

TECHNOLOGY

REVIEW

April 1959





wherever there's electronics...

there's Transitron

Advanced electronics is helping to open new frontiers in space. Vital to the reliability of rockets are their electronic guidance systems which depend on the tiny semiconductor. Maker of the industry's broadest line of advanced silicon and germanium semiconductors is Transitron. In rockets, missiles, industrial computers, long-distance communications, radar, atomic subs, jets — *wherever there's electronics* — there's Transitron, known the world over for leadership in semiconductors.

U. S. moon-shoot vehicles depend on Transitron products in their instrumentation and guidance systems.

TRANSISTORS • RECTIFIERS • DIODES • REGULATORS • VOLTAGE REFERENCES

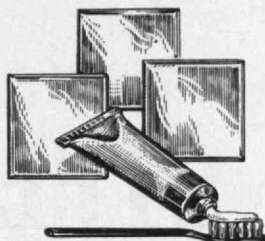


Transitron

electronic corporation • wakefield, massachusetts

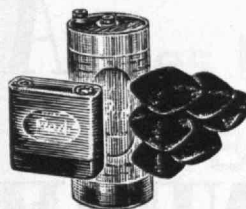


SALES OFFICES IN PRINCIPAL CITIES THROUGHOUT THE U. S. A. • CABLE ADDRESS: TRELCO



... tile or toothpaste

... batteries or briquets



... lp's or linoleum

Better Products begin with CABOT!

When it comes to the wisest, most economical selection of raw materials, you'd be surprised how *often* Cabot can help . . . how *much* Cabot can help to make your product perform better, last longer, and earn more profit.

WHICH OF THESE CABOT MATERIALS CAN HELP YOUR PRODUCT?

CABOT CARBON BLACKS . . . more than 50 different grades of channel, furnace and thermal blacks for use by the rubber, printing ink, paint, varnish, lacquer, enamel, plastics, paper, phonograph record, battery and other industries.

CAB-O-LITE® (wollastonite) . . . as a paint pigment, this versatile, uniform calcium metasilicate has more desirable properties than other extenders used singly or in combination. Excellent for all types of paint, and for quality improvement of all types of ceramics.

CAB-O-SIL® . . . this unique airborne silica, in extremely small quantities, greatly improves a host of products. Remarkable for its unusual combination of properties, it's equally effective as a thixo-

tropic, thickening, gelling, suspending, flatting, reinforcing, anti-caking and anti-slip agent. Used in plastics, lubricating oils, greases, paints, varnishes, lacquers, rubber, sulfur, insecticides, pharmaceuticals, cosmetics, many other products.

PT® PINE TAR PRODUCTS . . . these versatile quality controlled materials improve the performance of a wide variety of products, including: rubber, paint, cordage, oakum and insecticides.

For complete information, phone or write:

GODFREY L. CABOT, INC. 
77 FRANKLIN ST., BOSTON 10, MASSACHUSETTS
Phone: Liberty 2-7300

MARITIME STEEL AND FOUNDRIES LIMITED

- Canadian manufacturers of P & H Power Shovels and Cranes
- Steel and Alloy Castings
- Structural Steel—Buildings and Bridges
- Custom-built Machinery

NEW GLASGOW, NOVA SCOTIA, CANADA



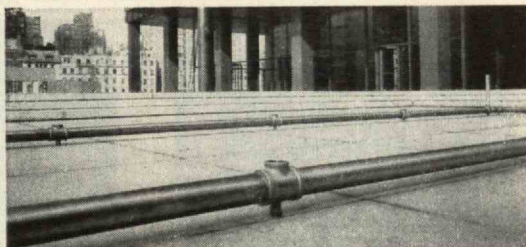
FROM THE GROUND UP...

World's First Bronze Skyscraper Uses Phelps Dodge Red Brass Pipe!

A vital network of Phelps Dodge Red Brass Pipe—roughly 17 miles of it—runs through the magnificent new bronze office building at 375 Park Avenue in New York. From street level to the top of this striking skyscraper, the maze of piping carries the hot and cold water needed for the 38-story structure's mammoth plumbing system.

