiaries.

The investments in subsidiaries and affiliates not consolidated, owned 50% or more, are stated at cost, adjusted for the Company's equity in their undistributed net earnings less appropriate valuation reserves. Net earnings for 1968 have been charged with losses of $427,247 (1967, earnings of $18,057) in respect of subsidiaries and affiliates not consolidated. Other investments are stated at cost or less.

(2) Marketable securities:

Marketable securities at December 31, 1967, consisting of 200,000 shares of Ferro Corporation common stock, were sold during the year 1968. The resulting gain of $1,935,828, net of taxes, has been offset by losses approximating this amount in connection with the disposition of certain foreign investments.

(3) Inventories:

Inventories are stated at the lower of cost or market. The inventories at December 31, 1968 include $58,271,000 of precious metals of the Engelhard Industries Division, of which amount approximately 75% is valued at cost prices under the last-in, first-out method of valuation. At December 31, 1968, the market value of such precious metal inventories exceeded the carrying amount by $32,784,000. Taxes on income would become payable on any realization of this excess by reason of reduction of precious metals inventories.

(4) Depreciation:

It is the policy of the Company to provide for depreciation under straight-line, declining-balance, sum-of-the-years digits or unit-of-production methods by charges to income in amounts sufficient to write off the cost of depreciable assets over their estimated useful lives. Depletion of mineral deposits has been provided at amounts estimated to cover the cost of the particular properties being mined, based on quantities depleted and periodic estimates of the minerals in place on such properties. Depreciation and allowances for depletion charged to operations for the year 1968 amounted to $8,253,750; for the year 1967, $7,554,151.

(5) Long-term debt:

The 5.3% note is payable to an insurance company in annual installments July 1, 1971 to July 1, 1986, as follows: 1971 to 1980 — $1,500,000, 1981 to 1985 — $2,000,000, and a final payment on July 1, 1986 of $10,000,000. The 5.5% note is payable to the same insurance company in annual installments March 1, 1971 to March 1, 1987, as follows: 1971 to 1976—$1,200,000, 1977 to 1982 — $1,800,000, and 1983 to 1987 — $2,400,000.

Under the terms of the loan agreements, the Company agrees, among other matters, that it will maintain consolidated working capital and domestic consolidated working capital as defined in the agreements. As of December 31, 1968 such working capital exceeded the required amounts by approximately $60,800,000 on a consolidated basis and approximately $29,400,000 on a domestic consolidated basis. The loan agreements also include certain provisions restricting the payment of cash dividends and acquisition of stock of the Company unless, after giving effect to such payments and acquisitions, consolidated net worth (as defined) would be not less than $140,000,000. At December 31, 1968 consolidated net worth was in excess of this requirement by $47,200,000.

(6) Preferred stock:

The $4.25 cumulative convertible preferred stock is convertible into common stock at the rate of 6.18 shares of common stock for each share of stock and has an assigned value of $6.18 (1967—$3.09) per share, which is equivalent to the par value of the common stock into which it is convertible. The preferred stock is redeemable at the option of the Company on and after September 27, 1974 at $104.25 per share. This amount will decline by 85¢ per share in each of the following five years. On any liquidation, dissolution or winding up, holders of the $4.25 cumulative convertible preferred stock will be entitled to receive out of the assets of the Company available for distribution to stockholders an amount equal to $60 per share, plus all dividends accrued and unpaid, before any distribution is made to holders of common stock. During 1968, 65,773 shares of $4.25 cumulative convertible preferred stock were converted into 203,183 shares of common stock. By agreement with a stockholder December 9, 1968, the conversion privilege with respect to 176,292 shares of the $4.25 cumulative convertible preferred stock has been suspended until such time as the Company's authorized common stock has been increased to provide sufficient shares to make such conversion possible.

(7) Stock options:

As of December 31, 1968, options were outstanding under the 1967 Stock Option Plan for 455,194 shares of common stock at prices ranging from $14.08 to $38.91 per share and 146,450 shares remained available for grant to key employees, including officers and directors of the Company. Under the plan, which terminates July 1, 1977, the option price is not less than the fair market price at time of grant and the options are exercisable beginning one year from the date of grant to the extent of 25% per year of the total number of shares under option and will expire five years from the date of grant. During the year 1968, options for 97,600 shares were granted, options for 6,120 shares were cancelled and options for 16,356 shares were exercised.

