

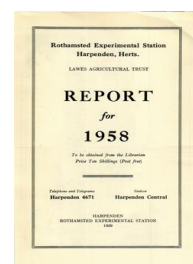
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Soil Survey of England and Wales

D. A. Osmond

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SOIL SURVEY OF ENGLAND AND WALES

D. A. OSMOND

J. P. Watson resigned and P. Bullock, W. M. Corbett and C. W. Montgomery were appointed. J. C. Chisnall of the Colonial Pool of Soil Surveyors died in Sierra Leone; other members are continuing surveys in the countries to which they were seconded and A. R. Stobbs was appointed. R. R. Storrier and J. Loveday returned to Australia after obtaining higher degrees. B. Clayden, C. C. Rudeforth and R. S. Seale returned from Iraq and have taken part in the season's work. A. Muir attended a meeting of a Working Party on Soil Classification, etc., in Baghdad and afterwards visited Teheran at the invitation of the Foreign Office. D. A. Osmond attended a symposium on soil structure at Ghent. H. H. Le Riche obtained a Ph.D. degree at London University.

Field work was completed on Sheet 83 (Formby) and is being continued on sheets as described below. The soil map of Great Britain and N. Ireland at 1 : 1,000,000 was prepared for incorporation into the Food and Agriculture Organization map of the soils of Europe; it will also be used by the Clarendon Press in a forthcoming atlas. Several maps are in course of production in the cartographic section, and a very interesting exhibit of the stages from field-slip to the published map was set up at the Autumn meeting of the British Society of Soil Science at Bangor.

NORTHUMBERLAND

Sheet 19 (Hexham)

Mapping on the 1 : 25,000 scale has progressed westwards, north and south of the Tyne and in Allendale. The most interesting area is that including Corbridge and Hexham, which is approximately bisected by the Tyne flowing in an east-south-easterly direction. Excluding the higher land above 700 feet, where gley soils, podzols and other moorland types predominate, the Tyne is a significant pedological boundary for, on the north bank, where the slopes are generally south-facing, the ratio of brown earths to gley soils is about 3 : 1. South of the river poorly drained soils are dominant, brown earths are relatively rare and the ratio is about 1 : 7. The fairly large spread of alluvium in the valley is mainly well drained and, although variable in texture, is mostly covered by sandy and light loams.

Allendale consists mainly of high moorland with soils similar to those described in previous years. The valley sides have been extensively worked for various minerals, so that spoil heaps and disturbed soils are extensive. Brown earths and associated soils occur on the lower slopes where most of the agricultural holdings are situated; the fell is traditionally rough grazing, for, as a common,

its stocking is limited by ancient bye-laws. Consequently, except for heather-burning, little or no improvement has been attempted. (Ashley and Rudeforth.)

YORKSHIRE

Sheet 71 (Selby)

Nearly all the land west of the Derwent was mapped as well as about half of that beyond it. The soils encountered were those associated with the Escrick Moraine, which have been described before.

When the growth of crops prevented mapping on Sheet 71, work was started around Settle and planned so as to provide the ground-work either for detailed mapping of Sheet 60 (Settle) or for a reconnaissance of the larger Sheet 90 (Seventh edition). The area straddles the Craven Fault with the Mountain Limestone to the north and the drumlin country, mainly of heavy Carboniferous Boulder Clay, to the south.

A reconnaissance was made of Farndale, which may be regarded as typical of the dales of the N. Yorkshire Moors. The lower slopes of the valley are gentle and have heavy, poorly drained soils on Liassic clays which resemble those on Carboniferous shales. The steeper and more broken slopes above have better drained soils on sandy shales which give way, higher up, to podzols on sandstones. The valley slopes end abruptly, often in a cliff which separates them from the flatter moorland where peaty gleys and soils with thin iron pan are dominant. (Crompton.)

LANCASHIRE

Sheet 83 (Formby)

Detailed mapping has been completed, and soil boundaries are being checked and profiles sampled on Sheets 83 and 74 (Southport), both of which will be described in one memoir. Most of the soils encountered have already been described except for those in the lowland Mosses, which, as they are mainly peat soils, were classified by features of botanical composition and genetic development. (Hall.)

DERBYSHIRE

Sheet 125 (Derby)

Surveying was concentrated on the southern part of the Derbyshire coalfield between the Derwent and Erewash. The established series Kirkby Overblow, Seacroft and Hazelwood are found on the bold escarpments of the Millstone Grit, east of the Derwent. A fairly large area of podzol soils occurs on Breadsall Moors. Between Chaddesden and Milford considerable areas of heavy drift give rise to poorly or very poorly drained silty or fine sandy clay loams with characteristic intense mottling and concretions in the subsoil. The northernmost extent of the Trias formation is marked by the faulted escarpment of Bunter sandstone where soils of the Bridgnorth and Hodnet series occur.

The soils of the Coal Measures appear to be fairly simply related

to each other. Sandstone ridges yield fine sandy loams that become deeper away from the crest. Sand that has been washed down gives poorly or very poorly drained sandy clay loams over a characteristic grey clay with yellow mottling, but without such sand a shallow clay loam over the mottled clay becomes dominant. (Bridges.)

SHROPSHIRE

Sheet 166 (Church Stretton)

There now remain only about 30 sq. miles to be surveyed. Soils on the tills and associated drifts of Apedale, of the Onny and Quinney brooks, were mapped, together with those west of the Longmynd in the valley of the East Onny and its tributaries. Most of the till areas have an intricate pattern of gleyed and slightly gleyed soils, analogous to those on boulder clay and glacial gravel as described in the Wem memoir. The East Onny district consists almost entirely of gleyed soils, the development of which was directly linked with a serious regional drainage problem.

