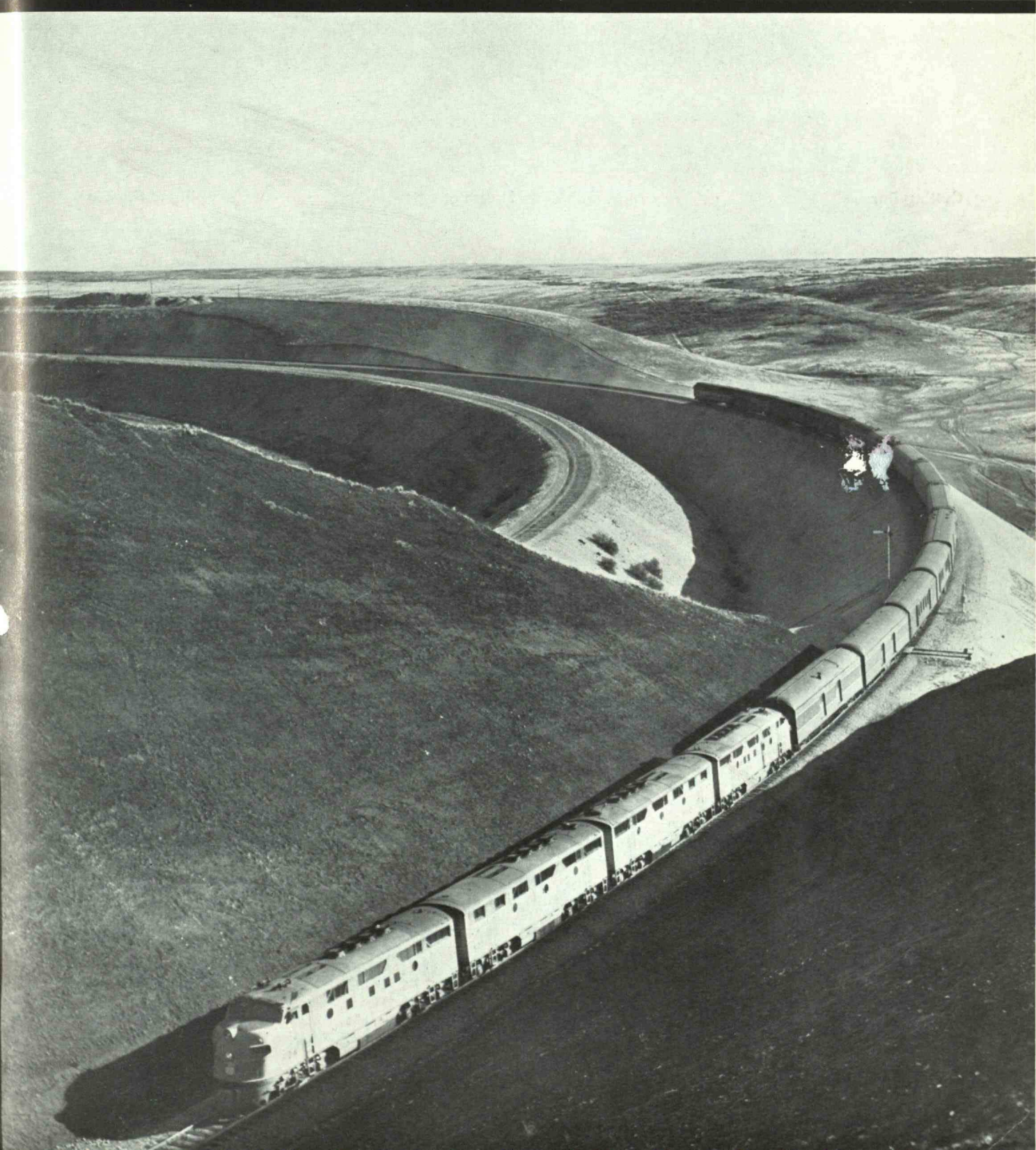
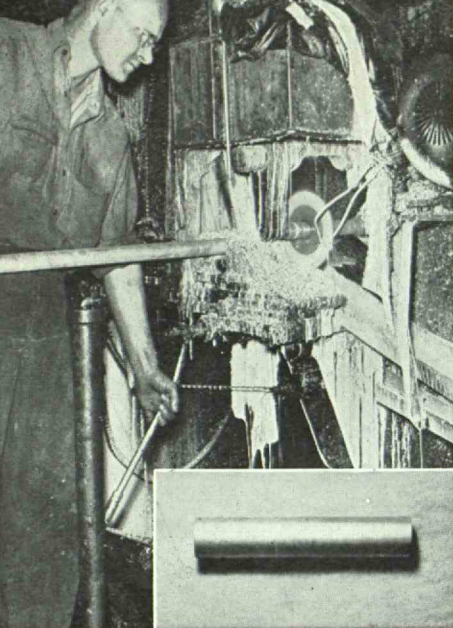


