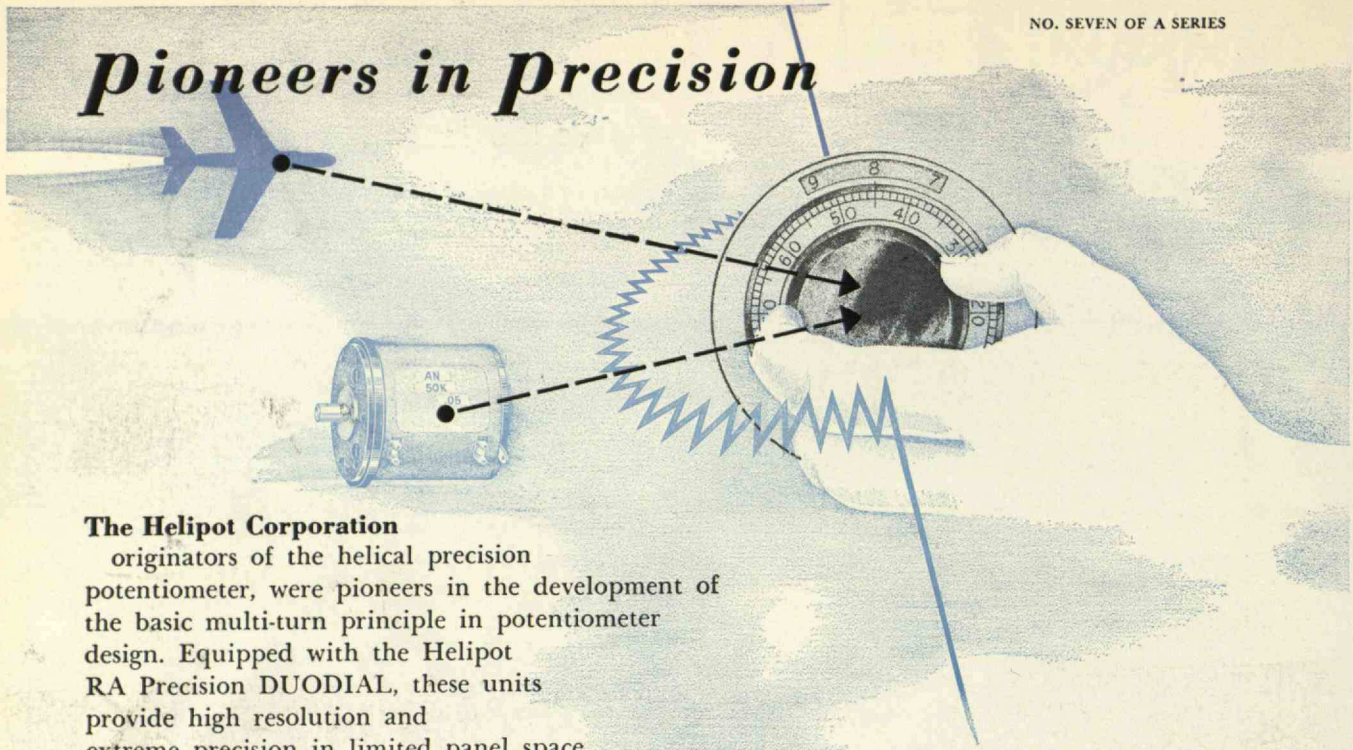


TECHNOLOGY

REVIEW *March* 1953



Pioneers in Precision



The Helipot Corporation

originators of the helical precision potentiometer, were pioneers in the development of the basic multi-turn principle in potentiometer design. Equipped with the Helipot RA Precision DUODIAL, these units provide high resolution and extreme precision in limited panel space.

