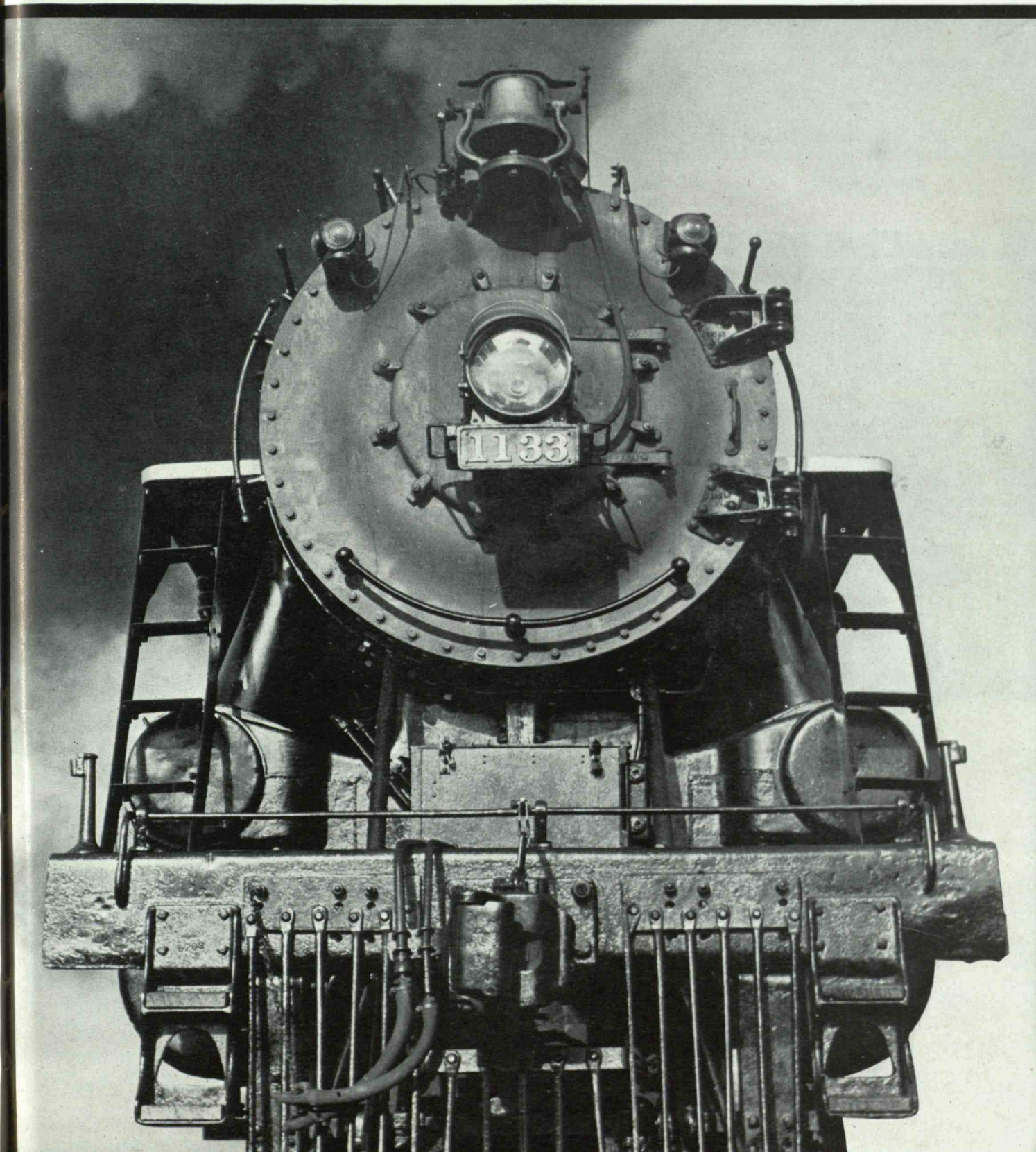
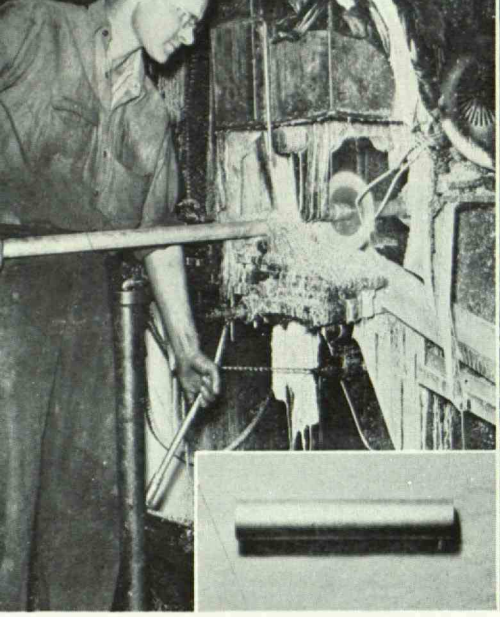
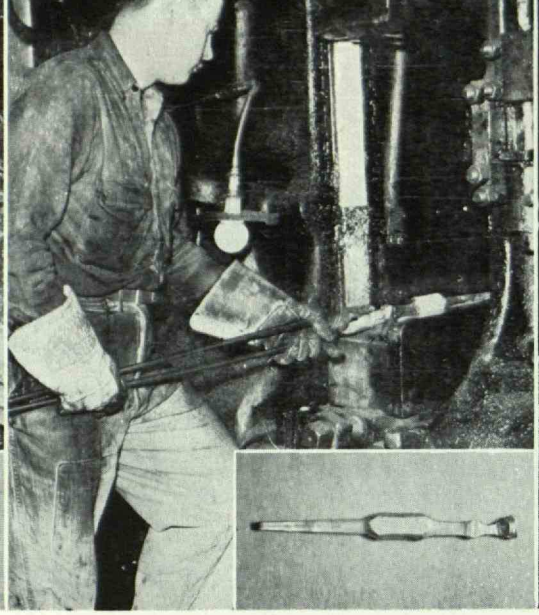
# TECHNOLOGY REVIEW

