

SOME ORGANIC REMAINS IN TROPICAL SOILS

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Tropical soils, though very suitable to study weathering processes are very impracticable to examine organic remains in it. This is a consequence of the very rapid decomposition in the tropics. It is clearly an advantage for the study of soil formation but it is a great drawback as far as organic matter is concerned. Much searching is needed to find a few evidently organic remains in some thin sections. They are mostly vegetable, as animal remains are rare. However locally (e. g. Papua and Africa) arthropod cuticles (chitin) can occur in considerable amounts. The latter will be published elsewhere and somewhat later.

This note contains some preliminary results of a more extensive study concerning organic matter in tropical soils. Only a few but quite different and common forms of organic matter are represented herewith (figs. 1-3). All micrographies are made from latosolic topsoils, because topsoils give the best opportunity to find various organic remains.

In fig. 1. is demonstrated a fragment of wood with well preserved structure. These are the commonest remains seen in tropical forest soils. It is striking how little parts of leaves and twigs can be observed in these soils. Even roots are noticed rarely. Moulds and termites and further moisture and heat seem most active and destructive agents. Wood seems therefore a very important source for humus in tropical forest soils. When this proves to be correct it is very likely that forest humus (from wood) and savanna humus (from roots) will show quite different properties. It is hoped to publish all the results of these investigations as soon as the whole work is completed.

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In fig. 2 is shown an irregular plant fragment enclosing several faecal pellets. Some still unknown soil organisms (oribatei ?) were feeding in these plant remains; then after satiating left the pellets. Sometimes it is also possible to see other proofs of feeding, something like the gnawing marks of rodents and such like.

Finally the last fig. 3. In savanna soils the usual organic remains are those of roots and charcoal but little else. In the represented topsoil however it was somewhat surprising to find distinct spores probable with small parts of the parent plant. It is not yet known to which plant these spores belong, i. e. either a fungus, a moss or a fern.

LEGENDS TO FIGURES

- Fig. 1. - Remains of wood with well preserved structure. Thin section made from a forest topsoil taken on a cool high plateau (2500 ft high). Magnification 50x.
- Fig. 2. - Faecal pellets enclosed by the remains of a plant. Thin section of a forest topsoil collected in the warm lowlands (less than 300 ft high). Magnification 125x.
- Fig. 3. - Spore grains with some remains of the parent plant. Thin section made from a savana topsoil sampled in the hot coastal plains (less than 100 ft high). Magnification 500x.

