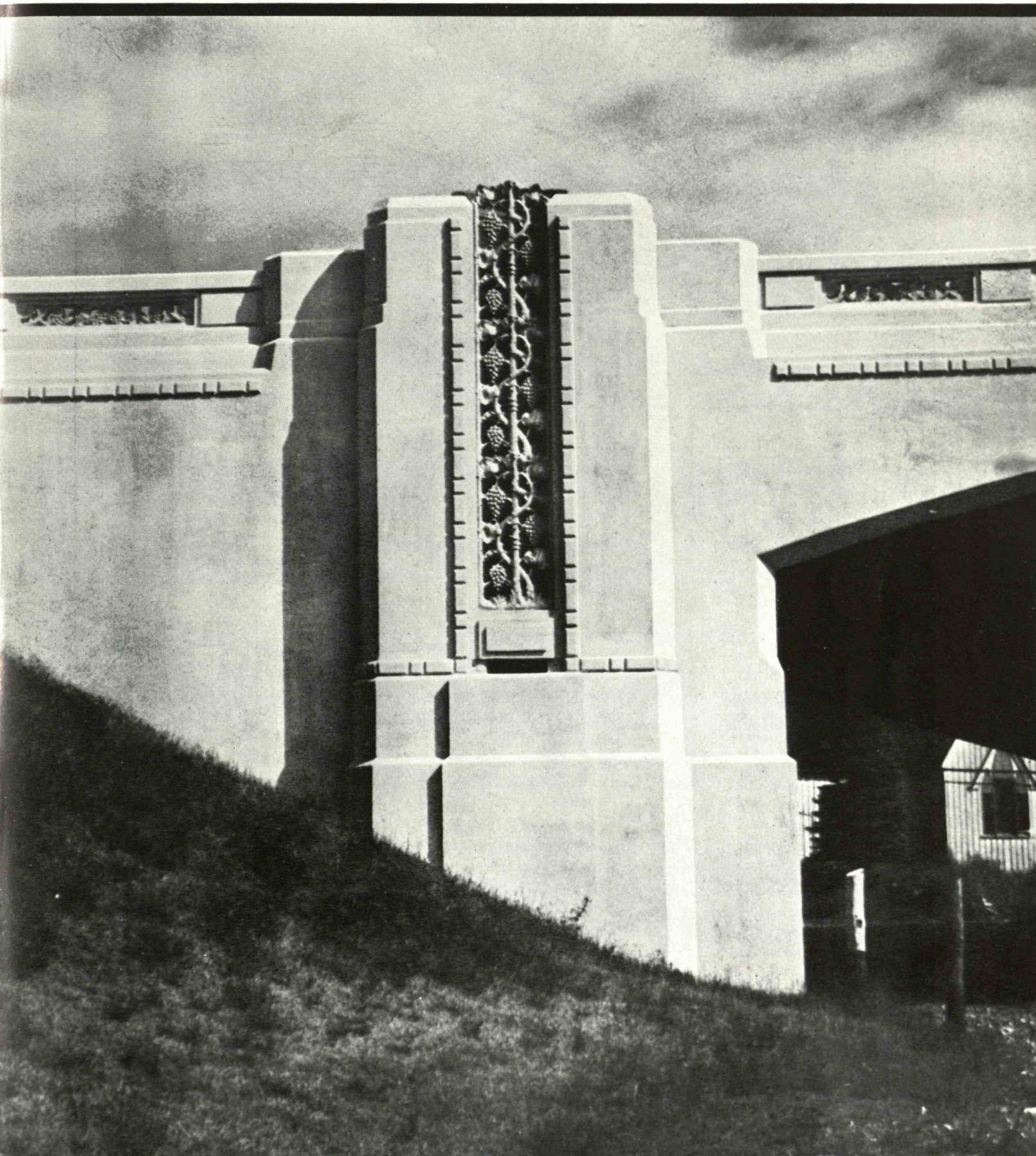
May 1944

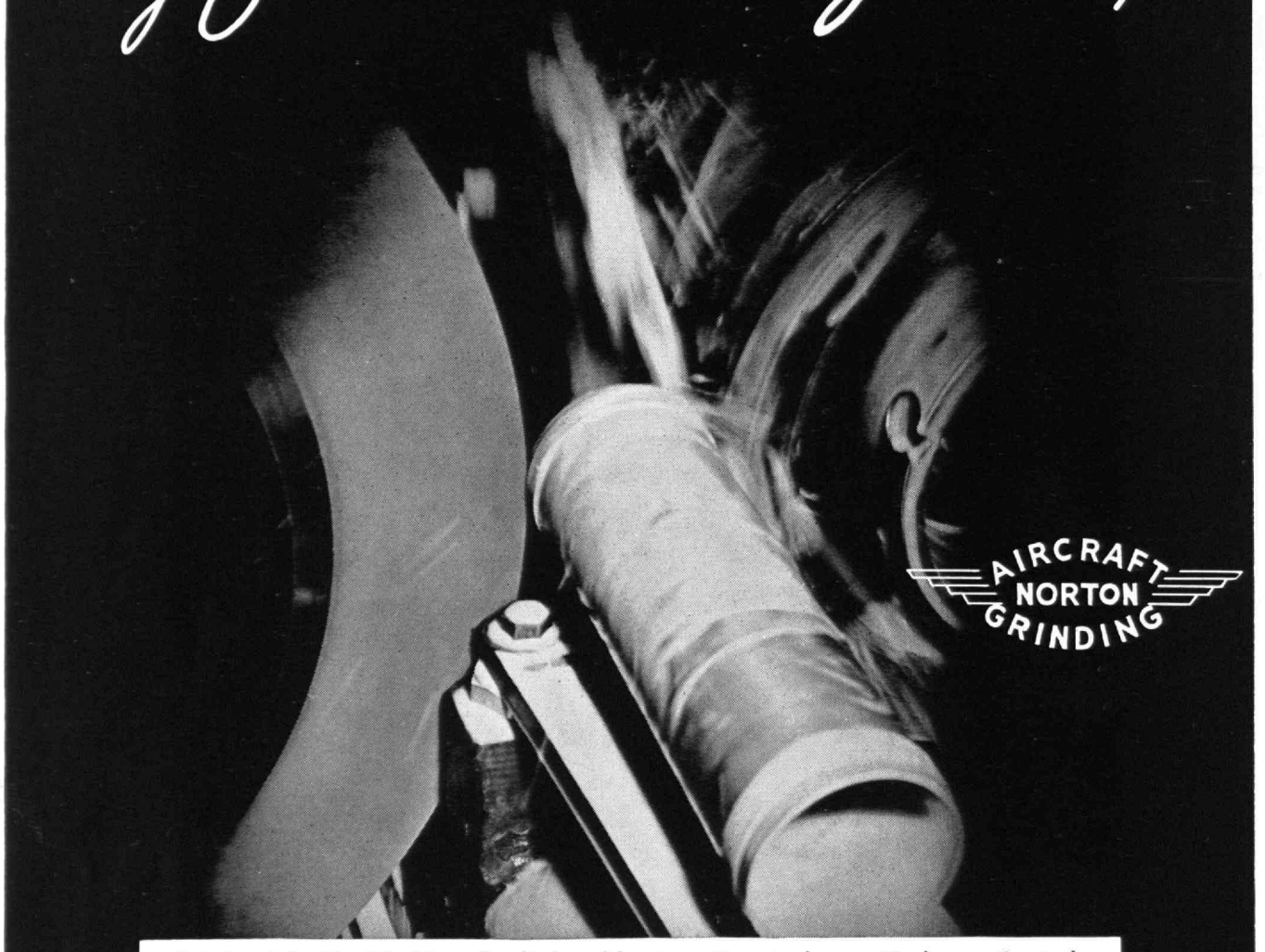
TECHNOLOGY REVIEW

Title Reg. in U. S. Pat. Office



NEW ABRASIVE

a "Gift" to Centerless Grinding—



Grinding jobs like this thin-wall cylinder of heat-sensitive steel are critical operations. In aircraft production tolerance limits are measured in tenths of thousandths and the steel itself must not be injured. The selection of the grinding wheel is an important matter —the selection of the abrasive and the grain size, grade, and structure.

A new abrasive recently announced has proved near perfect for grinding wheels employed in centerless grinding in the production of airplane parts because of its cool-cutting properties. It is known as 57 Alundum. It has met with so much success since its introduction in war industries, particularly aircraft, that the entire production has been frozen for this important work. Now, enlarged facilities have made 57 Alundum available for any plant that can use it. This is an important announcement, and you should not let it pass unnoticed.

NORTON COMPANY, Worcester 6, Mass.

Photo courtesy North American Aviation, Inc.