# TECHNOLOGY

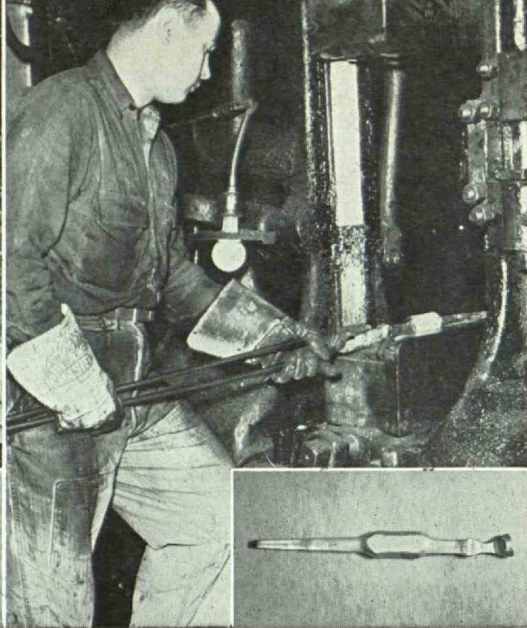
## REVIEW *January* 1950



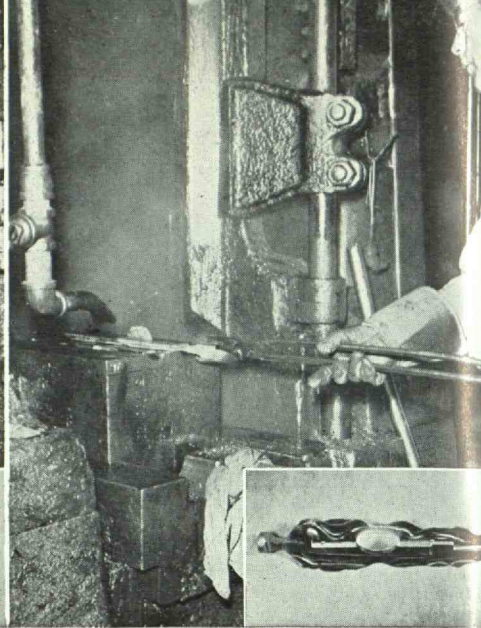




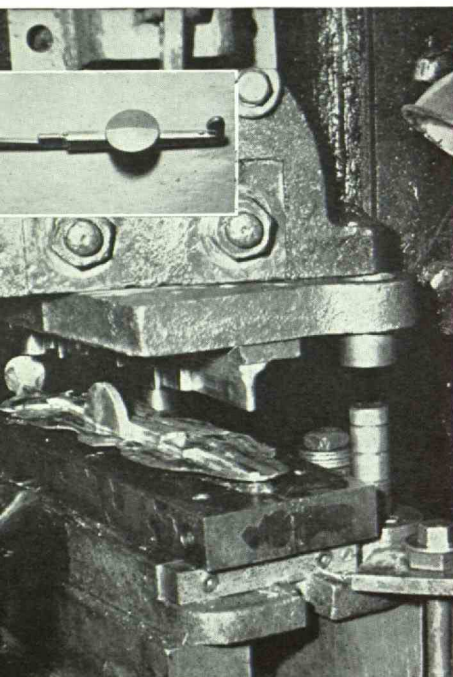
Cutting Bar



Lengthening and Shaping



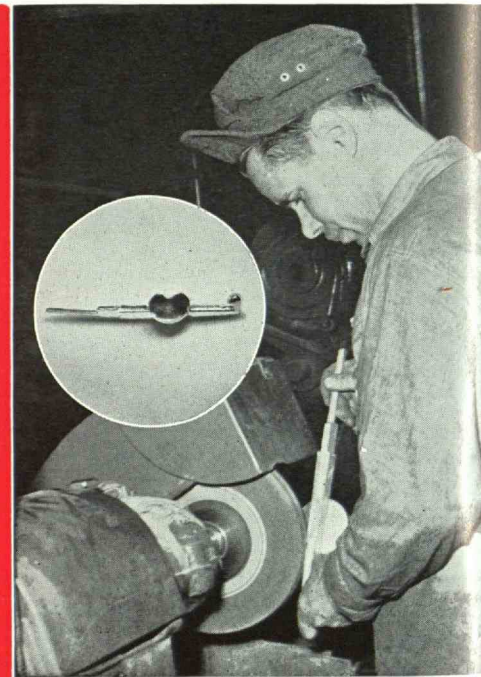
Shaping to the Die



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

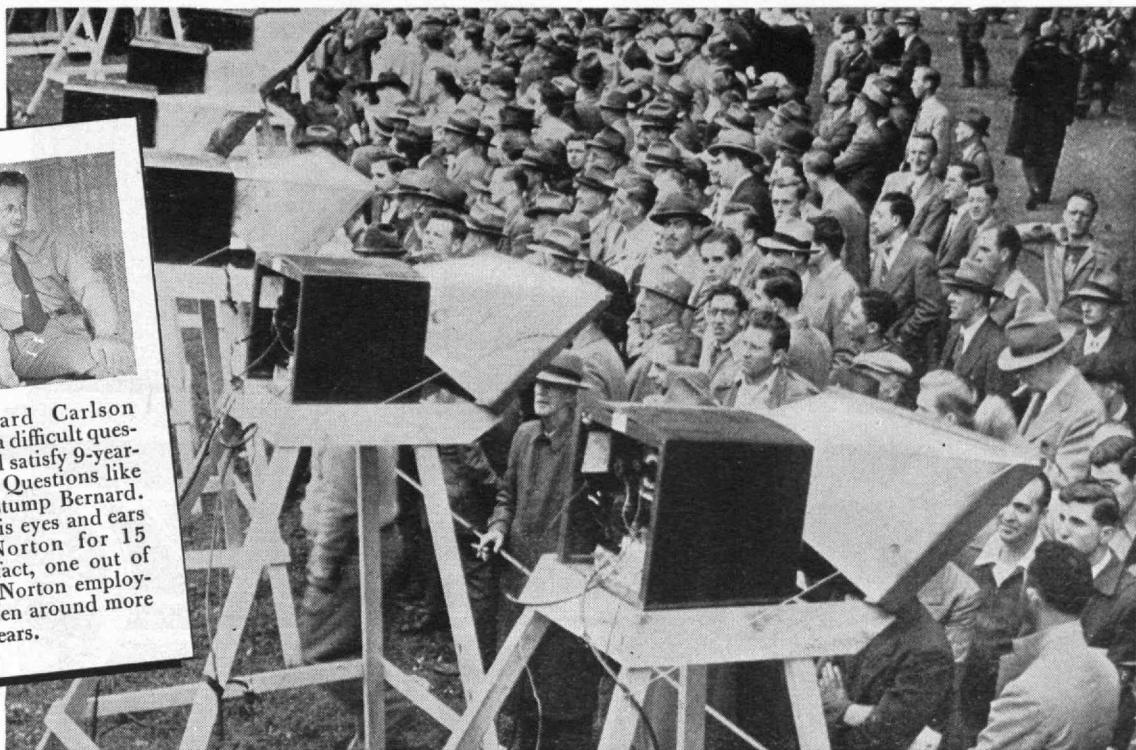
FORGINGS IN ALUMINUM — BRASS — BRONZE — COPPER — MAGNESIUM — MONEL — ALLOYS

MACHINING FACILITIES





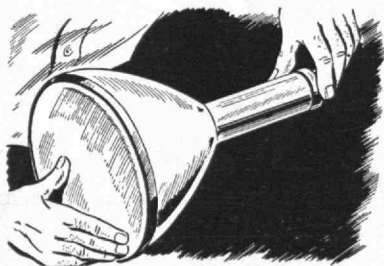
How Bernard Carlson might duck a difficult question and still satisfy 9-year-old Jackie. Questions like this don't stump Bernard. He's had his eyes and ears open at Norton for 15 years. In fact, one out of every two Norton employees has been around more than 10 years.



News photo of crowds watching television on Boston Common.

## BUT, DAD, WHAT MAKES TELEVISION SO CLEAR?

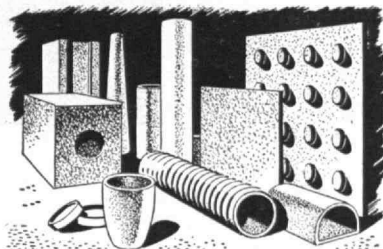
"Lots of things, Jackie! But mostly brains. The brains of men who know how to make electrons behave in tubes. Electrons are tiny particles of electricity. They're boiled out of metal wires by heating units. Much the same way as an electric stove boils water. But if the heating unit isn't right, everything goes wrong."



"The tube people are smart, son. They make sure the heating units give off the right heat and last longer by coating them with a fine Norton refractory. Alundum 38900 grain, we call it. It's so fine that ten grains end to end equal the thickness of a piece of paper."



"Alundum refractory grain is great stuff. Its melting point is 2015°C. That's real hot! Made into corrugated baffle plates, it doubles the efficiency of enameling ovens. That's why the surfaces of such things as refrigerators and electric stoves come so hard and smooth."



