

April 1943

TECHNOLOGY REVIEW

Title Reg. in U. S. Pat. Office



Get the "GRINDLINS" out of your Tool Room



Grindlins in the tool room are cousins of the Gremlins that cut capers with airplane pilots.

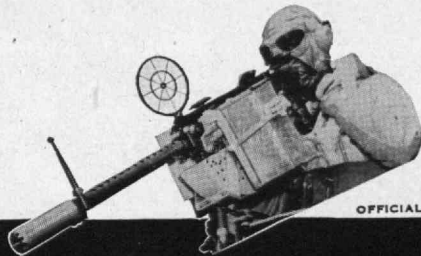
"Make the old wheel hog off the metal," suggests Mister Grindlin. "Pipe down," says experience, "the one way to assure uniform tooth height when grinding milling cutters is by taking light finishing cuts of not more than one-half a thousandth per pass."

Don't let Grindlins heckle your workers. There is a Norton Handbook on Tool Room Grinding, 176 pages of helpful information and illustrations, that will be definitely useful to the tool room worker who is new to his job.

NORTON COMPANY • Worcester, Massachusetts
Behr-Manning Division—Troy, N. Y.

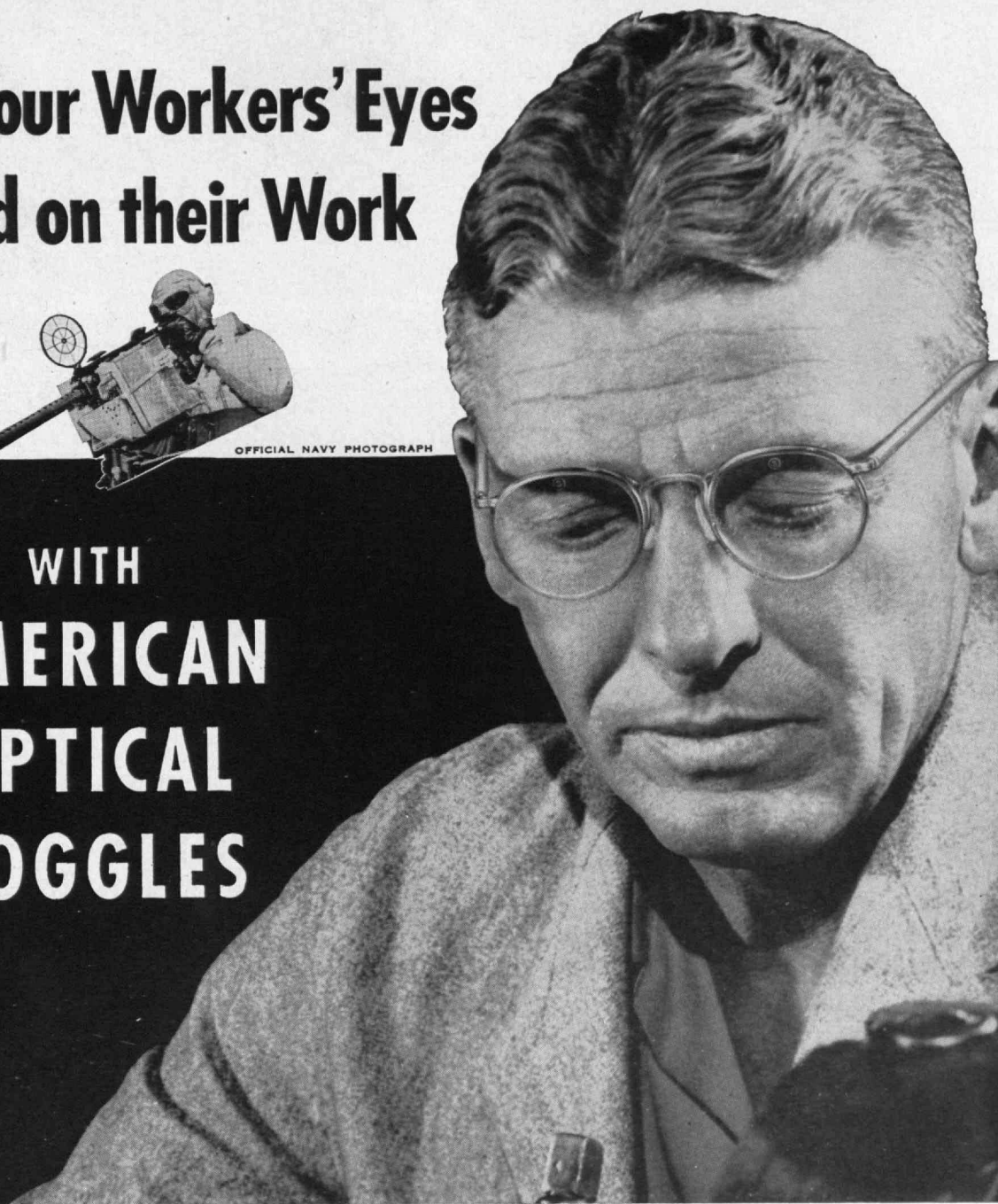
NORTON ABRASIVES

Keep Your Workers' Eyes Trained on their Work



OFFICIAL NAVY PHOTOGRAPH

WITH AMERICAN OPTICAL GOGGLES



We need more than our workers' hands to win this war . . . we also need their *eyes*. Yet, for lack of proper goggles, industrial eye accidents are *still* occurring at an alarming rate . . . *still* costing our valiant fighting men much equipment that they need to smash the enemy.