Behr-Manning, Troy, N. Y., is a Norton Division

NORTON ABRASIVES

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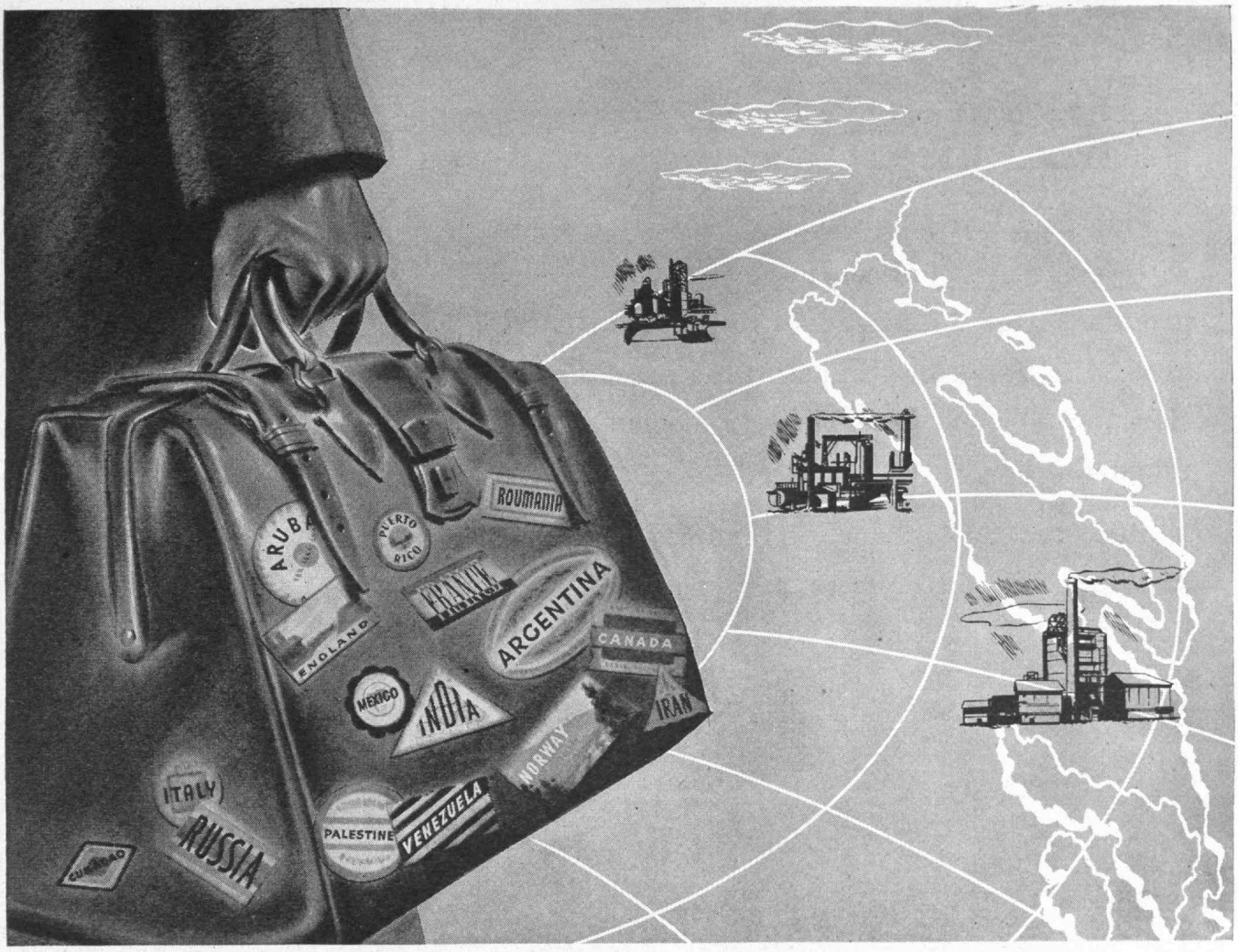
NC-100XA

The NC-100XA has gone to war. Under the pressure of the emergency following Pearl Harbor, many stock receivers of the NC-100 series went into action, and served brilliantly. Since then growing experience had led to a long series of minor changes and improvements, culminating in the superb receiver shown in the photograph above. We cannot show what is inside the cabinet until after the war, but a glance at the front panel will make any amateur recognize an old friend. It is stripped for action and in battle dress, but it is still the old reliable NC-100XA. And like its amateur prototype, this new Navy model is winning an impressive reputation for brilliant performance and absolute reliability.

