

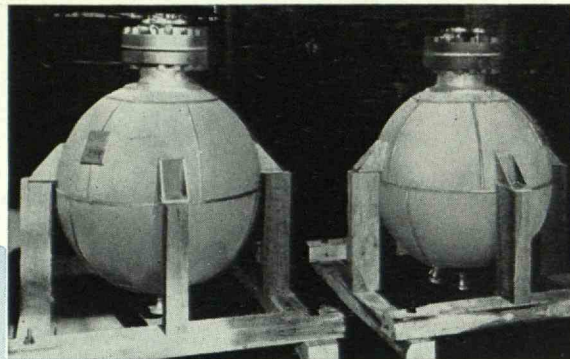
TECHNOLOGY

REVIEW *July* 1950

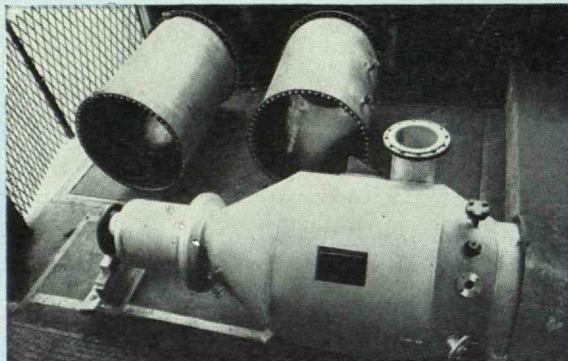


not just another

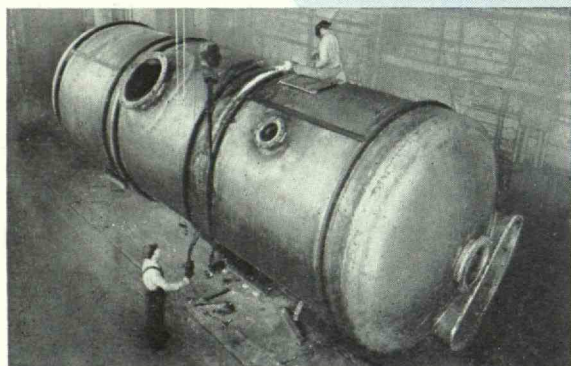
TANK!



These 42" diameter 304 stainless steel spheres are for the storage of monomer chemicals, with an operating temperature of minus 58° F. and a pressure of 500 psig. The welding of the 12 spherical segments to form each tank was performed in compliance with Paragraphs U-69 and U-140 of the A.S.M.E. Code.



A vertical flash evaporator body—12' in height, 54" and 24" in diameter, built of $\frac{5}{8}$ " thick type 316 extra low-carbon stainless steel. Use of expansion joint simplified a difficult space problem on the circulating pump piping.



A horizontal esterification kettle — 34' in length by 10' 9" in diameter, built of $\frac{3}{8}$ " thick deoxidized copper, using the silver brazing process. The vessel was tested at 10 psig. and the steam chest at 250 psig. Total weight was 36,000 lbs.

Present-day equipment design of chemical process vessels frequently requires something more than just another tank. Vulcan handles many such design and fabrication problems and is providing numerous special purpose vessels to process users. Three recent examples are illustrated.

Items such as flash coolers, reactors, decanters, percolators and separators are constructed. Often storage drums and tanks require special features. Complete evaporation units, single or multiple effect, natural or forced circulation, are built. The individual items—bodies, calandrias, heat belts—also are available. Comparison on cost can be made between any of the metals—solid, clad or lined—through Vulcan's wide range of experience in alloy as well as copper and steel fabrication. Acetic acid, ethylene glycol, isopropanol, fatty acids and pharmaceuticals are typical products being handled in Vulcan-built equipment.

