ROTHAMSTED RESEARCH

Report for 1949

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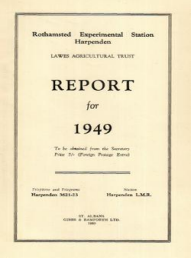

Soil Survey of England and Wales

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SOIL SURVEY OF ENGLAND AND WALES

By A. Muir

The work of the survey has, in the main, been confined to those areas reported on last year. The general demand for soil maps and information on special areas continues.

Lancashire

Sheet 75 (*Preston*)

Detailed field survey in the Preston region was continued and about 13,000 acres were mapped on the 6″ to 1 mile scale. Surveying was largely concentrated in the south east, around Chorley—an area of Carboniferous sediments which vary from fine mudstone to very coarse sandstone. Though outcrops of the solid formations are common, particularly towards the rising ground in the east, most of this district is covered with glacial drift, whose great variations, both in colour and texture, reflect its diverse origins. Certain areas show a great confusion of glacial deposits due to the presence of overflow channels and morainic deposits, and it has been found necessary to delimit these as morainic complexs.

The soil series encountered include most of those noted in last year's report as occurring on the Carboniferous rocks or on glacial drift of Carboniferous origin, together with several tentatively named new series formed on glacial drift of mixed Triassic and Carboniferous origin. Two parent material types have been recognised; a sandy clay to sandy loam and a clay loam to silty clay. Variation in drainage gives rise to six series of which the Gillibrand, an imperfectly drained soil on the lighter drift, the Adlington, an imperfectly drained soil on the heavier drift, and the Coppull, an impeded soil on the heavier drift are the most commonly occurring in this district.

Brown Forest Soils occur in small patches and include two series not previously recorded ; the Chorley which has a sandy loam to loam surface over a loamy to coarse sand subsoil and is usually freely drained, and the Ellerbeck, a shallow, freely drained, very gravelly soil formed on coarse glacial flood gravel. Both these series are found in the areas of morainic deposits. Podzolic Soils are represented by two new series ; the Lever which is similar to the Rivington but shows incipient podzolization with iron pan developing about 2″ below the surface and the Anglezarke, a podzol developed on very coarse sandstone.

The soil pattern on the alluvial flats of the Ribble, to the east of Preston, is very complex, and is not readily mapped in detail, but two main groups of soils have been separated.

Somerset

Sheet 296 (*Glastonbury*)

Detailed survey on a scale of 6″ to 1 mile has been continued in central Somerset. An area of 29,000 acres extending south from Shepton Mallet to Castle Cary has been covered, so completing the field survey of O.S. Sheet 296.

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The north-western portion of the area surveyed is relatively hilly, and associated topographically with the Mendip massif. Hereabouts, several small inliers of Carboniferous Limestone protrude through the dominant Triassic and Jurassic sediments. The Inferior Oolite, and the Upper and Middle Lias formations give rise to high ground near Castle Cary and the bold outlier of Pennard Hill. Elsewhere, the Lower Lias formation is dominant and the relief subdued.

Some thirty soil series have been distinguished, twenty two of which have already been noted. Of the new series, the Lulsgate, Wrington, and Ston Easton series belong to the Brown Forest Soil group and are leached soils developed on calcareous rocks of the Carboniferous, Keuper, and Lower Lias formations respectively. The Trip series is a gleyed calcareous soil derived from the Fullers' Earth Clay formation. Alluvium or colluvium mainly of Keuper origin give rise to the Birtsmorton and Tewkesbury series. The former is strongly gleyed nearly to the surface, with poor or very poor natural drainage, while the latter is gleyed in the subsoil only. Other series are of minor importance, and have been named only provisionally.