A number of especially designed water fixtures, including a unique central drinking water system, are connected to these Phelps Dodge pipes. Other PD pipes under the park plaza supply water to the graceful fountains and pools in front of the building.

Plumbing contractors know that the famous Phelps Dodge "Mine-to-Market" quality line of copper tube and pipe more than meets every requirement for modern plumbing systems. That's why they specify Phelps Dodge for every kind of installation—from skyscrapers to homes!



Red brass pipe in pool bottoms on building plaza furnishes water for beautiful fountain displays.

*Quality tube sold the quality way—through
authorized wholesalers!*

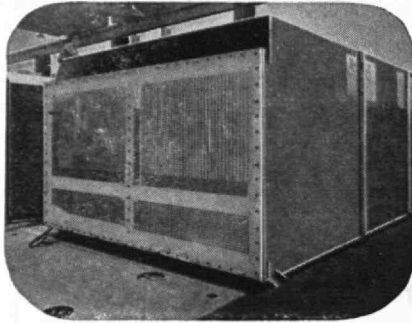
PHELPS DODGE COPPER PRODUCTS

CORPORATION

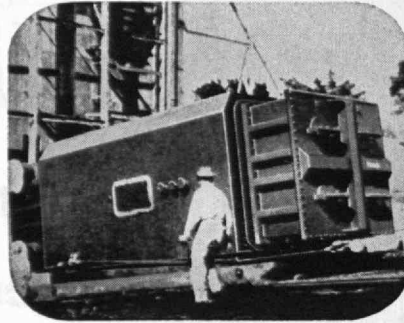
New York, N. Y. • Los Angeles, Calif.



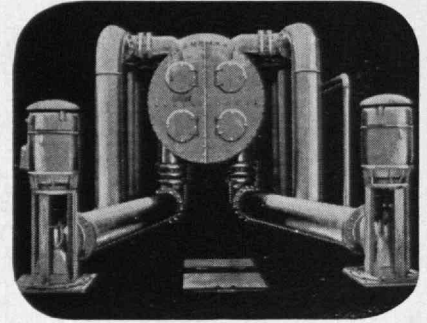
HOW C.H. WHEELER CONDENSER DESIGN saves space...



Head Room problems are solved by compact condensers like this one. Turbine floor to basement floor, in this case, is only 20 ft. The Unit has 65,000 square feet of condensing surface.

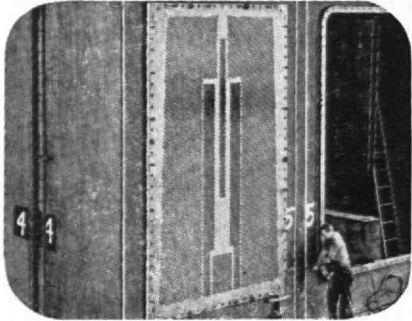


Rectangular Cross Section makes C.H. Wheeler Condensers adaptable to nearly any space or condenser arrangement because the length, width and height of any Wheeler Unit can be varied almost at will.

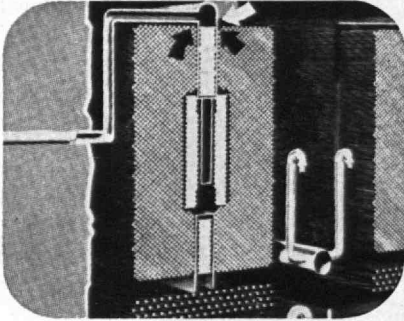


But Wheeler Doesn't limit itself to rectangular design. A round cross section worked out better here, for example, at the first planned gas-steam turbine station ever designed and built in United States.

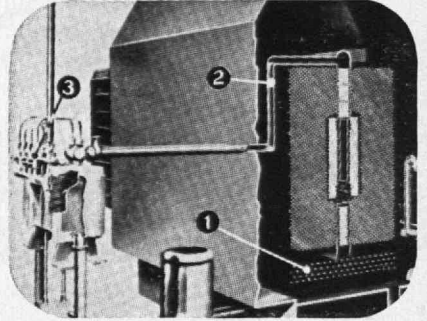
improves power generating efficiencies...