Fig. 1

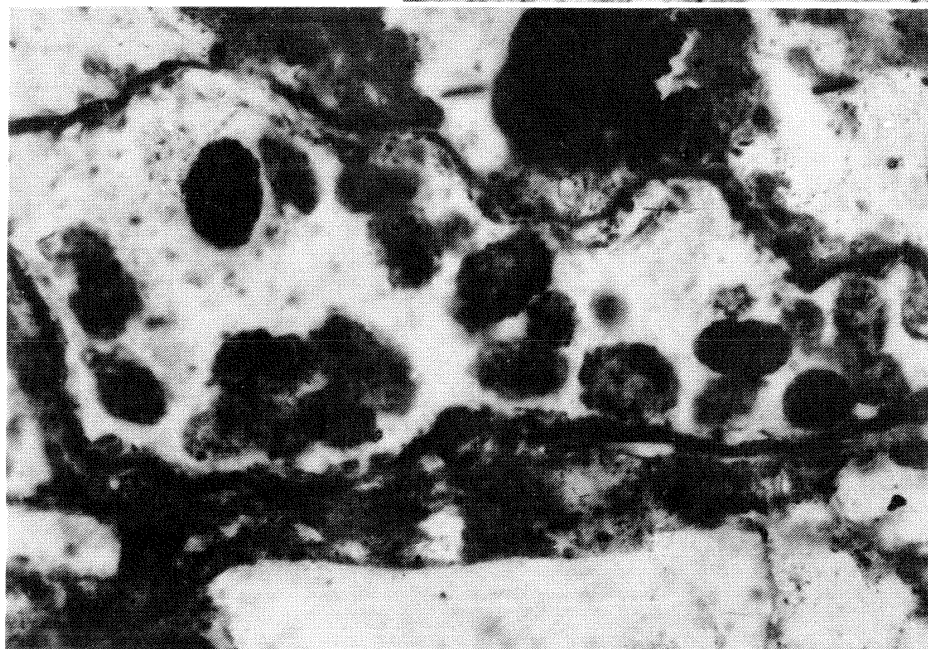
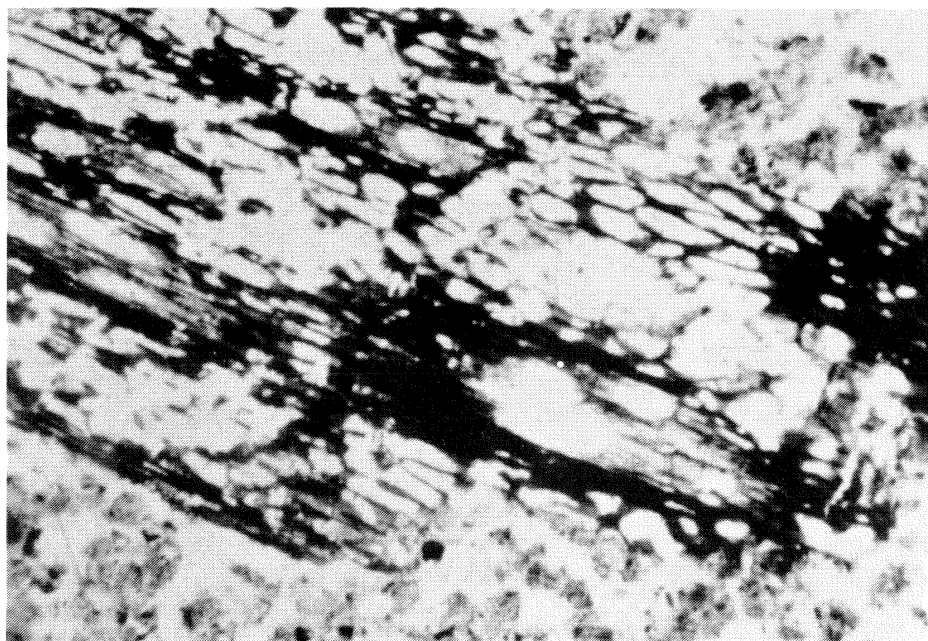
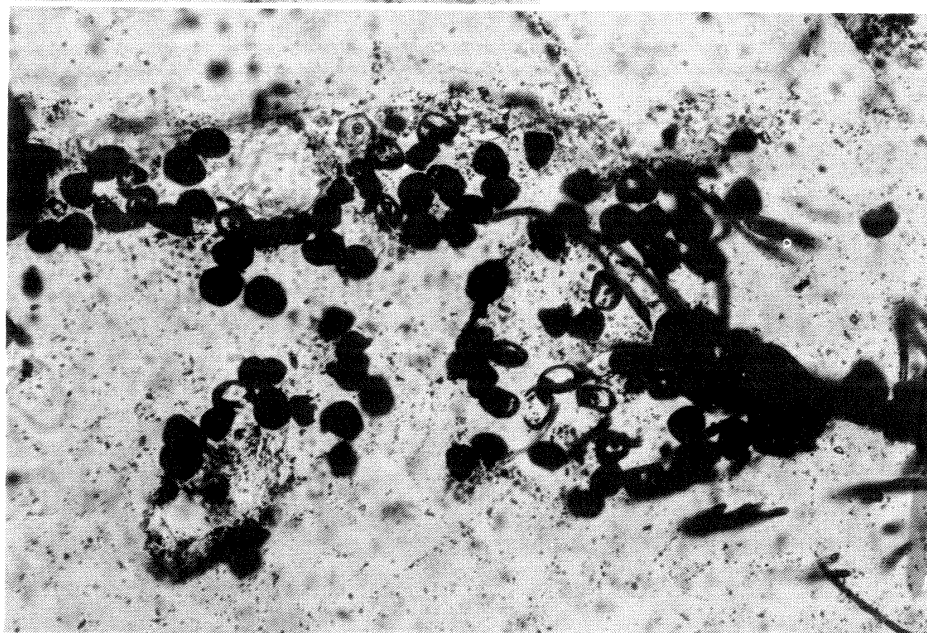


Fig. 2

Fig. 3



SUMMARY

Owing to the high humidity and the high temperatures in the tropics it is generally accepted that organic matter decomposes and disappears there rapidly. This is indeed true for organic matter lying on the soil surface as is proved by the thin or wholly lacking litter layers everywhere in the tropics. However it is quite a different question for organic matter in the soil even in arid regions. In a tropical soil many organic remains both from animals and from plants can be seen. Animal remains are e.g. arthropod skeletons (chitin), bones, eggs, faecal pellets, etc. Plant remains can be e.g. charcoal, pollen, spores, wood, roots, etc.

From this multitude only a few arbitrary pictures are given merely to warn for an often heard misunderstanding.