MONMOUTHSHIRE

Sheets 263 *and* 250 (*Cardiff and Chepstow*)

A reconnaissance survey of the Wentloog and Caldicot Levels bordering the Severn estuary was carried out at the request of the Ministry of Agriculture (Welsh Department). These levels have been largely reclaimed from tidal marsh within historical times, and are bounded by artificial "sea-walls." The predominant soil is the Wentloog series, belonging to the Gley group, and derived from estuarine silt-clay. Variation in the degree of drainage impedance as shown by soil morphology appeared to be correlated with the botanical composition and quality of permanent grassland.

WORCESTERSHIRE

Sheet 199 (*Worcester*)

A portion of the area in the south-east and east of this sheet had been previously surveyed. During the season some 14,000 acres were mapped on the 6″ to 1 mile scale. The area covered consists of two blocks, the larger stretching from Kempsey northwards to Martin Hussingtree, the smaller area lies in the north-east near Dormston.

The geological beds around Worcester are mainly of red and green clays of the Keuper formation which are conformable with the Rhaetic strata to the east. A considerable part of the area is covered by glacial drift, while river terraces flank the Severn and extend two or three miles on either side. Strips of alluvium adjoin the Severn and many of the smaller streams. The area near Dormston is situated on the Rhaetic and Lias formations which consist of clays and fine-grained shales that in places are overlain by glacial deposits.

Nineteen series have been mapped of which fifteen had been previously distinguished, although some of these have been subdivided since they were first described.

The soils considered as Brown Forest Soils are derived from the sandy drift of the river terraces (Newport, Wick) and glacial deposits

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overlying Keuper or Lias clay (Dunnington Heath, Newlands, and Pershore), while other Brown Forest Soils occur on recent alluvium (Wyre and Tewkesbury) and on the exposures of red and green Keuper marls (Worcester and Hurcot).

Non-calcareous gley soils, in which mottling appears at a depth of less than two feet, occupy considerable areas of the sheet and are found on Keuper clay (Spetchley), Lias clay (Charlton Bank) and on mixed Keuper and Lias alluvium (Fladbury). The Bushley series is found locally in wet spots on glacial deposits overlying Keuper Marl clay.

Four calcareous gley soil series were distinguished, two of which are as yet unnamed. Of the remaining two, the Evesham occurs on Lias clay and the Haselor on Lias clay with limestone bands.

Yorkshire

Sheet 71 (*Selby*)

The field mapping of this sheet was continued. Most of it is on the lacustrine deposits of the Vale of York, with a small area of solid Triassic, Jurassic and Cretaceous formations along its eastern edge, *i.e.* on the Western slopes of the Yorkshire Wolds. During the year mapping was restricted to the soils on the lacustrine deposits and the 21,000 acres mapped brings the total area now surveyed in detail to just over 60,000 acres. No new series were added to those previously described.

The lacustrine and more recent alluvial deposits give rise to a very flat topography with a high water table. This accounts for the great preponderance of gleyed soils, but a few examples of Brown Forest Soils and Podzolic Soils also occur.

The soils show very great textural variations. The lightest are those developed on patches of fine-grained sand covering the lacustrine clay, and locally they suffer considerably from wind erosion. The heaviest soils are those on the lacustrine clay and many of them are kept permanently under grass. The best agricultural land is found on the river sand associated with the Ouse and the Derwent, and in areas of loamy soils derived from mixed lacustrine deposits.

Sheet 70 (*Leeds*)

Two areas on this sheet had previously been surveyed by Dr. F. F. Kay as proposed sites for satellite towns. During part of the field season some additional mapping was done to unite these areas. The new area lies on Permian strata and the parent materials of the soils are Magnesian Limestone, Marl and boulder clay derived from both these formations with a varying amount of Millstone Grit material carried over from the west. In the 4,400 acres surveyed no new series were found.

Other Surveys

A reconnaissance survey of some areas of marginal land in the counties of Radnor, Brecknock and Montgomery has been carried out in connection with an investigation by the Statistics Department. A number of farms that have been taken over by the National Agricultural Advisory Service and other organizations for experimental purposes have also been surveyed.

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