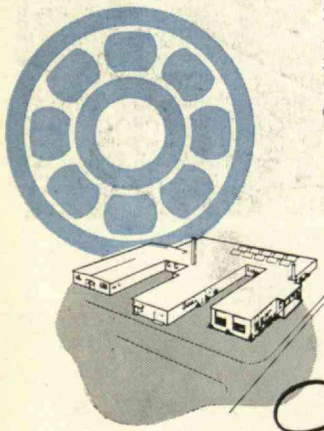
Miniature Precision Bearings

are the extra quality products manufactured by the originators and pioneer developers of ball bearings in miniature precision sizes. More than three thousand discriminating customers are currently being supplied with **MPB** components for applications involving high fidelity performance.

These fine quality **MPB** ball bearings are manufactured under exclusive and exacting production procedures as conceived and developed by **MPB** designers and engineers. Many designs and sizes of miniature ball bearings initially developed at **MPB** are now internationally standardized. Over a million **MPB** ball bearings have been installed in devices operating under unusual conditions . . . extreme temperature range . . . shock . . . continuous high load capacity . . . limited space in project miniaturization.

MPB ball bearings are fully ground, lapped, and/or honed to ABEC 5 tolerances or better. They are torque tested, ultrasonically cleaned, supplied in specific tolerances and classified within the tolerances for prompt assembly and maximum service. **MPB** ball bearings are normally supplied in 10 series, from 1/10" to 5/16" o.d., of high carbon chrome bearing steel. Some are supplied in stainless and beryllium copper, and all are assembled with best quality balls. The most extensive engineering knowledge in miniature bearing applications is available to you. Write for Catalog and survey sheet TR3

Continued expansion, necessary in order to supply a steadily increasing demand for extra quality bearings, will soon enable us to participate in your future planning.



Miniature precision Bearings

Incorporated



Keene, New Hampshire

"pioneer Precisionists to the World's foremost Instrument Manufacturers"

**save
space
weight
friction**

Roast beef in a push-button age

Mother never cooked so easily. Her kitchen is a sparkling modern delight of home-making convenience and efficiency. And abrasives play a major part in perfecting the household appliances which she employs as a maid.