NATIONAL COMPANY, INC., MALDEN, MASS.



WE'VE BEEN PLACES AND DONE THINGS

Process engineering, plant construction, equipment manufacture . . . Badger's experience in these phases of the chemical, petro-chemical and petroleum refining industries covers not only many years—but *many scenes of operations throughout the world.*

These world-wide activities have broadened Badger's "know-how" well beyond that which is normally acquirable from domestic projects alone. Regions where only salt water is readily available—climates that reach 60° below or 110° above—terrains subject to earthquakes or sand-storms and drought—locations inaccessible by normal means . . . these and similar perplexing problems have had to be — and were — solved by Badger planning boards, design engineers, procurement specialists, transportation experts, erecting engineers, labor co-ordinators, and other key personnel.

Badger's foreign assignments include both war and pre-war projects. The knowledge gained therefrom is of special value to those looking to post-war expansions — either at home or abroad. It carries every assurance that any processing method, plant design, or form of construction recommended by Badger is the best that modern engineering can provide.

The Badger organization is prepared to consider further contracts embracing chemical, petro-chemical or petroleum refining plants anywhere in the world —whether involving new construction, conversion, or modernization.

E. B. Badger & SONS CO., BOSTON — EST. 1841

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PROCESS ENGINEERS AND CONSTRUCTORS FOR THE CHEMICAL, PETRO-CHEMICAL AND PETROLEUM INDUSTRIES

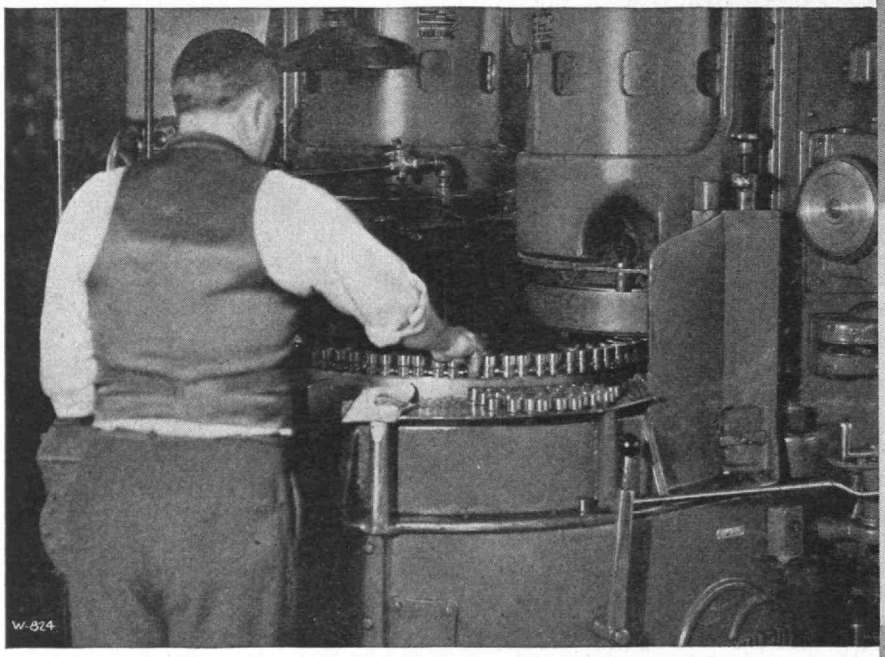
"PUT IT ON THE BLANCHARD"

These heat treated steel trunnion bearings are ground on a No. 16-A2 Blanchard Surface Grinder.

They are loaded on special 80-station fixture with magnetic studs locating from previously ground surface. The end of the bearing is then ground to very close limits. At the unloading station the work is automatically ejected and demagnetized.

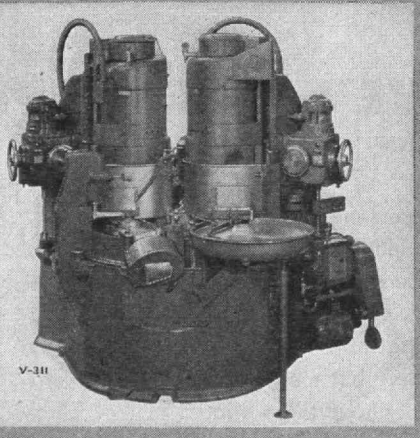
.005" to .015" of stock is removed, to limits of ± .0005". 18,500 pieces are produced per 8 hour shift.

