BOOK REVIEWS

Experimental Pedology
Univ. of Nottingham Eleventh Easter School in Agricultural Science, 1964


This book contains the proceedings of the Eleventh Easter School in Agricultural Science held in 1964 at the University of Nottingham. The school was held to celebrate the centennial of soil science in Britain, and the first of the 29 papers, arranged in five sections: Soil Formation and the Environment (3 papers); Redistribution of Inorganic Substances (6 papers); Biogeochemistry of Soil Forming Processes (8 papers); Pedogenetic Studies (7 papers); and Demonstrations of Techniques (3 papers). The editors' preface sets an unfortunate stage for the contributions. To one familiar with the methods of the earth sciences, experiments may be planned, but there are also natural experiments—situations where soils formed under different sets of environmental factors can be compared. The earth scientist seeks out the natural experiments and from them develops his science. Geology and pedology have developed largely by such studies. The chemists and physicists have used planned experiments. Both, however, are experiments. The editors say "it is now possible in pedology to put up a hypothesis and to submit it to the same kind of experimental investigations that has been responsible for the dramatic advances in other branches of science over the last fifty years." Thus, the extreme view of experiments may have led to the emphasis on planned experiments and virtual exclusion of reports of studies of natural experiments.

The contributors have presented substantial evidence that it is possible to plan laboratory and field trials for the processes of weathering, clay formation, and organic accumulation, and for the processes of soil formation and soil movement. They have shown the use of natural experiments and the development of techniques described here must precede the circumscribed investigations that are to come. In the past few decades, the reader need not expect to find ready-made methods to reproduce the conditions in real soils. Problems of methods are difficult and only partially solved. However, some experiments reported involve continuous leaching, a characteristic of only a few soils of the world. Most of the soils that furnish our food and fiber are subject to seasonal leaching, interrupted by seasons of saturation deficit with partial or complete drying of one or more horizons to wilting point. The effects of alternate wetting and drying are more difficult to study—one paper recognizes this as a factor. The concluding paper that attempts to relate "experimental pedology" to the classification of soils is an extreme disappointment. It primarily reflects lack of experience within real soils. The author, Hallsworth, forgets the extensive cracking clays why they crack and whether movement of materials in water is the most entirely related to the movement of water.” He fights straw men, for example, when he emphasizes that an A horizon is not necessary to form a Podzol. Anyone who has seen the Podzols of sub-tropical and tropical regions already knows this and those who read the literature should know it. It is important to understand the mechanics of iron removal, but little is gained by whipping a dead horse. His proposed classification of soils is possible because he seems not to know many of the problems. Chernozems, he proposes, should have heavy textures and secondar carbonates. What, then, does one do with sandy soils that are otherwise like Chernozems, or soils formed in noncalcareous materials that lack secondary carbonates but are otherwise like Chernozems?

Nevertheless, we must take our first step before we can take the second. This book represents the first faltering step of what may well become an invaluable tool of pedological experiments. The editors are not apt to replace studies of natural experiments, particularly those involving geomorphology, but they could become extremely valuable as a supplement to present methods. The importance of the later work is as much in the techniques that are reported as in the results obtained.

The discussions of the papers, reported in some detail, are also of importance in highlighting the shortcomings of the methods and the hopes of the investigators that they can improve them. The emphasis on the biologic aspects of soil formation is an unfortunate limitation of the theme of the First Easter School. Centuries of care of every aspect of soil genesis, every step, should he read it with a critical attitude.—GUY D. SMITH, Soil Survey Investigations, SCS, USDA, Washington, D.C.

Spuren tierischer Tätigkeit im Boden des Buchenwaldes
(Imprints of the Faunal Activity in Soils of Beech Forests)

By Gerhard Zacharias, Paul Parey Verlag, Hamburg and Berlin. 1965. 68 p., 20 illus. DM. 12.80 (Approx. $4.00).

This is an outstanding contribution to our knowledge of soil fauna, a sadly neglected pedogenetic factor. While in the past hundred odd years the students of soils spent untold hours in investigating physicochemical soil properties, many of them pursued their professional career with a mere extra-curricular knowledge of a single member of soil fauna—fishing worms. Actually, the genetic profile of many soils of the world owes its origin to the complex of animals ranging from the surface-inhabiting Callembola and Orbitididae to large Annelidae and large burrowers. These impart to soils definite morphological and biochemical properties which determine the course of soil development.

The essay of Dr. Zacharias incorporates results of a seven-year investigation of the activity of soil animals, conducted in several locations and during different seasons. The direct observations of soil population were supplemented by examination of thin sections and experiments in forest stands and in the laboratory. The most significant conclusion of the author is that in soils supporting beech stands the important soil-forming activity is limited to the fauna. Eucythera, because of its small size, becomes extremely valuable as a supplement to present methods. The importance of soil fauna to soil scientists, agronomists, foresters, and zoologists, particularly those concerned with plant protection—S. A. WILDE and C. D. HOLD, The University of Wisconsin, Madison, Wis.

De Alluviale Gronden van de Maas, de Roer, en de Geul in Limburg
(Alluvial Soils of the Rivers Maas, Roer, and Geul)


A visitation by the Dutch people of an enormous area of soil into land is an accomplishment providing some justification for the aphorism that "the Lord created the World, but the Dutch created most of Holland." However, a transformation of the soil into terra firma is not synonymous with an acquisition of productive soils. The amelioration and rational utilization of a sodium- and magnesium-enriched deposit with a critically high water table requires much additional effort. A large share of this is accomplished by a meticulous soil survey based on intensive research. The volume under the review illustrates excellently the classification results of the activities in soil activity in soil horizons. The volume of interest to soil scientists, agronomists, foresters, and zoologists, particularly those concerned with plant protection—S. A. WILDE and C. D. HOLD, The University of Wisconsin, Madison, Wis.

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