



BOTANY



### Grapefruit

POPULAR botany has been recruited to the aid of political controversy by that warrior, still vigorous if no longer exactly happy, who some time ago brought popular zoology into the same arena, mixed and packed into the skin of a "boloney." Having heaved his heavy sausage with telling effect, Al Smith has now tried his marksmanship with a grapefruit.

It is as well, perhaps, that the honorary degrees conferred by various universities upon this eminent Democrat have been in law and the letters; for if he had received a degree of Doctor of Science it might now be the embarrassing duty of botanists and horticulturists to point out the fact that in alluding to grapefruit as "half way between a lemon and an orange," Al got his botanical classification as thoroughly mixed as are the zoological contents of bologna.

Grapefruit, they would point out, is not at all half way between lemon and orange, in the classifications of scholars who have paid careful attention to the taxonomy of the genus *Citrus*. Although they are not in complete agreement as to its exact position on the citrus family tree, botanists do concur in placing it quite close to the orange and rather farther from the lemon. Thus, Dr. Walter D. Swingle of the U. S. Department of Agriculture, writing for Bailey's Standard Cyclopedia of Horticulture, lists *Citrus grandis*, which is the grapefruit, between *C. aurantifolia*, the lime, and *C. aurantium*, the Seville orange. An equally well-versed botanist, Prof. Wilfred W. Robbins of the University of California, classifies grapefruit half way between the Seville orange and *C. nobilis*, the species that includes mandarin orange and tangerine.

It is to be particularly noted that no botanist considers grapefruit to be a hybrid between lemon and orange, a widely held popular notion which possibly Dr. Smith holds, though he does not specifically say so. Grapefruit is a "good" species—by which botanists mean a species distinct from its neighbors, and no hybrid. Like all the rest of the genus *Citrus*, it came originally from southeastern Asia—tropical and subtropical China, and the Malayan region. In its present perfection, however, it was developed practically altogether in Florida, whence its cultivation has spread to southern California, Arizona, Texas and other southern and southwestern states.

If Dr. Smith should desire some hybrid citrus fruits for political bombarding purposes, he might be referred to the tangelo, which is a cross between tangerine and grapefruit, or the lime-

ASTRONOMY

## Electric Eye May Show That Ours is Just Ordinary Galaxy

### Photo-Electric Amplifier on 100-Inch Telescope Detects Stars and Nebulae Lost to Photographs in "Sky Shine"

THE PART of the universe in which we live will probably turn out to be "just another galaxy."

Dr. Joel Stebbins, director of the University of Wisconsin's Washburn Observatory, predicted in a recent lecture at the Carnegie Institution of Washington that new photoelectric measurements of the size of nebulae and the effect of dark, obscuring matter in interstellar space will greatly reduce astronomical estimates of the size of the Milky Way galaxy of stars in which our sun is a minor star and the earth a speck of dust.

Our galaxy has heretofore been considered much larger than other such systems which we see as spiral nebulae, but an astronomical "electric eye" perfected by Dr. Albert E. Whitford of the University of Wisconsin and used by Drs. Stebbins and Whitford last summer on the Mt. Wilson 100-inch telescope has furnished evidence that man does not live in an unusually large collection of stars after all.

The existence of an extensive layer of dark, obscuring material near the

quat, a hybrid of lime and kumquat, or the citrange, which had for parents the common orange and the hardy three-leaved orange. All of these interesting fruits originated on American soil by the blending of separate immigrant strains—therein resembling the "typical" American citizen of the present day, of whom an eminent example may be found in Alfred E. Smith himself.

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Swedish museums have evolved a system of artificial lighting for exhibit halls, so that pictures and other objects are seen as if in clear daylight.

A German firm has introduced a non-shatter glass for automobiles and goggles, which is said not to interfere with vision nor to lose cohesiveness by accidents.

central plane of the Milky Way was confirmed last year by Dr. Stebbins. This non-luminous gas or dust fills up large spaces between the stars. It not only obscures but it reddens the light of distant heavenly objects seen through it, just as the sun looks red at sunset because it is seen through a greater amount of air. This means that the stars are actually brighter than they appear and they are therefore closer to us than has previously been estimated, making the galaxy smaller.

The photo-electric amplifier attached to a giant telescope will detect faint stars and nebulae which can not be photographed because they are lost in the "sky shine" or the diffuse light of the earth's own atmosphere.

The known diameter of the famous Andromeda nebula has been more than doubled, Dr. Stebbins reported, and its extension has been traced out to where the luminosity is only one per cent. of the general surface brightness of the sky.

In the experiments with the improved "electric eye" attached to the Carnegie Institution world's largest telescope on Mt. Wilson, Calif., Dr. Stebbins, who

is also a research associate of the Carnegie Institution, extended the usefulness of the new instrument in measuring light and color of faint stars, clusters of stars and nebulae.

