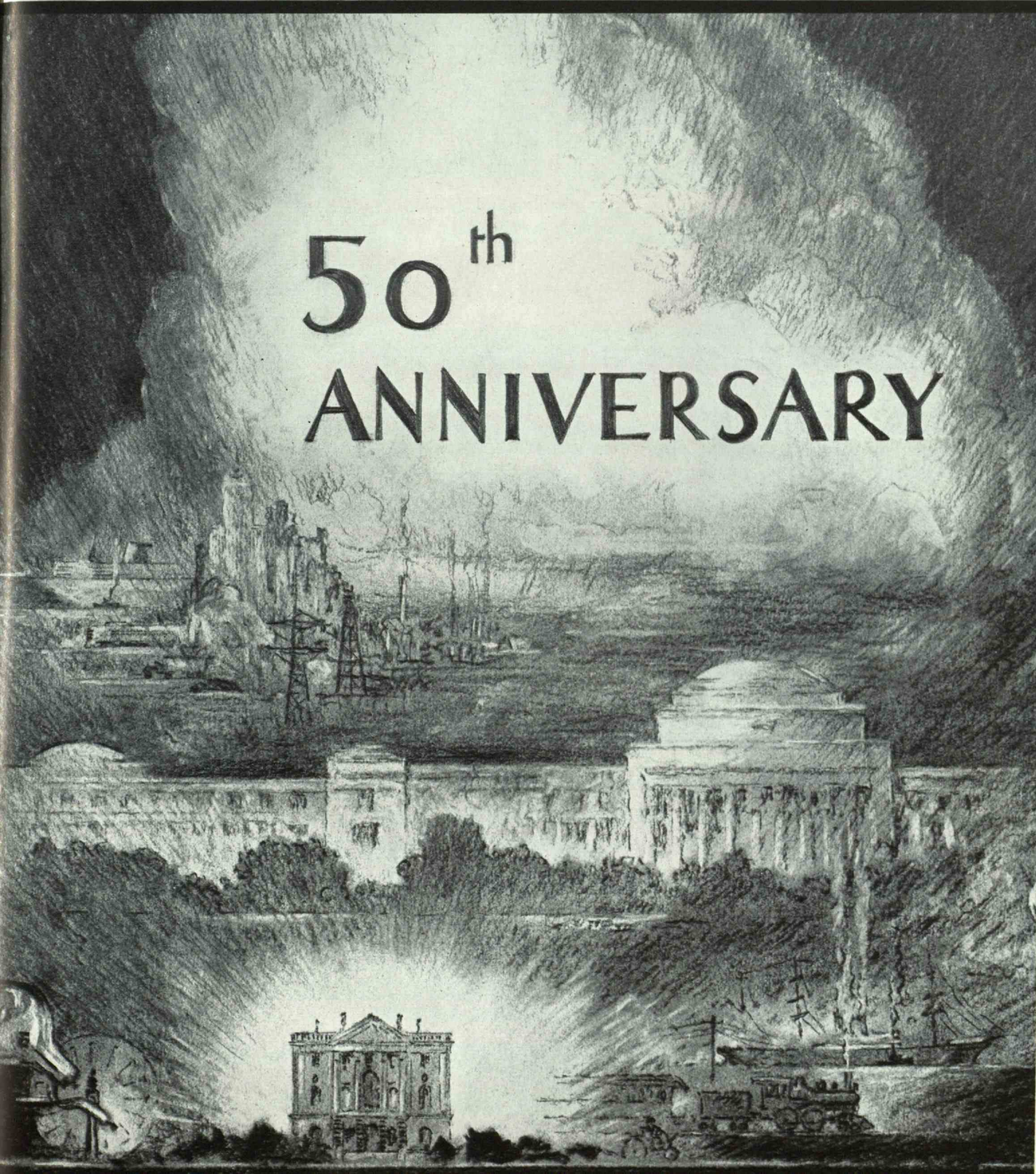


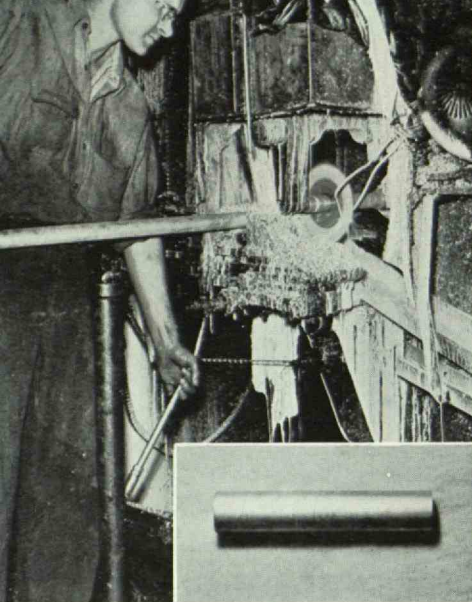
TECHNOLOGY

REVIEW

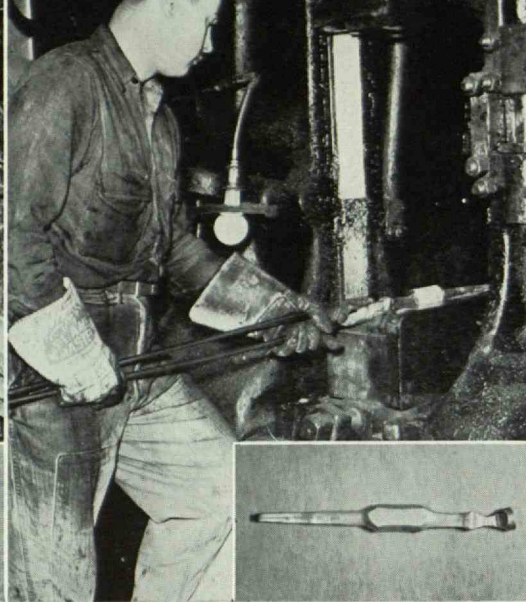
January 1949

50th
ANNIVERSARY

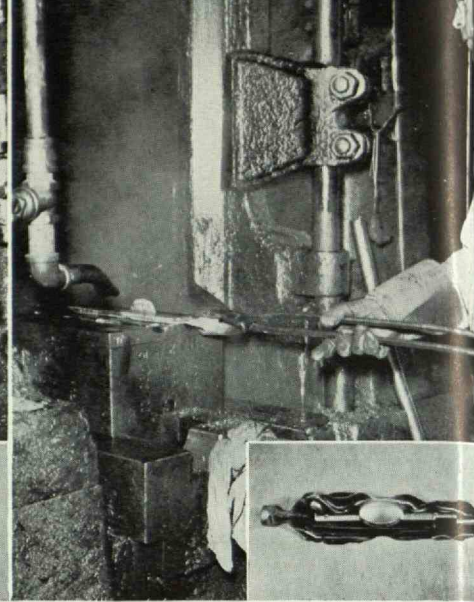




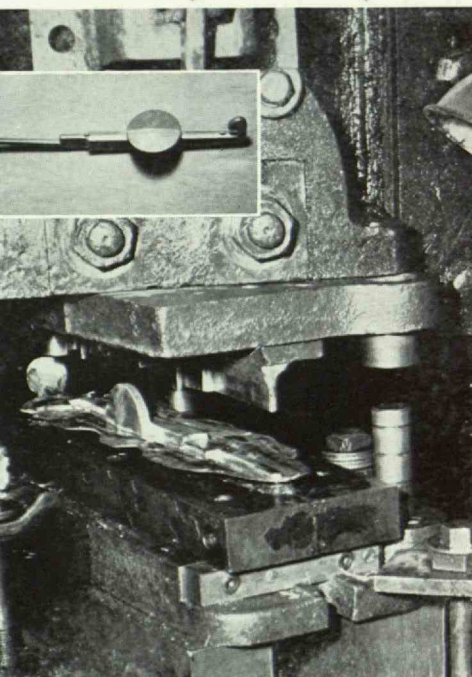
Cutting Bar



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

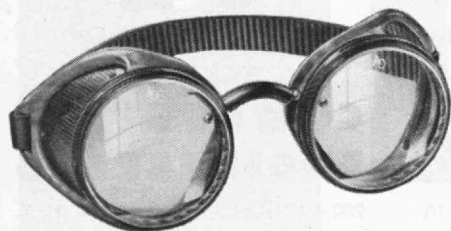


***Here's An Expense
that Can Be Slashed
in these
Days of Rising Costs***



Industrial Eye Accident Costs Up 78½%*

*Since 1939



Have you ever checked the figures on eye accident costs in your plant? You may find it good business to do as one manufacturer of electrical equipment did who saved \$14,000 in two years by installing an eye protection program. Or, as was done by a large machinery manufacturer who cut his annual eye accident costs from \$50,000 to \$5,800. 98% of all eye accidents can be prevented for approximately ½ a cent per day per man! Ask your nearest AO Safety Representative to come in and show you how.

