

INTRODUCTION

by

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The Working Group on Soil Micromorphology was set up during the third International Working Meeting of Soil Micromorphology in Wroclaw, Poland in 1969. At that time there was concern about the proliferation of complex terminology and the fact that current systems of description and classification, though each having individual merits, were unsatisfactory in one way or another. The task given to the Working-Group was, therefore, to study the problems of terminology, examine existing systems of description and classification in micromorphology and, where necessary, to develop ones which were more internationally acceptable. In 1970, the Group became one of the official Working-Groups of the International Society of Soil Science and became recognised and supported by U. N. E. S. C. O.

Members

The following members were elected at the inaugural meeting in 1969; Dr. H. J. Altemüller (Germany); Dr. N. Fedoroff (France); Dr. A. Jongerius (The Netherlands); Prof. Dr. S. Kowalinski (Poland); Prof. Dr. G. Paneque (Spain); Prof. G. K. Rutherford (Canada); Dr. G. Stoops (Belgium); and Dr. E. A. Yarilova (U. S. S. R.). As Dr. R. Brewer (Australia) was not at the meeting he was invited by letter to be a member. In 1972, Dr. P. Bullock (U. K.) was invited to join the Group. Prof. G. K. Rutherford was elected President and Dr. A. Jongerius Secretary.

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The composition of the Group changed slightly following elections at the Fourth International Working Meeting in Canada in 1973. Dr. R. Brewer resigned and his place was taken by Dr. J. Sleeman (Australia). Dr. U. Babel (Germany) replaced Dr. H. J. Altemüller as the German representative and in addition Dr. E. A. Fitzpatrick (U.K.) Prof. G. V. Dobrovolsky (U.S.S.R.), Dr. K. Flach (U.S.A.) and Dr. N. K. Tovey (U.K.) also joined the Group, the latter representing the field of soil mechanics.

The only change in composition of the Main Group since the Kingston meeting has been that Prof. S. Buol (U.S.A.) has replaced Dr. K. Flach who resigned.

Meetings

Because of the regional distribution of the members most meetings have been held in Western Europe. Since 1969 ten meetings have been held: Wageningen (The Netherlands) and Ghent (Belgium), 1970; Moscow (U.S.S.R.) and Braunschweig (Germany), 1971; Sevilla (Spain) and Paris (France), 1972; Zakopane (Poland), 1973; Harpenden (U.K.) 1974; Aberdeen (Scotland) 1975; and Grignon (France) 1976. At several of these meetings micromorphologists of the host country were invited to take part in the discussions in addition to the elected representative. Progress reports were given at the 4th International Working-Meeting of Soil Micro morphology in Canada, 1973 and at the 10th International Congress of Soil Science in Moscow 1974.

Programme

The programme of the Group has included both short and long term projects. The main short-term project has been to review current terminology and produce a Glossary of micromorphological terms. The Glossary is now complete and will be published by Pudoc, the printing office of the

Ministry of Agriculture of the Netherlands during 1977. A report on this project is given below.

The early meetings of the Working-Group were also devoted in part to an assessment of current schemes of description and classification in micromorphology (e. g. those of Brewer, Barratt, Kubiena and the Soviet schools). Although these had many merits, they also had particular shortcomings which restricted their universal use. A common characteristic was that they were restricted to normal soil materials. All the systems failed in one or other way when applied to certain specific soil horizons (e. g. petro-calcic, peaty) or saprolitic layers. No system included detailed schemes for both lower and higher levels of organic matter. There were significant gaps between classifications of different parts of the soil. Few of the authors of the systems explained by means of examples how the systems could be applied in practice, a drawback which causes major difficulties for students.

Because of these shortcomings, the Working-Group decided to attempt to develop new comprehensive systems for both description and classification. Before beginning this, it devoted some time to the consideration of concepts of fabric analysis, particularly because of the misunderstanding that appeared to exist in the literature concerning fabric, structure and texture.

Work on the development of schemes for description and classification by the Working-Group has taken several forms. It soon became obvious that two particular areas needed specialist attention, namely organic matter and the weathering and neoformation of minerals. To deal with these, two sub-groups were set up, composed partly of main group members and partly of invited specialists. The Sub-Group on Organic Matter had its first Meeting in 1972 and that on Weathering and Neoformation of Minerals in 1975. Reports of both these Sub-Groups are given below.

In addition to the Sub-Groups, individuals and small

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groups within the Main Group have examined ways of describing and classifying soil material in thin sections. The study of the fabric of a soil can be approached in two basically different ways. One approach is to start with the recognition of the simplest units or basic building blocks and to examine the way that these are organised into successively higher units. The other approach is to start with the most complex units and to examine how these breakdown into units of simpler organisation until the simplest building elements themselves are reached. In the first approach one goes from the microscopic to the macroscopic and in the second in the opposite direction.

Both these approaches are being examined within the Working-Group. Dr. Babel has applied the first approach to the study of organic matter and is reporting on his investigations in a separate paper at this Working-Meeting. This approach is also being used within the Sub-Group on Organic Matter in developing its system of description and classification (see its Progress Report below). Drs Fedoroff and Bullock have applied the same approach to dominantly mineral soils and this also is being read as a separate paper at the Congress. In it they outline a scheme for a morphographic description. It is based in the first place on the identification of the basic constituents and secondly on the relation between the constituents at every level. The latter entails the description of the related distribution and orientation patterns of each component. Experience shows that natural soils, rocks and their weathering products are characterised by a rather limited number of organisations. Specific combinations of organisations are mostly restricted to a soil horizon or part of it, suggesting that a relationship exists between these types of organisations and the diagnostic horizons of Soil Taxonomy.

A proposal for an alternative classification has been

worked out by Drs. Stoops and Jongerius based on the re-system the authors have produced a scheme for coarse-fine related distributions (Geoderma 13 (3), 1975, 189-200). The classification scheme for the fabric types of both lower and higher orders is also to be published in Geoderma.

Future Work of the Main Group

The main Group now enters into the most important and demanding period of its existence, with the responsibility of welding together the work of its individual members, groups of members and Sub-Groups into a complete comprehensive system of description and classification.

As an additional task the Main Group is to set up a Bibliography of Soil Micromorphology which will be made available to all interested persons.

cognition of different homogeneous zones and their mutual relationship and distribution. All identical homogeneous zones are grouped as a partial fabric. A particular partial fabric is selected as a reference against which other partial fabrics are compared from the point of view of position, composition and fabric.

The system is applicable at all levels of observation and to all types of soil material including that which has proved difficult in the past e. g. petrocalcic. In developing this

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Examples of Classes of Components	Amount	Size	Internal Structure	Colour	Shape	Origin
Organic residues Organic/Tissue residues Yeast residues Cell residues						
Morphogenic material Polymorphic material						
Voide Mineral grains						

Table 1