"Some people know Norton only as the world's largest maker of grinding wheels and machines, Jackie. But refractories in many sizes, shapes and materials are important Norton products, too. They're used in kilns, furnaces and ovens whenever industry wants to get the most out of high temperatures... safely."



"So, you see, son, from television tubes to refrigerators, Norton Products help make all kinds of products better. That's why the experienced heads and willing hands that make up the Norton team try a little harder to make Norton products better."

# NORTON

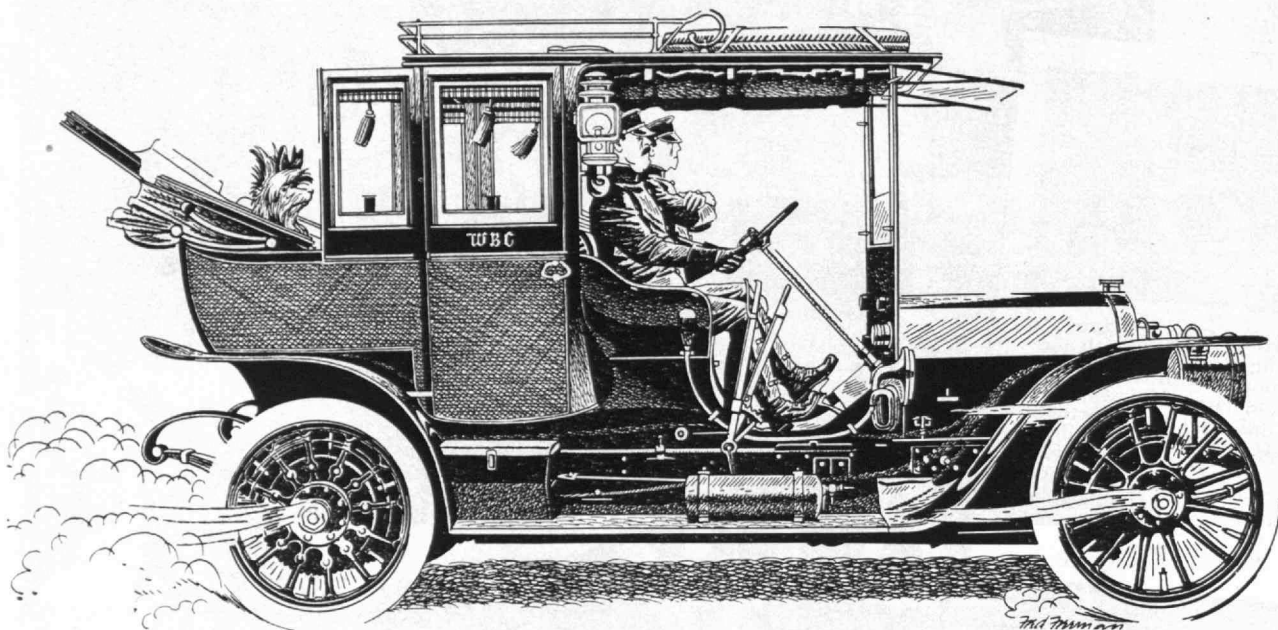
TRADE MARK REG. U. S. PAT. OFF.

*Making better products to make other products better*

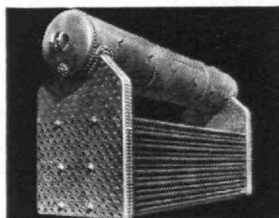


**NORTON COMPANY, WORCESTER 6, MASSACHUSETTS**

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



## Boilers go out of date too!



As good as new isn't good enough when it comes to boilers. For boilers become obsolescent long before they wear out. And when you consider today's cost of fuel and labor, you'll find that gains in operating efficiency make new steam generating equipment a profitable investment.

Boiler obsolescence, tremendously accelerated in the past twenty-five years, is the result of technological improvements that have resulted in greatly increased efficiency and lower operating costs. Combustion Engineering—Superheater has long been in the forefront of steam generating and fuel burning progress. Combustion experience is yours for the asking in helping to solve today's most difficult problem — the diminishing margin between lower selling prices and high costs. A letter from you will bring an experienced C-E sales engineer to your office.