VULCAN

**distillation
evaporation
extraction
processes and equipment**

THE VULCAN COPPER & SUPPLY CO., General Offices and Plant, CINCINNATI, OHIO

SAN FRANCISCO

NEW YORK

PHILADELPHIA

BUENOS AIRES

IN CANADA—VICKERS VULCAN PROCESS ENGINEERING COMPANY LTD.—MONTREAL

PILOT PLANT

PROCESS DESIGN

MECHANICAL DESIGN

SHOP FABRICATION

FIELD ERECTION

INITIAL OPERATION

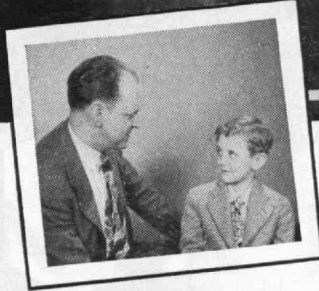
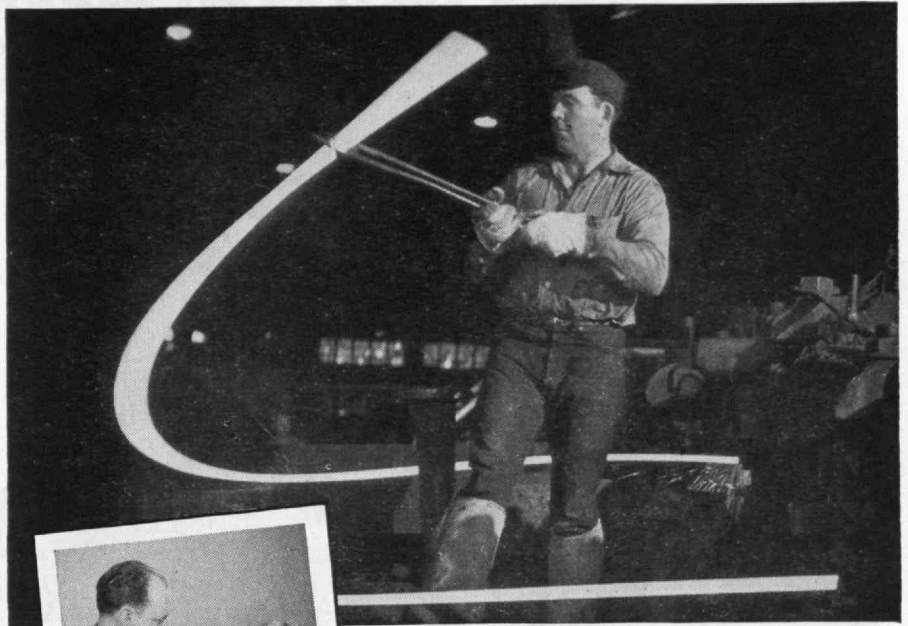
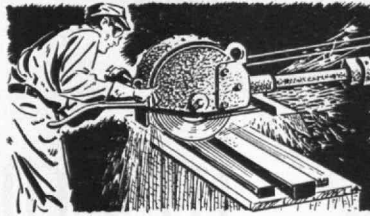


Photo courtesy of United States Steel Corp.

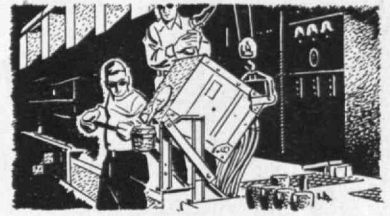
NORTON WORKER BILL SKARIN, left, could give his 7-year-old son Paul some exciting information if they were to visit a steel mill. Bill knows industry. He has been with Norton 14 years. In fact, more than half of his fellow workers have been with Norton more than 10 years.

"IS HE CRACKING THE WHIP, DAD?"

"Yes, Paul, in a sense. He's whipping red hot steel into a pass in a 12-inch mill. That's called stranding. Now let's see how Dad's work helps steel men."



"**HE'S GRINDING A BAR**, or billet, by using Norton grinding wheels made of Norton's fast, cool-cutting 57 Alundum abrasive. With wheels like these, stock removal of 35 pounds per hour is not unusual.



"**THEY'RE POURING METAL** from an electric furnace that makes special alloys used in jet engines and rockets. Here again, Norton is on the job. The furnace is lined with a Norton high-temperature refractory cement!"

"**YOU SEE, PAUL**, Norton is the world's largest manufacturer of abrasives and related products. In the metal working industry, as well as many, many others, you'll find Norton products always on the job."

Grinding wheel distributors in over 300 cities of the world; warehouses in five cities of the United States; branch grinding wheel plants in six foreign countries.