American Optical



COMPANY

*Safety
Division*

SOUTHBRIDGE, MASSACHUSETTS • BRANCHES IN PRINCIPAL CITIES



Pulverizing

— materials of Industry

For a multitude of products that enrich our lives, we owe a debt to modern methods of grinding and pulverizing evolved from the mortar and pestle. The soothing softness of talc . . . pigments for paints and dyes . . . the velvet smoothness of pencil graphite . . . natural and synthetic resins for a myriad of plastics . . . high fineness flour, cocoa and sugar for the nations' kitchens . . . coal crushed to dust for the great boilers of industry and public utilities and for the kilns that produce more than 90 per cent of the world's cement . . . these, and a host of chemicals, clays and non-metallic ores, depend on pulverization for much of their usefulness.

In the development of this vital process, the Raymond Pulverizer Division of Combustion Engineering has been in the forefront for more than sixty years. It is,

today, the unquestioned leader in the production of universal grinding equipment. C-E Raymond roller, hammer and bowl mills deliver products produced to specified refinement . . . from coarse granules to particles finer than 4-one hundred thousandths of an inch.

The link between pulverization and C-E's familiar field of steam generation lies in the adoption of pulverized coal for firing large capacity boilers, a method pioneered by C-E engineers nearly thirty years ago. The total contribution of pulverized coal firing to industry cannot be calculated, but it is safe to say that in coal savings alone it amounts to millions of tons annually. Thus, pulverization shares with other C-E products and processes the common basis symbolized by the C-E flame . . . efficient utilization of heat for the needs of all.

B-228



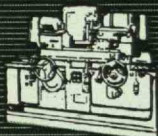
COMBUSTION ENGINEERING

200 MADISON AVE. • N. Y. 16, N. Y.

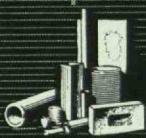
C-E Products include all types of Boilers
Furnaces • Pulverized Fuel Systems
Stokers • Superheaters • Economizers
Air Heaters. Also, Pressure Vessels
Chemical Recovery Equipment • Flash
Drying Systems • Sewage Incineration
Equipment • Domestic Water Heaters.



GRINDING WHEELS



GRINDING MACHINES



REFRATORIES



NORBIDE



NON-SLIP FLOORS



LABELING MACHINES



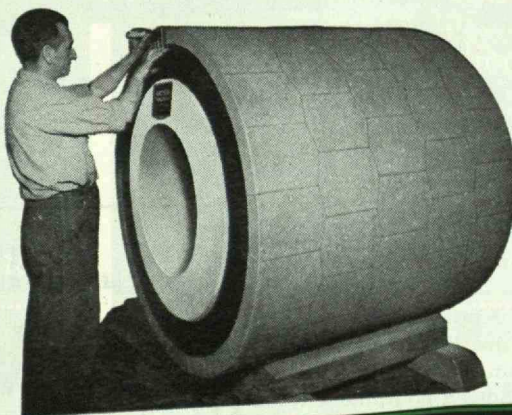
ABRASIVE PAPER
AND CLOTH...
SHARPENING STONES



... the tree became a newspaper
through **GRINDING!**

WAY back in the woods Norton starts to have a part in producing your newspaper—axes and saws sharpened by Norton grinding wheels fell the trees and cut them to pulp wood lengths.

Then at the paper mill the wood is ground into pulp for newsprint by Norton Pulpstones—gigantic ten-ton, segmental grinding wheels as large as six feet in diameter and as wide as 66"—wheels developed by Norton research to replace nature's sandstones.



The machines that convert the pulp into paper and the complicated presses which print your newspaper contain many rolls and other parts precision-produced by Norton grinding machines and grinding wheels.

