

SCIENCE

FRIDAY, NOVEMBER 8, 1912

THE AMERICAN ASSOCIATION FOR THE
ADVANCEMENT OF SCIENCE

CONTENTS

The American Association for the Advancement of Science:—

Micro-organisms of the Soil: PROFESSOR
GEORGE T. MOORE 609

Plant Food in Relation to Soil Fertility:
PROFESSOR CYRIL G. HOPKINS 616

The Fifth International Congress of Mathematicians: PROFESSOR A. R. CRATHORNE .. 622

The New England Geological Excursion: PROFESSOR HERDMAN F. CLELAND 624

The Pageant at Mount Holyoke College 625

Scientific Notes and News 626

University and Educational News 631

Discussion and Correspondence:—

The First Use of Trinidad Pitch for Road-making: DR. E. W. GUDGER. *The "Williams Process" of Photography:* ROGER H. WILLIAMS 632

Scientific Books:—

Heredity and Eugenics: PROFESSOR LEON J. COLE. *Browne's Handbook of Sugar Analysis:* DR. F. G. WIECHMANN. *Gratacap's Popular Guide to Minerals:* PROFESSOR W. E. FORD 634

Special Articles:—

Antagonistic Action of Electrolytes and Permeability of the Cell Membrane: PROFESSOR JACQUES LOEB. *Vital Staining of Chromosomes and the Function and Structure of the Nucleus:* DRS. G. L. KITE and ROBERT CHAMBERS, JR. *Experiments with Desiccated Thyroid, Thymus and Suprarenals:* DR. F. E. CHIDESTER. *Newly Discovered Eurypterids in Nebraska:* PROFESSOR ERWIN H. BARBOUR. *Some Necessary Changes in Cephalopod Nomenclature:* S. S. BERRY 637

Societies and Academies:—

The Anthropological Society of Washington 646

MICROORGANISMS OF THE SOIL¹

SUCH statements as "the soil is not a mere sponge, but is teeming with life" or that "the earth is one of nature's vast laboratories in which microscopical wonder-workers perform incredible experiments" may have been unusual enough at one time to attract attention; but no longer is the presence or performances of these inhabitants of the soil of such novelty as to startle or dismay us. Indeed so accustomed have we become to the idea that each gram of the upper layers of the earth is filled with its millions or billions of bacteria, that the tendency is to ascribe all functions of the soil to its micro-flora and no theory is too bizarre, no miracle too improbable, so long as we may fall back upon the soil bacteria to account for it.

The apologetic statement only a short while ago of a German investigator, that perhaps, after all, the chemical condition of the soil might have almost as much to do with a given condition as the bacteria, illustrates, if nothing else, the great changes that have taken place in our conception of the constitution of the earth's surface during the last twenty years. To attempt to indicate the relative places of the various aspects of science which are concerned in problems of the soil would be as useless as it is impossible, but I might as well say at once that I do not feel that the situation calls for any particular glorification of the biologist. I do not wish to

¹ Presented at the Symposium on Soils at the Washington meeting of the American Association for the Advancement of Science.

MSS. intended for publication and books, etc., intended for review should be sent to the Editor of SCIENCE, Garrison-on-Hudson, N. Y.