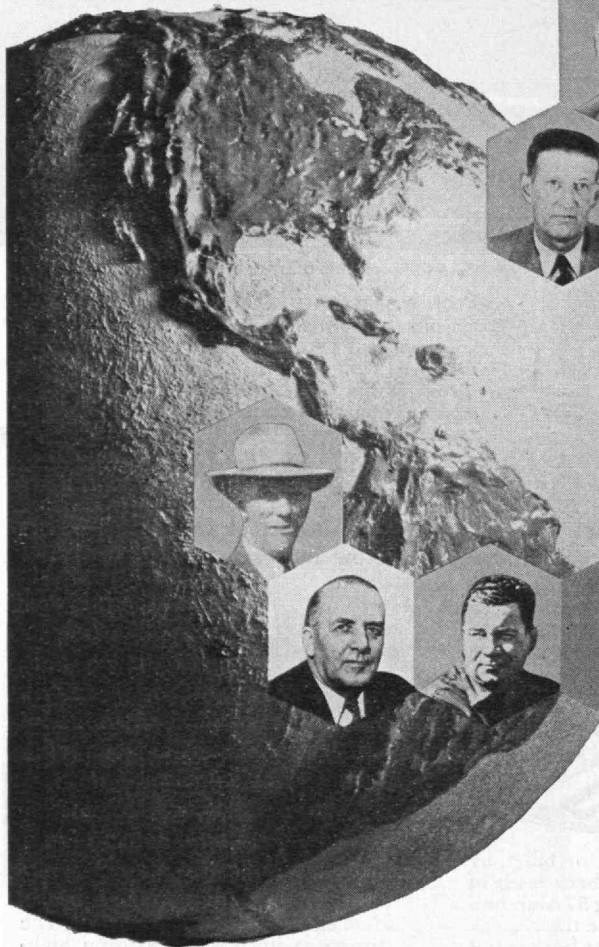
TRADE MARK REG. U. S. PAT. OFF.

Making better products to make other products better



NORTON COMPANY, WORCESTER 6, MASSACHUSETTS

BEHR-MANNING, TROY, N. Y. IS A DIVISION OF NORTON COMPANY



in construction

these men are at home 'round the world

The Lummus construction superintendent and field engineer averages a twelve-year record of refinery building, literally—"everywhere under the sun." In addition, he has seen service at chemical plants and other heavy construction both in this country and abroad.

In a period of rapid progress, he has contributed to new techniques: the pre-assembly of pipe and equipment before erection, the raising of heavy vessels to greater heights and the providing of means to facilitate future maintenance and "turn around." Refinements in the scheduling of the erecting sequence are an outgrowth of his experience.

Behind Lummus' "ahead of time" deliveries stands the Construction Man. Because he has learned to *anticipate* the problems of remote location, emergencies seldom arise. But the records show that his decisions, made on-the-spot to meet the unexpected, reveal sound judgement and a steady hand. The low labor turnover, reflecting the high morale of his crews, both American and native, is evidence of his human as well as his technical understanding.

During the war he constructed, in record-breaking time, ordnance plants, high octane gasoline plants and plants that produced the raw materials for synthetic rubber. Today, the Lummus Construction Man is combining *time savings* with *dollar savings* in new projects throughout the world.

THE LUMMUS COMPANY
385 Madison Avenue, New York 17, N. Y.

LUMMUS

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HOUSTON—Mellie Esperson Bldg., Houston 2, Texas
The Lummus Company, Ltd., 525 Oxford St., London, W-1, England
Société Française des Techniques Lummus
39 Rue Cambon, Paris 1er, France
Compañía Anónima Venezolana Lummus—Edificio "Las Gradillas"
Esquina Las Gradillas, Caracas, Venezuela