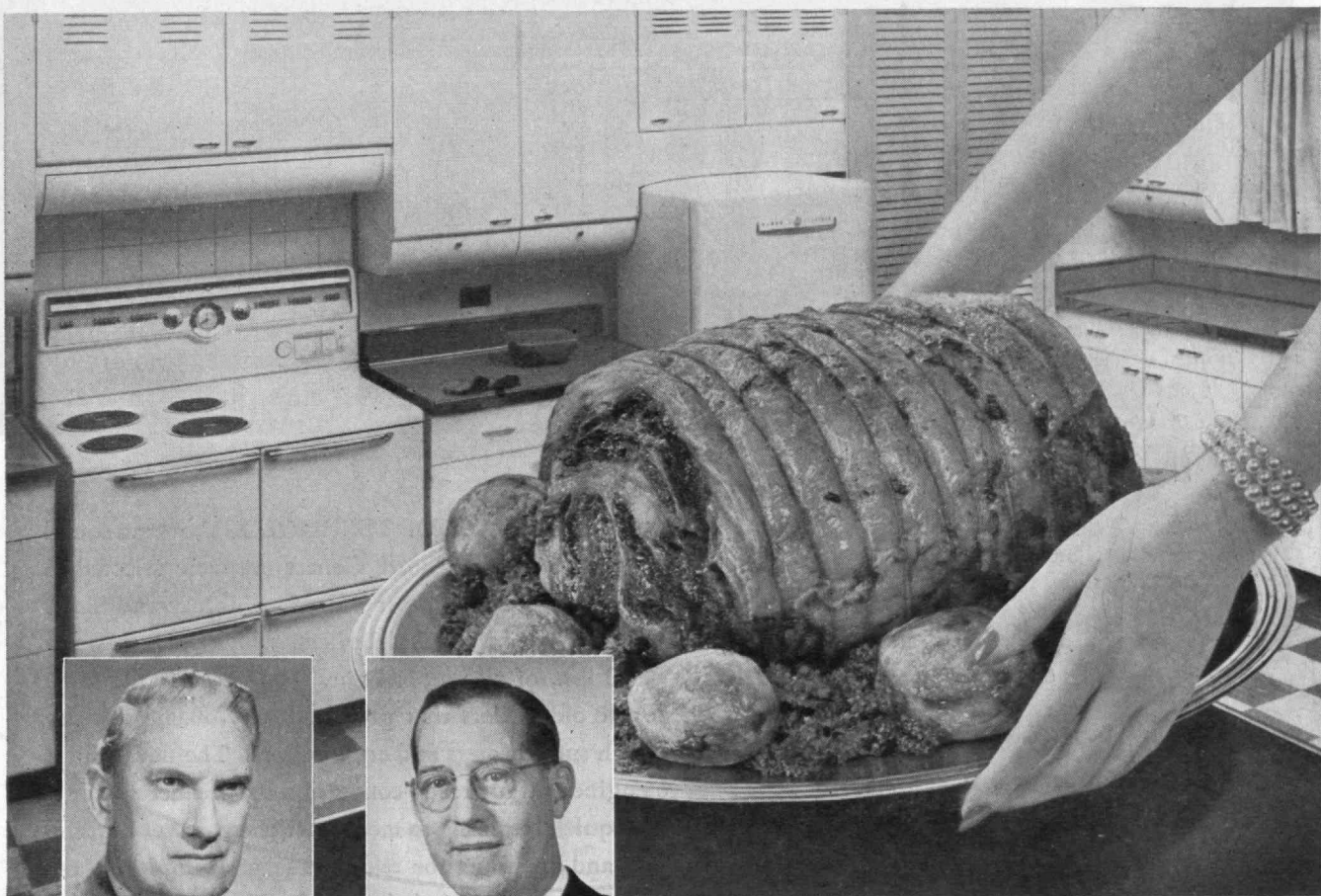
Mother's mixer, dishwasher, and refrigerator have scores of parts ground with Norton wheels and machines. Their satin smooth finishes would not have been possible without Behr-Manning coated abrasives. And their gleaming porcelain enamel is baked in furnaces lined with Norton high temperature refractories.

Thus in every part of life and in every phase of industry, Norton and Behr-Manning abrasives and abrasive products create usefulness, beauty and value in finished goods. Together, Norton and Behr-Manning are the world's largest source of abrasive and abrasive products.

NORTON COMPANY makes abrasives, grinding wheels, pulpstones, refractories, grinding and lapping machines, non-slip floors, Norbide grain and molded products. Norton Company, Worcester 6, Mass.

BEHR-MANNING makes abrasive paper and cloth, oilstones, abrasive specialties, pressure-sensitive tapes. Behr-Manning Corporation, Division of Norton Company, Troy, New York.

Plants, Distributors and Dealers the world over



DR. L. A. HANSEN, Director of Research, Abrasive Division, of Behr-Manning. Dr. Hansen was in charge of the research and development work which resulted in "TUFBAK" SPEED-WET DURITE Paper for wet sanding.



ARCHIBALD H. BALLARD, resident director of the research laboratories at the Norton electric furnace plant, where 32 ALUNDUM abrasive was developed — the most outstanding abrasive development of the last 45 years.