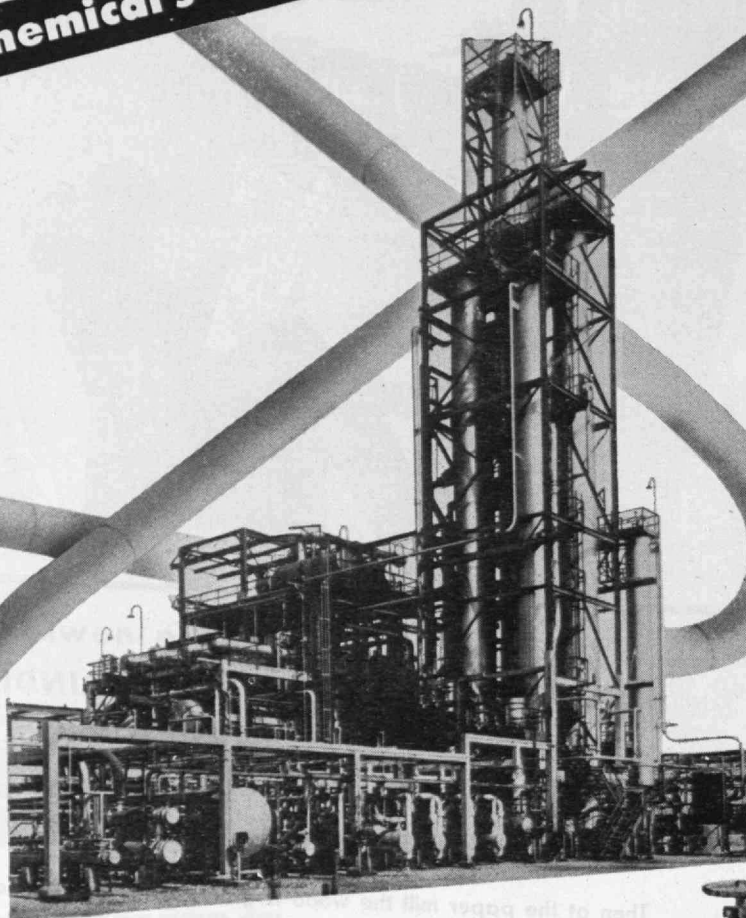
Norton Refractories are important, too—Alundum Laboratory Ware is used in the paper mill laboratories, Crystolon Brick in the power plants.

NORTON

NORTON COMPANY • WORCESTER 6, MASS.

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

Jefferson Chemical's ethylene plant—



designed and built by Lummus

Large ethylene plants are much like big petroleum refining units.

An ethylene plant must be designed for high yields, varying charge stock compositions, economical operation and minimum investment costs. Fundamental design must take a long term view of the plant—ease of operation, long on-stream periods, minimum turnaround time and low maintenance costs.

Long range thinking, good engineering, careful planning by Jefferson Chemical Company and Lummus are reflected in the performance of this ethylene plant at Port Neches. This plant is producing high yields of ethylene from varying charge stock compositions. When shut down for scheduled inspection after five months initial run, turnaround was completed in about fourteen days. Examination showed equipment to be unusually clean and in good mechanical condition.

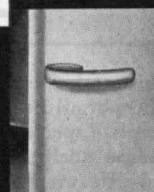
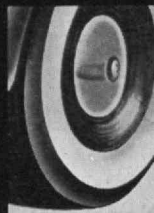
Playing an important part in the high yields of this ethylene plant are the Lummus Cracking Heaters, especially designed to obtain required temperature-time relationship with minimum coke deposition. On-stream periods of two months have been obtained and there are good possibilities of extending these periods.

Including an ethylene plant now under construction, Lummus has designed four plants for the production of ethylene from petroleum, with a total capacity of approximately half million pounds per day.

THE LUMMUS COMPANY
420 Lexington Avenue, New York 17, N. Y.

LUMMUS

CHICAGO—600 South Michigan Avenue, Chicago 5, Ill.
HOUSTON—Mellie Esperson Bldg., Houston 2, Texas
LONDON—525 Oxford Street, London, W. 1, England



Non-staining carbon black . . .

which will not cause black rubber to stain adjacent materials, is essential in many phases of the rubber industry. Cabot has the right carbon black for carcasses of white side wall tires, for automobile window channels, refrigerator door strips and many other applications which require a non-staining black pigment.



We will gladly furnish technical data

GODFREY L. CABOT, INC.

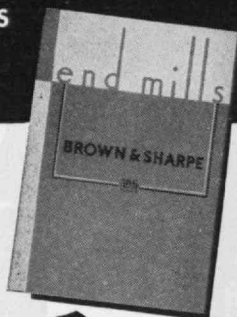
77 FRANKLIN STREET, BOSTON 10, MASSACHUSETTS

FOR MORE ACCURATE SELECTION OF QUALITY END MILLS...

BROWN & SHARPE OFFERS

8 ADDITIONAL TYPES

SEE THEM
and other production-
boosting end mills
IN THE NEW HANDY-SIZE
CATALOG



WRITE for a copy of this catalog describing important production-proved features of all Brown & Sharpe End Mills, together with complete specifications and prices. There's a Brown & Sharpe quality end mill to meet every end milling need. Brown & Sharpe Mfg. Co., Providence 1, R. I., U.S.A.

