


May 1947

TECHNOLOGY REVIEW

Title Reg. in U. S. Pat. Office





ELIMINATE ASSEMBLIES
and
RESULTANT MACHINING COSTS

USE NON-FERROUS
FORGINGS

by

THE
HARVEY

METAL CORPORATION

HAROLD B. HARVEY '05 • *Engineers & Manufacturers* • SHERRY O'BRIEN '17

74th STREET and ASHLAND AVENUE • CHICAGO 36, ILLINOIS

FORGINGS IN ALUMINUM • BRASS • BRONZE • COPPER • MAGNESIUM • MONEL • ALLOYS

MACHINING FACILITIES

***17**

Industrial Workers Will Lose the Sight of One or Both Eyes TODAY

**AN ALARMING
COST
TO INDUSTRY
Yet Almost Wholly
PREVENTABLE**

*U. S. DEPT. OF LABOR ESTIMATE

Of the 17 serious eye accidents in industry that will happen in the next 24 hours, 16 could be prevented *now* by use of safety goggles. Eye accidents are estimated to cost industry \$5 per shop worker per year—

an alarmingly high figure. Yet, according to the Society for the Prevention of Blindness, 98% of eye accidents can be prevented by the use of safety goggles—at an average cost of only \$1.50 a pair.

Are *you* overlooking this opportunity to effect a substantial cost reduction? If so, we suggest you get in touch with your nearest AO Safety Representative for advice and help in establishing an adequate eye-protection program in your plant.



American Optical



COMPANY

Safety
Division

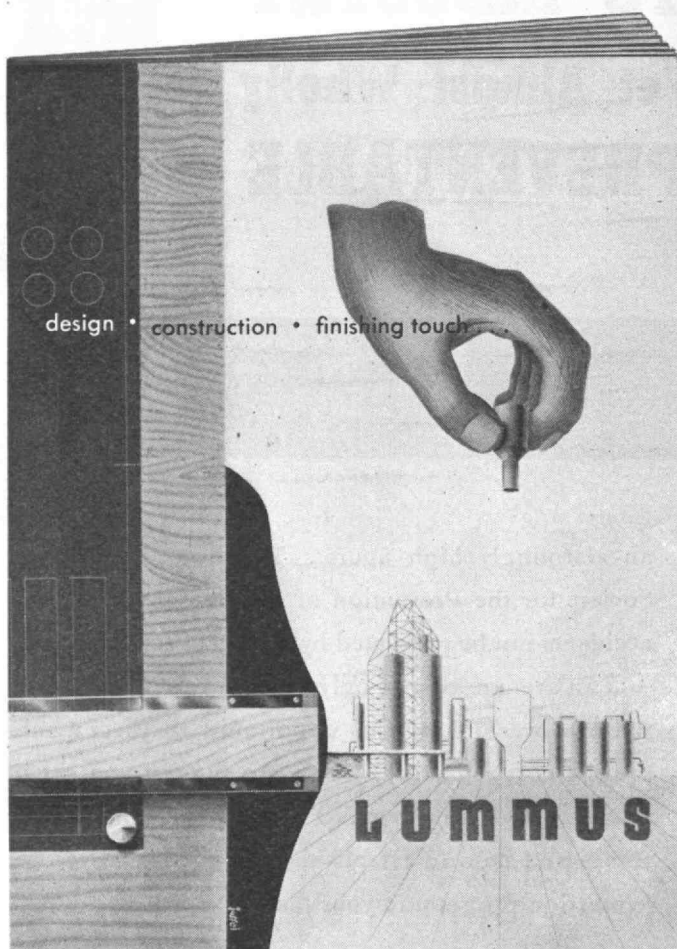
SOUTHBRIDGE, MASSACHUSETTS • BRANCHES IN PRINCIPAL CITIES

new Lummus

publication

...on petroleum
refining processes

contains 64 pages
of timely, authoritative information
for petroleum refiners
and chemical manufacturers



With text, data, photographs, and 22 flow diagrams, this tenth refinery publication of The Lummus Company describes the latest processes and plants for the manufacture of gasoline—lube oils and waxes—petroleum chemicals. It defines Lummus services, facilities, and world-wide experience in design, construction, and supervision of petroleum and chemical plants.

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

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Copies of "Petroleum Refining Processes" will be sent upon request

Are You Using Norton OPEN STRUCTURE Grinding Wheels?

Their Fast, Cool Grinding Action Can Cut Costs on Many Jobs . . .