April 1949

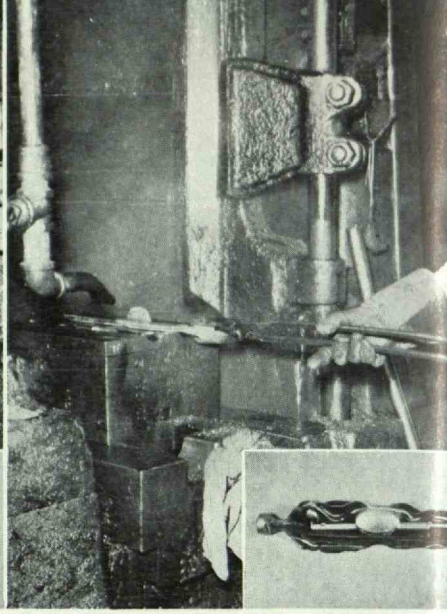




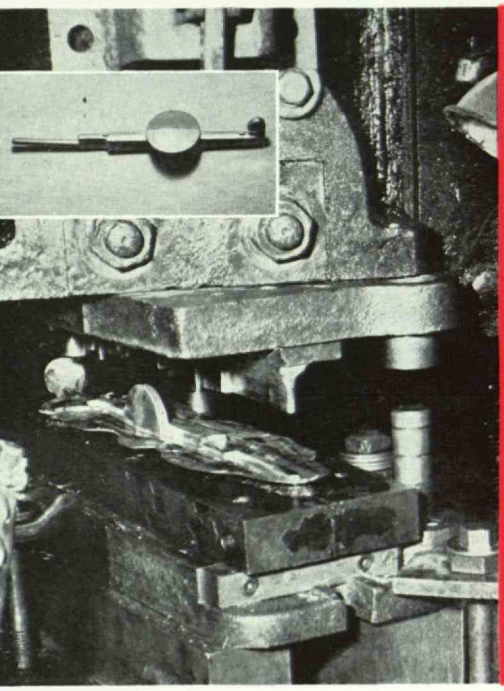
Cutting Bar



Lengthening and Shaping



Shaping to the Die

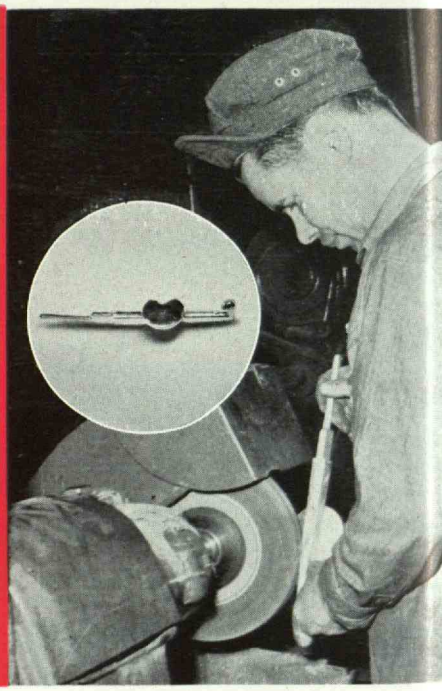


Trimming the Flash

# FORGING ALUMINUM

into

Pressure Cooker Tops



Finishing and Polishing

# The Harvey Metal Corporation

*HAROLD B. HARVEY '05*

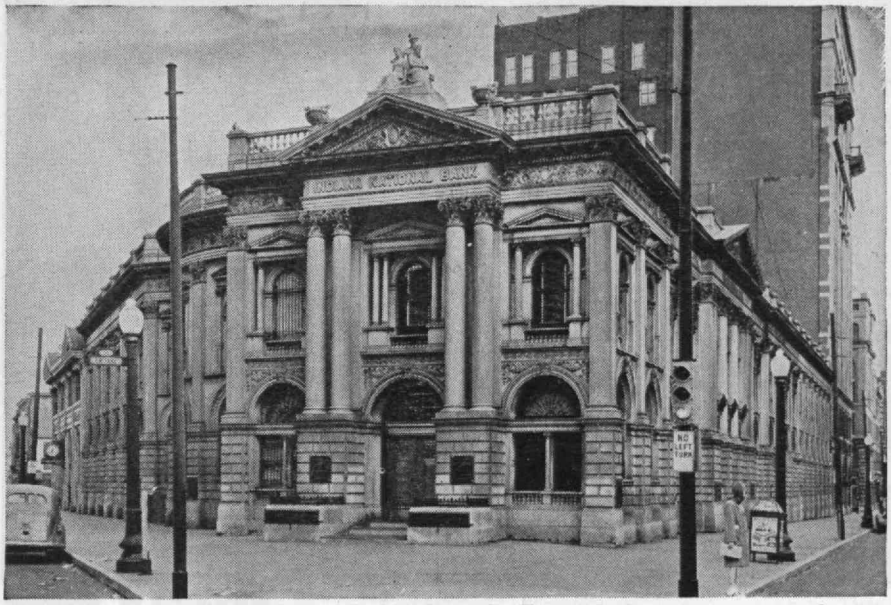
## *Engineers and Manufacturers*

74th Street and Ashland Avenue — Chicago 36, Illinois

*FORGINGS IN ALUMINUM — BRASS — BRONZE — COPPER — MAGNESIUM — MONEL — ALLOYS*

*MACHINING FACILITIES*

# East Side, West Side, All Around Indianapolis




Main Office of Indiana National Bank, Indianapolis. Equipped when originally designed by D. A. Bohlen & Son with Webster Steam Heating System. In 1947, Strong Brothers, heating contractors, modernized the installation by installing Webster Moderator System.

The Indiana National Bank, successor in 1865 to the business of the Indianapolis branch of the State Bank of Indiana, organized in 1834, has been a Webster customer for over 34 years.

