

*December* 1942

# TECHNOLOGY REVIEW

Title Reg. in U. S. Pat. Office







# Thousands of Combinations

*Are You Using the Best One?*

The grinding wheel has a job to do. Out of an army of 100,000 grinding wheels (combinations) you can pick one that can best do your job — find it.

It may mean more production from your present grinders.

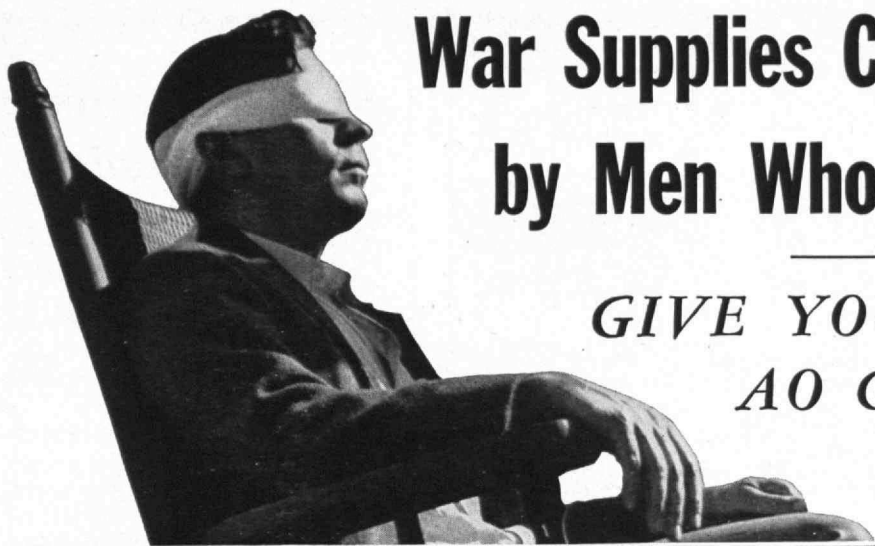
It may mean another tank for Uncle Sam or another fighting plane, or bomber.

The best advice: To get the largest possible production from your grinders, call in a Norton Abrasive Engineer.