Making better products to make other products better

NORTON • BEHR-MANNING

M.I.T., famous engineering school, uses **WICKES** boilers for steam production

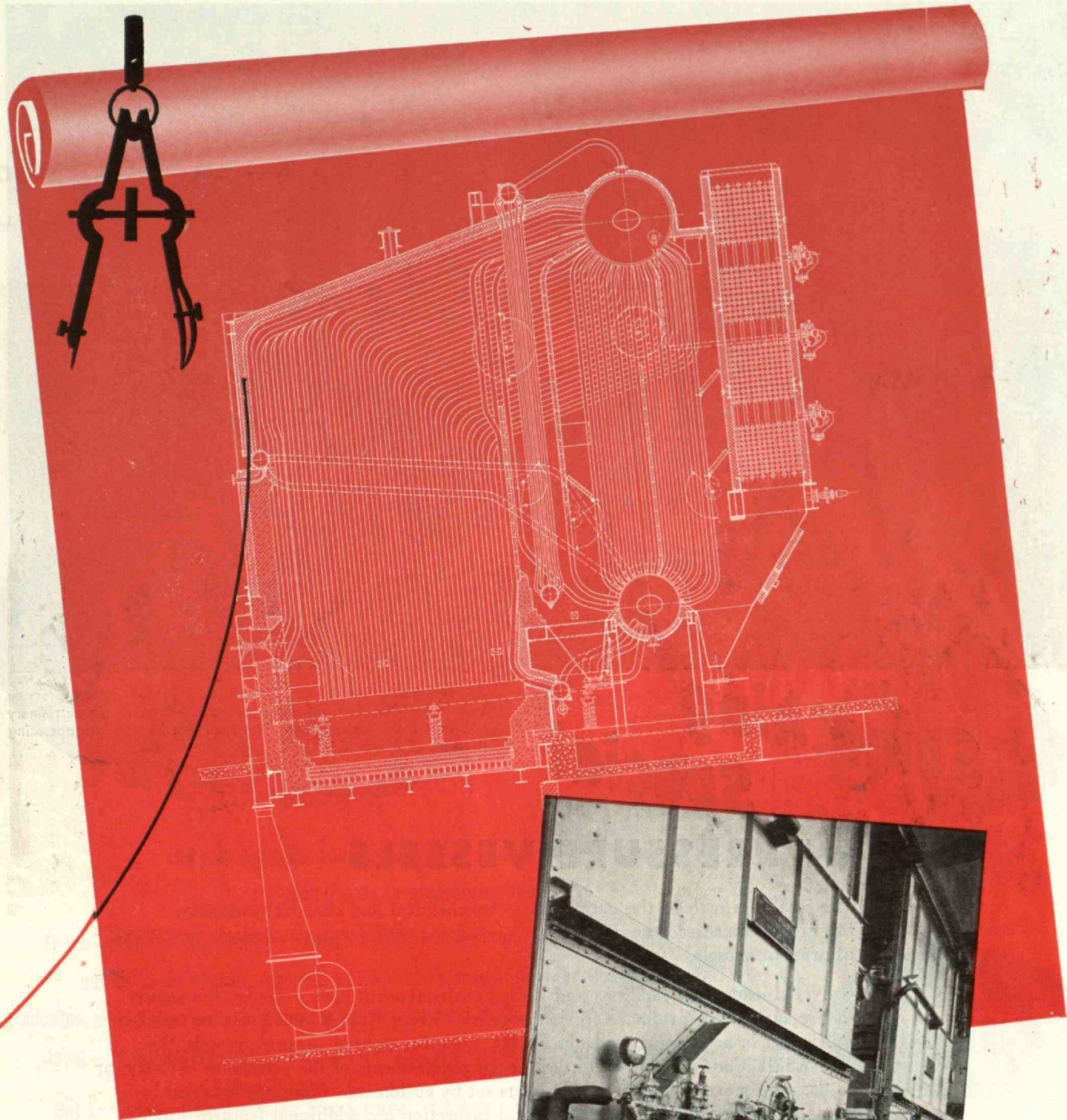
Consultants — JACKSON & MORELAND, ENGINEERS of Boston, Mass.



AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY, where sound engineering principles are taught, two Wickes Steam Generators were selected to supply heat for several new buildings including the Hayden Library and Sloan Metals Research Laboratory. The Wickes Boilers, which were custom-engineered for M.I.T., produce 160,000 lbs. of steam per hour. They occupy the same space formerly occupied by the two old boilers that produced only 40,000 lbs. per hour. They are equipped with superheaters and economizers. The new boilers are oil-fired at present but are engineered for ready conversion to spreader stoker if desired. They are designed for quick steaming to meet emergency power requirements and are fitted with thermowells and openings for taking flue gas samples so the students at M.I.T. can run boiler tests as part of their instruction. The installation of these boilers, an extremely difficult job because of the close erection tolerances, was handled by Flagg, Brackett & Durgin, Inc., Wickes' agents in Boston. **✓ ✓ ✓**

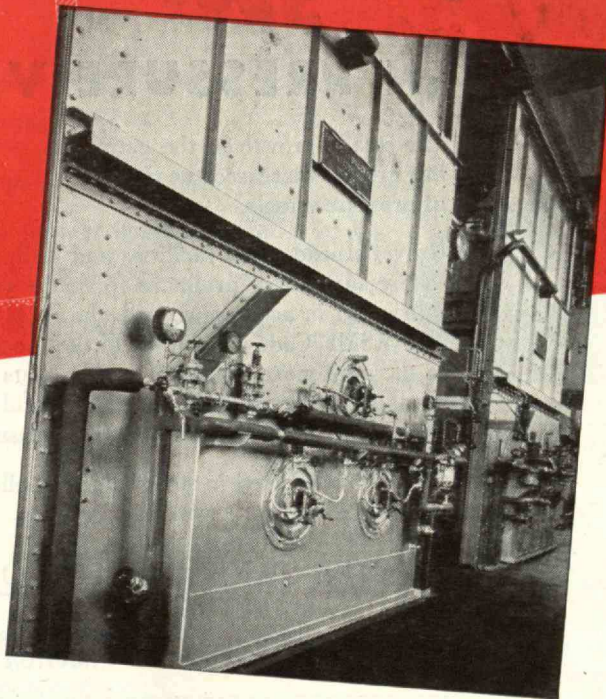
Wickes can fill your requirements for steam generators up to 250,000 lbs. per hour and 1000 psi.—all types of multiple drum boilers adaptable to any standard method of firing; oil, gas, underfeed or spreader stoker. Write today for descriptive literature or consult your nearest Wickes representative.

RECOGNIZED QUALITY SINCE 1854



ABOVE: Blueprint diagram of one of the Wicks Steam Generators at M.I.T.

RIGHT: View showing the two Wicks Boilers installed in the power plant at M.I.T.