Put on an offensive now to stop eye accidents in *your* plant. American Optical Company, pioneer

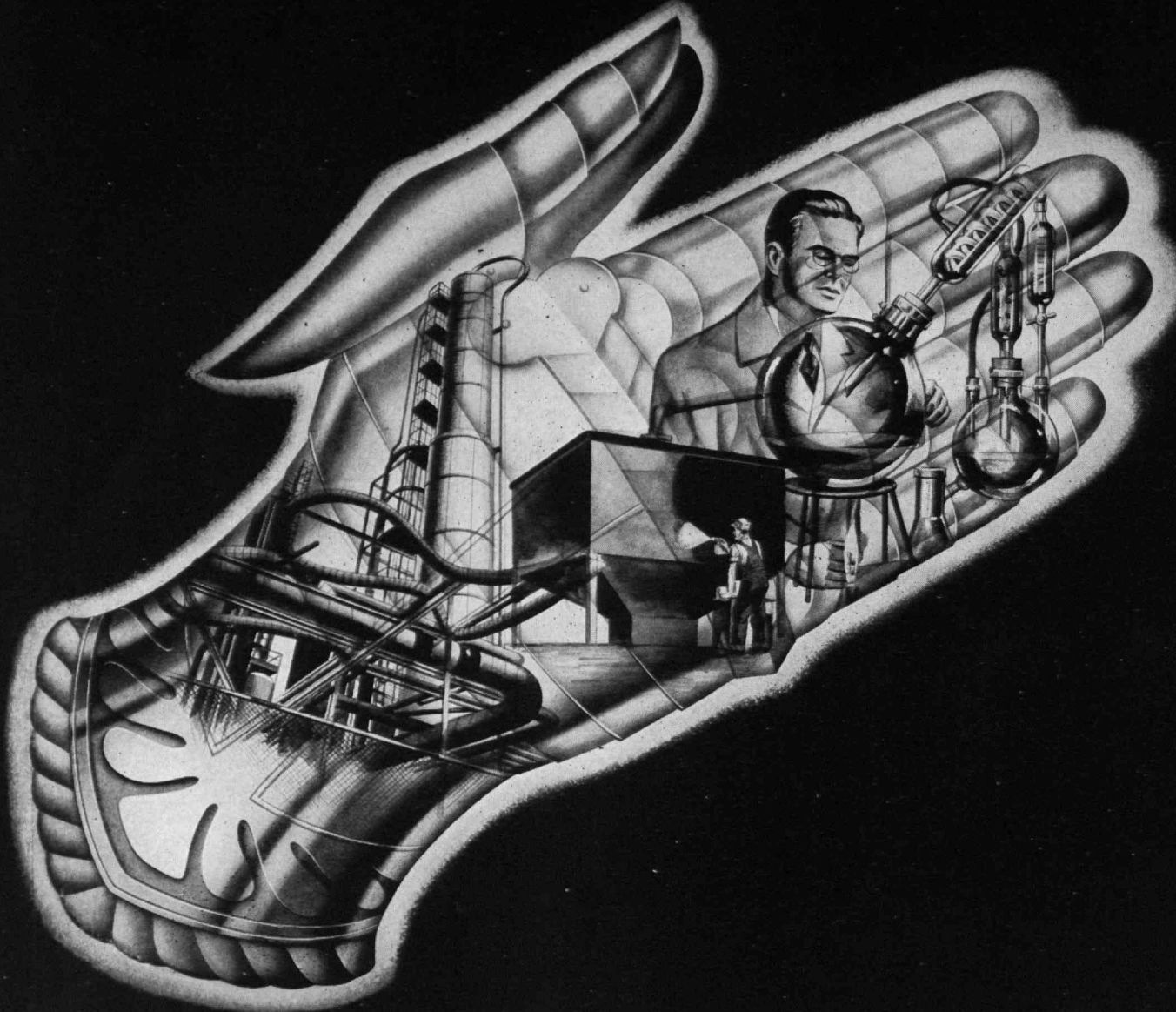
manufacturer of products to aid and preserve vision, offers you the eye protection equipment and complementary services that your plant needs to protect man-power for war-power. AO Goggles are scientifically designed to give maximum possible protection . . . and workers find them comfortable to wear. Have your Safety Director get in touch with the nearest American Optical Branch Office.

American  Optical

COMPANY

SOUTHBRIDGE, MASSACHUSETTS





TYGON protects the fingers of the iron fist

THE mechanical fingers that move America's iron fist must not be stilled for a single moment . . . from these fingers flow the planes, the ships, the tanks, the guns, on whom victory depends.

There dare be no joints stiffened by corrosion! These moving fingers must be kept free!