Grinding Trunnion Bearings on No. 16-A2 Blanchard Surface Grinder.



CHECK THESE ADVANTAGES OF BLANCHARD GRINDING

- ★ Production
- Adaptability
- Fixture Saving
- Operation Saving
- Material Saving
- ★ Fine Finish
- ★ Flatness
- ★ Close Limits



★ . . . . . *Especially valuable on jobs like the one illustrated.*

BLANCHARD

The BLANCHARD MACHINE COMPANY

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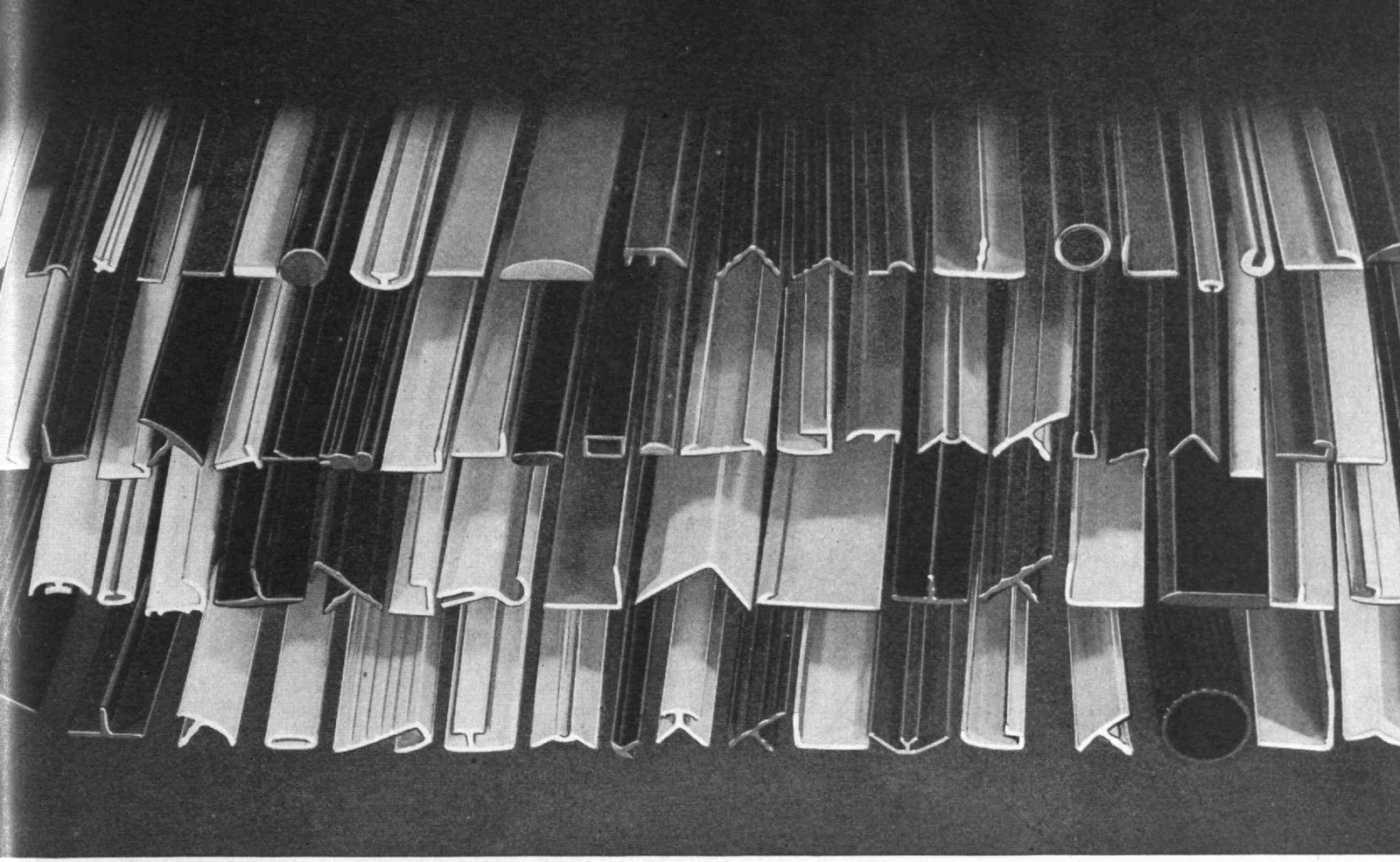
Send for your free copy of "Work Done on the Blanchard." This book shows over 100 actual jobs where the Blanchard Principle is earning profits for Blanchard owners.