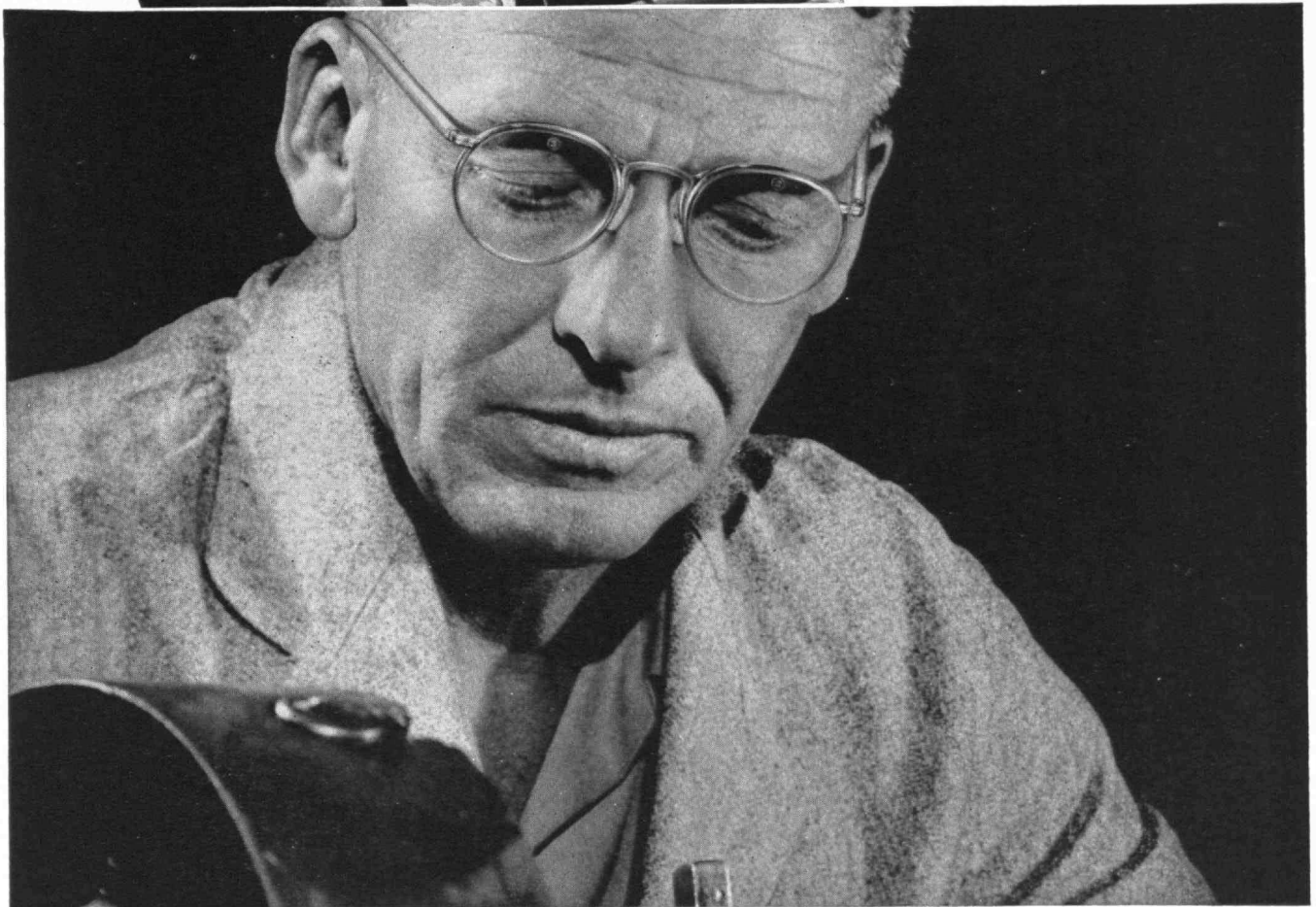
» **NORTON ABRASIVES** «

**NORTON COMPANY, WORCESTER, MASS.**  
BEHR-MANNING DIVISION, TROY, N. Y.



# War Supplies Cannot Be Made by Men Who Cannot See

*GIVE YOUR WORKERS  
AO GOGGLES*



Last year, eye accidents took from the War Production Program, 9,455,000 man-days . . . enough time to build 600 bombers, or 15 destroyers, or 8,000 light tanks.

A flying chip will drop a worker from your ranks as quickly as an enemy bullet and upset production rates for a machine, a section, a department. That is *one* reason it more than pays to give all your skilled workers AO Goggles.

American Optical Company, manufacturers for more than 100 years of products to aid and protect vision, offers you a complete line of goggles to meet every type of industrial eye hazard. AO Goggles are comfortable to wear, lightweight and ventilated. Equipped with Super Armorplate lenses, AO Goggles offer maximum possible resistance to impact. Have your Safety Director call our nearest Branch Office, today.

American  Optical  
COMPANY  
SOUTHBRIDGE, MASSACHUSETTS



## Wartime readjustments . . . #2



THE GIBSONS GET AROUND RUBBER RATIONING — AND GET AROUND!

THE American sense of humor — and American ingenuity — make our many wartime adjustments easier than they otherwise would be.

Out of the whole process — learning to balance on a bike again and grow our own vegetables and live more simply — comes a new perspective. Non-essentials show up for what they are, and *big* things take their place at the head of the list.

For most of us, putting first things *first* means paying taxes, buying War Bonds and adding life insurance. Certainly life insurance has a special service to render in these tense times.

It's the quickest, cheapest, *safest* way to provide protection for families who now need protection more than ever. Its purchase helps to curb inflation, and contributes to the war effort because much of your premium

dollar is promptly re-invested in Government bonds.

And it's one commitment that *helps finance itself* when premium payments come hard. How? Ask any New England Mutual *Career Underwriter*.

### Here are some of the advantages of a New England Mutual contract

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 toward payment of the *second* annual premium.
4. **CONVERSION** to Retirement Income or higher premium plans requires the payment of difference in reserves only.

## How to balance bike or budget

Both take practice. Both bring tumbles — at first. Both are easier with a little expert coaching.

Even if you're a *born* bike-rider, you can probably use some real help with the budget adjustments imposed by war.

Now is a good time to turn to the men 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*. If none of these men is near you, you can get similar service at the New England Mutual office in your city.