Tygon, one of America's newest and most versatile materials, is effectively aiding designers and engineers everywhere in retarding the action of corrosion on buildings and plant equipment. In arsenals and shipyards, in airplane and tank factories, in chemical and metallurgical plants, the life of irreplaceable machines and equipment is being indefinitely prolonged through the use of Tygon anti-corrosive protection.

For Tygon is unaffected by more than 90% of the corrosive elements which play hob with industry. The chemicals that work havoc with metals, that quickly destroy steel, that eat through glass, have little effect on this amazing synthetic. Sun, air, moisture, and time—

levelers of most material things—leave Tygon virtually untouched.

Tygon possesses the rare virtue of "flexibility of application," retaining its basic corrosion-resistant properties through a wide range of physical forms. It is made into flexible, resilient sheets for tank linings or for gasketing; into liquid for use as a paint or for impregnation of porous materials; into light, flexible tubing, or into easily machined solid rods. Tygon may be readily molded into intricate shapes possessing excellent tensile strength plus remarkable durability and corrosion-resistance.

Would you like to learn more about this versatile material? Write today for Bulletin 1621.

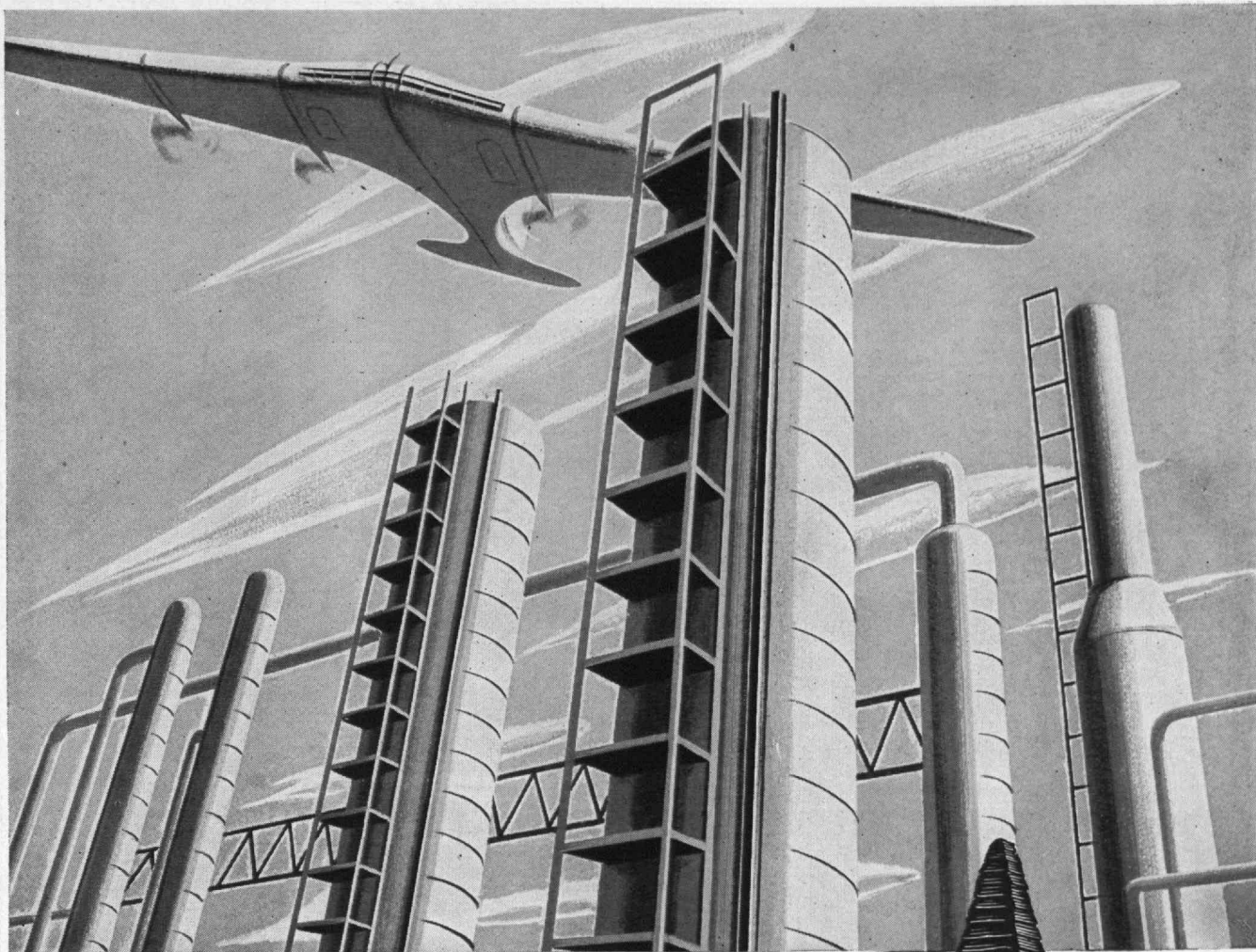


U. S. STONEWARE

AKRON, OHIO

IN CANADA: CHAMBERLAIN ENGINEERING, LTD., MONTREAL

ENGINEERS • MANUFACTURERS • ERECTORS OF CORROSION-RESISTANT EQUIPMENT



Looking ahead from a long way back



From the early days of "Colonel" Drake and "Coal Oil Johnny," the chemistry of oil has been destined for great things. Greater even than the high-octane gasoline which today is propelling planes across the sky at 400 miles per hour. Greater than butadiene and toluene.