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They are available in the several varieties of Alundum abrasive; also in Crystolon abrasive for grinding carbide tools. The combination of OPEN STRUCTURE and the new 32 ALUNDUM* abrasive is showing truly remarkable results in many plants.

Let a Norton abrasive engineer study your grinding jobs and specify OPEN STRUCTURE where it can save you time and money.

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NORTON ABRASIVES
Including the Sensational
New 32 ALUNDUM*

NORTON ABRASIVES

Arnold presents:

CAST ALNICO I

CAST ALNICO II

CAST ALNICO III

CAST ALNICO IV

CAST ALNICO V

CAST ALNICO VI

CAST ALNICO XII

SINTERED ALNICO

*another step towards a
complete line of permanent
magnet materials*

SINTERED ALNICO

In general SINTERED ALNICO MAGNETS do not compete with, but rather supplement, magnets produced by the cast method to widen the scope of potential permanent magnet applications.

Alnico magnets weighing roughly one ounce or less should be produced by the sintered method.

Heavier magnets of more intricate shapes can be produced. For some applications Sintered magnets are more economical because:

1. Magnetic characteristics are practically the same as Cast Alnico.
2. Sintered Alnico is a fine-grain, homogeneous material which has more uniform flux density, is easier to grind, and provides better surface finish.
3. Sintered Alnico magnets can be produced to closer dimensional tolerances:

SINTERED ALNICO II

0.000 to 0.125	— + .005
0.126 to 0.625	— + .010
0.626 to 1.250	— + .015
1.251 to 3.000	— + .062

CAST ALNICO II

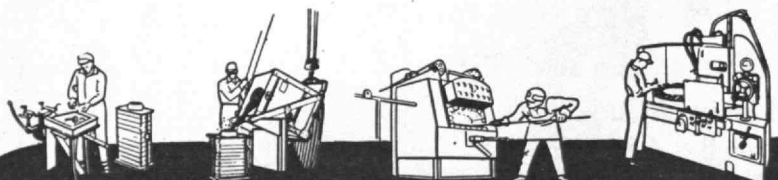
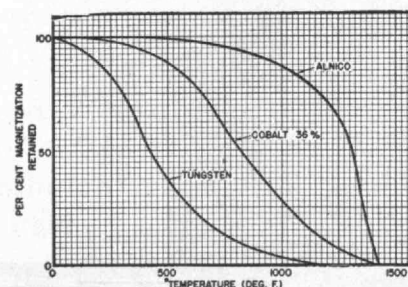
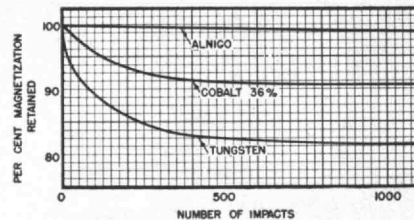
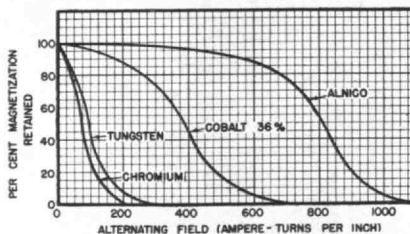
0.000 to 2.00	— ± 1/64
2.0 to 4.0	— ± 1/32
4.0 to 6.0	— ± 3/64

Grinding can in many applications be eliminated.

4. More intricate shapes, including holes, inserts, etc., are more feasible.
5. Transverse modulus of rupture is several times greater.

All Alnico, and particularly Sintered magnets, have very high values of Coercive Force (which is the capability of resisting demagnetization or loss of magnetism due to stray fields and from heat and vibration).

The curves show roughly the effect of these demagnetization factors on Alnico compared to other alloy steels.

