

bine to aircraft propulsion. Like all gas turbine engines, it has light weight for the power it delivers.

It is only about one-half as heavy as an ordinary engine delivering the same power. This is important in aviation. It permits a plane to carry a heavier pay-load. Also it permits a plane to carry, without overloading, all the radar and other electronic and safety equipment now demanded in commercial planes that fly in all kinds of weather.

The development of the jet engine in this ten-year age of jet propulsion is perhaps responsible for the development of gas turbine engines used in the turbo-prop because both of these types of propulsion are similar in some respects. Both use a type of gas turbine engine.

In the turbo-jet, part of the high-pressure gases generated in the combustion chamber is used to drive a compressor to provide air for combustion. The rest is discharged to the rear to provide propulsion. In the turbo-prop all the gases generated are driven against vanes on a shaft to cause rotation of the shaft, at one end of which are conventional blades to provide propulsion.

The development of the turbo-prop during this age of jet propulsion may carry over into a wide usage in surface propulsion. Gas turbine engines have been widely used in stationary installations for many years. Now they are in experimental use in vehicles of various types.

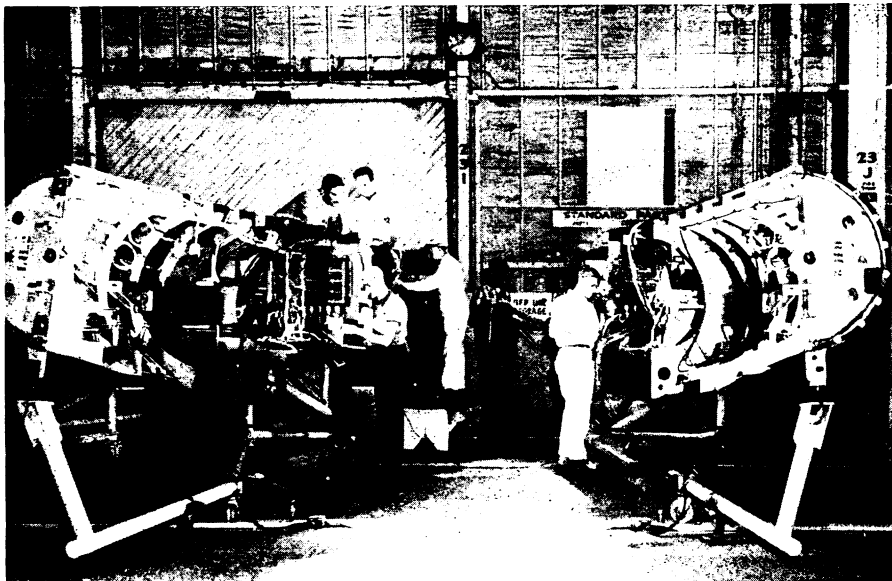
Gas Turbine Locomotive

A gas turbine locomotive was relatively recently put into regular service on an American railroad where it is undergoing severe testing. A coal-burning gas turbine locomotive is under development. It would use for fuel very finely pulverized coal instead of oil. Its development is sponsored by a group of eastern coal-carrying railroads. The objective is a locomotive with the efficiency and economy provided by the gas turbine, which would use America's most abundant fuel and be independent of possible shortages in fuel oil.

The world's first merchant ship powered with a gas turbine engine has recently made a round trip from England, where it was built, to the Caribbean area. Small boats using this type of propulsion are in experimental use by American armed forces. The British vessel is a 12,500-ton tanker with one of its four diesel engines replaced by a gas turbine. The test trip was made using the gas turbine only. Many marine engineers seem to be of the opinion that gas turbines will some day be the preferred power for ocean vessels because of the efficiency and smoothness with which they operate.

Science News Letter, August 9, 1952

A Scottish-owned research ship, the Calamus, is being equipped with a television apparatus powerful enough to see life on the ocean floor at experimental fish-breeding grounds.



JETS ON THE HALF SHELL—To speed up production of the Scorpion, assemblers work on halves of the fuselage separately, installing plumbing, wiring and other equipment.

PHYSIOLOGY

Dextran Consumed in Body

Burning in body traced with radioactive dextran obtained by fermenting radioactive sugar. Discovery reassures doctors about using it as plasma substitute.

► FAVORITE AMONG blood plasma substitutes today is dextran, the chemical produced by bacterial fermentation of sugar.

Dextran gains this place as a result of new evidence that it is burned in the body like other sugars and starches. This was discovered through studies with radioactive dextran made at the request of the Surgeon General of the Army and under the direction of the subcommittee on shock of the National Research Council.

The fact that dextran is handled in the body and eliminated like carbohydrates makes medical men a little happier about using it. They do not like to inject something into the blood stream which is going to stick around in the body for a long time unless they can be sure it is perfectly safe.