B-352

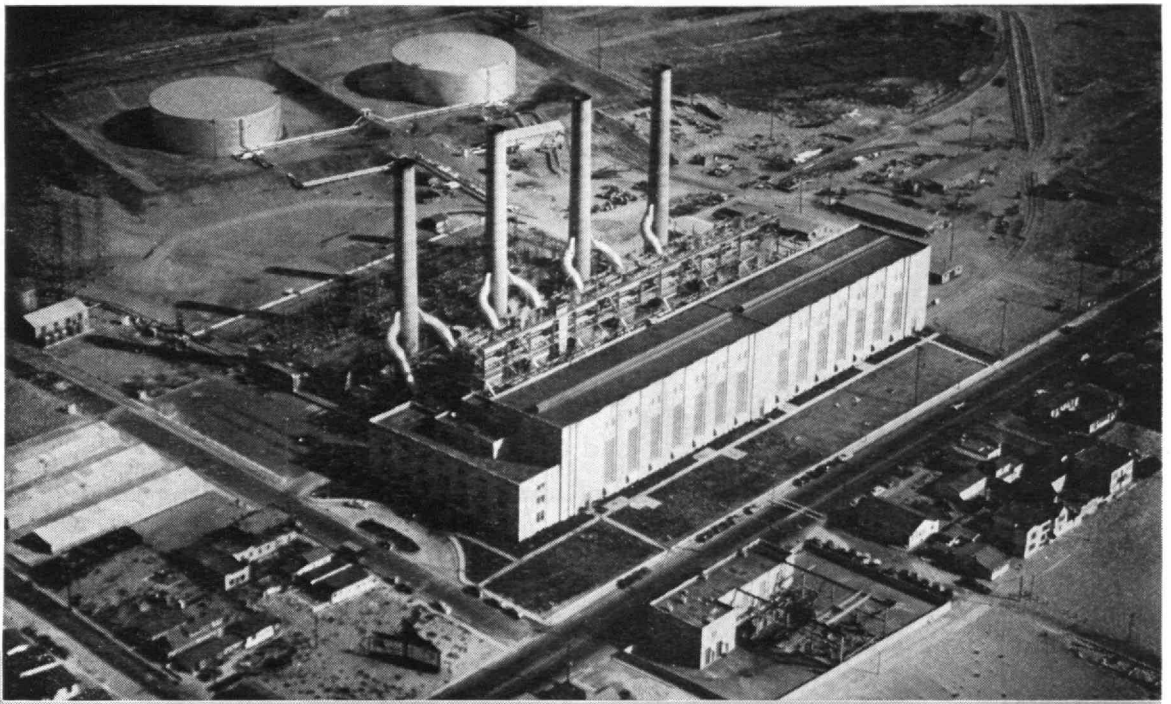


**COMBUSTION ENGINEERING—  
SUPERHEATER, INC.**

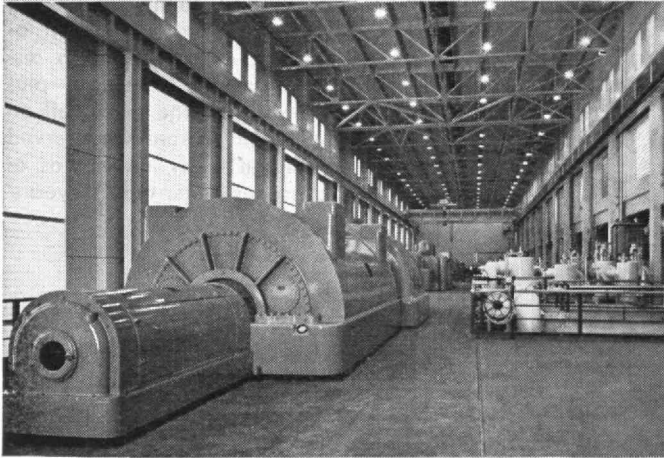
A Merger of Combustion Engineering Company, Inc. and The Superheater Company

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

ALL TYPES OF STEAM GENERATING, FUEL BURNING AND RELATED EQUIPMENT

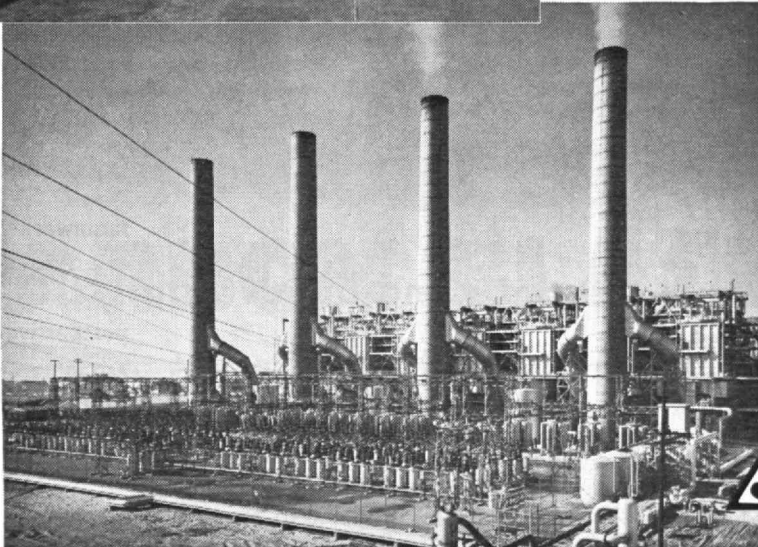


## HELPING TO MAKE THE WONDERS *of* SO. CALIFORNIA *more wonderful*



The 280,000 kw Redondo Steam Station was constructed to keep pace with the rapidly growing power demands of this region. Semi-outdoor design combines economy of construction with operating comfort and convenience and the entire structure has been built to resist the stress of possible earthquake shock. Unique is the provision for control of marine growth through thermal shock during periodic reversal of salt water flow in the two 2,000 foot intake and discharge tunnels which obtain condenser circulating water from the Pacific Ocean.