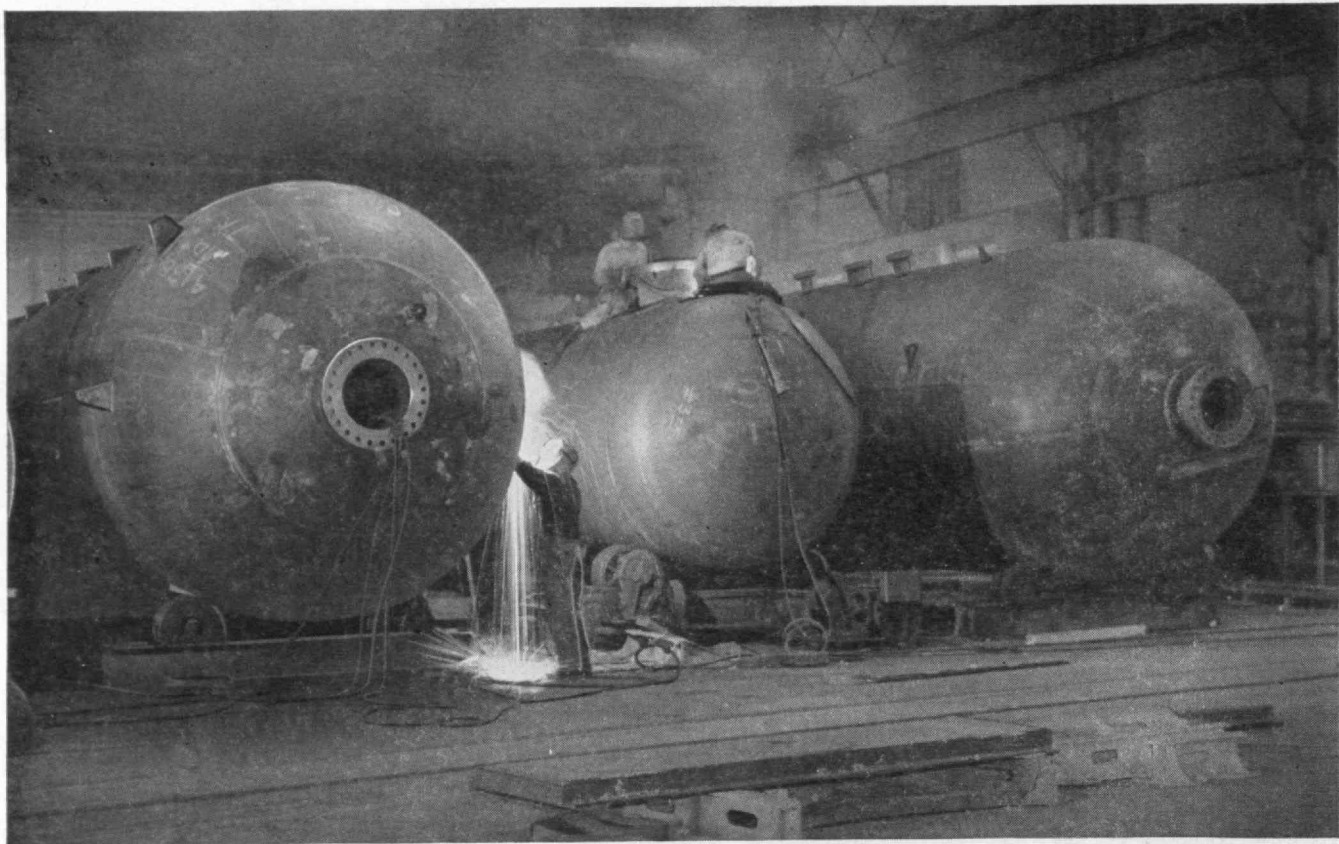


WICKES

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Something Special

IN PRESSURE VESSELS

An excellent example of Graver's skill in fabricating pressure vessels is this 10' x 32' desalting tank for use in a new refinery unit now under construction. The tank was built for an operating pressure of 300 psi.

The steady growth of the petroleum, petro-chemical and chemical industries has greatly increased the demand for specialized equipment, particularly new types of pressure vessels.

Graver's production facilities and skilled craftsmanship have provided the answer to pressure vessel problems for many years. Every Graver-built pressure vessel is fabricated in accordance with the ASME Code for unfired pressure vessels, the API-ASME Code as adapted to the special requirements of the petroleum industry, or to the even more stringent requirements set by customers. Complete X-raying, stress relieving and equipment for rigid inspection are additional features which assure that every fabrication will measure up to the requirements expected of it.

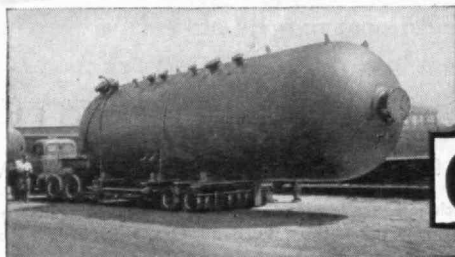
Whether fabricated in steels, clads or alloys, every pressure vessel bearing the Graver nameplate bears the symbol of quality.

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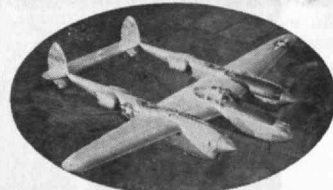
But Lockheed offers you more than a career. It offers you a new life, in an area
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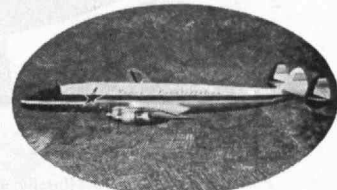
Lockheed Aircraft Corporation
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This Plane made History



The P-38 Lightning—first 400 mile
per hour fighter-interceptor, the
"fork-tailed Devil" that helped
win World War II.