Another of the new plasma expanders, called PVP, short for polyvinylpyrrolidone, is not metabolized in the body, as dextran is, and almost half of the original amount of PVP injected remains in the body. No one knows whether, over a long period, this will or will not be harmful.

Civil Defense authorities are stockpiling PVP for use in case of a national emergency, while the Department of Defense is stockpiling dextran and has cornered the entire supply for this year and most of next year's.

Dextran is not considered an ideal plasma substitute, or expander, because it

does sometimes cause mild reactions. The cause of these is not yet known. The fact that it comes from sugar and is burned in the body and eliminated like sugars does not, however, mean that it gives any appreciable amount of nourishment to the patient.

This and the other plasma expanders, such as PVP and a special gelatin, are valuable in treating shock because they restore the volume of blood circulating through the body, though they do not have the



GO PLACES

LISTEN and LEARN A
LANGUAGE by
LINGUAPHONE IN 20
MINUTES
A DAY

World's-Standard CONVERSATIONAL METHOD

FRENCH AT HOME, learn another language—easily, quickly, naturally by LINGUAPHONE. You LISTEN—you hear native men and women speak—you understand—**YOU SPEAK!** World-wide educational endorsement; a million home-study students.

—29 STOP Wishing—Start Talking. Languages Write Today for Free Book Available or call for Free demonstration.

LINGUAPHONE INSTITUTE
3108 Radio City, N. Y. 20, N. Y. Cl. 7-0829

oxygen-transporting ability and other vital qualities of whole blood.

The radioactive dextran which shows how the chemical is handled in the body was made by cooperation of scientists at the Argonne National Laboratories, Chicago, and the research and development laboratories of Commercial Solvents Corporation, Terre Haute, Ind. Argonne team scientists were Drs. Norbert J. Scully, John Skok, William Chorney and Ronald Watanabe, and the Commercial Solvents scientists were Drs. Homer E. Stavely, Alfred R. Stanley, J. K. Dale, J. T. Craig, E. B. Hodge and Robert Baldwin.

They made their radioactive dextran by first getting carbohydrate-depleted, cut Canna leaves to photosynthesize in the presence of carbon dioxide made with radioactive carbon. This gave a radioactive sugar because its carbon was carbon 14. From this labelled sugar the dextran was synthesized by fermentation. This process is reported in *Science* (July 25).

Tests of the radioactive dextran on mice, rats, dogs and man were made, and will be reported in detail later, by the following scientists: Dr. J. Garrott Allen, University of Chicago Medical School; Dr. Walter L. Bloom, Emory University Medical School, Atlanta, Ga.; Dr. Leon Hellman, Sloan-Kettering Institute, New York; Drs. Joe Howland and Rodger Terry, University of Rochester, N. Y., School of Medicine and Dentistry; the Surgical Research Unit at Brooke Army Hospital, Fort Sam Houston, Tex.; and Dr. Harry M. Vars, University of Pennsylvania School of Medicine, Philadelphia.

Science News Letter, August 9, 1952

If you were living on the moon, the skies would appear black even though the sun might be up; there is no appreciable atmosphere there to scatter the blue rays of sunlight.

An ostrich egg weighs about three pounds and equals in volume about a dozen and a half chicken eggs.

Giant hydro-electric plants at Niagara Falls generate almost half the total rated water-power capacity of New York state.



New 1952 Model!
33-mm. EXAKTA "VX"
Single Lens Reflex Camera

One lens both for viewing and picture taking assures perfect sharpness, accurate exposure, maximum depth of field, and correct composition for color. You always see the exact image before you take the picture—whether the subject is an inch or a mile away, whether it is microscopic or gigantic, whether it is moving or stationary. Instantly interchangeable lenses permit telephoto, wide angle, close-up, copy and microscope photography. With f2.8 Zeiss Tessar "T" Coated Lens with Pre-Set Diaphragm Control. \$269.50 tax included

Write Dept. 900 For Free Booklet "I"
NATURE PHOTOGRAPHY WITH MINIATURE CAMERAS by Alfred M. Bailey (Denver Museum of Natural History). This eminent explorer and scientist displays his finest Exakta photographs and others along with explanatory material. 35 full page photographs. 64 pages. 50c
Exakta Camera Co., 46 W. 29th St., N. Y. C. 1

Books of the Week

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. books in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N. W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

CHILDHOOD EXPERIENCE AND PERSONAL DESTINY: A Psychoanalytic Theory of Neurosis—William V. Silverberg—*Springer*, 289 p., \$4.50. The author believes that a child's experiences before the age of six plant the seeds of whatever mental illness he may later develop.