So, too, with the chemistry of alcohols, phenols, esters, ketones and other organic compounds.

The greater things are sure to come. Many are already germinating—secretly in some instances—and inevitably head-

ing toward enriching the world of tomorrow.

It takes background and experience to put into successful production the products chemical research has perfected. It takes far-reaching facilities to design and build processing equipment that can be expected to operate efficiently.

Badger perspective looks through four generations toward process engineering and plant construction in many future fields. Though busy on gasoline, rubber, T.N.T. and other war-aid projects,

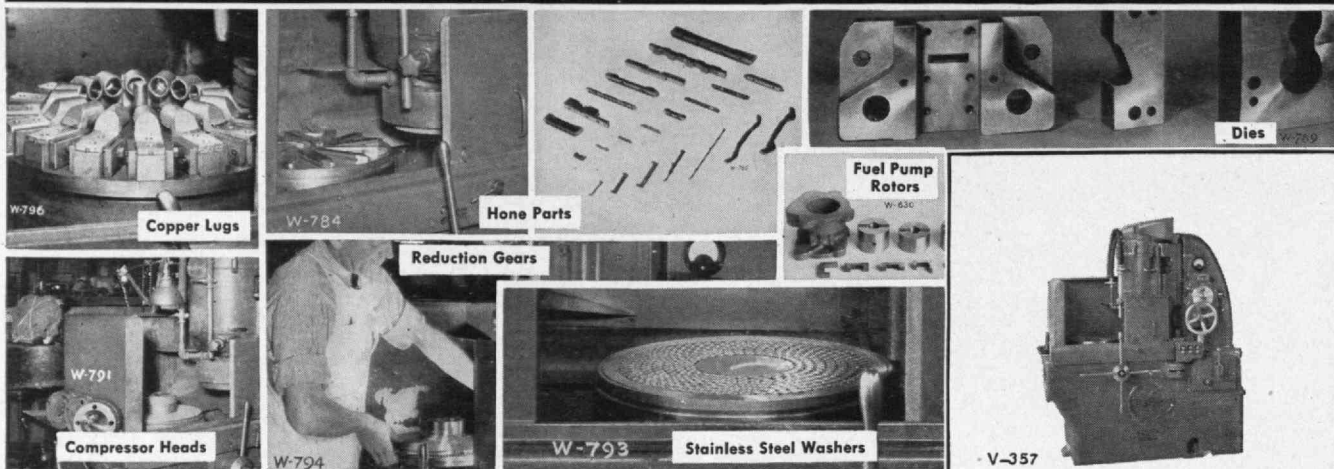
Badger is nevertheless preparing for post-war undertakings. . . . Manned with engineers, designers and draftsmen to convert the new miracles of science into realities. . . . Equipped to plan, build, and to supervise the initial operations of complete manufacturing units.