PHELPS DODGE COPPER PRODUCTS CORPORATION

BULLDOG

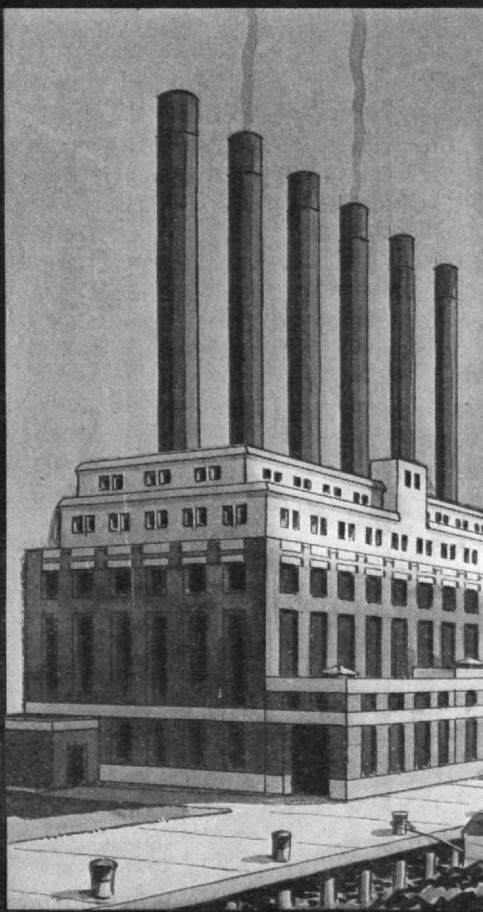
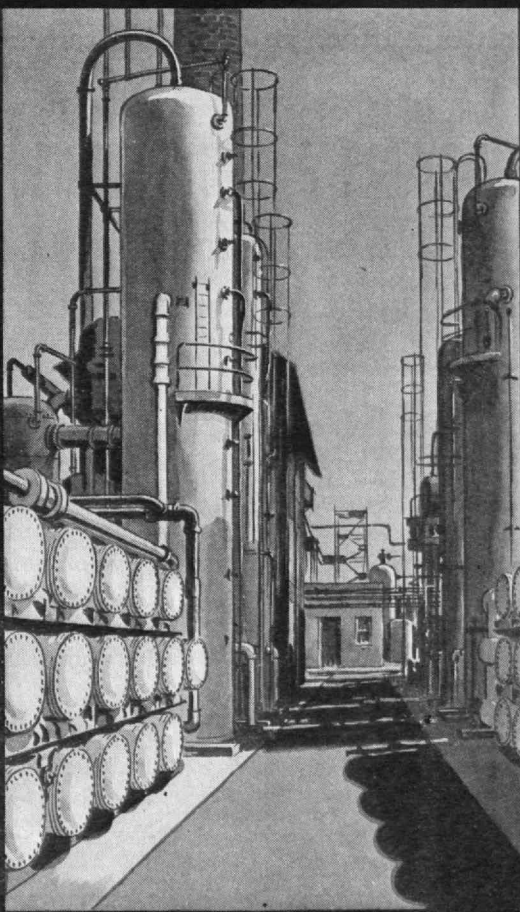
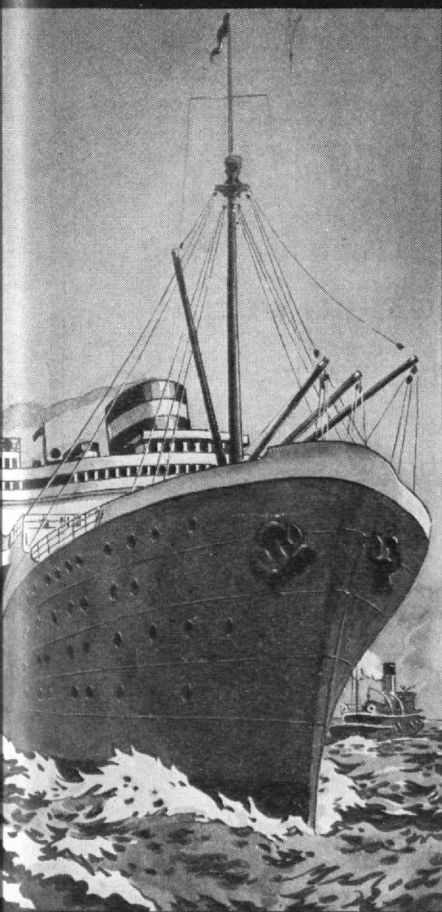


BRAND

CONDENSER TUBES

For SHIPS

• *For OIL REFINERIES* • *For POWER PLANTS*



PHELPS DODGE COPPER PRODUCTS CORPORATION

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JOY

The World's Largest Manufacturer of Underground Mining Equipment...the Pioneer in Modern Mechanized Mining Methods

Continuous Miners . . . Coal Cutters . . . Loaders . . . Shuttle Cars . . . Belt, Chain and Shaker Conveyors . . . Slushers . . . Rock and Core Drills . . . Fans . . . Blowers . . . Hoists . . . Miscellaneous Mining Equipment.