RAYMOND P. MILLER, '18

Salem

▪

ARTHUR C. KENISON, '19

Boston

▪

BLAYLOCK ATHERTON, '24

Nashua

We're making readjustments, too. With some 15% of our field force now in military service, we have real opportunities for able men in several cities.

If you're interested in a satisfying career where you can be your own boss — and if your draft status is reasonably assured — we'd like to talk things over. Or perhaps you have a friend who might appreciate the tip.

In either case, just write to Wm. Eugene Hays (Stanford '26), 501 Boylston Street, Boston, Mass., for information. There's no obligation, of course.

## 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—1835

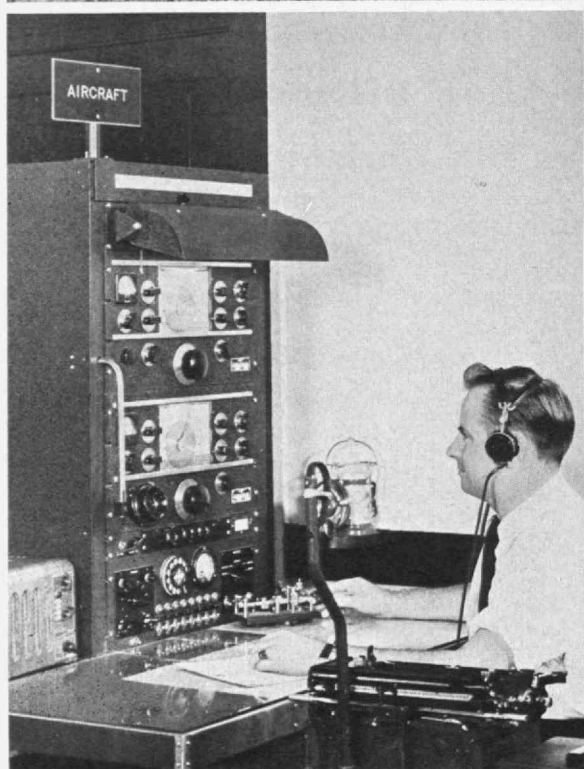




# **WAR needs the wires this Christmas**

**War can't wait—not even for Christmas.  
So please don't make Long Distance  
calls to war-busy centers this Christmas  
unless they're vital... BELL TELEPHONE SYSTEM**





PHOTOS COURTESY PAN AMERICAN AIRWAYS SYSTEM

Upper photo: Pan American Strato-Clippers

Lower photo: A Pan American radio installation using National Receivers

**I**t is not too much to say that Pan American Airways has invented the technique of trans-oceanic air transport; a technique based on superb skill, meticulous maintenance, and thoroughly reliable equipment.

National and Pan American Airways have never been strangers, but we are particularly proud that year by year Pan American has turned increasingly to National communication equipment.

**NATIONAL COMPANY, INC.**  
**MALDEN, MASSACHUSETTS**

“We may confidently depend on science to provide the foundation for a better social structure, if we can prevail upon ourselves to build thereon in a different frame of mind.”

ARTHUR D. LITTLE

(From the *Industrial Bulletin*, December, 1937)

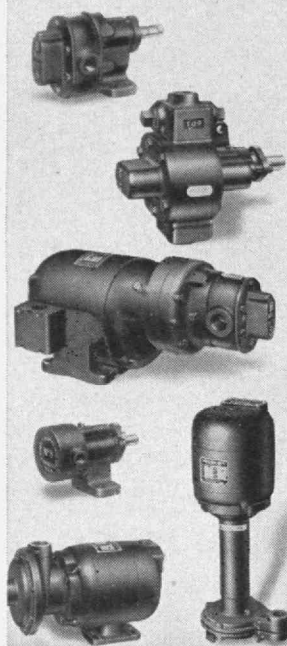
**Arthur D. Little, Inc.**

RESEARCH IN APPLIED SCIENCE

Charles River Road at Kendall Square

Cambridge, Massachusetts

WHEREVER PRODUCTION DEPENDS  
ON PUMP RELIABILITY  
— Specify Brown & Sharpe



### ROTARY GEARED PUMPS

Spur Gear  
Helical Gear  
Bronze  
Reversible  
For Hydraulic Operation  
Motor Driven


### CENTRIFUGAL PUMPS

Motor Driven  
Several styles for a wide  
flexibility of installation

Also No. 8 Vane Pump for lubrication

Use dependable  
Brown & Sharpe Pumps

... for coolant — pressure —  
lubrication — hydraulic operation  
of machines — and miscellaneous  
combinations.