E. B. Badger & SONS CO.

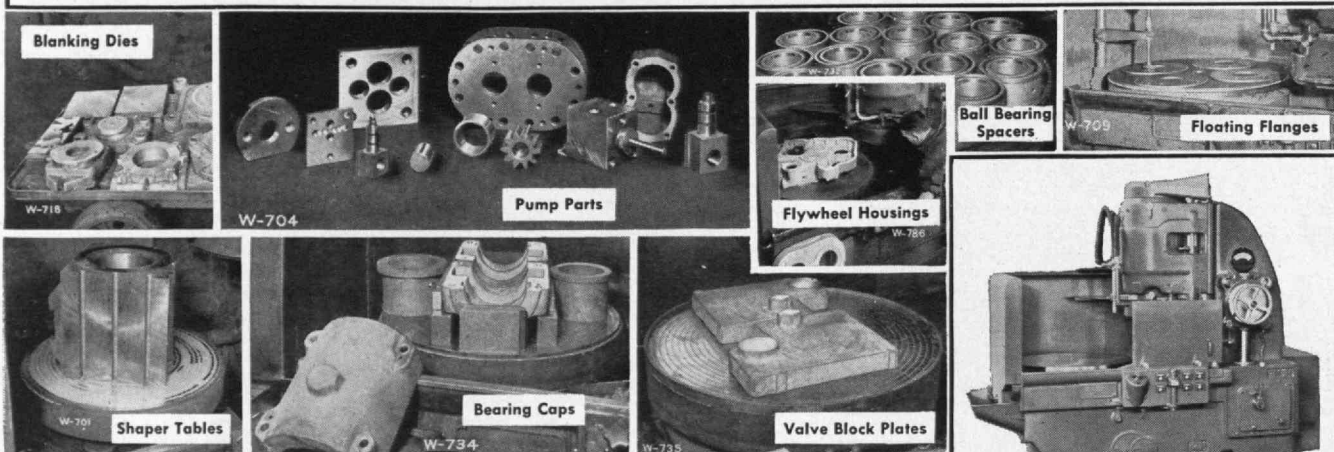
BOSTON EST. 1841
NEW YORK • PHILADELPHIA
SAN FRANCISCO • LONDON

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

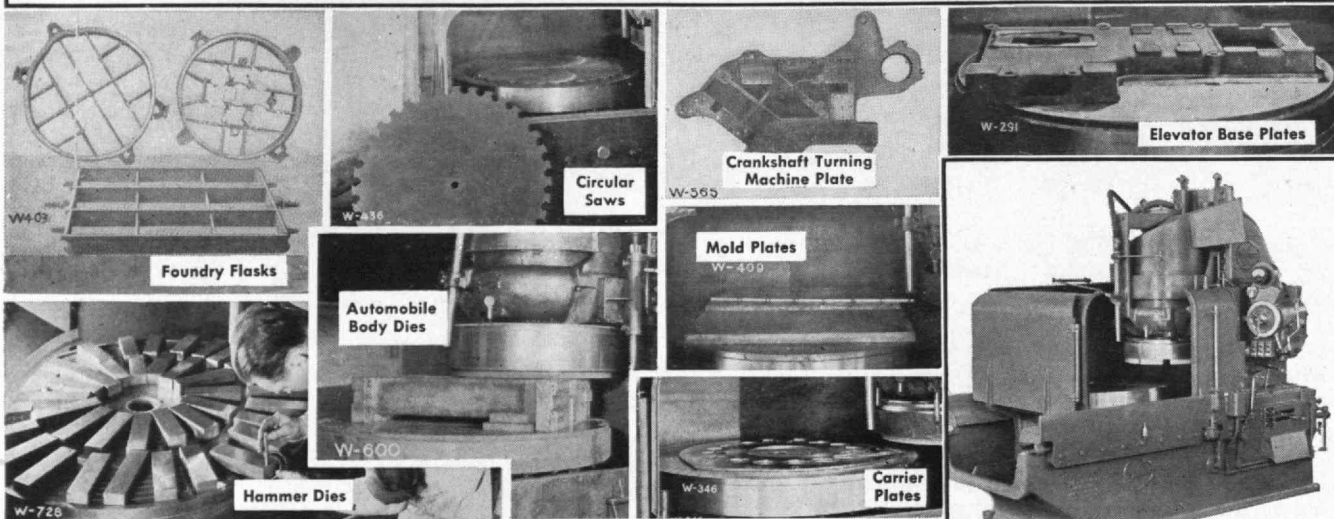
"PUT IT ON THE BLANCHARD"



EXAMPLES OF WORK DONE ON THE NO. 11 BLANCHARD SURFACE GRINDER

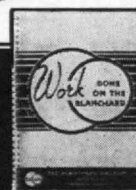


EXAMPLES OF WORK DONE ON THE NO. 18 BLANCHARD SURFACE GRINDER

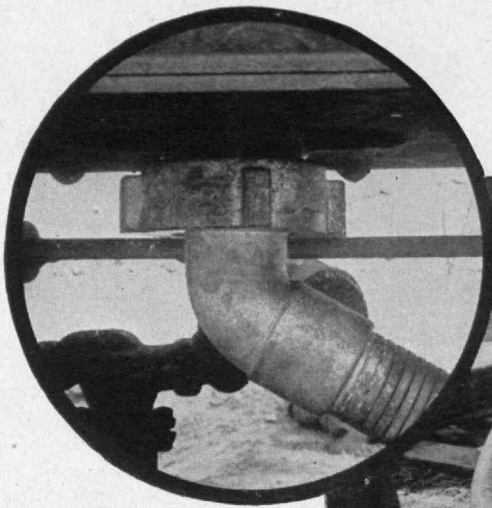


EXAMPLES OF WORK DONE ON THE NO. 27 BLANCHARD SURFACE GRINDER

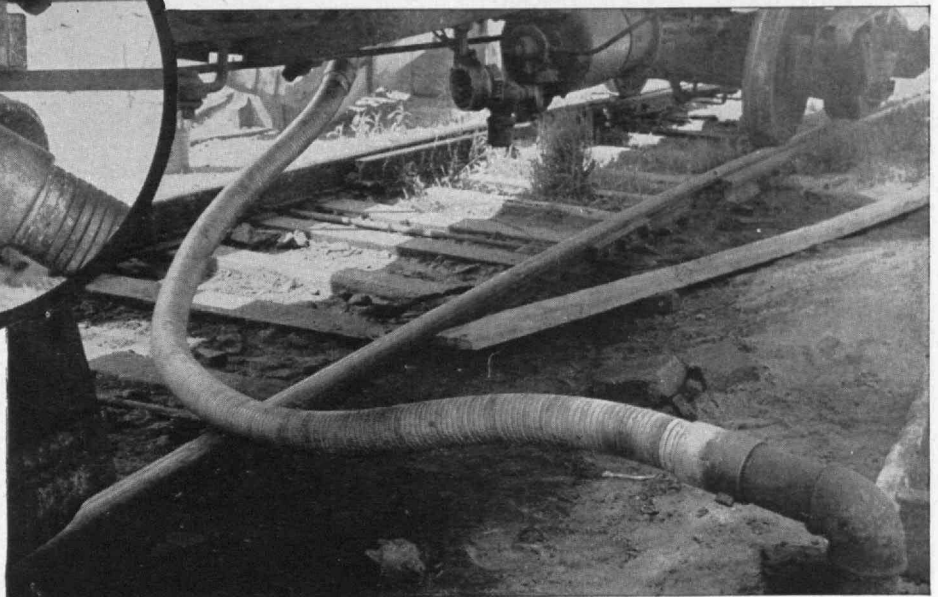
The **BLANCHARD MACHINE COMPANY**
64 STATE STREET, CAMBRIDGE, MASS., U. S. A.