Dark stuff in outer space, unseen by human eyes, actually outweighs the luminous material revealed in the form of shining stars, it is considered probable by Dr. Stebbins. Any reasonable assumption as to the nature of the interstellar dust leads, he said, to enormous calculated masses.

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#### PHYSIOLOGY

### Radium Poisoning Treatment Promising

**F**UTURE sufferers from radium poisoning may have hope for recovery by a method now being developed by Robley D. Evans, physicist of the University of California and Dr. R. Ware of the Los Angeles General Hospital.

These investigators are now trying out their new method on the few survivors of the unfortunate luminous dial paint workers of ten or more years ago, and so far the results are promising. Radium workers in mines and in laboratories will always be exposed to this dread form of poisoning.

The method follows the work of Dr. J. C. Aub, Prof. F. B. Flinn and Dr. S. M. Seidlin and depends on the fact that calcium and radium are very similar in chemical properties. The calcium absorbed by the body goes mainly into the bony structure and therefore the radium also accumulates there. Since the bones are comparatively permanent in composition the radium remains in place, giving off radiations which wreak destruction on the blood-producing centers and on surrounding bone structure.

Now an excess of parathyroid gland hormone will disturb the normal calcium metabolism, causing the system to lose an excess of calcium. Consequently it ought to eject radium too. Of course after this depletion of the calcium has gone far enough the diet must be made rich in calcium to build the bones up again.

Essentially the process is a rinsing out of the radium-contaminated calcium and a substitution of fresh pure calcium. It is a drastic treatment.

To date it has speeded up the rate of elimination of radium to three times the normal rate.

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## ● First Glances at New Books

#### Genetics

**NATURE AND NURTURE**—Lancelot Hogben—*Norton*, 143 p., \$2.75. The reader who wants to know the difference between what doctors call familial and hereditary diseases, the scientific facts about the influences of heredity and environment and what may be the results of marriage of close relatives, will find these and many other interesting genetic problems ably discussed in this book. However, the subject of genetics is not a simple one, and while Prof. Hogben has simplified and clarified it greatly, the book nevertheless requires careful, thoughtful reading.

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#### Ornithology

**TRAVELING WITH THE BIRDS**—Rudyard Kipling—*Donohue*, 64 p., 12 pl., \$1.50. This book is unique in many respects. It is apparently aimed at children, for its text consists of mostly short words in large print, but the scientific information presented is worthy of the full consideration of any adult. It not only tells about the birds as we see them during part of the year but of their ways southward in the winter, illustrating range and route with clean-cut little maps. And the superb full-page plates in color, by Walter Alois Weber, will delight readers of any age. An excellent book to give at Christmas.

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#### Demography

**AMERICAN AGRICULTURAL VILLAGES: 1930**—Irving Lorge—*Amer. Statistical Assn. (Columbia Univ.)*, 133 p., \$1. An analysis of census data on a number of small American communities, minutely analyzed, intended as basic data for the new program of planned population distribution. This publication constitutes No. 1 of a new monograph series.

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#### Nutrition

**THE NUTRITIVE VALUE OF THE BANANA**—Walter H. Eddy—*Teachers College, Columbia Univ.*, 37 p., 25c. A monograph of interest and value to nutritionists and child specialists.

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#### Engineering

**A LIMITED WAY PLAN FOR THE GREATER CHICAGO TRAFFIC AREA**—John A. Massen and others—*Chicago City Council*, 103 p., limited ed., price not yet fixed. An elaborately developed plan for handling the terrific traffic of a modern metropolis by means of specially constructed, isolated high-speed traffic ways, complete even to the healthy suggestion that it be paid for out of current taxes instead of by another bond issue tossed into an already waterlogged market. The planning committee is to be congratulated on its sound fiscal sense as well as on its sweeping engineering vision. The report was prepared by the Albert Russell Erskine Bureau for Street Traffic Research in Harvard University, of which Dr. Miller McClintock is director.

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#### Technology

**HENLEY'S TWENTIETH CENTURY BOOK OF RECIPES, FORMULAS AND PROCESSES**—Ed. by Gardner D. Hiscox—*Henley*, Rev. Ed., 809 p., \$4. Among the improvements to this widely used reference text are new processes from the paint and lacquer industry and formulas for chromium painting. The book is essential to the man whose hobby is a home workshop and would be very useful in any household. Some of the information that it gives concerns dyes, inks, waterproofing, perfumes, cement, plating, glass, dentifrices, soaps, glues, adhesives, cosmetics and oils.

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#### Photography

**THE AMERICAN ANNUAL OF PHOTOGRAPHY, 1934**—Edited by Frank R. Fraprie—*American Photographic Publ. Co. (Boston)*, 296 p., \$1.50. Excellent halftone reproductions of firstclass photographs, technique of aperture and timing, the alchemy of the darkroom, brief discussion of "ixteen-millimeter sound," lists of honors and prizes for the past year—this photographers' annual is a worthy addition to its predecessors in that it goes a step beyond them.

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