



### Low-Grade Ores

WHEN a man-made ore-reducing plant succeeds in paying its way by getting gold out of rock where its presence is measurable in dollars per ton, we pat the inventors and engineers on the back, give them medals and honorary degrees, and maybe even let them keep some of the money for themselves.

Yet plants and animals every day work lower-grade ores than any industrial establishment would ever dream of tackling. They make their livings that way, and they even have so much surplus that man and his hungry-mawed livestock can appropriate large chunks of the products of their living laboratories.

In the soil, potash, nitrates, phosphates and the other minerals needed by plants exist in minute quantities expressed usually as a few parts per million. Yet plant roots can take in huge quantities of soil water containing this exceedingly thin stuff, and the plants' protoplasm extracts from it as much as it needs for its own purposes. So successful is this living extraction process that when we want to replenish worn-out soils with concentrated fertilizers containing the lost elements, we most commonly use the remains of dead plants or animals, either recent or fossil.

But this successful concentration of thin solutions of mineral salts is only an incident in the life of the plant, which has to make its real foodstuffs out of water and thin air—out of a gas that exists in the air only as a small fraction, carbon dioxide. Again the protoplasm, in its specialized bits known as chloroplasts, manages somehow to catch and hang onto this thinner-than-thin stuff, enslave sunbeams to tie it to pieces of broken water molecules, and eventually turn it into carbohydrates and oils. With nitrates added from the soil solution, proteins also are formed.

Animals do not concentrate minerals and foodstuffs directly from soil water and air, as plants do, but they can take some of the partly concentrated stuffs made by the plants and perform some very creditable jobs of further concentration upon them. In an animal's bones, for example, there is a far higher concentration of lime and phosphorus than one commonly finds in plants. The animal has eaten plants containing these

minerals and raised the concentration higher. That is why we use bonemeal for a phosphate fertilizer, rather than any plant stuff.

Again, animals eat the starches and sugars, and even the celluloses of plants and concentrate parts of them into fats like butter, lard and bacon, which have a markedly higher energy content per pound than the stuffs out of which they were made.

*Science News Letter, November 30, 1935*

## •First Glances at New Books

Additional Reviews  
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### Photomicrography

PHOTOMICROGRAPHY, 13th ed.—*Eastman Kodak Co.*, 121 p., \$1. This new edition represents a considerable advance over the twelfth, both in methods and mechanisms described, and in the makeup and appearance of the book itself. There should be a copy of this handy manual in every laboratory where microscopic work is carried on.

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### Chemistry

GENERAL CHEMISTRY FOR COLLEGES—Herman T. Briscoe—*Houghton Mifflin*, 872 p., \$3.75. Prof. Briscoe has prepared a very comprehensive text in elementary college chemistry which should serve the needs of those teachers who want more material than is commonly provided in the usual textbook. Containing too much information to be given in a normal one-year course, the various chapters are so arranged that almost any type and length of course can be presented. Good typography, many diagrams and scores of industrial pictures add readability to the other merits of the book. A ten-page index is provided.

*Science News Letter, November 30, 1935*

### Herpetology

A CONTRIBUTION TO A KNOWLEDGE OF THE HERPETOLGY OF A PORTION OF THE SAVANNA REGION OF CENTRAL PETEN, GUATEMALA—L. C. Stuart—*Univ. of Mich. Press*, 65 p., 50c.

*Science News Letter, November 30, 1935*

### Biology

THE DARTERS OF THE GENERA HOLOLEPIS AND VILLORA—Carl L. Hubbs and Mott D. Cannon—*Univ. of Mich. Press*, 100 p., 50c.

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### History

COFFEE: THE EPIC OF A COMMODITY—Heinrich E. Jacob—*Viking*, 296 p., \$3.50. Fascinatingly written and ably translated (by Eden and Cedar Paul), this book tells the story of coffee from

its first appearance as "Islam's wine" a thousand years and more ago, down to its present state as one of the major economic factors (and hence troubles) of the modern world. The illustrations are numerous, well chosen, well reproduced.

*Science News Letter, November 30, 1935*

### Marine Biology

WATER PEOPLE—Wilfred Swancourt Bronson—*Wise-Parslow*, 104 p., \$1. Fishes and other water creatures, fascinatingly pictured and entertainingly written up. If you have any bright youngsters of eleven or twelve or older on your Christmas list, here is a sure-to-please present. The growing army of Bronson "fans" will buy, regardless of their ages.

*Science News Letter, November 30, 1935*

### Botany

AN ILLUSTRATED MANUAL OF PACIFIC COAST TREES—Howard E. McMinn and Evelyn Maino—*University of California Press*, 409 p., \$3.50. The native and introduced trees of California, adequately described and illustrated, with suggestions regarding their horticultural, agronomic and industrial uses. An exceedingly useful appendix condenses this latter information into groups of trees classified according to uses.

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