This Plane is making History



The Super Constellation—larger, faster,
more powerful; the plane that bridges
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This Plane will make History

The jet of
the future—the plane
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This plane—which exists only in
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Lockheed will always need engineers
with ideas, engineers with
imagination, engineers who build
the planes that make history.



Travel to the
northernmost Army outpost —
in "shooting" distance of the Pole
— you'll find National
receivers on the job!

FROM FROZEN WASTE TO STEAMING JUNGLE

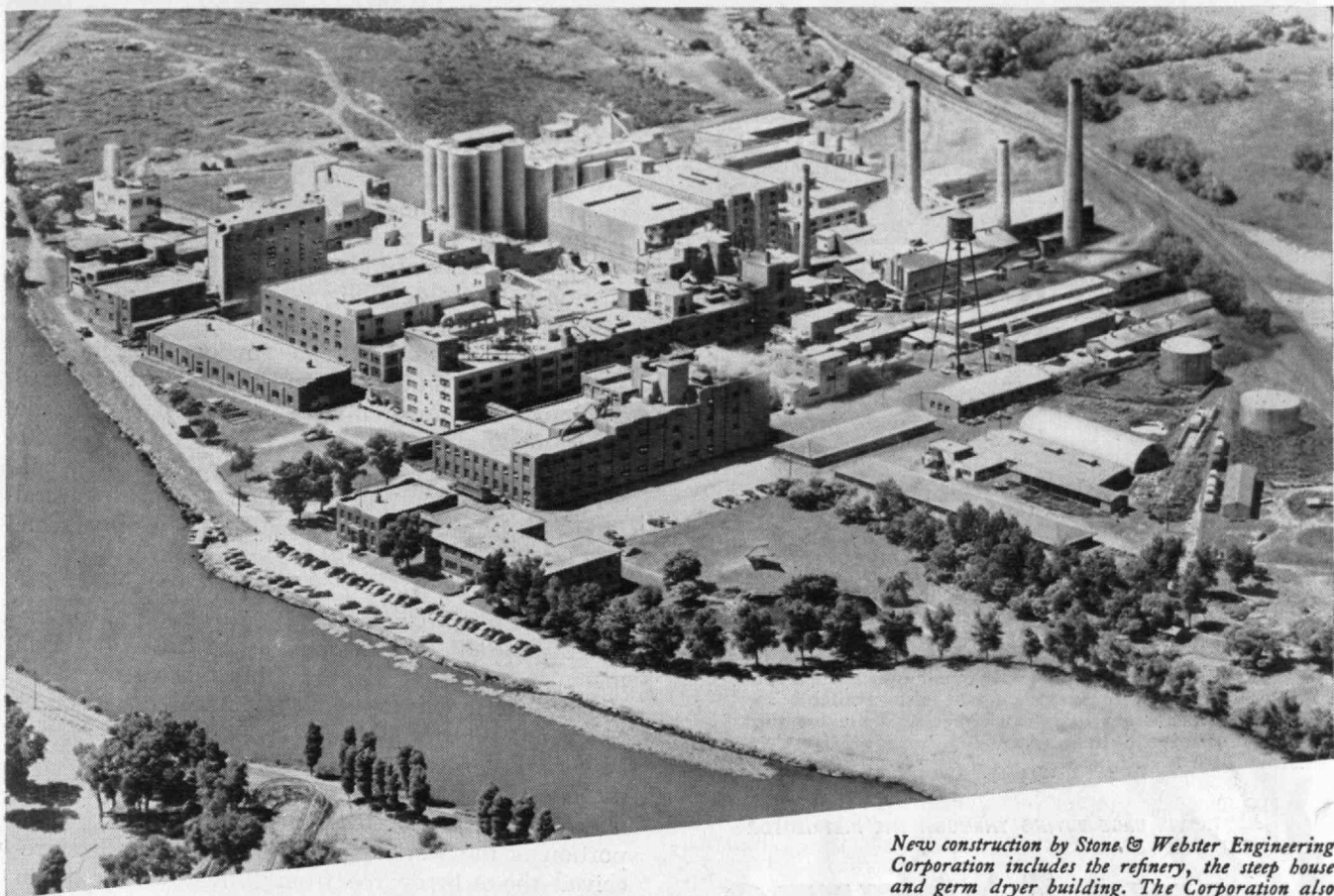
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ELECTRONIC EQUIPMENT AND COMPONENTS