Triple Lane tube layout, another design feature, provides 3 pathways for steam travel, utilizes maximum cooling surface and produces higher condenser vacuums for power generating stations.

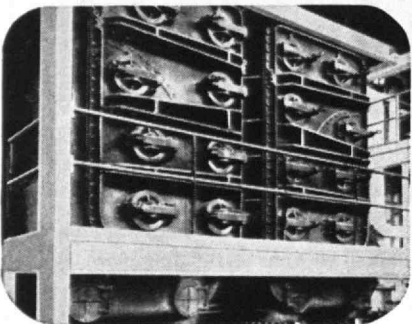


Location of air-vapor takeoff speeds steam travel and allows steam to penetrate to the peripheries of all tubes. It thus improves condenser efficiencies and overall power station operation as well.

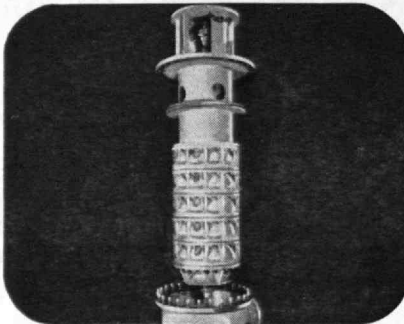


Deaeration of condensate not to exceed 0.01 cc. oxygen/liter is available with special Wheeler designs. Note the Deaerating Bars (1), the Air-Vapor Suction Line (2), and Tubejet® Ejectors (3).

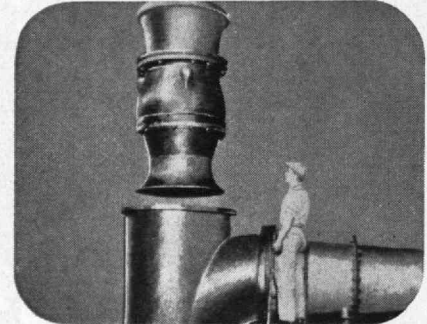
and reduces maintenance



Patented Reverse Flow permits flushing tubes and sheets without shutting down Unit, during full load with either or both circulating pumps operating. No additional circulating water inlet or discharge piping necessary with C.H. Wheeler's Reverse Flow.



"Pull-Out" Condensate Pumps simplify maintenance because entire pumping element, including all rotating parts, can be removed without disturbing either the pump barrel or the piping connections.



C. H. Wheeler Circulating Pumps, like Condensate Pumps, are easy to inspect and maintain because of "Pull-Out" design. In addition, shafts are heat treated alloy steel and impellers are statically and dynamically balanced for trouble-free operation.

C. H. Wheeler has been designing and building condensers since 1903; has developed such features as Dual Bank Design and Reverse Flow.