JOY also builds the most modern line of portable and stationary compressors available for general industrial, mining, quarrying, and construction needs.



JOY MANUFACTURING COMPANY

Henry W. Oliver Building, Pittsburgh, Penna.

PLANTS AND REPRESENTATION THROUGHOUT THE WORLD

Among the JOY executive personnel, we are proud to number the following men who are graduates of the Massachusetts Institute of Technology

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Vice Pres.-General Manager
Galt, Ontario, Canada

Raymond MANCHA '26
Vice President
Ventilating Equipment
Pittsburgh, Pa.

George Walter BERGMAN '27
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Knoxville, Tenn.

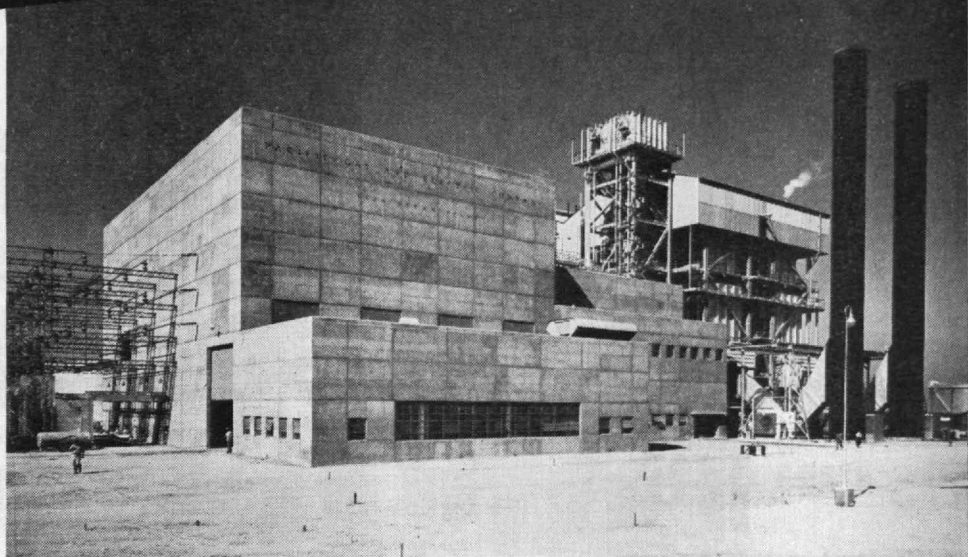
Robert Wesley SCOTT '23
Production Manager
Air Compressors
Michigan City, Indiana

Benjamin Philbrick LANE '23
District Sales Manager
Chicago, Ill.

Jonathan A. NOYES, '12
District Manager
Dallas, Tex.