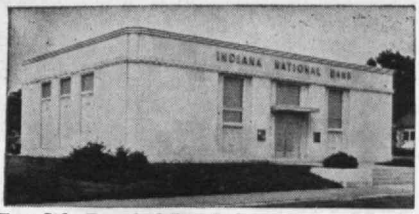
Ever since a Webster Vacuum System was installed in the main office building in 1914, Webster Equipment has been purchased for the main office building and the various branches, keeping the bank properties abreast of the latest developments in comfort and economy in heating.

In 1947, a Webster "Controlled-by-the-Weather" Moderator System with Outdoor Thermostat was installed in the main office building. Prefabricated Webster System Convector Radiation with integral supply valve and thermostatic trap was used.

Webster Systems of Steam Heating are also installed in the three recently constructed branch office buildings of the Indiana National Bank.

In each of the new branch offices, Webster Type WI Extended Surface Radiation with Webster traps and valves was installed. Especially suitable for this type of building which has limited floor space, WI Radiation meant increased useable aisle space.

As was the case in their selection of heating equipment, Indiana National Bank chose the same architectural firm to design all of their buildings.




East Side Branch Office, Indiana National Bank, Indianapolis. Equipped with Webster Heating System. Heating Contractor: Cook Brothers.


West Side Branch Office, Indiana National Bank, Indianapolis. Equipped with Webster Heating System. Heating Contractor: Roland M. Cotton Co., Inc. Consulting Engineer: Ammerman, Davis & Stout.


North Side Branch Office, Indiana National Bank, Indianapolis. Equipped with Webster Heating System. Heating Contractor: Roland M. Cotton Co., Inc.

D. A. Bohlen & Son is said to be the oldest established firm of architects in the United States, servicing Indianapolis clients for the past 80 years.

An important factor in the success of these installations was the close association that has existed between bank management, under President Russell L. White, the Architect and Webster Representative, S. E. Fenstermaker.

The story of Webster heating in Indiana National Bank illustrates how Webster serves their customers. Let us help you with your heating.

Address Dept. TR-4

**WARREN WEBSTER & CO.**
Camden, N. J. : : Representatives In Principal Cities
*In Canada, Darling Brothers, Limited, Montreal*

**Webster HEATING**

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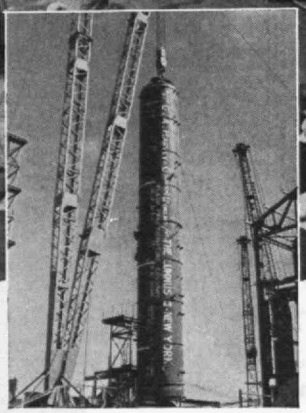
# from London to Cardon...

## for Shell's Cardon Refinery Venezuela

## ...now being built by Lummus


A Shell Photograph



A Shell Photograph

Typical of the scope of Lummus foreign operations is the construction of a refinery at Cardon, Venezuela, by The Lummus Company of New York and Compania Anonima Venezolana Lummus for The Shell Oil Company of Venezuela. Most of the fractionating equipment, like the hundred-ton tower illustrated, was fabricated in England and Holland, and transported to Venezuela. Staffed offices in London and Paris give Lummus an added flexibility in operation and the advantages of wide purchasing contracts.

In oil producing states in America, all through Europe, in the Near East, Netherlands Indies, South America, China—Lummus has built more than 150 gasoline refineries, upwards of 90 process units for solvent refining and dewaxing of lube oils and more than 300 chemical units, including complete plants of ethylene, butadiene, styrene, phenol.