Tell us your pump needs —  
 Brown & Sharpe Mfg. Co.  
Providence, R. I.  
U. S. A.

**BROWN & SHARPE PUMPS**

## BATH IRON WORKS CORPORATION

*Shipbuilders and  
Engineers*

BATH, MAINE

## THE TABULAR VIEW

**Three Hundredth.** — Christmas, 1642, saw the birth of one of the few great minds of all time, whose analytical capacity and creative strength were destined to give new and lasting direction to human thought. Writing of Sir Isaac Newton in this tercentenary month, GEORGE R. HARRISON, Dean of Science at the Institute, emphasizes in a thoughtful essay (page 73) the youthful age at which Newton wrought out the ideas which remain fundamental to the science and technology on which our civilization rests. Himself a physicist of note, Dr. Harrison, whose work in spectroscopy is of fundamental value, is in addition a skilled and vigorous writer.

**Matrix.** — From HERBERT S. SWAN, city planner and industrial consultant, The Review presents (page 75) commentary upon the readjustments which will probably be necessary in urban employment structures as a consequence of the specialized and impermanent alterations in force during war. Employment patterns before Pearl Harbor will not, he holds, coincide with those to be foreseen once the Axis is defeated. How the discrepancies may best be eased is a question deserving thoughtful consideration now.

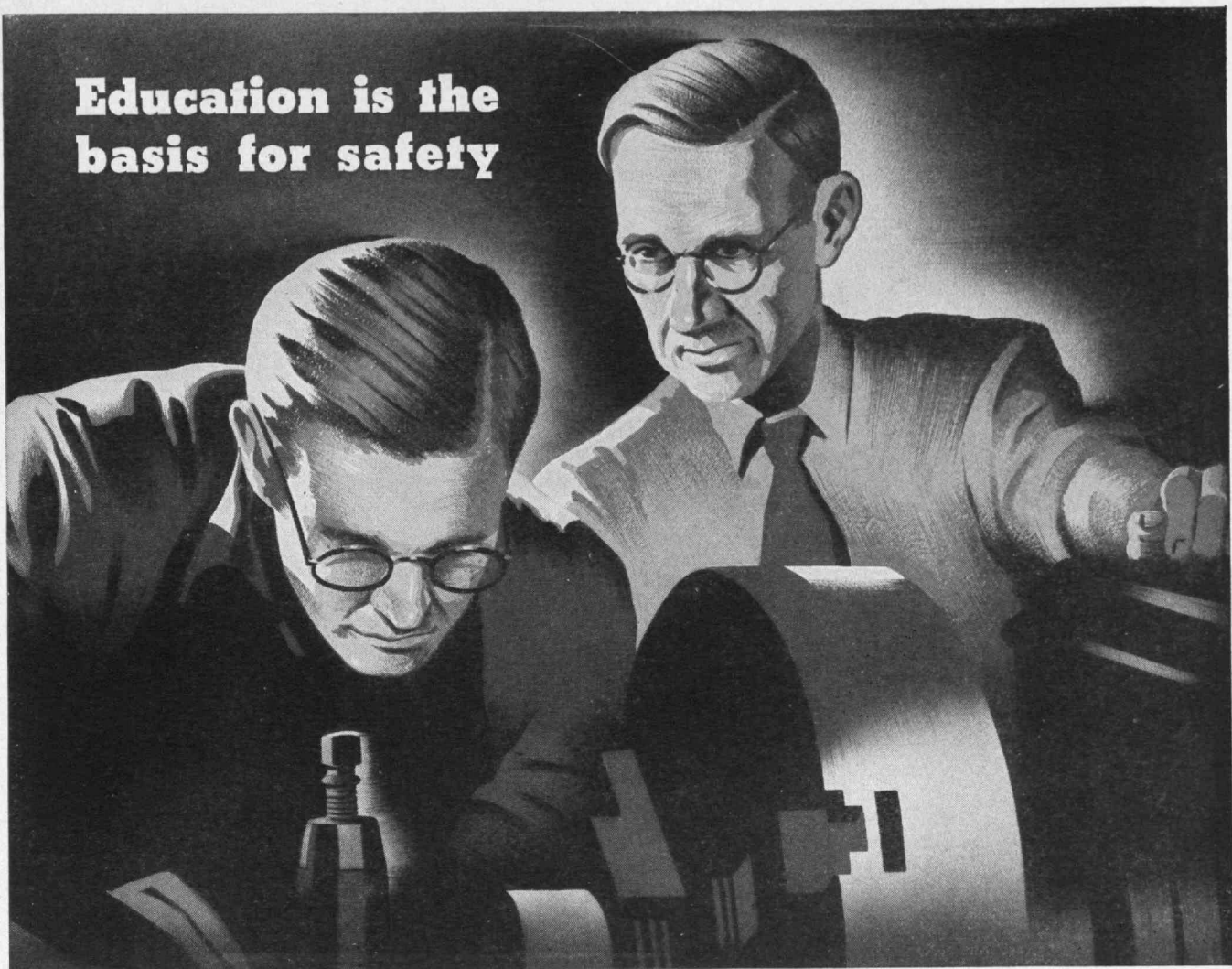
**Canny Calorifics.** — What the householder may and should do to hold heat in the house and so help hit Hitler by saving fuel and lightening transportation loads is discussed (page 77) by JAMES HOLT, '19, Associate Professor of Mechanical Engineering at the Institute. Professor Holt's special field of interest is the engineering aspects of heating and ventilating. His article is a practical survey of a practical question.