Mapping of the Longmynd was extended to the west and north edges of the sheet, where freely drained and slightly podzolized, coarse-textured soils predominate.

Geological complexities and physical difficulties made progress slow around Hopesay and Clungunford, but this district was completed in the late summer. (Mackney and Burnham.)

CAMBRIDGESHIRE

Sheets 188 (Cambridge) and 173 (Ely)

One surveyor was absent for most of the field season, so that mapping was restricted to completing and checking some boundaries on Sheet 188 as well as sampling further profiles for inclusion in the memoir which is being written. A number of thin-sections were made to examine the micromorphology of the textural B horizons of soils resembling sols lessivés.

Mapping was continued on Sheet 173 in the neighbourhood of Southey, Haddenham, Littleport, Stuntney and Isleham, where peat soils of variable depth or peat soils overlying fen clay and occasional areas of the Isleham or Peacock series were recorded. (Hodge and Seale.)

BUCKINGHAMSHIRE AND BEDFORDSHIRE

Sheet 220 (Leighton Buzzard)

Mapping was extended into the country between Lidlington and Leighton Buzzard and into the parishes of Shenley Brook End, Woughton-on-the-Green and Silsoe.

The soils encountered are similar to those reported previously. Sandy brown earths are widespread between Ampthill and Boughton End and also occur in the north-west of Woburn Park and north-east of Bragenham; a gravelly phase has been noted around Steppingley and Stockgrove. Podzolized soils are quite well developed on Rammamere Heath and Cooper's Hill.

Gley soils are very extensive, being developed chiefly on the Chalky-Jurassic Boulder Clay. North-west of Bletchley they conform closely to the Hanslope series, but farther east, between Boughton End and Milton Bryan, the profiles are more distinctly mottled to within a few inches of the surface, are generally slightly less calcareous and often have a sandy clay loam or clay loam plough layer. At Silsoe considerable areas of soils of the Wicken series are developed on resorted Gault. (King.)

HERTFORDSHIRE

Sheet 239 (Hertford)

Boulder clay, occupying the undulating interfluves in the north-east give rise mainly to calcareous gley soils, but farther west, around Bramfield, soils are more diverse and the commonest may be non-calcareous to 30 inches and is a gleyed brown earth of high base status. In both district fluvio-glacial gravel yields freely drained soils, and on slopes below the spread of boulder clay a complex of freely drained stony, brown earths of medium texture has been distinguished.

South-east of Hatfield soils similar to those around Bramfield on boulder clay overlying London Clay were mapped at elevations from 200 to 400 feet. In addition, a flinty, non-calcareous, strongly mottled drift of fine texture gives rise to gleyed brown earths and, in places, to podzolized soils. This deposit, of uncertain origin, rests on the Pebble Gravel and has been proved to 8 feet without reaching a calcareous zone, but the glacial erratics in it are similar to those in the boulder clay. On the upper slopes of valleys cut into the underlying London Clay, the Pebble Gravel gives rise to a complex of sandy and pebbly soils, among which a coarse sandy, gley podzol is commonest. On the lower slopes are acid, strongly gleyed soils. (Thomasson.)

GLAMORGAN

Sheet 262 (Bridgend)

Past sporadic small-scale mapping of parts of this and the adjoining sheets has led to the naming of several series, some of which could possibly be correlated with those now being mapped elsewhere. Field examination of soils on Carboniferous Limestone and Lower Lias interbedded shales and limestones at other centres revealed the possibility of correlating some with similar soils in South Wales. Furthermore, field investigations and mineralogical studies suggest that ambiguity in some previously named series mapped on glacial gravels can be removed and further simplification introduced. Numerous profiles were dug in this re-examination which will be continued with further mapping. (Crampton.)

SOMERSET

Sheets 279 (Weston-super-Mare) and 280 (Wells)

Profiles were sampled to establish the identity of certain parent materials on and around the Mendips, because soils very like those

of the Nordrach series over Carboniferous Limestone occur over rocks of other formations, e.g., Old Red Sandstone and Lower Lias; generally the finer-textured subsoils over these less pervious rocks are mottled and contain abundant manganese dioxide, indicative of imperfect drainage. On lower ground near the Mendips and Quantocks, deep sections in gravelly "Head" with included pockets of stoneless sand of considerable depth provide evidence for the development of texture profiles.

In the moorland around Godney 5 feet of peat has accumulated since the deposition of the estuarine alluvium in Romano-British times. Phragmites peat passes upwards into late Fen-stage Phragmites-Sedge peat and although no oligotrophic plant remains have been found, quite acid peat (pH about 4.5) has developed, possibly as a result of drainage. (Findlay and Clayden.)

KENT

Sheet 305 (Folkestone)

Revision and more detailed survey was continued of many parts where complicated soil patterns were indicated in the initial reconnaissance. Some very detailed mapping was done where little or no relief is present to differentiate soil zones that appear as long, sinuous fingers or as islands.

Discrete areas of soils that are distinctly different as regards the extent to which calcium carbonate has been leached are still being found, and some difficulty has arisen where no clear-cut division can be made between them. (Green and Hodgson.)

OTHER WORK

Apart from the primary survey, members of the staff examined many small areas in detail. These include experimental husbandry farms, experimental sites, farm institutes, open-cast coal sites, forestry areas and town-planning areas. In the laboratory, apart from the routine analyses of soils, a promising study is being made of a new potentiometric method of determining the sodium content of saline soils. It has so far been used on soil/water extracts and on saturated soil pastes; pH control is essential to attain the necessary accuracy.

The cartographic section, in addition to preparing the soil maps for publication, prepares all figures and diagrams for Survey memoirs and helps other departments when possible.