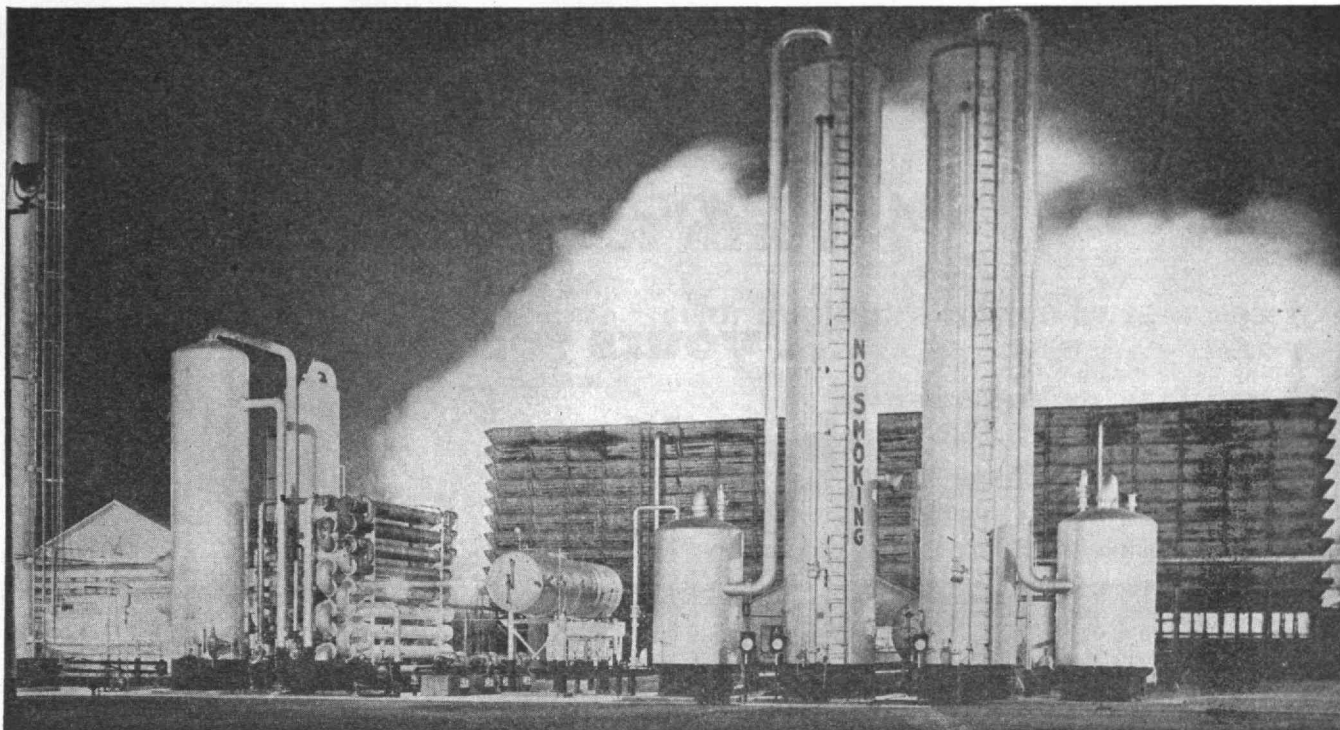


THE ARNOLD ENGINEERING COMPANY

SUBSIDIARY OF ALLEGHENY LUDLUM STEEL CORPORATION

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Specialists in the manufacture of PERMANENT MAGNET MATERIALS



FOR INDUSTRY

Carbon Black
Natural Gas
Natural Gasoline
Pumping Equipment
Pine Tar
Charcoal

The first step in the manufacture of two Cabot products takes place in plants like this, in the Pecos River country in West Texas.

First, Cabot strips natural gas of its natural gasoline, which is used to enrich aviation and other special motor fuels.

Next, Cabot takes this same gas and burns it for the manufacture of its own superior grades of carbon black, all of them essential to the rubber, paint, lacquer, enamel, ink, paper and plastics industries.

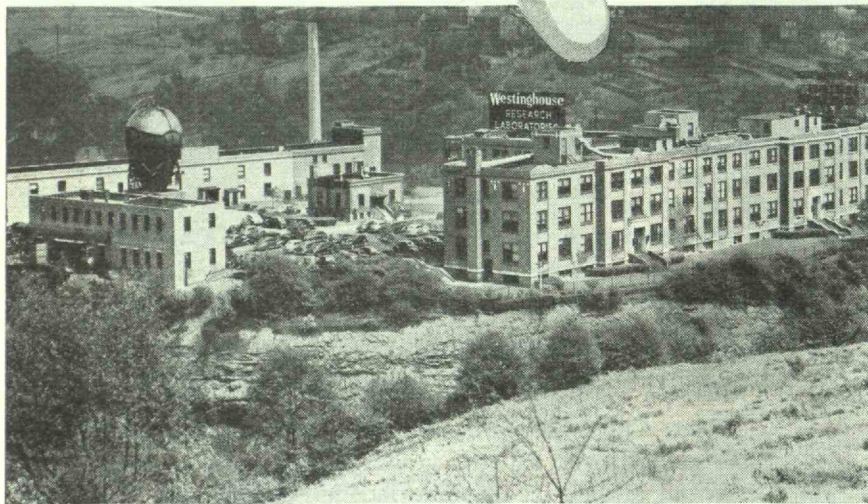
CABOT CARBON CO.
TEXAS ELF CARBON CO.
GENERAL ATLAS CARBON CO.
CABOT SHOPS, INC.