SEND FOR THIS
WORK BOOK.



Unloading from tank car. Couplings and Hose made by PENFLEX. Flexibility of metallic hose which is tight as pipe shown in larger illustration.



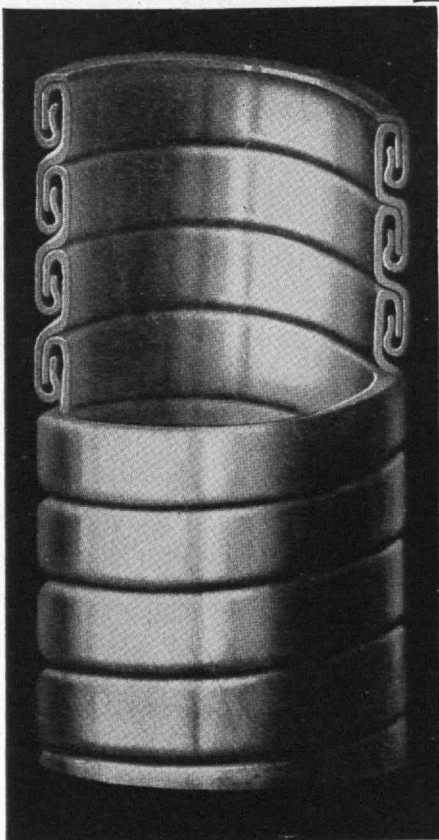
Here is Hose to Handle *Styrene* and other Synthetics

"Double interlocked type hose is best suited for handling Styrene since it contains what is commonly known as a benzine ring." So states a letter from a large synthetic rubber manufacturer who ought to know, since he also manufactures other mechanical rubber products.

PENFLEX is wound in a continuous helix, from strips of heavy metal which resists attack from a wide range of liquids. Four metal walls — *tight as pipe* — reduce danger of puncture; four metal walls interlock to resist crushing.

Great flexibility, accomplished by PENFLEX sliding, interlocking joint construction — *the metal itself does not bend* — provides freedom from kinks.

Perhaps you, too, have an unusual problem in handling liquids. If so, write our engineering staff. You can get helpful data and information gathered through 40 years' experience in research and manufacture of flexible metallic hose and tubing.



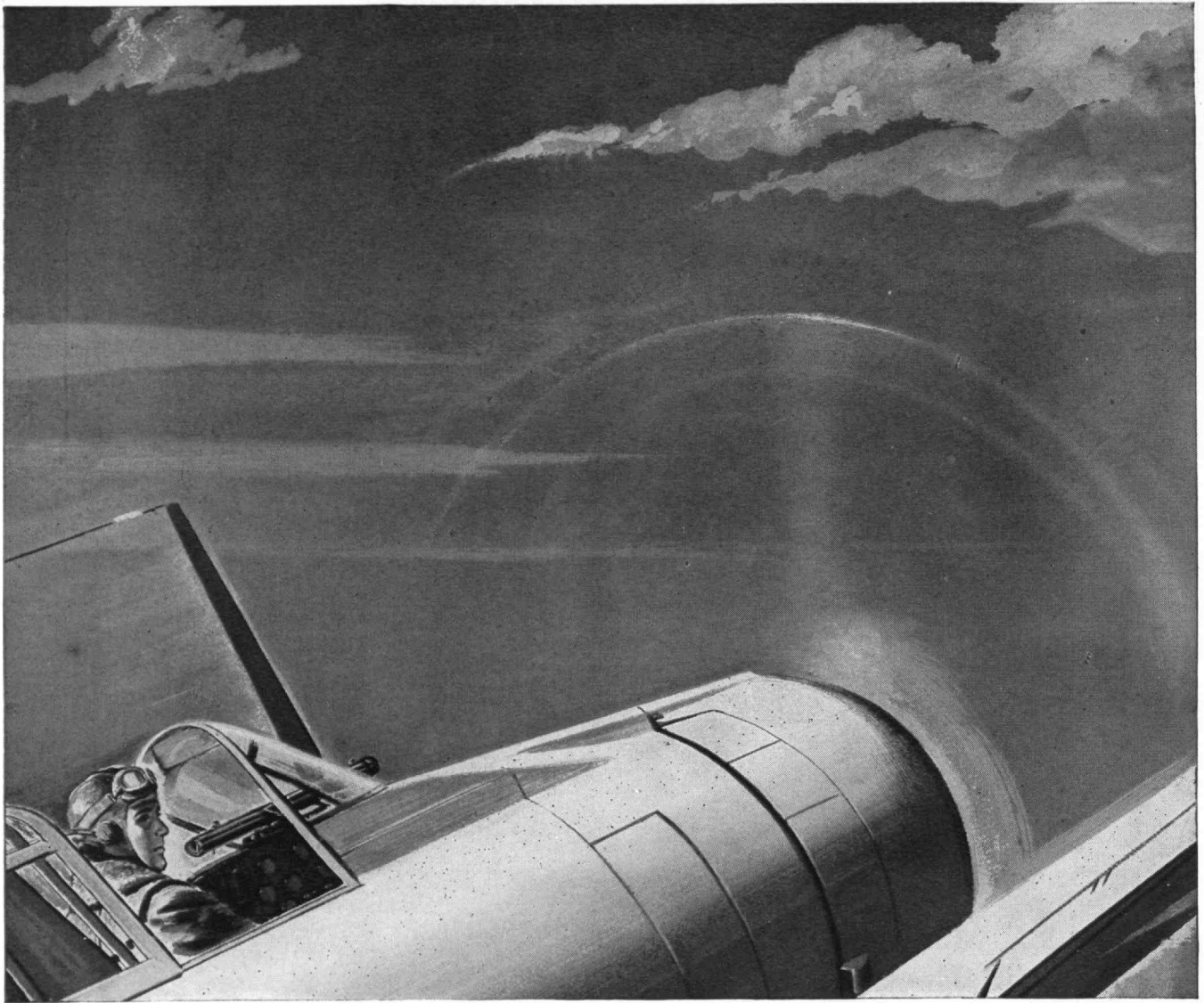
Four-Wall Interlocked Construction in sizes 1" to 18" I.D. In various metals and alloys . . . coated and uncoated.