C. H. WHEELER MFG. CO.

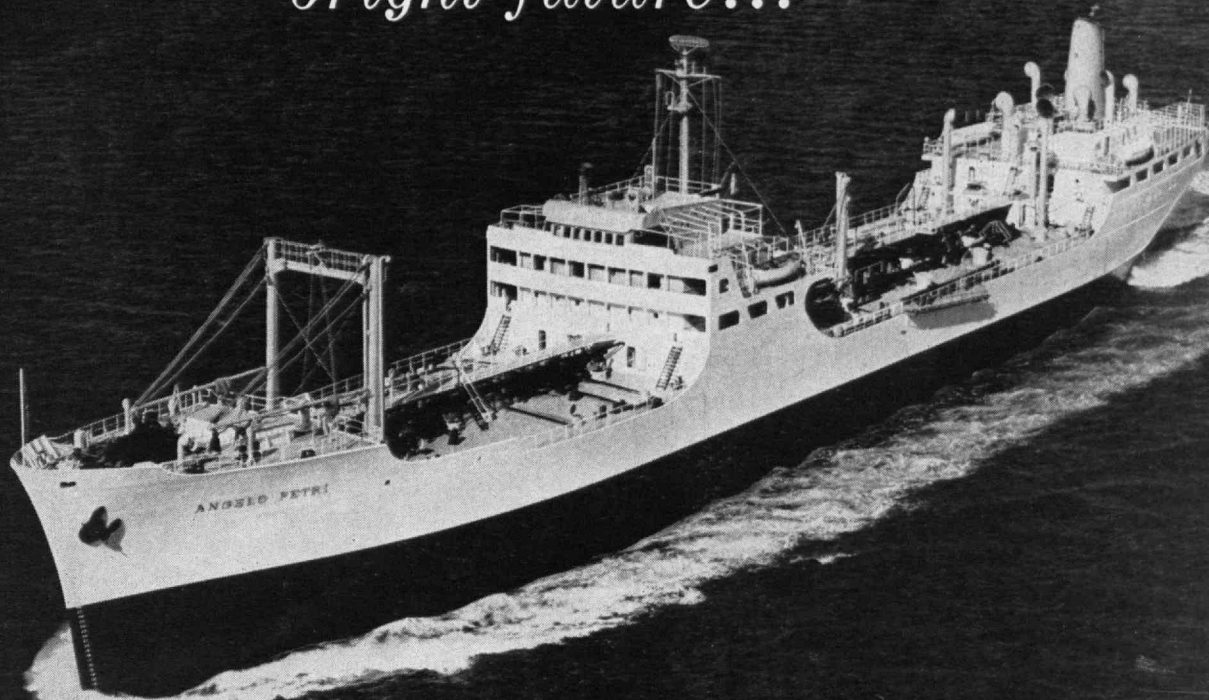
Whenever you see the name C. H. Wheeler on a product, you know it's a quality product

Steam Condensers • Steam Jet Vacuum Equipment • Centrifugal, Axial and Mixed Flow Pumps • Marine Auxiliary Machinery • Nuclear Products

19TH & LEHIGH AVENUE

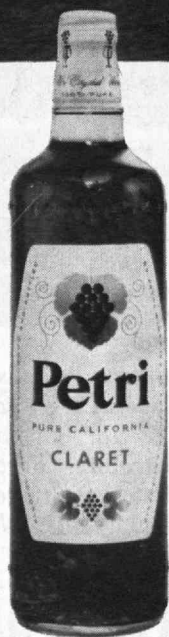
Philadelphia 32, Pennsylvania

*Unusual past...
bright future...*



for the World's largest wine tanker

S.S. Angelo Petri was built by Bethlehem's San Francisco yard.



The S.S. Angelo Petri, America's first wine tanker, is certainly a most unusual ship. Representing a pioneering venture on the part of United Vintners, Inc., the vessel is unique in several respects. Because she was designed to transport a cargo so dependent upon high standards of purity and flavor, her main cargo tanks and all connecting piping and valves are of stainless and stainless clad steel—1,800,000 pounds of it in the tanks alone.

The ship has an unusual past. The entire after section was originally that of a T-2 tanker which broke in two in a storm. The machinery section was salvaged and towed to Anchorage, Alaska, where it provided electric power to the city for some years. Now, provided with entirely new bow and cargo sections, this extraordinary ship is back at sea. And the same C-E boilers that powered her, first as a World War II tanker and then as a floating power station, are doing the same reliable job for the S.S. Angelo Petri.

COMBUSTION ENGINEERING

Combustion Engineering Building
200 Madison Avenue, New York 16, N. Y.



C-168

ALL TYPES OF STEAM GENERATING, FUEL BURNING AND RELATED EQUIPMENT; NUCLEAR REACTORS; PAPER MILL EQUIPMENT; PULVERIZERS; FLASH DRYING SYSTEMS; PRESSURE VESSELS; SOIL PIPE



LINCOLN LABORATORY

continues to augment its staff.

We invite inquiries from persons
with superior qualifications.