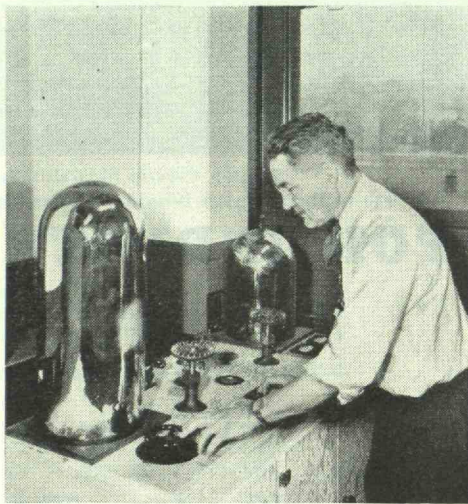
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research
worth 100,000 dollars
... yours for
the asking!



Part of Westinghouse research laboratories at East Pittsburgh, Pa.



Modern pumping system for evaporating substances under test in research on Selenium Rectifiers.

Westinghouse Selenium Rectifiers are not an overnight development. Before the present process was adopted, more than 9 years of continuous research—at a cost of more than 100,000 dollars—was spent in testing of foreign and domestic types and processing experiments.

The result has been a Selenium Rectifier comparable in quality to Rectox Rectifiers . . . long recognized as having a longer life and greater dependability than any other type of metallic rectifier.

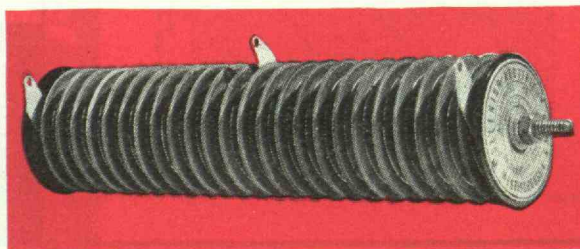
For instance: In a comparative test with other Selenium units under identical conditions—and at full rating—Westinghouse Selenium Rectifiers showed an increase in forward resistance of less than one-half that of the best units tested, indicating a longer life than any Selenium Rectifier now available.

No other Selenium Rectifier unit is backed by such an intensive research program, justifying our claim that Westinghouse Selenium Rectifiers are unexcelled where long life and dependability are prime factors.

These new Westinghouse Selenium Rectifiers are ready for the market now. If you're a user of Selenium Rectifiers you can take advantage of this investment in research by outlining your requirements to a Westinghouse representative. Or write your nearest Westinghouse office for all the facts. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Penna. J-21382

Westinghouse
PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

Selenium Rectifiers



NEW

SOCKETS AND SHIELDS...

for miniature button base tubes

These new National sockets are of mica-filled natural molded Bakelite with silver-plated beryllium-copper contacts — designed for maximum dependability and adaptability. The contacts — either axially or radially mounted and removable for replacement — provide short leads and low inductance so vital to ultra-high frequency design. Sockets are built to JAN specifications — can be used with or without shields.

Made in three sizes to accommodate the various sizes of miniature tubes, the shields are of nickel-plated brass, with cadmium-plated phosphor bronze spring to provide correct tension to hold both tube and shield in place regardless of angle or vibration. Shield bases are of nickel-plated brass, with two 4/40" spade bolts mounting both socket and shield base.

You'll find hundreds of other parts, both new and old, to improve your apparatus in the new 1947 National Catalog.

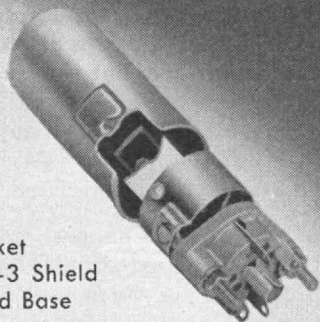


NATIONAL

COMPANY, INCORPORATED

MALDEN, MASS.

