

The leaves surrounding the real flowers develop a red pigment in place of the usual chlorophyll.

The "Mexican Flame Leaf," a native of Mexico and Central America, has a lesser known cousin in a variety with white bracts instead of red. There is also a double variety in which the colored leaves are branched.

Science News Letter, December 25, 1943

OPTICS

3-Dimensional Pictures Used to Teach Navigation

► TWO PICTURES, one superimposed on the other on a specially treated plastic sheet with the outlines seemingly not quite coinciding when viewed by the naked eye, do coincide when seen through special goggles, and stand out from the sheet as a single three-dimensional object. The three-dimensional picture is called a vectograph; the goggles are called polarizing three-dimensional viewers.

The three-dimensional vectograph can be thrown on a screen by any ordinary

projection apparatus, and viewed by a group of people simultaneously if each person is equipped with the polarizing three-dimensional viewers. These are small plastic pieces of specially prepared transparent material held in frames similar to ordinary eyeglasses.

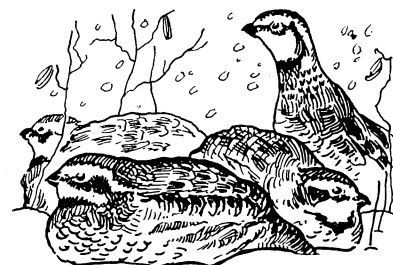
The new technique has recently been perfected by Prof. John T. Rule of the Massachusetts Institute of Technology, and is used by him in teaching aircraft navigation to military students. It eliminates the need for training men to interpret depth in flat charts by presenting life-like pictures of models of the heavens and the earth in three dimensions. Celestial navigation vectographs "teach students, easily, to see and think three-dimensionally," he states.

Formerly the only practical three-dimensional viewing device was the stereoscope. This, however, could be used by only one person at a time and was therefore of little use in a classroom. The vectograph process is the invention of Edwin H. Land and Joseph Mahler of the Polaroid Corporation.

Science News Letter, December 25, 1943



SPEEDS NAVIGATION TRAINING—MIT Prof. John T. Rule examines the globe which serves as a photographic model for three-dimensional pictures known as vectographs, which he uses in a new technique to teach military courses more easily and quickly. An instructor walking into the beam of a vectograph of this globe projected on a screen appears actually to be walking into the center of the earth itself.



Men of Good Will

★ "PEACE ON EARTH, good will towards men," is the version we commonly hear. A sentiment of grand, wide-hearted charity that takes in all mankind; so inclusive in its sweep, indeed, that few of us ever achieve the courage to believe in it and practice it fully.

Yet grand as it is, this expression limits itself. Strictly read, it offers good will only to human beings; that is, it is essentially simply a sociological ideal. It needs to be made much more inclusive, to take in the whole of the living complex of which man's life is an inseparable part. That is, it needs to become in the widest sense an ecological ideal.

A better translation, from this point of view, may be found in St. Jerome's version, which renders into English as, "Peace on earth among men of good will."

That is a far less easy-going way of putting the idea; for it will be noted that it places upon all of us the obligation to become men of good will before we can expect peace. It should, incidentally, cause a good deal of heart-searching in these days when some proposed "peace" terms fairly drip with the most vindictive ill will toward the foes we expect to defeat.

But that is not the present theme, nor is it the whole crux of the building of ultimate peace. Whoever aspires to be *homo bonae voluntatis*, and so worthy of peace in his own heart, should examine his conscience well, to be sure that he is doing whatever lies in his power to end abuses of forests, grasslands, natural waters and the creatures that therein dwell, and to bring about legitimate and temperate uses of the

earth's bounties, distributed as equitably as possible among all men. Thus shall we achieve inner peace, and move toward peace within the state and among nations.

St. Francis of Assisi, who was a man of good will if the world ever saw one, understood this perhaps better than his biographers, contemporary or modern, have realized. His talks to birds and fishes and lone wandering wolves, his nailing of fire as brother and water as sister, were not mere pious sentimentalizations. By the swift intuition which often enables poets to arrive at natural truths without the labor of slow learning, he perceived the intimacy of man's relation as a creature to all other creatures, and so swept them all up into the wide embrace of his good will.

Science News Letter, December 25, 1943

INVENTION

Slot Machine Nickels Sorted by Conductivity

➤ "HOT" MONEY is good money when subjected to the test imposed by a device for slot machines on which Fred E. A. Wallin of University City, Mo., received patent No. 2,335,369. It makes the inserted nickel into part of a thermocouple, which passes more or less current according to the conductivity of the coin in contact with an electrically heated pin.