PENNSYLVANIA FLEXIBLE METALLIC TUBING CO.

7211 Powers Lane, Philadelphia, Pa.

ESTABLISHED 1902



Up there alone, hobnobbing with the scudding clouds in the white-flecked azure, what's in the back of his mind, while he scans an ocean monotonously empty?

There are long and glamorless stretches to patrolling. Plenty of time to think—in a detached way that doesn't distract his watchful eyes from sea or instrument panel Plenty of time to see a sunlit street, a campus path, a breath-catching moment of bashful ardor under a genial moon. Whatever the image, it stands against the background of coming home to opportunity, to work, to fulfillment.

And that's what it will be if production is pushed, if paydays are bond-days and if spare hours are devoted to plans for supplying post-war markets—and thereby a job and home for this boy.

It's his due There'll be a hunger for the goods we've done without, but they'll not be identical goods. They'll be improved or entirely new. Made, quite probably, with machines that have yet to be built—machines that are typical of American ingenuity—perhaps even like some of those developed and made here at FIDELITY and described in "Facilities."

Write for a copy of this illuminating book.



Designers and Builders of Intricate, Automatic Precision Machines



FIDELITY MACHINE COMPANY

3908-18 FRANKFORD AVENUE, PHILADELPHIA, PA.

Wartime readjustments . . . #7



NEVER AGAIN WILL BILL COLEMAN TRY TO BUY
A TRAIN TICKET AT THE LAST MINUTE!

The trip is urgent, the line is long, and the time is short. Bill's at the end of the line, and almost at the end of his patience.

He should have known better. You can't put things off in wartime and expect them to go smoothly. You've got to plan in advance — whether you are buying tickets or life insurance.

Remember that insurance premium dollars go to work for America and promote the war program, directly or indirectly, in every vital field. So that, if you do plan your insurance program now, you can increase your war contribution and your family's protection at the same time. If you wait, war strain or accident may make you uninsurable.

Taxes, War Bonds, life insurance . . . these three are basic in all budgets

now. These three help win the war and check inflation. Whatever readjustments they require are well worth while. Any New England Mutual representative will be glad to help you — with friendly, practical suggestions that will make every dollar do its wartime duty.

New England Mutual contracts meet present-day needs because:

- 1 **DIVIDENDS** begin at the end of the *first* year.
- 2 **CASH VALUES** begin at the end of the *second* year.
- 3 **A PREMIUM LOAN** is available beginning with the *second* annual premium.

Let a Career Underwriter show you how valuable these features can be

New England Mutual Life Insurance Company of Boston

George Willard Smith, President Agencies in Principal Cities Coast to Coast
The First Mutual Life Insurance Company Chartered in America—1935

(295)

Don't put off life insurance, either!

Traveling, marketing, remodeling — almost *anything* you do in war-time must be planned in advance — or you're out o' luck.

That's especially true of life insurance. It takes *very* careful planning to cover the needs that war can create—or to provide for the financial adjustments that may be necessary. You can be sure of getting the *right* kind of planning *only* from able underwriters.

A number of them are listed below. They're alumni of your college and they talk your language. They are also trained representatives of the First Mutual Life Insurance Company Chartered in America.