XOA Socket
with XOS-3 Shield
and Shield Base

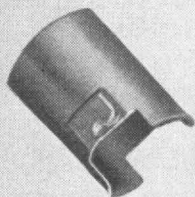


XOA Socket

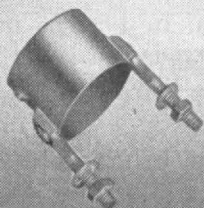
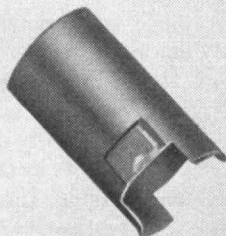


XOR Socket

XOS-1 Shield
for 1 ³/₈" high
tube body
(6AK5 type)



XOS-3 Shield for
2" high tube body
(OA2 type). Also
available: XOS-2
for 1 ¹/₂" high tube
body (6C4 type)



Shield Base for
XOS-1, XOS-2
or XOS-3

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for GRINDER, LATHE or BENCH

Here's a Rotary Chuck (9" dia.) with many unique features. Does not heat the work... no electricity... no work thrown off. Holds tightly for light cuts on lathes and on thin work for light machining. Can be clamped to bench for testing or inspection work. When you buy a ROTARY get ALL these and other advantages

... buy a Brown & Sharpe. Rectangular Models (5 sizes from 2 1/8" x 5 1/4" to 12 1/8" x 36") and other Permanent Magnet Holding Tools also available.

For sale only in the United States of America and its Territories. Write for illustrated catalog. Brown & Sharpe Mfg. Co., Providence 1, R. I., U. S. A.



We urge buying through the Distributor

BROWN & SHARPE PERMANENT MAGNET CHUCKS

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Hevi Duty Electric Co. Surges Transformers

With the acquisition of the Surges Electric Company of Milwaukee, Hevi Duty can now offer quality dry type air cooled transformers with or without tap changing switches as well as special transformers for special requirements. An accelerated program of modernization will present opportunities for increased production and good delivery schedules.

Write for Bulletin S-4611

HAROLD E. KOCH '22, President

ELTON E. STAPLES '26, District Manager, Cleveland

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THE TABULAR VIEW

Still Time.—Admonishing engineers to take the lead in finding solutions to the many questions which will naturally arise with the necessity of protecting our key industries, S. PAUL JOHNSTON, '21, recounts (page 398) the havoc which befell the Japanese who learned too little too late. Admittedly, the picture which Mr. Johnston paints, as a result of his studies in Germany and Japan during 1945 when he was deputy director of the aircraft division of the United States Strategic Bombing Survey, is not a pleasant one, but the consequences of unpreparedness are tragic. Since World War I, Mr. Johnston has long been active in the aviation industry, about which he writes with authority. Mr. Johnston expresses only his personal view in this issue, of course.

American Food Basket.—Changes in the customs and taste habits, the increased standard of living, and education and promotion are the factors largely responsible for the change in contents in America's food basket over the past half century for which reliable records are available. Such, at least, are the conclusions of FREDERIC W. NORDSIEK, Editorial Associate of The Review, whose authoritative and penetrating article (page 401) outlines the general pattern of food consumption of the American family, and traces in detail the rise and fall of three important staple foods in this country over the past five decades.

Unclogging Polyglottism.—Teaching graduate students to read technical literature in a foreign language with a saving of as much as 30 per cent of the time usually required for such mastery is but one of the results recently achieved in the Institute's Department of Modern Languages. Development of proper pronunciation of foreign languages through the use of speech recording apparatus, which enables the student to compare his lingual achievements with those of foreign language records, is another, as WILLIAM N. LOCKE, head of the Department of Modern Languages tells (page 405).

For a New Science.—Plea for the development of organization as a true science is the nub of the message (page 408) made by ALVIN BROWN, Vice-president for Finance of the Johns-Manville Corporation. As an Alfred P. Sloan Visiting Lecturer at the Institute, Mr. Brown took pains recently to elucidate the opportunities for today's students in elevating organization to the status of a true science. In 1933, Mr. Brown served in Washington as assistant to the director of the Federal Budget, later becoming assistant administrator and executive officer, and finally review officer of the National Recovery Administration. In 1937 he became vice-president of the West Virginia Coal and Coke Corporation and in September, 1946, was appointed to his present position.

Pioneer.—From a busy program in the Office of the Secretary of War, DR. EDWARD L. BOWLES, '22, takes time out to pay tribute (page 397) to an early telephone pioneer whose contributions have done much to advance this country to the position of the world's largest user of wire transmission of the human voice.