A brochure is available which is
generally descriptive of

Lincoln Laboratory programs
in the following areas:

AICBM SYSTEMS STUDIES

NEW RADAR TECHNIQUES

RADIO PHYSICS

SOLID STATE Physics, Chemistry, and Metallurgy

COMMUNICATIONS:

Techniques

Psychology

Theory

**INFORMATION PROCESSING,
DIGITAL COMPUTER TECHNOLOGY**

Research and Development

**M.I.T. LINCOLN
LABORATORY**

BOX 28

LEXINGTON 73, MASSACHUSETTS



25 YEARS AGO

*A column of items of interest culled
from The Technology Review's files*

■ From data compiled by Registrar Joseph C. MacKinnon, '13, showing the mid-year academic accomplishment of the 485 freshmen of the Class of 1937, it appeared that some 200, who had been admitted "without examination from the upper scholastic fifth of their classes in accredited secondary schools," had scored an average rating of 3.40 contrasted with an average rating of 2.77 by those who had entered "by examination." Encouraged by the success of this "upper fifth" method, which had been started experimentally for the Class of 1936, the Faculty Committee on Admissions announced "still another alternative form of admission, College Board Plan B," which would be effective in the following autumn for the entering Class of 1938.

Plan B, the description read, "instead of requiring many examinations, . . . allows a high-ranking and well-recommended student from a secondary school to present subjects of his first three years on certificate, but tests the quality of his preparation by requiring College Board comprehensive examinations in four of his senior subjects. The Institute will require examinations in English, a modern language, advanced mathematics, and physics or chemistry. It will retain the old College Board Plan A, . . . as well as the upper fifth plan and the New York State Regents plan."

■ Faculty promotions announced during April, 1934, included the following:

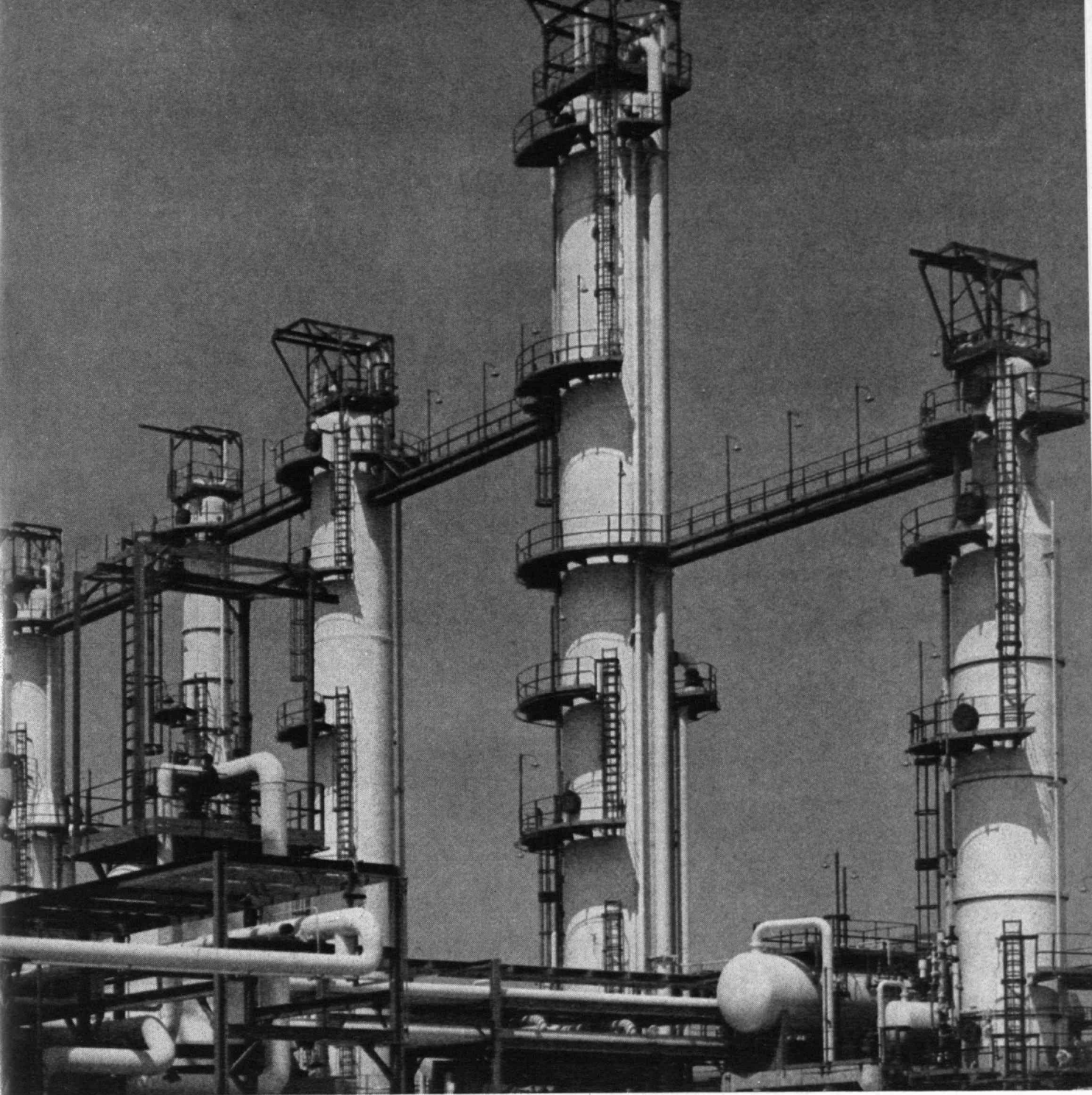
Professors *Charles B. Breed*, '97, as Head of the Department of Civil and Sanitary Engineering; *Ralph E. Freeman*, as Head of the Department of Economics and Social Sciences; and *Henry B. Phillips* as Acting Head of the Department of Mathematics.