Out of their experience you'll get *practical*, constructive suggestions. They'll help you make the most of your limited life insurance dollars—help you protect your present policies with premium loans if necessary. Check your protection *now when you need it most*.

RAYMOND P. MILLER, '18

Salem

▪

ARTHUR C. KENISON, '19

Boston

▪

BLAYLOCK ATHERTON, '24

Nashua

If none of these folks is near you, you can get similar service at the New England Mutual office in your city. Or use the coupon below, and the Home Office will have a competent representative counsel with you. No obligation, of course.

**NEW ENGLAND MUTUAL LIFE
INSURANCE COMPANY OF BOSTON**
Box 1-2, 501 Boylston St.
Boston, Mass.

Please have one of your representatives get in touch with me, without obligation on my part.

Name _____

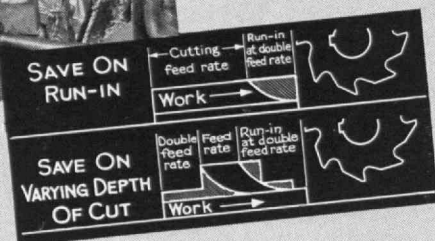
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USE THE DUAL FEED RATE

for **Greater**
Milling
Production
— on No. 12s



Brown & Sharpe Mfg. Co.
Providence, R. I., U. S. A.

Double or **halve** the selected
cutting feed automatically at
any desired point in the cut.

These savings frequently cut production
time in half — sometimes more — on your
No. 12 Plain Milling Machines.

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EQUIPMENT FOR THE CHEMICAL INDUSTRIES

Made by ARTISAN from any metal

Autoclaves

With or without agitators
Steam, Dowtherm, Elec-
tric or Gas Heated

Condensers and Heat Exchangers

Single Pass and Multipass

Distillation Equipment

Continuous Rectifying
Batch Rectifying
Steam Distillation
Plain Evaporative

Evaporators

Horizontal Tube
Vertical Tube
Basket Type
Forced Circulation

Jacketed Kettles

Hemispherical or Standard
Dished Heads

Pipe, Pipe Coils, and Bends

Large fabricated pipe,
particularly copper,
monel, and stainless
steel. All types of proc-
essing piping

Pipe coils — in any metal
— helical, zigzag, pan-
cake, from all sizes of
pipe and tubing

Reactors

Plain, jacketed, or with
coils. Agitated — horse-
shoe, turbine, or paddle-
blade type

Tanks

All types and sizes

ARTISAN METAL PRODUCTS INC.

20 SULLIVAN SQUARE

BOSTON, MASS.

JAMES DONOVAN '28, Treasurer and General Manager

THE TABULAR VIEW

Limits and Logic. — Dealing vigorously with a sub-
ject whose usual vital importance is enhanced by war-
time conditions, the address delivered by ROBERT E.
WILSON, '16, at the time of his receiving the 1943 Per-
kin Medal of the Society of Chemical Industry, is a
trenchant discussion of various proposals for revision
of the American patent system. The address has ap-
peared in full in *Industrial and Engineering Chemistry*.
Through the courtesy of the Society of Chemical In-
dustry and of the American Chemical Society, holder
of the copyright, The Review commences in this issue
(page 307) an article drawn from Dr. Wilson's text.
His appraisal of the values in our present way of cor-
relating the interests of inventors and of society by
means of a system of limited monopoly, and his analy-
sis of the logic of constituted limits as opposed to
sundry plans for compulsory licensing and other de-
vices, are penetrating. Formerly director of the Re-
search Laboratory of Applied Chemistry at the Insti-
tute, Dr. Wilson, who is president of the Pan American
Petroleum and Transport Company, is himself an
inventor holding numerous patents on chemical and
engineering processes.

Bear Believers. — From NEILL JAMES, who lived
among them in 1940 on the island of Hokkaido off the
coast of Siberia, comes a description (page 310) of the
Ainus, white aborigines whose present status is a
measure of the ability, or lack of it, which the Japanese
possess as overlords of a colonial empire. Miss James,
whose delight is adventuring hither and yon, last wrote
for The Review in December, 1941, reporting on her
observations of the Laplanders.

Accommodation. — Adjustment of the economic
structure of a nation to the appearance of new products
is discussed in this issue (page 313) by RALPH E. FREE-
MAN, Professor of Economics and Head of the Depart-
ment of Economics and Social Science at Technology.
Widely experienced in practice as well as theory, Pro-
fessor Freeman writes understandingly of problems
which industry and society must expect to confront
after the war.

Life. — From his variegated investigations, M. F.
ASHLEY MONTAGU, anatomist, anthropologist, and
generally interested observer, writes (page 315) on the
attitude of science toward war as it has been expressed
by noted scientists of centuries past. Professor Mon-
tagu is a member of the faculty of the Hahnemann
Medical College and Hospital of Philadelphia.

Spinners. — Spring's coming on brings with it mani-
fold interests for the observant. One of these is re-
counted for The Review (page 304) by CHARLES H.
BLAKE, '25, Associate Professor of Zoology at the
Institute, whose Thoreauvian cast of mind fits him
well for the undertaking.