RIGID

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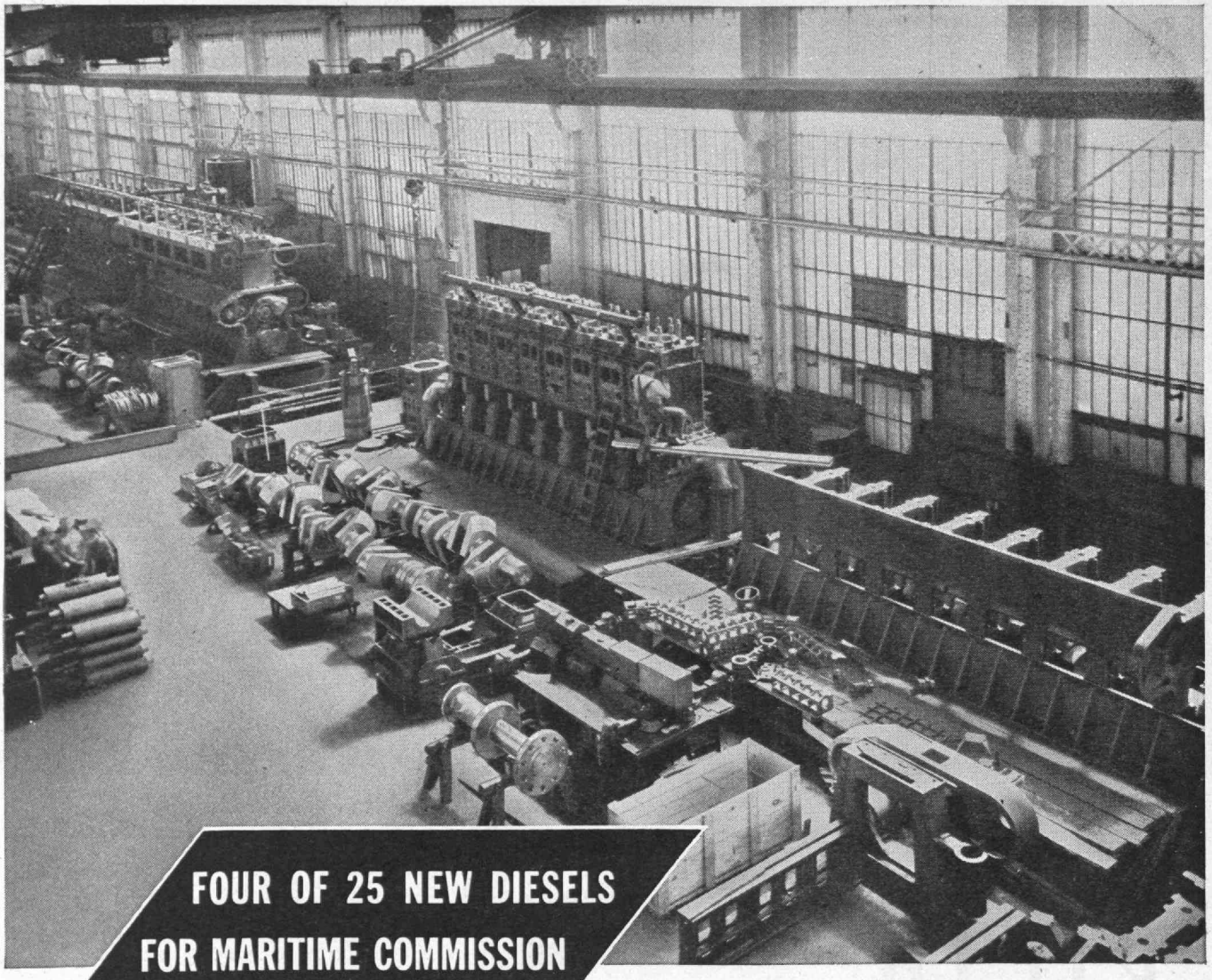
EXTRUDED PLASTICS AND SPECIAL TOOLS



FOUR OF 25 NEW DIESELS FOR MARITIME COMMISSION BEGIN OFFICIAL TEST RUNS

The photograph pictures a part of the big Busch-Sulzer plant in St. Louis. At the extreme left, one of the main propulsion engines for the Maritime Commission's Type C1-AV1 coastal cargo vessels is making its successful trial run. Next left, a second engine is nearly ready to turn over while the remaining two are rapidly nearing complete assembly.