CONSERVATION IN CANADA—O. M. McConkey—*Dent*, 215 p., illus., \$3.50. Canada, the author points out, is one of the last almost virgin areas of the world and has some of the world's last reserves of raw materials. Here are considered ways to prevent wastage of this wealth.

EDUCATORS GUIDE TO FREE SLIDEFILMS—Mary F. Horkheimer and John W. Diffor, Eds.—*Educators Progress Service*, 4th ed. 1952, 172 p., paper, \$4.00. Listing in convenient form 214 sound slidefilms, 357 silent slidefilms and four sets of slides.

ELECTRONICS BUYERS' GUIDE—Keith Henney, Editorial director—*McGraw-Hill*, 558 p., illus., \$2.00. An important reference book for anyone having to do with electronic equipment. A directory of manufacturers of electronic products is included.

AN EXPLAINING AND PRONOUNCING DICTIONARY OF SCIENTIFIC AND TECHNICAL WORDS: 10,000 Scientific and Technical Words in 50 Subjects Explained as to a Person Who Has

Little or No Knowledge of the Particular Subject

—W. E. Flood and Michael West—*Longmans, Green*, 397 p., illus., \$2.25. A helpful feature of this handy dictionary is the liberal use of clear drawings to illustrate it.

THE FERN GENUS DIELLIA: Its Structure, Affinities and Taxonomy—Warren H. Wagner, Jr.—*University of California Press*, 167 p., illus., paper, \$3.00. This genus is endemic in Hawaii and has served as a textbook example of transition from separate sori to coenosori.

GENERAL EDUCATION BOARD ANNUAL REPORT—Robert D. Calkins, director—*General Education Board*, 83 p., illus., paper, free upon request to publisher, 49 West 49th St., New York 20, N. Y. Telling of the benefits obtained for the money distributed by this institution.

INDIA AND THE PASSING OF EMPIRE—Sir George Dunbar—*Philosophical Library*, 225 p., illus., \$4.75. Recalling the influences of the historical background, the author sets forth his explanation of how modern India developed.

INSTRUMENTS FOR AIR POLLUTION MEASUREMENT—W. C. L. Hemeon—*Mellon Institute*, 4 p., paper, free upon request to publisher, 4400 Fifth Avenue, Pittsburgh 13, Pa.

AN INTRODUCTION TO HISTORICAL GEOLOGY WITH SPECIAL REFERENCE TO NORTH AMERICA—William J. Miller—*Van Nostrand*—6th ed., 555 p., illus., \$5.50. Many new topics have been added to this edition designed for the student who has already had a beginning course in geology.

MEDIAEVAL PHILOSOPHY—Frederick C. Copleston—*Philosophical Library*, 194 p., \$2.75. While knowledge of Aristotelian philosophy will aid the reader of this book, terminology has been simplified in this historical approach to medieval philosophy.

NATOB—A NEW BUSH LESPEDEZA FOR SOIL CONSERVATION—Franklin J. Crider—*Govt. Printing Office*, 10 p., illus., paper, 10 cents. Finding of this Natob strain makes it possible to extend the use of Lespedeza bicolor much farther north.

YOUR HAIR

Its Health, Beauty and Growth
By Herman Goodman, M.D.

A medical specialist tells you what to do to save and beautify your hair, stimulate healthier hair growth, and deal with many problems, as: Dandruff—gray hair—thinning hair—care of the scalp—baldness—abnormal types of hair—excessive oiliness—brittle dryness—hair falling out—infection—parasites—hair hygiene—glands—diet—coloring—and myriad other subjects concerning hair.

"Discusses the many problems of hair retention, regrowth and removal."—*Science News Letter*.

287 pages—PROFUSELY ILLUSTRATED!
Price \$2.95, incl. postage, 5-day-Money-Back Guarantee

EMERSON BOOKS, Inc., Dept. 246-H
251 W. 19th Street, New York 11

Questions

AERONAUTICS—What does the "Skyray" look like? p. 85.

• • •

CHEMISTRY—What is the structure of terramycin? p. 83.

• • •

HERPETOLOGY—Why is the hunter in greater danger from snakes than the oil worker? p. 84.

• • •

INVENTION—What changes are provided in new patent law? p. 82.

• • •

PHYSICS—What atmospheric conditions might make people see saucers? p. 82.

• • •

PHOTOGRAPHY—How can you get a picture of lightning? p. 83.

• • •

PLANT PATHOLOGY—What new threat faces the date industry? p. 93.

• • •

PSYCHOLOGY—What is the advantage of roadside billboards? p. 93.

• • •

Photographs: Cover, Fremont Davis; p. 83, Westinghouse; p. 85, Douglas; p. 87, Babcock & Wilcox; p. 91, Northrop; p. 95, General Electric.