We urge buying through the Distributor

BROWN & SHARPE 

THE TABULAR VIEW

Editor-Publisher. — Successively student of architecture, infantry officer in World War I, assistant director of the Division of Industrial Coöperation, assistant dean of students, editor of *The Review*, dean of students, publisher of *The Review*, chairman of the Technology Loan Fund, and executive vice-president of the Alumni Association — all at the Institute, with the obvious exception of war service — H. E. LOBDELL, '17, has been associated with *The Review* for half of its five-decade existence. Mr. Lobdell records (page 155) the significant events in *The Review's* struggle to provide a chronicle of events relating to M.I.T., its Alumni, and matters of scientific and technical interest.

Editor-Poet. — This month, *The Review* breaks its practice of hewing strictly to prose, and presents (page 161) a piece on geology and engineering construction in the language of a poet by former *Review* editor F. G. FASSETT, JR. Upon acquiring a youthful taste for printer's ink in the Waterville (Maine) *Sentinel*, which his father edited, Mr. Fassett studied at Colby College and took graduate work at the University of Maine and at Harvard University. He was also reporter, correspondent, and editor of Maine newspapers before becoming a professor of English at M.I.T. In 1945, Professor Fassett became director of the Office of Publications and Public Relations of the Carnegie Institution of Washington.

Editor-President. — Third of *The Review's* former editors to be represented in this issue is JAMES R. KILLIAN, JR., '26. Bespeaking the independence for which New England has been so well known, President Killian, whose honors include the degree of doctor of engineering from Drexel Institute conferred on December 14, presents a stout case (page 162) for strongly financed, privately endowed institutions of learning. Dr. Killian's administration of Institute affairs is widely known. In this column, we emphasize his earlier work as writer on topics in science and engineering, teacher of journalism, editor of *The Review*, past national vice-president of the honorary journalistic fraternity, Pi Delta Epsilon, past chairman of the Board of Publication for *The Technology Press*, and (with Harold E. Edgerton, '27) coauthor of *Flash!* — a beautifully executed volume on the technique of modern high-speed photography.

Editor-Professor. — Not only because he is author of many scientific papers and two volumes on science (*Atoms in Action* and *How Things Work*) does GEORGE R. HARRISON, Dean of Science, qualify under the boldface paragraph headings of this page. He also qualifies as valued contributor to *The Review*, and if not one of its former editors, Dean Harrison is editor of the *Journal of the Optical Society of America*. Prior to becoming dean of science in 1942, he was professor of physics. In his sprightly pronouncements (page 165) Dean Harrison views the Institute, and some of its administrative leaders, with kindly whimsey.



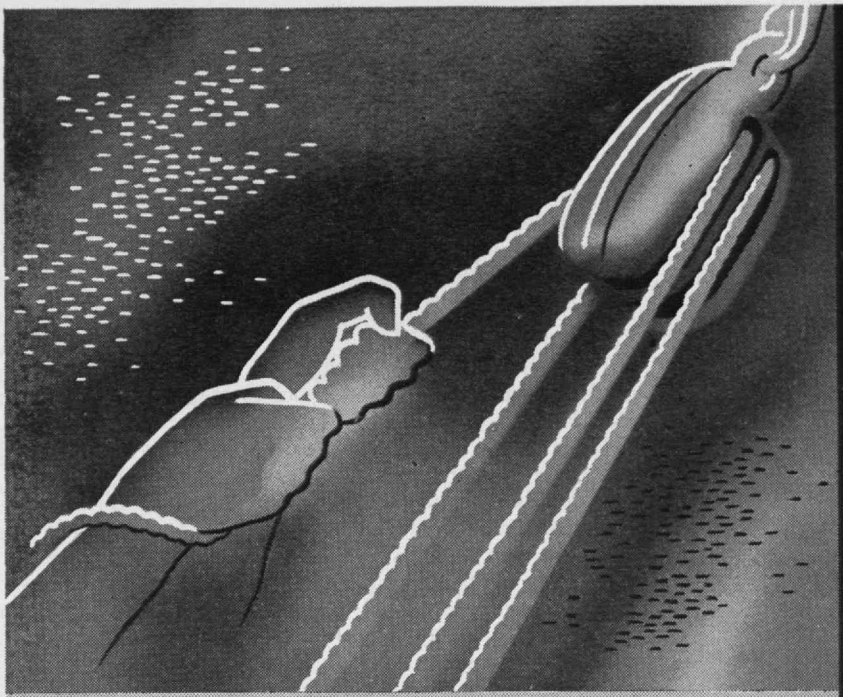
Right Where It Counts

Diefendorf Gears are "right on the job" — cut to specifications of all wanted materials. Design and engineering aid where required. Experimental and production facilities.