FOR

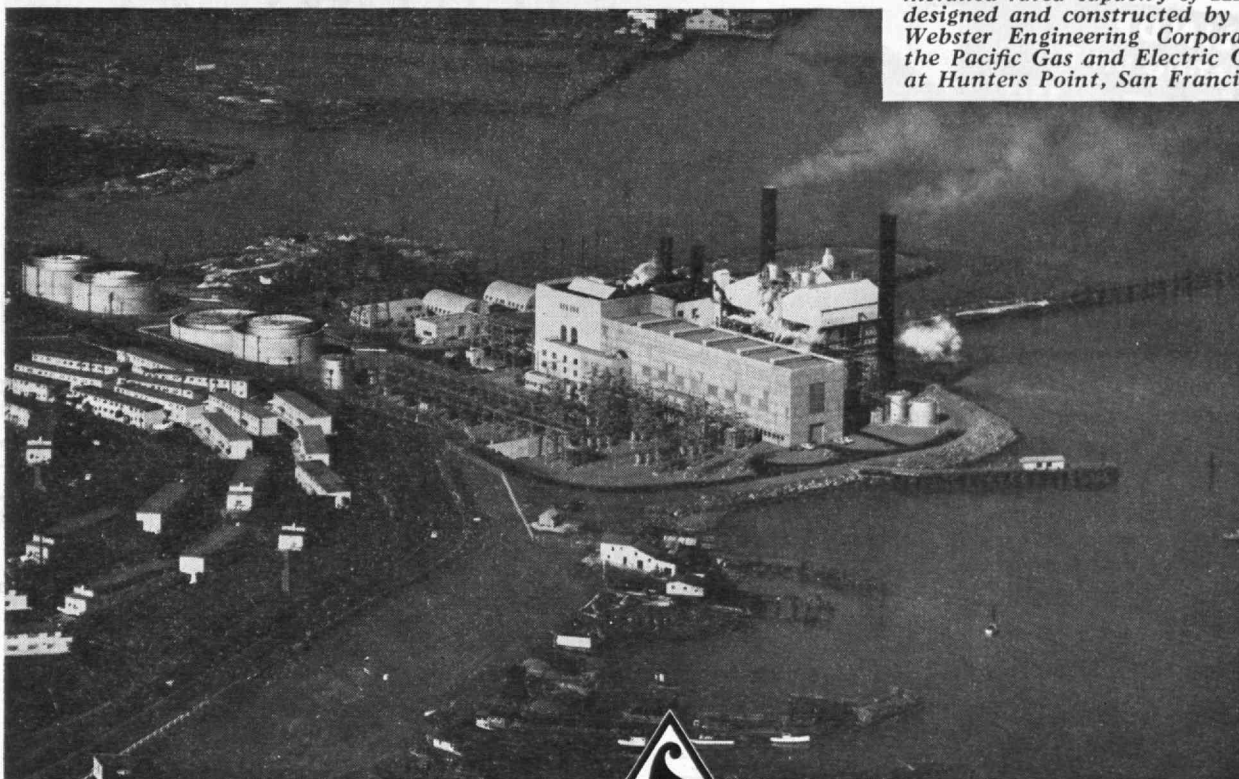
P.G. and E.



The Kern Steam Plant, with an installed rated capacity of 175,000 kw, recently completed for the Pacific Gas and Electric Company in Kern County, about 300 miles south of San Francisco in the San Joaquin Valley.

The Kern Steam Plant and the extension to Station P of the Pacific Gas and Electric Company represent the finest examples in the country of centralized control in steam power stations.

The extension to Station P, with an installed rated capacity of 222,000 kw, designed and constructed by Stone & Webster Engineering Corporation for the Pacific Gas and Electric Company at Hunters Point, San Francisco.