Options covering 17,418 shares of common stock at prices ranging from $3.39 to $7.06 per share were outstanding at December 31, 1968 under the Company's previous stock option plan, now terminated. Options for 14,196 shares were exercised under this plan during the year 1968.

Under stock option plans assumed by the Company in 1967 on the merger of Minerals & Chemicals Philipp Corporation and now terminated, options covering 182,434 shares of common stock and 14,328 shares of $4.25 cumulative convertible preferred stock were outstanding at December 31, 1968 at prices ranging from $8.76 to $15.64 per unit (consisting of one share of common stock and 0.07854 shares of preferred stock). During 1968 options were exercised under these plans for 206,018 shares of common stock and 16,154 shares of preferred stock and options for 178 shares of common stock and 14 shares of preferred stock were cancelled.

On June 27, 1968, the Board of Directors approved the granting of options outside of the 1967 Stock Option Plan covering 35,500 shares of common stock of the Company held in the treasury to 14 employees in foreign countries at an option price of $38.91. The terms and conditions under which these options were granted are substantially the same as for the options granted under the 1967 Plan.

Prices per share and numbers of shares shown in this note have been adjusted for the two-for-one stock split January 20, 1969 (Note 10).

(8) Retirement plans:

The Company and its principal subsidiaries have in effect various retirement plans covering substantially all employees. Pension costs for the year 1968 amounted to $3,123,979 and for 1967, $1,957,017. The Company's policy is to fund pension cost accrued. Unfunded prior service costs are being funded over thirty and forty year periods and at December 31, 1968 amounted to $14,230,000. As a result of amendments for increased employee benefits to the principal plans, total expense and unfunded prior service cost increased in 1968.

(9) Taxes on income:

Included in the provision for taxes on income is $478,000 (1967 — $300,000) representing the deferred income tax in respect of depreciation allowable for tax purposes which is in excess of book charges. The investment credit applied as a reduction of the 1968 provision for U.S. taxes on income amounts to $440,000 (1967 — $758,000).

(10) Stockholders' equity:

On January 20, 1969 the common stock of the Company was split two-for-one. The financial statements at December 31, 1968 give effect to this stock split.

(11) Commitments and contingent liabilities:

At December 31, 1968, the Company and its consolidated subsidiaries were contingently liable for bank obligations of affiliates and others of $3,200,000. In addition, the Company and its consolidated subsidiaries issue in the ordinary course of business letters of credit in favor of suppliers. At December 31, 1968, the amount of unused balances of such letters of credit was $27,000,000.

The Company and certain of its subsidiaries are defendants in various lawsuits generally incidental to their business. In the opinion of legal counsel, the disposition of these lawsuits will not result in any material liability.

In the opinion of management, there are no contingent liabilities or commitments which would materially affect the consolidated financial position of the Company and its subsidiaries at December 31, 1968.

ACCOUNTANTS' REPORT

The Stockholders and Board of Directors
Engelhard Minerals & Chemicals Corporation:

We have examined the consolidated balance sheet of Engelhard Minerals & Chemicals Corporation and subsidiaries as of December 31, 1968 and the related statements of consolidated earnings, retained earnings and additional paid-in capital and the consolidated statement of 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.

In our opinion, such financial statements present fairly the financial position of Engelhard Minerals & Chemicals Corporation and subsidiaries at December 31, 1968 and the results of their operations for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year. Also, in our opinion, the accompanying consolidated statement of source and application of funds for the year ended December 31, 1968 presents fairly the information shown therein.

PEAT, MARWICK, MITCHELL & CO.