**Special.** — In this issue (page 79) W. MACK ANGAS, '17, Captain, Civil Engineer Corps, United States Navy, concludes his account of the pioneering steamboats which played important parts in the development of American transport. Specialized through an evolutionary process for the particular hazards of big-river navigation, the steamers of the western rivers like the sound steamers of the seaboard were, in Captain Angas' phrase, "as American as corn whisky." Correspondents of The Review have pointed out that though the economical Scotch omit "e" from the second syllable of that spirituous word, American versions of the fluid are labeled "whiskey." On this controversial matter, failing exhaustive research, The Review for the present at least is following Webster, and the Scotch.

**Mars, Chemist.** — Dedicated to M.I.T. men of the first and of this World War, *Gas Warfare* by Alden H. Waitt, '14, Brigadier General, Chemical Warfare Service, United States Army, is reviewed (page 70) by LEICESTER F. HAMILTON, '14, Professor of Analytical Chemistry and Acting Head of the Institute's Department of Chemistry, who writes with authority as a chemist and with interest as a classmate of General Waitt.



## Education is the basis for safety



*Information supplied by the National Safety Council*

Labor, particularly inexperienced labor, cannot be expected to recognize the full penalties of carelessness in the shop. Management has assumed the responsibility of supervising safety measures, and has cooperated in establishing sound safety rules.

Nevertheless, the large increase in labor personnel due to war needs, plus the influx of inexperienced men, have resulted in a substantial increase in lost time accidents.

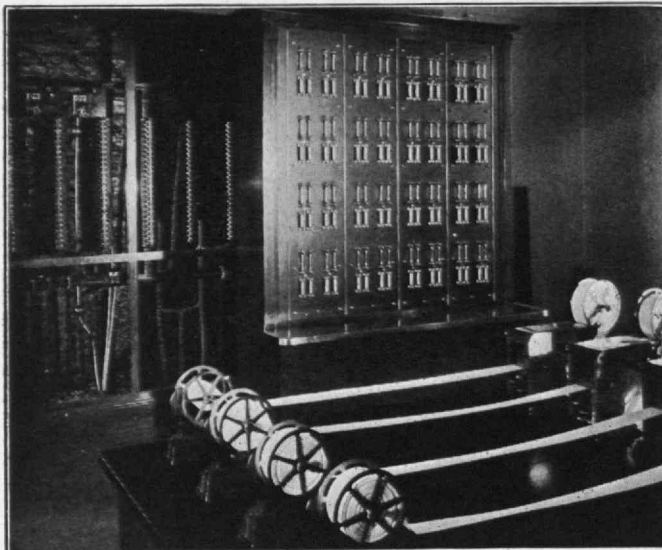
Even assuming that the obvious safety measures with regard to operating machinery, electrical equip-

ment and shop traffic have been installed, two factors — education and eternal vigilance — determine the real effectiveness of any safety program.