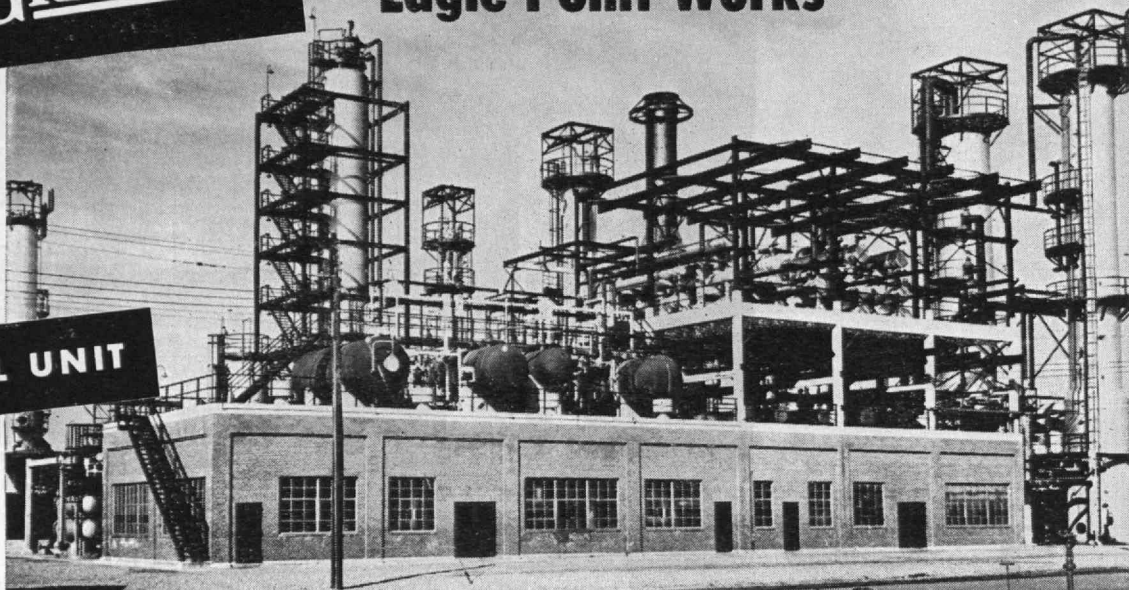
STONE & WEBSTER ENGINEERING CORPORATION

A SUBSIDIARY OF STONE & WEBSTER, INC.

*Construction
by GRAVER*

for THE TEXAS COMPANY Eagle Point Works

FURFURAL UNIT



**LINDE
TREATING UNIT**



Again it's *construction by Graver* . . . this time, The Texas Company's first large east coast refinery—the multi-million dollar Eagle Point Works at Westville, New Jersey.

The Furfural Unit is a special design developed by The Texas Company and erected by the Graver Construction Co. This unit efficiently removes sulphur from middle distillates which are processed into diesel fuel and heating oil. The Linde Treating Unit was designed and erected by Graver from a flow sheet.

Other Graver construction included five cooling tower basins and pump houses, propane control house, B.S.W. pump house, river pump house, barometric oil separator basin and such miscellaneous jobs as foundations, pipe supports, sewers, manholes, and the handling of all material.

For further information and details . . . get in touch with Graver today. *When it comes to construction . . . come to Graver!*



GRAVER CONSTRUCTION CO.

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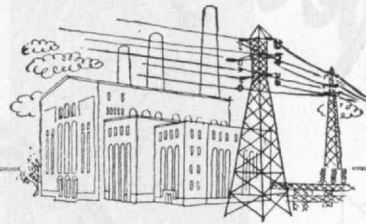
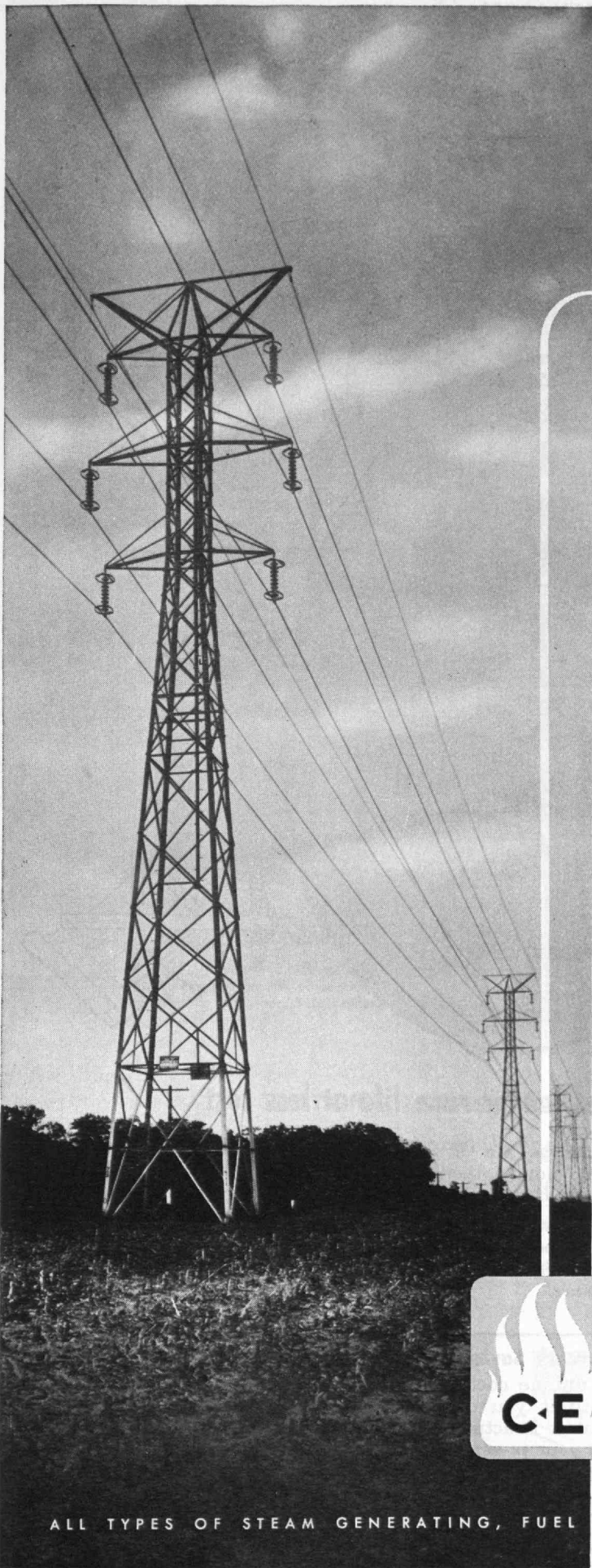
Engineering Dept.: Jersey City, N. J.