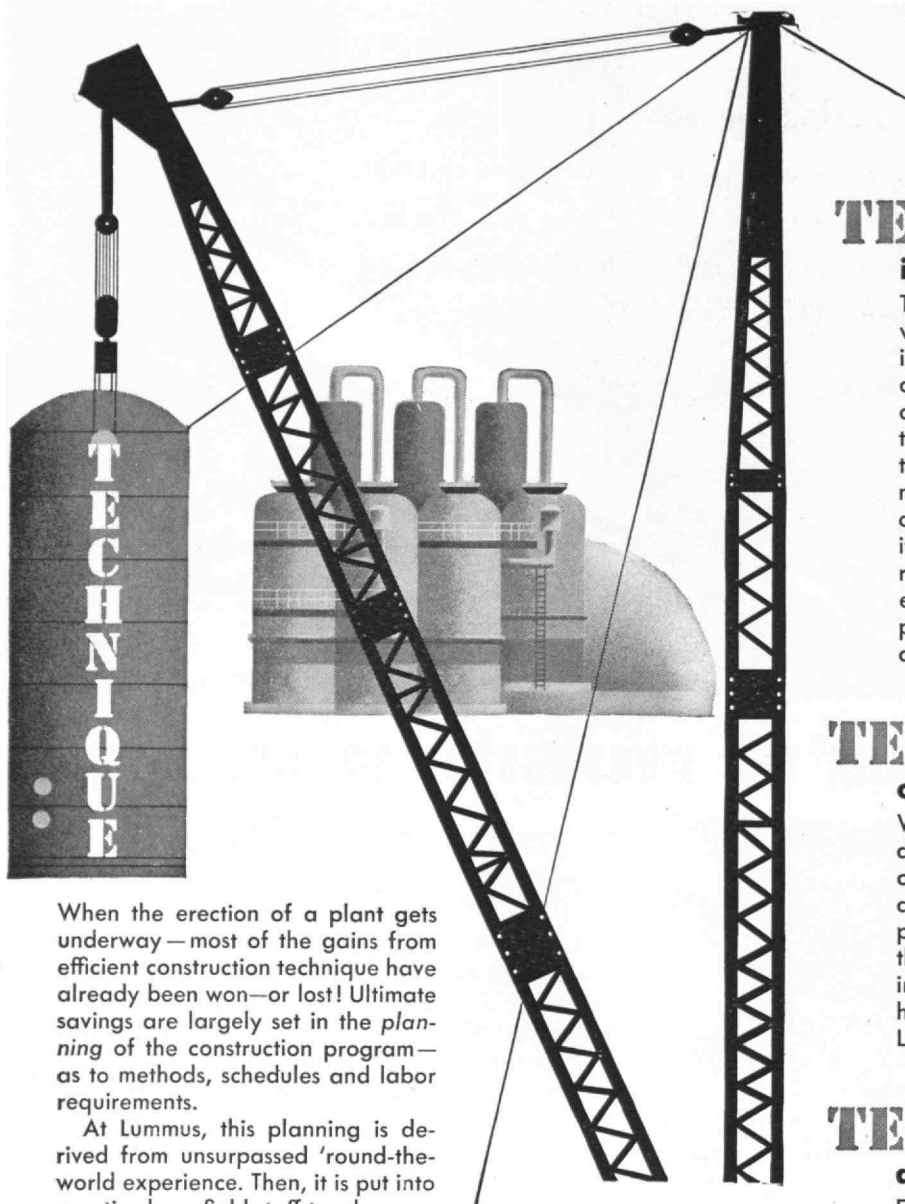
Stone & Webster Engineering Corporation designed and constructed the Redondo Steam Station for Southern California Edison Company.



# STONE & WEBSTER ENGINEERING CORPORATION

A SUBSIDIARY OF STONE & WEBSTER, INC.





## TECHNIQUE

### in planning

The full effect of detailed planning in advance of actual construction has been realized in foreign work where local facilities are at a minimum. It called for scheduled arrival of tools and materials, periodic estimates of manpower requirements and the preplanning of specific procedures for materials handling and heavy lifts. Economy in requirements for construction facilities, tools and equipment by preplanned re-use at various construction stages is one example. The selection of a staff with experience permitting effective reassignment as the job progresses is another.