The nickel alloy in the American five-cent piece has very high conductivity, the almost pure nickel in the corresponding Canadian coin nearly as much. Slugs and spurious coins are far less conductive. Differences in volume of current passed determine whether the coin is accepted or shunted into the rejection chute. The machine can be set to accept both American and Canadian nickels, or American nickels only; in any case it turns down all imitations as being too "cold."

Science News Letter, December 25, 1943

ENGINEERING

Opportunities for Women Seen in Civil Engineering

➤ CIVIL engineering, which has to do with the construction of buildings, bridges, roads, etc., is a field women are not rushing into these war days. Yet Prof. Ray C. Brumfield of the Cooper Union Engineering School believes that there will be a serious shortage of such engineers in the future and that women are overlooking opportunities.

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Books Off the Press

- CHEMICAL PROCESS PRINCIPLES: Part One; Material and Energy Balances**—Olaf A. Hougen and Kenneth M. Watson—*Wiley*, 452 p., illus., \$4.50. A detailed discussion of procedures for estimating vapor pressures, critical constants, and heats of vaporization; new methods for dealing with equilibrium problems in extraction, adsorption, dissolution and crystallization.
- COVERTS AND CASTS: Field Sports and Angling in Words and Pictures**—William J. Schaldach—*A. S. Barnes*, 138 p., illus., \$5.
- DEAFNESS AND THE DEAF IN THE UNITED STATES: Considered Primarily in Relation to Those Sometimes More or Less Erroneously Known as "Deaf-Mutes"**—Harry Best—*Macmillan*, 675 p., \$6.50. A comprehensive authoritative book, including medical, organizational and educational aspects.
- GEOMETRY: WITH MILITARY AND NAVAL APPLICATIONS**—Willis F. Kern and James R. Bland—*Wiley*, 152 p., illus., \$1.75.
- INDUSTRIAL CHEMISTRY**—William Thornton Read—*Wiley*, 631 p., illus., \$5. This is a third edition of a successful text.
- AN INTRODUCTION TO POLLEN ANALYSIS**—G. Erdtman—*Chronica Botanica*, 239 p., illus., \$5.
- MAINTENANCE ARC WELDING**—A. F. Davis and Ed. C. Powers, eds. *James F. Lincoln Arc Welding Found.*, 234 p., illus., 50c.
- MODERN AIRFIELD: Planning and Concealment**—Merrill E. De Longe—*Pitman*, 167 p., illus., \$4.
- OIL INDUSTRY AND TRANSPORTATION: Prewar and Postwar**—P. Harvey Middleton—*Railway Business Assn.*, 60 p., 50c., paper.
- PRINCIPLES AND PRACTICE OF REHABILITATION**—John Eisele Davis—*A. S. Barnes*, 211 p., \$3.
- THE RAFT BOOK: Lore Of The Sea And Sky**—Harold Gatty—*George Grady Press*, 152 p., illus., \$3.25. With this book and enclosed charts, no instruments other than a stick and a piece of string, and no previous knowledge of navigation, persons who find themselves in small boats or rafts anywhere in any ocean or sea in the world can find their way to land.
- STATISTICAL ABSTRACT OF THE UNITED STATES 1942**—comp. by Morris H. Hansen—*Gov. Print. Off.*, 1,097 p., \$1.75.
- THE STORY OF PAINTING: From Cave Pictures to Modern Art**—Thomas Craven—*Simon and Schuster*, 254 p., illus., \$5.
- SYNTHETIC RESINS AND RUBBERS**—Paul O. Powers—*Wiley*, 296 p., illus., \$3. The chemistry of synthetic resinous materials and the raw materials from which they are made. Covers: theories of polymer formation, condensation, polymers, vinyl polymers, synthetic rubbers, resins from natural products, application of synthetic resins.
- THE TEN COMMANDMENTS: Ten Short Novels of Hitler's War Against the Moral Code**—Armin L. Robinson, ed.—*Simon and Schuster*, 488 p., \$3. Fiction by a number of prominent authors.
- TOMORROW WE FLY**—William B. Stout and Franklin M. Reck—*Crowell*, 160 p., illus., \$2.
- WORLD ECONOMICS**—Lewis L. Lorwin, ed.—*Institute of World Economics*, 100 p., paper, Nos. 3-4. This issue with next volume, \$5.

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