Newark, N. J.
February 26, 1969

Engelhard Minerals & Chemicals Corporation and Subsidiaries

CONSOLIDATED STATEMENT OF SOURCE AND APPLICATION OF FUNDS

Year ended December 31, 1968
(with comparative figures for 1967)

	1968	1967
SOURCE OF FUNDS:		
Net earnings	$31,658,302	$28,380,845
Depreciation and depletion charged against earnings	8,253,750	7,554,151
Sale of capital stock under stock option plans	2,282,879	2,628,164
Net decrease in investments and advances	5,551,660	1,092,907
Sale of treasury stock	58,000	—
Net increase in long-term debt	—	9,662,910
Other	1,042,755	988,314
	$48,847,346	$50,307,291
APPLICATION OF FUNDS:		
Dividends on capital stock	$11,494,292	$ 9,907,393
Additions to property, plant and equipment, net	11,317,333	18,985,965
Net decrease in long-term debt	30,959	—
Expenses of merger	—	1,218,353
Purchase of treasury stock	—	948,375
	22,842,584	31,060,086
Increase in working capital	26,004,762	19,247,205
	$48,847,346	$50,307,291

DIVISIONAL OFFICERS

ENGELHARD INDUSTRIES DIVISION

113 Astor Street, Newark, New Jersey 07114

Gilbert L. Tugwell, *President*
Richard C. Glogau, *Executive Vice President*
DeWitt L. Alexandre, *Vice President*
S. Roy Bryant, *Vice President*
James J. Casey, *Vice President*
John R. Cockshutt, *Vice President*
J. Gunther Cohn, *Vice President*
Alexander E. Eltz, *Vice President*
Nelson A. Emmons, *Vice President*
George A. Helmer, *Vice President*
Lawrence Hoguet, *Vice President*
Collister Johnson, *Vice President*
Julian J. Keenan, *Vice President*
Carl D. Keith, *Vice President*
W. Frederick Mittendorf, *Vice President*
Joseph Nickerson, *Vice President*
Theodore Papademetriou, *Vice President*
Samuel P. Reed, *Vice President*
John F. Thompson, Jr., *Vice President*
R. Blake McCune, *Treasurer*
Edgar R. Bistika, *Assistant Treasurer*
John E. Conway, *Assistant Treasurer*
Kurt G. Siederer, *Assistant Treasurer*

MINERALS & CHEMICALS DIVISION

Menlo Park, Edison, New Jersey 08817

James Deshler II, *Chairman*
Alfred G. Blake, *President*
Gerald A. Hale, *Executive Vice President*
A. Calhoun Todd, Jr., *Senior Vice President*
C. Gerald Albert, *Vice President*
Melvin C. Flint, *Vice President*
Roy E. Landers, *Vice President*
Charles L. Gifford, *Vice President & Controller*
Richard K. Hanlon, *Assistant Controller*
James F. Orr, *Assistant Controller*
Jerry Santor, *Assistant Controller*

PHILIPP BROTHERS DIVISION

299 Park Avenue, New York, New York 10017

Ludwig Jesselson, *Chairman & President*
Ernst L. Frank, *Senior Vice President*
Henry Rothschild, *Vice President*
Rudolph Forchheimer, *Vice President*
Irving D. Isko, *Vice President*
Walter Kann, *Vice President*
Y. Ben-Ami, *Vice President*
Hal H. Beretz, *Vice President*
Jules L. Chender, *Vice President*
James L. Feely, *Vice President*
Hubert E. Hutton, *Vice President*
Gary M. Joseph, *Vice President*
Henry A. Katz, *Vice President*
Eric S. Katzenstein, *Vice President*
Richard R. Knobler, *Vice President*
John F. Lee, *Vice President*
Fritz S. Levi, *Vice President*
Nathan J. Muskin, *Vice President*
Arnold A. Scharf, *Vice President*
William Spier, *Vice President*
Norbert Strauss, *Vice President*
Wolfgang Wassermann, *Vice President*
Lawrence Cohen, *Assistant Vice President*
Gerald E. Franks, *Assistant Vice President*
Irwin Fromme, *Assistant Vice President*
Hans W. A. Gunzenhauser, *Assistant Vice President*
A. S. Kestenbaum, *Assistant Vice President*
Anthony Nicklas, *Assistant Vice President*
Arthur Orzel, *Assistant Vice President*
Arno Schallamach, *Assistant Vice President*
Max Stern, *Assistant Vice President*
Paul H. Novy, *Controller*
Walter J. Goldsmith, *Assistant Controller*
Arthur A. Simons, *Assistant Controller*

Transfer Agent MORGAN GUARANTY TRUST COMPANY OF NEW YORK, NEW YORK

Registrar BANKERS TRUST COMPANY, NEW YORK