**THE LUMMUS COMPANY**
**420 Lexington Avenue, New York 17, N. Y.**

# LUMMUS

**CHICAGO—600 South Michigan Avenue, Chicago 5, Ill.**
**HOUSTON—Mellie Esperson Bldg., Houston 2, Texas**
**LONDON—525 Oxford Street, London, W. 1, England**

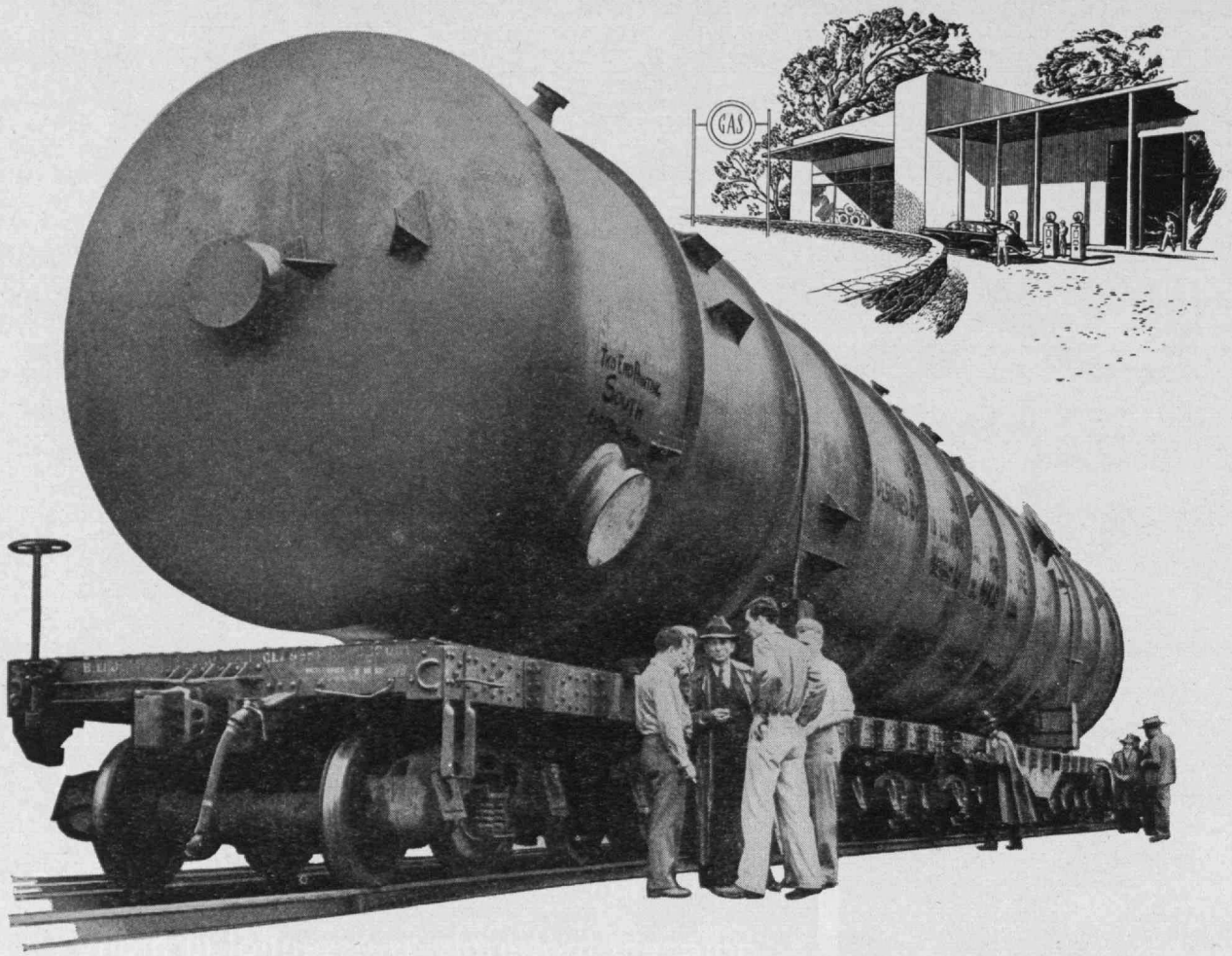

## *Non-staining carbon black . . .*

which will not cause black rubber to stain adjacent materials, is essential in many phases of the rubber industry. Cabot has the right carbon black for carcasses of white side wall tires, for automobile window channels, refrigerator door strips and many other applications which require a non-staining black pigment.