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A DIVISION OF **GRAVER TANK & MFG. CO., INC.** EAST CHICAGO, IND.



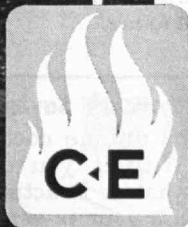
HOW
Kilowatt Highways
REDUCE YOUR
STEAM PRODUCTION COSTS

Most of the power that pulses along America's kilowatt highways is produced by low cost steam. Keeping down steam costs . . . through improved boiler design and fuel burning techniques . . . is vital to electric utility companies. These steam economies are available to you, thanks to power station developments in steam generation that are translated into every Combustion boiler — industrial as well as utility.

For over a quarter of a century Combustion Engineering-Superheater, Inc. has originated, or been closely identified with every major development in steam generation for electric utility stations. With such a background of experience it is small wonder that Combustion *industrial* boilers reflect the operating economies of large central power stations. The importance of these economies is readily seen when you consider that the cost of *fuel alone* to operate a boiler for a *single year* is usually greater than the first cost of the boiler.

Plants in all types of industry have found that savings in operation, gained through Combustion's *applied experience* pay dividends year after year. This extensive experience — *focused on your need* — is freely available. Make use of it. A letter stating your problem will receive our immediate attention.

B-402



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200 Madison Avenue • New York 16, N. Y.

ALL TYPES OF STEAM GENERATING, FUEL BURNING AND RELATED EQUIPMENT

"Rope engineering! What's that to me?"



... it's your assurance of longer rope life at less cost

Engineering is as important to rope as to any other mechanical tool you buy. You get it at no extra cost when you specify Plymouth ropes. Plymouth engineering is the skills, backed by research, that consider every factor before a Plymouth rope is made . . . its tensile strength, hardness, twist of yarn and strand, type of fiber, treatment. And instead of costing you money, it *saves* through longer rope life and fewer replacement costs. Here's evidence:

Plymouth periodically tests all brands of rope. Recent tests—based on tensile strength, and giving other brands the benefit of an assumed rate of deterioration equal to SHIP BRAND—show that

when the average life of ten other brands was 4.8 months, then the life of PLYMOUTH SHIP BRAND was 6 months!

On that basis, you would have to buy rope at 9¢ less per pound before you could approach SHIP BRAND's low cost per month *to use!*

Prove Plymouth Savings Yourself

Send for unique cost-of-service chart. With it you can quickly figure what it is actually costing you *to use* your present rope, and how much you could save by using Plymouth.

SEE AND HEAR "THE PLYMOUTH STORY". If you have not yet seen this color, sound film, write for an early showing. It shows how much more Plymouth puts into its ropes, so that the user may get more out of them.

PLYMOUTH CORDAGE COMPANY
Plymouth, Massachusetts

THE ROPE YOU CAN TRUST BECAUSE IT IS ENGINEERED FOR YOUR JOB

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