## TECHNIQUE

### on the job

What makes it possible to move a 150-ton derrick intact from one tower-erection location to another, as contrasted to disassembly and reassembly? Planning—plus practical experience of the field staff on the job! Lummus field personnel has served in some 15 foreign fields, as well as at home, and averages better than 10 years' Lummus experience.

## TECHNIQUE

### as to costs

From an analysis of unit erection costs in which every man-hour is estimated in advance, Lummus lays the groundwork for continuing cost control. Periodic reports, detailing costs and work-progress, permit evaluation of all phases of the job from start to finish.

When the erection of a plant gets underway—most of the gains from efficient construction technique have already been won—or lost! Ultimate savings are largely set in the *planning* of the construction program—as to methods, schedules and labor requirements.

At Lummus, this planning is derived from unsurpassed 'round-the-world experience. Then, it is put into practice by a field staff to whom so-called "unpredictables" are old and familiar.

Sound technique, as Lummus applies it, means a sound night's sleep for those we serve who shoulder the responsibility.

### THE LUMMUS COMPANY

420 Lexington Avenue, New York 17, N. Y.

# LUMMUS

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HOUSTON—Mellie Esperson Bldg., Houston 2, Texas

The Lummus Company, Ltd.

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Société Française des Techniques Lummus

39 Rue Cambon, Paris 1er, France

Compañía Anónima Venezolana Lummus

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perspective  
economy  
fulfillment  
resourcefulness

## **... reinforce rubber**

Special Cabot blacks add the abrasion resistance, resilience, low heat build-up and flex-cracking resistance to help make the long-wearing rubber products you demand.

## **... make paints blacker**

Other Cabot blacks add deep blackness to paints and lacquers, and are known for their easy wetting and dispersion in every type of vehicle.

## **... inks jetter**

Certain Cabot blacks add the color strength, flow properties, blue tone, ease of dispersion, and low oil absorption which make ink-makers prefer Cabot.

## **... paper, plastics, better**

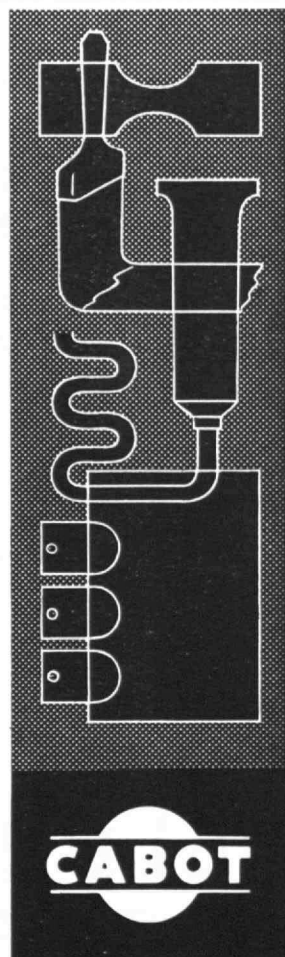
Still other Cabot blacks give the particular jetness, strength, or electrical conductivity most desired by the paper maker. In plastics, Cabot blacks serve both as coloring pigment and filler.

GODFREY L. CABOT, INC.