Both are the responsibility of the supervisory staff, from foremen up. The foreman who does a thorough job of educating his particular group in safety rules and cooperative enforcement has done much to cut down accidents. Management that takes an active interest in both safety education and the enforcement of safety measures has taken a great step forward in reducing wastage of irreplaceable production time.

CLIMAX FURNISHES AUTHORITATIVE ENGINEERING DATA ON MOLYBDENUM APPLICATIONS. MOLYBDIC OXIDE—BRIQUETTED OR CANNED • FERROMOLYBDENUM • "CALCIUM MOLYBDATE"

**Climax Mo-lyb-denum Company**  
**500 Fifth Avenue • New York City**



## LATOX CABLES

because of their dependability  
were used on this  
fire alarm equipment

**Simplex Wire & Cable Co.**  
79 Sidney St., Cambridge, Mass.



Reg. U. S. Pat. Off.

## Samson Cordage Works

Boston, Mass.

Herbert G. Pratt, '85, Chairman of the Board

Manufacturers of braided cords of all kinds, including sash cord, clothes line, trolley cord, signal cord, shade cord, Venetian blind cord, awning line, etc., also polished cotton twines, ladder tape for Venetian blinds, and specialties.

### SAMSON SPOT CORD



Reg. U. S. Pat. Off.

Our extra quality sash cord, distinguished at a glance by our trade-mark, the colored spots. Especially well known as the most durable material for hanging windows, for which use it has been specified by architects for nearly half a century.

## MAIL RETURNS

### *Publish to Progress*

FROM ALVIN GUTTAG, '40:

. . . I have read with interest the letter by Charles H. Blake, '25, [November Review, page 8], and although I agree with him wholeheartedly on the points mentioned in the first two paragraphs, I cannot say the same for his major thesis — the suppression of knowledge of medical and other scientific improvements. In one or two instances he is right that information should be suppressed; in the vast majority of cases, however, we are hurting ourselves more than we are hurting the Axis. While it is difficult for the Axis to obtain copies of the journals in which scientific information is propagated, these same journals are the means of one scientist's conveying to another one in this country the knowledge of what he has found. If we do not permit scientific discoveries to be published so that they can be improved upon, we shall soon find that we won't have many scientific discoveries to worry about.

Richmond, Va.

### *Dickens' Joke*

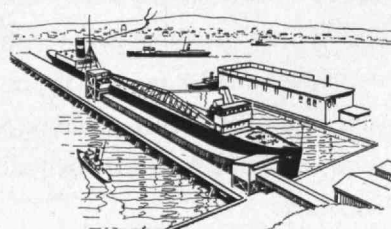
FROM LONSDALE GREEN, '87:

I was immensely pleased and surprised to find the group picture of the Class of 1887 in the November Review. . . .

You deserve a lot of credit for the "M.I.T. Men at War," which filled six-and-a-half pages in the supplement of the November issue.

Captain Angas' article about steamboats was interesting. I note that another article of his will appear about our western steamers [see page 79]. Here are excerpts from what Charles Dickens wrote in his *American Notes* of 1842. He and his wife went from Pittsburgh to St. Louis via the Ohio and Mississippi rivers with a return trip to Cincinnati, from there by stagecoach to Columbus and Tiffin, thence by railroad to Sandusky, and finally another boat trip to Buffalo. He "knocked" almost everything he saw except Cincinnati and its people. He found some culture there and acknowledged it. At that time Cincinnati was, I think, about the fifth city in population in the United States and was the largest west of Philadelphia.

"These Western vessels are still more foreign to all the ideas we are accustomed to entertain of boats . . .," Dickens wrote. "They have no mast, cordage, tackle, rigging, or other such boat-like gear; nor have they anything in their shape at all calculated to remind one of a boat's head, stern, sides, or keel. . . . The whole is supported on beams and pillars resting on a dirty barge, but a few inches above the water's edge: and in the narrow space (Concluded on page 102)



Old Colony Coal Terminal

### *Speed with Economy*

In our 25 years of industrial building, we have erected factories, warehouses, power plants, coal handling terminals, bulkheads, special tanks, etc. This wide range of experience may prove valuable to you.

## W. J. BARNEY CORPORATION

101 PARK AVENUE, NEW YORK

### INDUSTRIAL CONSTRUCTION

Alfred T. Glasett, '20, Vice President