*We will gladly furnish technical data*

**GODFREY L. CABOT, INC.**

77 FRANKLIN STREET, BOSTON 10, MASSACHUSETTS




# Metal Monsters

## —that let you say, "Fill 'er up"

When you stop at a service station and say, "Fill 'er up", it's quite possible that your gasoline has been processed through huge C-E pressure vessels like the bubble tower shown above. This giant tower, built in the St. Louis shops of Combustion Engineering-Superheater, is 92 feet high, over 13 feet in diameter, and weighs 490,000 pounds.

This "metal monster" is by no means unique. Combustion has built hundreds of big pressure vessels, many for the largest and most modern oil refineries, and many more of various shapes, sizes and metal composition for plants in the chemical and other process industries.

Combustion's contribution to the gas that flows into the tank of your car may seem to bear little relationship to its major field of steam generation, yet the association is direct and logical. For the facilities required to build boilers are identical to those used for the fabrication of pressure vessels—and the Company's facilities for boiler manufacture are the finest available.

Whether the product is pressure vessels or boilers, industrial stokers or domestic water heaters—in many seemingly diverse fields, you will find the C-E flame symbolizing Combustion's primary purpose — the more efficient utilization of heat. B-253

C-E

**COMBUSTION ENGINEERING—SUPERHEATER, Inc.**

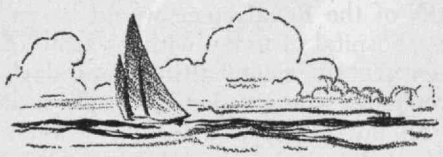
200 MADISON AVE. • N. Y. 16, N. Y.

All types of Boilers • Furnaces Pulverized Fuel Systems • Stokers Superheaters • Economizers • Air Heaters. *Also,* Pressure Vessels Chemical Recovery Equipment • Flash Drying Systems • Sewage Incineration Equipment • Domestic Water Heaters.

*In the days when cattlemen drove their stock across the unfenced prairie to the railhead, it was common practice among the least scrupulous to feed the cattle plenty of salt before they were offered for sale. When they were allowed to drink their fill, the gain in weight was the buyer's loss. Hence the term "watered stock" sensationalized in early days of corporation revelations and regulations.*

*Print from* Bettman Archive

# Are you selling "WATERED STOCK?"



WATER is just about our commonest material. In many places it is indispensable; in some places it is beautiful; but in others it contributes nothing but extra weight and the risk of depreciation. To send a six-ounce orange North from Florida freight must be paid on over five ounces of water which the North has in abundance — and then it must be eaten quickly before it rots.

## BLOOD PLASMA

When World War II darkened the horizon Army doctors looked beyond the outright slaughter to the millions of wounded who might die in the field. Blood transfusion could save many but in a remote, devastated theater of war it was unthinkable — unless blood collected from a healthy population could be reduced, preserved, transported and reconstituted. To make this possible National Research Corporation took low temperature, high vacuum dehydration from the laboratory and developed it to the level of mass production.

## PENICILLIN

Faced with an urgent wartime need for a universal antiseptic the English recalled the experience of Alexander Fleming with the blue-green mold, Penicillium Notatum. Under pressure the wonder antibiotic was accumulated — enough for a mouse, enough for a man, enough for twenty men — and then, grown by "kitchen culture" in millions of milk bottles, enough for an army. Again there was need for dehydration without heat damage and National Research's high vacuum process now installed in substantially all of the larger plants throughout the world, turned penicillin into powder at a rate to supply the world.

## ORANGE JUICE


During the war we experimented with the dehydration of many common foods; meat, fish, vegetables, fruits, coffee. Of these orange juice was the most promising with a nationwide market ready and a world market waiting. We had produced citrus concentrate and powder on a pilot plant scale. Near the war's end we organized Vacuum Foods Corporation. For them we built and equipped a plant in Florida that now concentrates, for the national market, 75,000 gallons of juice a day.