**DIEFENDORF GEAR
CORPORATION**
Syracuse 1, N. Y.

DIEFENDORF

GEARS



When sail trimming is required

No business can stay healthy without an occasional overhaul of its production set-up—particularly when a seller's market begins to quiver.

Molybdenum steels may be just what the doctor ordered to reduce production costs, and still maintain the product's reputation for consistent performance.

Send for our comprehensive 400-page book, free; "MOLYBDENUM: STEELS, IRONS, ALLOYS."

CLIMAX FURNISHES AUTHORITATIVE ENGINEERING DATA ON MOLYBDENUM APPLICATIONS

Climax Molybdenum Company
500 Fifth Avenue • New York City

MOLY

® C4

MARTIN-HUBBARD CORPORATION

Engineering Consultants

Computers — Servomechanisms

Instrumentation for Nuclear Research

Applied ultrasonic research and development

Design and construction of scientific instruments
to your performance specifications

Complete engineering of original or unique electrical
and mechanical devices and machinery

Technical reports

11 BEACON STREET

BOSTON 8, MASSACHUSETTS, U. S. A.

Telephone: CApitol 7-6990

"Cable Address MARHUB-Boston"

MAIL RETURNS

Bread upon the Waters

[Letters such as the following from the president of the Republic of Italy, addressed to Dr. Compton, continue to indicate the worthwhile value of undergraduate ideas as expressed by the Foreign Student Summer Project which was effected last summer. — Ed.]

FROM LUIGI EINAUDI:

It was very kind of you to send me, through the courtesy of Gian Federico Micheletti, your message of September 20, 1948.

I was deeply interested in hearing, from the description contained in your letter and from the additional explanatory details given to me by Mr. Micheletti, of all the activity carried out by M.I.T. in the field of the exchange of ideas between students of different countries, and particularly as far as the group of the Italian postgraduate students is concerned.

Not only as a former professor in the Polytechnical Institute of Turin, but also as a constant and sincere promoter of any initiative aiming to the strengthening of international understanding in cultural and scientific fields, I wish to express to you my personal appreciation for the advantageous work done by the Institute of Technology with such high purpose. I consider it a real privilege that the Italian students were the guests of your institution during the past summer.

My best wishes for the increasing success of your initiatives and for your personal prosperity.

Rome, Italy

Timing

FROM DONALD R. STEVENS, '11:

May I compliment Ward Allan Howe not only for his excellent photograph on page 94 of the December, 1948, Review, but also for his choice of "The Invader" as the title.

I wonder whether he took the picture first and then thought of the title, or whether he thought of the title and then waited for the proper timing of train, sky, and tranquility. Rarely have I seen a photograph so beautiful, fully equaled by a title so inspiring.

Ridgewood, N.J.

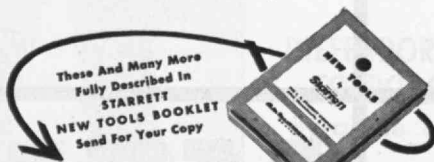


TOOLMAKER'S HAMMER

With Built-In Lens



A handy little hammer for spotting in layout work, light hammering, heading, etc. Built-in magnifier saves hunting and fumbling for glass. Offset head permits working in close quarters.



THE L. S. STARRETT COMPANY
Athol, Massachusetts
Please rush my free copy
STARRETT NEW TOOLS BOOKLET "L"

Name
Position
Company
Address
City Zone State

Starrett

MECHANICS' HAND MEASURING TOOLS AND
PRECISION INSTRUMENTS - DIAL INDICATORS
STEEL TAPES - HACKSAWS AND BAND SAWS
PRECISION GROUND FLAT STOCK
Buy Through Your Distributor

Your New Building

... How soon can it be completed? ...
What will it cost? ... How can savings be
made? ... These and other questions can
be answered by us before you make deci-
sions or commitments.

W. J. BARNEY CORPORATION

FOUNDED 1917

101 PARK AVENUE, NEW YORK

INDUSTRIAL CONSTRUCTION

Alfred T. Glassett, '20, Vice President