To full Professorships: *Arthur C. Hardy*, '18, Physics; and *Walter C. Schumb*, Chemistry.

To Associate Professorships: *Raymond D. Douglass*, '24, Mathematics; *Philip M. Morse* and *Bertram E. Warren*, '24, Physics; *Edward R. Schwarz*, '23, Mechanical Engineering; and *Thomas K. Sherwood*, '24, Chemical Engineering.

To Assistant Professorships: *William P. Allis*, '23, and *John C. G. Wulff*, Physics; *Avery A. Ashdown*, '24, and *Stephen G. Simpson*, '16, Chemistry; *Herbert L. Beckwith*, '26, Architecture; *Frederick G. Fassett, Jr.*, English and History; *Samuel H. Caldwell*, '25, Electrical Engineering; and *John B. Wilbur*, '26, Civil and Sanitary Engineering.

■ . . . Elections to its membership at the April, 1934, meeting of the National Academy of Sciences included three members of the Institute's Faculty, namely: *Vannevar Bush*, '16, Vice-president and Dean of Engineering; *James F. Norris*, Director of the Research Laboratory of Organic Chemistry; and *Norbert Wiener* of the Department of Mathematics.



Third New Platformer for Gulf...

COLUMNS BY

GRAVER®

The third of three new 26,000 b/d Platforming® units to be installed by the Gulf Oil Corporation is now on stream at Gulf's Port Arthur refinery. Built under license from the Universal Oil Products Company, this latest installation will substantially increase the high octane potential at the refinery.

The five large columns above and two separator units were shop-fabricated at Graver's East Chicago plant and erected by Procon Incorporated, the general contractor. Eighteen columns for the other two Platforming unit installations at Gulf's Philadelphia refinery were also shop-fabricated at Graver's East Chicago plant.

Large or small processing equipment for petroleum, petrochemical, chemical and nuclear energy installations are produced with dispatch and skill by Graver artisans. Graver's century of experience means quality construction.

GRAVER TANK & MFG. CO. EAST CHICAGO, IND.

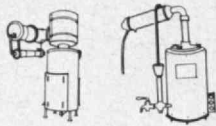
DIVISION—UNION TANK CAR COMPANY

Barnstead

pure
water
specialists
since
1878...