New construction by Stone & Webster Engineering Corporation includes the refinery, the steep house and germ dryer building. The Corporation also installed processing equipment in the existing buildings and redesigned and enlarged the plant process disposal system.

FROM ICE CREAM TO PENICILLIN

From the Roby, Indiana, plant of the American Maize-Products Company come dehydrated corn syrup which is a component of commercial ice cream; corn starch; corn syrup used in candy manufacture; animal feed; and media for growing penicillin.

To design and build the recently completed additions to its Roby plant, the Company employed Stone & Webster Engineering Corporation.

One of the many products manufactured by American Maize-Products Company.



STONE & WEBSTER ENGINEERING CORPORATION

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PRACTICAL**



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THE TABULAR VIEW

Corrosion Resistance. — The effective and comparatively simple method of rust prevention by cathodic protection is described (page 251) by HERBERT H. UHLIG, '32, Associate Professor of Metallurgy at the Institute. Professor Uhlig received the B.S. degree from Brown University in 1929, and the Ph.D. degree from M.I.T. in 1932. After excursions into industry between 1932 and 1936, and again from 1940 to 1946, he was research associate in charge of the Corrosion Laboratory at M.I.T. from 1936-1940. Since 1946 he has been associate professor of metallurgy in that same post. He is consultant to several industrial firms and the Atomic Energy Commission, and is editor of the *Corrosion Handbook*.

Protein Research. — As part of a broad and long-range program on research on proteins — in which many members of the Institute's Department of Biology are involved — work has been carried on at M.I.T. on the development of artificial sutures for surgery. Progress in this field is reported (page 255) by IRWIN W. SIZER, Associate Professor of Physiology, who has been responsible for a substantial portion of the work on sutures. Professor Sizer received the A.B. degree from Brown University in 1931, and the Ph.D. degree from Rutgers University in 1935 when he joined the Institute's staff.

Chemical Warfare. — As a companion piece to his article, "Biological Warfare," in the November, 1952, issue of *The Review*, JAMES A. TOBEY, '15, has prepared the story on "Chemical Warfare" which appears on page 259 of this issue. Disturbing as it may be to recognize that civilian populations can now be exposed to warfare, one can glean some ray of hope from Dr. Tobey's assurance that national preparedness, coupled with public enlightenment, is the best and most effective measure to employ in minimizing disasters. Dr. Tobey has had a versatile and distinguished career in the broad field of public health, as last recorded on page 12 of the November issue. Dr. Tobey recently served as a colonel in the Army's Medical Service in Texas, and not in Korea as was reported in November.

Educational Concept. — ARAM BOYAJIAN, whose personal views appear in "The Education of Tom, Dick, and Harry" (page 262) has been associated with both industry and educational institutions for many years. Since 1924 he has been a nonresident member of the Institute's staff, in the Department of Electrical Engineering, engaged in teaching cooperative students during their industry assignments; and more recently he has been a visiting lecturer. As an engineer with the General Electric Company, Mr. Boyajian is well known as the author of many papers on transformer theory and circuit and system problems, and has given career guidance to many young people who have come within the radius of his inspiration.