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**CARBON BLACKS**

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**G E A R S**

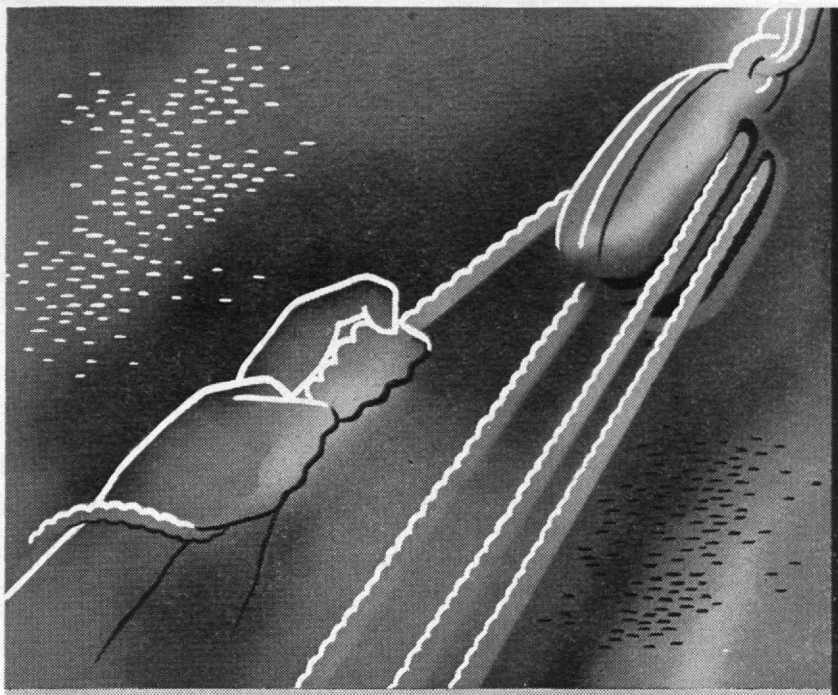
## THE TABULAR VIEW

**Initiative and Freedom.**—In a convocation for M.I.T. students on December 5, VANNEVAR BUSH, '16, (following the roles of his ancestors which included clergymen, bank presidents, and whaling captains) warned future scientists and engineers of the dangers of soft security, surrender of individual self-reliance, scramble for subsidy, and the decline of the pioneer virtues which produced men of greatness. It is the privilege of The Review to bring to its Alumni (page 147) this message from Dr. Bush who has served M.I.T. between 1919 and 1938 as a professor in the Department of Electrical Engineering, dean of the School of Engineering, and vice-president. Since 1938 Dr. Bush has been president of the Carnegie Institution of Washington. During World War II he was director of the Office of Scientific Research and Development, and subsequently was appointed by President Truman as head of the Research and Development Board of the National Military Establishment. Few others are so well fitted by experience, insight, and sympathetic understanding to inspire a return to the virtues of an earlier day and to demonstrate that, in economics and in government, as well as in science, no path leads to "something for nothing."

**Going Like Sixty.**—At decennial intervals, H. E. LOBDELL, '17, has taken a look at the speeds with which passenger trains operate. His current examination (page 149), emphasizing the progress which has been made since 1940, highlights the fast tempo of the present era, and on the basis of trends well established, records the passing of the puffing, snorting iron horse. As an ardent student of American railroad operation, Mr. Lobdell has ample opportunity to observe firsthand the workings of this form of transportation, for as executive vice-president of the Alumni Association, he travels annually many thousands of miles to cement good fellowship between the Institute and its Alumni in M.I.T. clubs throughout North America. Mr. Lobdell has been closely associated with The Review for more than a quarter of a century—as editor and now as its publisher.

**Twentieth Century Mid-Point.**—The influence which science and engineering have had in shaping our present mode of living is surveyed (page 156) by PAUL COHEN, '35, whose thumbnail sketch of significant progress during the past five decades has been prepared especially for this issue of The Review. No account of half a century of change in the United States would be complete without some record of the progress which we have made in international affairs, in redistribution of wealth, and in piling up a huge public debt, but Mr. Cohen limits his discussion largely to the overwhelming accomplishments in science and industrial technology. An editorial associate of The Review for more than a decade, Mr. Cohen is by nature an acute observer, by training a mechanical  
(Concluded on page 136)





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## THE TABULAR VIEW

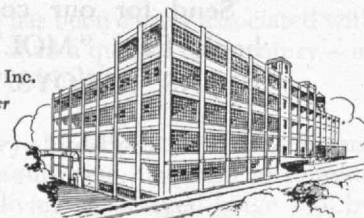
(Concluded from page 134)

engineer, and by inclination an interpretive writer on topics technological. Since his graduation from the Institute, Mr. Cohen has been, successively, an instructor in the Department of English and History at M.I.T., an engineer with the United Shoe Machinery Corporation, and now occupies an administrative and engineering position with the Sperry Gyroscope Company.

**Depletion of Natural Resources.** — The study of mineral depletion and metal supply which appears (page 158) in this issue of *The Review* was delivered by EVAN JUST at a symposium of the Institute's Department of Metallurgy some months ago. The inclusion of Mr. Just's study in the January issue is particularly appropriate, not only because the general theme of the issue is in the nature of a survey of our present world, but also because New York's current water shortage has drawn national attention to the need for conserving our natural resources. By training, Mr. Just is a geologist, having received his bachelor's and master's degrees in this field in 1922 and 1925 from Northwestern University and the University of Wisconsin, respectively. He became a petroleum geologist for the years 1922-1924 and again in 1928-1931. From 1925 to 1928 he was a geologist engineer and his explorations for bauxite, lead, and fluorspar took him to Brazil and Russia, as well as to various parts of the United States. He became assistant professor of geology and petroleum technology at the New Mexico School of Mines from 1931 to 1934, petroleum production engineer for the Carter Oil Company between 1934-1937, and secretary of the Tri-State Zinc and Lead Ore Producers Association between 1937 and 1942. Except for the past year when he was director of the Strategic Materials Division of the Economic Cooperation Administration, Mr. Just has been editor of the *Engineering and Mining Journal* since 1942.

Avon Allied Products Co., Inc.

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