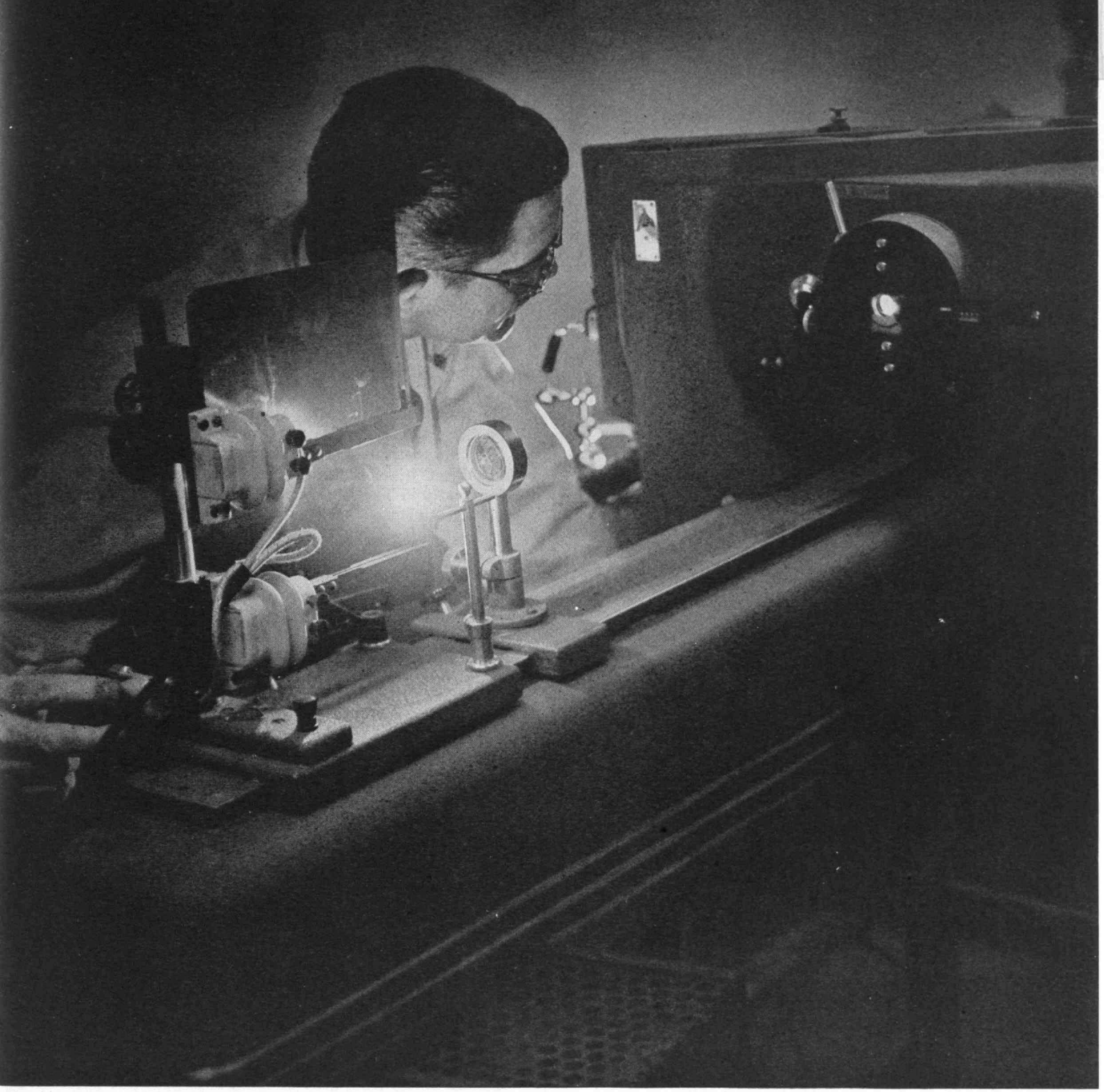
The C1-AV1 vessels will be used to move troops and materials to combat areas. Each of the twenty-five 4,000 ton ships with Busch-Sulzer Diesels will be propelled by a single direct-connected engine developing 1700 B. H. P. at 180 R. P. M.

Busch-Sulzer also builds Diesels for other Maritime Commission ships and for vessels of the Army and Navy and marine and stationary engines for orders of high priority. Since a tremendous demand for Diesels is expected to continue for several years after hostilities cease, may we suggest that you acquaint us now with your requirements? We build 4-cycle engines up to 1500 B. H. P. and 2-cycle engines up to 7500 B. H. P. in sizes and speeds to suit a variety of needs. Your inquiry will receive prompt attention.