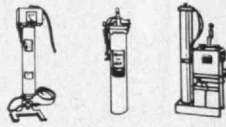
STILLS

In capacities of from 1/2 to 1000 g.p.h., for laboratory, commercial and industrial use.



DEMINERALIZERS

Mixed-Bed, One-Bed, Two-Bed, and Four-Bed models. Capacities up to 2500 g.p.h.



TRANSISTOR WASHERS



For washing and rinsing transistors, diodes, rectifiers, tube parts, and materials such as Silicon and Germanium.

ULTRA PURE WATER

BARNSTEAD® "MF" Sub-micron Filter for electronic and nuclear fields. Filters out particles to .000016 inches. Produces 18,000,000 ohm water.



Barnstead

STILL & STERILIZER CO.

A. White, '26 T. Hartwell, '28
N. A. Everett, '48 V. C. Smith, '48 S. Beran, '58
2 Lanesville Terrace, Boston 31, Mass.



FREE BOOKLET TELLS WHAT CO₂ CAN DO FOR YOU

agriculture
chemistry
metals
electronics
refrigeration
food
drugs
textiles
rubber

There's practically no end to the important jobs that CO₂—combined with Liquid Carbonic savvy—is doing. Chances are this combination can come up with some surprising answers for you, too. For scores of CO₂ applications, covering all industry, send for LIQUID's new free booklet, "Applications Unlimited." Just use the coupon below.

MAIL THIS COUPON

LIQUID CARBONIC

DIVISION OF GENERAL DYNAMICS CORPORATION

135 South LaSalle St. • Chicago 3, Illinois

Send me my free copy of "Applications Unlimited."

Name _____

Company _____

Position _____

Address _____

City _____ Zone _____ State _____

MAIL RETURNS

The Russian View of M.I.T.

FROM JAMES CRITCHLOW, '45:

I happened this morning to be looking through the pages of a monthly magazine published by the Ukrainian Komsomol in Kiev (U.S.S.R.). To my surprise, one of the articles proved to be devoted almost entirely to the Institute. The author of the article, one of the group of Soviet student editors who visited the United States in May, 1958, "describes" M.I.T. and his impressions of it. Here are a few of his points:

1. M.I.T., a private institute, has 15,000 students. It is a kind of "corporation of education." To explain this, the author writes that "some corporations produce steel, copper, or electricity, but the Institute produces specialists with higher education."

2. The Institute is financed by "funds received from students in the form of tuition, by 'patronage' contributions from various 'national funds,' and also — in case of necessity — by issuance and sale of lotteries, shares, and so on."

3. The Institute has a newspaper called *The Tech* which "is possibly supported entirely by advertising, for the newspaper devotes no less than half of its pages to publication of advertisements." The writer adds that "the majority of this advertising has nothing in common with student needs." Like the big newspapers, *The Tech*, he explains, "seeks sensations," which Americans love.

4. The Institute's dormitories are built through contributions from various patrons and fraternities.

5. "We tried to dispel the atmosphere of mistrust and apathy which for years the bourgeois press has been instilling in the American student." Nevertheless, the author reports that his group were subjected to various "provocations" during their visit to Tech.

These are just a few of the interesting "facts" about "Massachusetts' kyy institut tekhnologii" presented in the article's six pages of fine print.

My work here as manager of Radio Liberation's Central Research Department makes me a constant reader of Soviet publications.

Munich 27, Germany

New York Telephone Co.,
Jamaica, L. I.
Voorhees, Walker, Smith,
Smith & Haines, Architects



Good quality . . . speedy construction . . . right cost

This is what you want of a builder. Proof that you will get it from us is our record of service for such companies as: Avon Products, Inc., 11 contracts; Canada Dry Ginger Ale, Inc., 9 contracts; New York Telephone Co., 15 contracts; Chas. Pfizer & Co., 36 contracts.

W. J. BARNEY CORPORATION

Founded 1917

INDUSTRIAL CONSTRUCTION

101 Park Avenue, New York

Alfred T. Glassett, '20, President