This new industry, producing some 4½ million cans in the 1946–47 season is expected to reach an annual production rate of 200 million in 1949. Within five years it is predicted that one-fourth of all Florida's oranges will reach their market as concentrated juice. In this industry Vacuum Foods is the pioneer and leader.

## COFFEE

The success story of orange juice will, we hope, be rewritten for coffee. For over a year we have been producing in small quantity a "crystalline coffee" — pure coffee essence, nothing more and *nothing less*. This small production is being market-tested through the local retail trade and a steadily increasing number of users have found out that coffee *can* be reduced to an instantly soluble concentrate, and still taste like good coffee.

## WHAT NEXT

To anyone who is selling "watered stock," not with guile but from necessity, National Research can offer a new prospect — lower cost methods of producing dry materials with instantaneously soluble structure. To apply our proven techniques of high vacuum dehydration National Research Corporation stands ready with a carefully chosen, experienced staff, with the newest equipment and with an accumulated knowledge of large scale low temperature dehydration that cannot be equalled anywhere.

INDUSTRIAL RESEARCH PROCESS DEVELOPMENT
HIGH VACUUM ENGINEERING & EQUIPMENT
Metallurgy — Dehydration — Distillation — Coating — Applied Physics

# NATIONAL RESEARCH CORPORATION

SEVENTY MEMORIAL DRIVE CAMBRIDGE, MASSACHUSETTS

In the United Kingdom, BRITISH-AMERICAN RESEARCH, LTD., London S.W 7, England — Glasgow S.W. 2, Scotland

# THE TABULAR VIEW

**NO SALESMAN** harasses those who patronize coin-operated vending machines, but this is a minor aspect of the growing business of selling by machines. As editorial associate of The Review and keen analyst of the social phases of scientific and technological change, PAUL COHEN, '35, traces the growth of mechanized selling (page 327) from its early beginnings in the penny arcades of the 1880's to today's supermarkets which are almost entirely automatic. It was during the 1930's that the various forms of slot machines outgrew their carnival attire and became a truly significant force in our social structure. Revealing his engineering training, Mr. Cohen attributes the recent rise in mechanized selling to such technological factors as mass production, carefully regulated coinage, standardized packaging, and the availability of highly reliable electromechanical assemblies. If mechanized selling has an important social effect in reducing costs of distribution, it has even greater significance in freeing persons from routine operations and making them available for tasks requiring creative talent which cannot be mechanized.

**NO SURGEON** of the Renaissance would be entirely at ease in a hospital of today with its array of modern equipment. Yet the mental attitude of today's medical men would be stranger than their physical equipment, for all but a few Renaissance workers were steeped in medieval thinking. The transition from medieval to modern medicine is traced (page 331) by DR. M. F. ASHLEY MONTAGU, a member of the faculty of the Hahnemann Medical College and Hospital of Philadelphia, and already well known to Review readers for his articles on varied topics in the field of cultural history. His present article points out how the inquiring spirit which led to the rise of the physical sciences had an equally important bearing in developing the era of modern medical science.

**NO SCIENTIST** has yet offered a completely satisfactory explanation of the origin of the green glasslike obsidian found in various parts of the world. The difficulties of finding a satisfactory explanation for its origin are somewhat akin to those of accounting for the properties of "the ether" or in choosing between the wave and the particle nature of light. First discovered in Bohemia, the green shards were alternately regarded as natural and artificial, and occasionally as both and neither! The fascinating chronicle is told (page 335) by WILLY LEY, editorial associate of The Review for several years and frequent writer on scientific subjects. Mr. Ley alternates his periods of writing with research. Having completed certain research at the Washington Institute of Technology, he has once more turned to writing as his primary vocation. To his credit are volumes entitled: *Rockets; The Days of Creation; Bombs and Bombing; Shells and Shooting;* and *The Lungfish, the Dodo, and the Unicorn.*