BUSCH-SULZER BROS.-DIESEL ENGINE COMPANY
SAINT LOUIS

AMERICA'S OLDEST BUILDER OF DIESEL ENGINES

BUSCH-SULZER ST. LOUIS



The Spark that Lights the Flame of Victory

A pinpoint of fighting metal placed in the arc of the spectrograph writes its own signature on a photographic plate. Inside the instrument, the light from that flame is broken up by a prism as a prism breaks up sunlight. Each element identifies itself by a series of characteristic lines, always the same for the same basic element. It reveals to the spectrographer each constituent, what impurities are present and in what quantities.

Thus spectrography helps in controlling inspection. It keeps tough fighting steels tough, helps in development of new fighting metals. Spectrography is used too in other fields . . . chemicals, foodstuffs, vitamins. It speeds research, control, and analysis. Today, spectrography is helping to build the tools of Victory as in peacetime it helps to make better cars and better breakfast foods.

Because Bausch & Lomb had long experience with such precision optical equipment needed in education, research, and industry, it was ready for quantity production of precision optical instruments of war such as gunfire control instruments, binoculars, and aerial photographic lenses. When the last gun is fired, Bausch & Lomb will devote its enlarged experience to peacetime optical production. Through war and peace, Bausch & Lomb has continued . . . and will continue . . . to do the job it knows how to do best. *Here again optical science is seeing it through.*

For Bausch & Lomb Instruments essential to Victory—priorities govern delivery schedules.

BAUSCH & LOMB

OPTICAL CO. • ROCHESTER, N. Y.

ESTABLISHED 1853

AN AMERICAN SCIENTIFIC INSTITUTION PRODUCING OPTICAL GLASS AND INSTRUMENTS FOR MILITARY USE, EDUCATION, RESEARCH, INDUSTRY AND EYESIGHT CORRECTION

THE TABULAR VIEW

Coadjutor.—From the dynamic beginning days of the electrical industry, which his recent biography of Elihu Thomson presented in vivid detail, DAVID O. WOODBURY begins in this Review (page 419) another graphic story. This is the account of the career of Hermann Lemp, who as a newcomer from Switzerland two generations ago became the assistant first of Thomas Edison and later of Thomson, shared in many of the ups and downs attending the development of basic electrical inventions, and as an inventor himself contributed substantially to the growth of the industry. Mr. Woodbury, who received bachelor's and master's degrees in Electrical Engineering from the Institute in 1922, has written on a wide range of subjects in science and engineering. His work appears frequently in The Review, and he is responsible for regular treatment of that field in *Collier's*.

Sesame.—One of the too rare good fortunes of periodical publication is the occasional coming-to-hand of articles which have been written by authors working independently and from individual points of view but which approach a common subject in such wise that the one illuminates and enforces the other. Such a welcome coincidence brings added substance to this issue of The Review. The articles in question are those by SIR HAROLD HARTLEY (page 422) and JAMES R. KILLIAN, JR., '26 (page 423). The subject they treat is that of sponsored research as a source of economic strength and social progress. The points of view are, on the one hand, why and how British industry must seek to expand and fortify research of this kind; on the other hand, how and why a great expansion of such research has been administered in a recognized major American center of science and engineering — the Institute. On the one hand, a general problem is posed; on the other, a specific solution is described. The authors are well qualified to analyze authoritatively the subjects they have elected. Sir Harold, whose notable commencement address at the Institute in 1939 appeared in The Review for July of that year, was formerly lecturer in physical chemistry at Oxford and is now vice-president and director of research for the London Midland and Scottish Railway. Mr. Killian, for 13 years associated with The Review and its editor from 1930 to 1939, became in the latter year executive assistant to President Compton and a year ago was named executive vice-president of the Institute. During the intensive development of Technology's facilities in war research, he has taken a heavy share of primary responsibility; his discussion of the principles and procedures followed in bringing the Institute fully into action as a center of military potential is based on firsthand knowledge.

Provender.—That history often offers commentary on the present and the future is a precept well substantiated by the story of food in the Civil War which GEORGE FORT MILTON tells in this issue (page 426). Both the North and the South then faced agricultural dilemmas equal in difficulty though different in characteristics. The

(*Concluded on page 408*)