

# Agriculture in Roman Britain<sup>1</sup>

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## I

IF we consider that agriculture employed a majority of the population in non-industrial societies and is still man's staple occupation, we must admit that the agriculture of Roman Britain has concerned archaeologists and historians much less than it should, for on its vicissitudes depended to no small degree the well-being and decline of the province. The existence of Roman 'villas' was first recognized in this country in the age of Elizabeth, and they began to be excavated in the eighteenth century. The mosaics of the Stonesfield house, Oxfordshire, were found in 1711; Lysons published his handsome account of the Woodchester villa, Gloucestershire, in 1797. But it took a long time before antiquaries understood these remains to be those of farms. The gentlemanly outlook of the Victorian antiquaries, projected upon these relics, saw them as the country residences of Roman officers and gentry; gay mosaics and Horatian banquets were more attractive than cow-houses. In a new epoch (1900) Professor Haverfield, writing his introduction to the Romano-British section of the Victoria County Histories, revealed a clear theoretical realization that the normal 'villa' "was the property of a great landowner who . . . cultivated the ground close to it. . ."; ". . . the blocks (*sc.* of the villa's buildings) may consist of corridor house, barns, outhouses, and farm-buildings." But Haverfield never reached the point of attempting to identify such buildings in the villa-plans he knew. John Ward, to whom Romano-British archaeology owes so much on the practical side, also grasped the villas' agricultural rôle, particularly where the 'basilical' house was concerned. His work was published in 1911.<sup>2</sup> The next intelligent inkling occurs in A. H. Cocks's excavation of the villa at Hambleden, Bucks, in 1913, when a number of furnaces were found. These

<sup>1</sup> This paper summarizes the main contents of a broader piece of research on the agriculture of Roman Britain. For reasons of space it is not practicable to document all the details, and footnotes will be confined to certain selected or outstanding points. The various archaeologists and scholars to whom the present survey owes acknowledgements are too numerous to mention here, but I stand in particular debt to Mr C. E. Stevens of Magdalen College, Oxford, for his suggestions and criticisms. Others whose aid and advice evoke my special thanks include Miss J. Liversidge, Dr E. W. Russell, Mr C. W. Phillips and his staff of the Ordnance Survey Archaeological Section, Chessington; Mr G. W. Willis of Basingstoke Museum, the authorities of the Dutch Government's Institute of Archaeological Excavation, Aamersfordt, and a group of French *savants*, including especially Monsieur P. Fournier.

<sup>2</sup> J. Ward, *The Roman Era in Britain*, 1911; *Romano-British Buildings and Earthworks*, 1911.

Professor Gowland identified as being for the drying of grain.<sup>1</sup> In the later 'twenties, Dr Philip Corder excavated the villa at Langton, in south-east Yorkshire, with a clearer consciousness of its agricultural function, taking care to dig as many of the buildings as he could, identifying threshing-floor and corn-drying furnaces, analysing plant-finds and animal bones.<sup>2</sup> His more recent excavation of a Roman farm near Great Casterton, Rutland, is equally perceptive. Mr Raleigh Radford made an important contribution to our knowledge of Romano-British agriculture by his excavation of the Ditchley villa.<sup>3</sup> He attempted to reconstruct its agrarian development with a scholar's attention to Roman social history and a farmer's eye for farming installations, crop-yields, and the extent of the estate. A further milestone on the way was Professor C. F. C. Hawkes's restudy of the Cranbourne Chase farms excavated by General Pitt-Rivers in last century, with special attention to their agricultural aspects (1948).<sup>4</sup> This work owed a good deal to Dr G. Bersu's masterly excavation of an Early Iron Age farmstead at Little Woodbury near Salisbury in 1944.<sup>5</sup> The year 1948 brought Mr F. G. Payne's comprehensive study of Romano-British ploughs and coulter, and the late Professor M. P. Charlesworth, in his Gregynog Lectures, devoted some attention to the plants introduced by the Romans into Britain.<sup>7</sup> In the meantime the pioneer work of Mr O. G. S. Crawford, the Curwens, and Mr G. Holleyman had prepared another approach to Early Iron Age and Romano-British agriculture by the discovery and study of the 'Celtic' field system. Nevertheless several otherwise very competent excavations of villas have been carried out in recent years without due attention to their character as farms.<sup>8</sup>

## II

One of the results of the progress of Romano-British archaeology in the last twenty years has been to establish that the roots of the Romano-British

<sup>1</sup> *Archaeologia*, LXXI, 1921, pp. 141 sqq. The furnaces, pp. 152-3. Pitt-Rivers was, I think, the first to report his finds of animal bones scientifically. McKenney Hughes was a pioneer in the consideration of the remains of Romano-British cattle (*Archaeologia*, LV, 1894); notable were Clement Reid's reports on the plant remains of Silchester (1896-1900) in *Arch.*, LVII-LXI.

<sup>2</sup> P. Corder, J. L. Kirk, *The Roman Villa at Langton*, Roman Malton and District, Report 4, 1932.

<sup>3</sup> *Antiquity*, IX, 1936, pp. 472 sqq.; *Oxoniensia*, I, 1936, pp. 24 sqq.

<sup>4</sup> *Arch. Jour.*, CIV, 1948, pp. 42 sqq.; A. Pitt-Rivers, *Excavations in Cranbourne Chase*, I-IV, 1887-98.

<sup>5</sup> *Proc. Prehistoric Society*, 2nd ser., VI, 1940, pp. 30 sqq.; XIV, 1948, pp. 19 sqq.

<sup>6</sup> *Arch. Jour.*, CIV, 1948, pp. 82 sqq.

<sup>7</sup> M. P. Charlesworth, *The Lost Province*, 1948, pp. 71-3.

<sup>8</sup> For a justified stricture on British archaeologists' neglect of the continental evidence to throw light on British villas, cf. Rostovtzeff, *Soc. Ec. Hist. R. E.*, 1957, p. 636, n. 52.

rural system lay in the British Early Iron Age. Not only did British farmsteads such as those in Cranbourne Chase, Dorset, continue in occupation in Roman times, but traces of pre-Roman dwellings have been detected beneath the remains of Roman villas at Park Street near St Albans; Lockleys near Welwyn; Rudston, Yorkshire; Catsgore, Somerset; and elsewhere. 'Celtic' fields are known to have been cultivated continuously under Roman rule. On the other hand, not much has been done to study the social implications of such continuity, or to relate archaeological features to what we know of Celtic society.

A few years ago, working from Helbaek's analysis of prehistoric grain-finds in this country,<sup>1</sup> I endeavoured to demonstrate that in the last 500 years B.C. a shift of emphasis began to take place in Britain from the cultivation of summer to that of winter grains, partly under the impact of climatic deterioration.<sup>2</sup> The same period saw the establishment of the mould-board plough to secure better drainage (Payne). I was able to correlate this agricultural change with the field-system of Figheldean Down, Wiltshire, where it was possible to argue the enclosure of a winter-crop area and the fencing of summer grazing-grounds for stock which moved on to the summer crop-areas in the winter. This development seemed to be part and parcel of the social evolution leading to the erection in the second or first century B.C. of a local hill-fort. The village unit at Figheldean Down covered about 370 acres of arable, feeding some dozen families. The known crops of the British Early Iron Age were eincorn, emmer, spelt, breadwheat, naked and hulled barley, and (uncultivated) oats, barley being the preponderating cereal. Beans were grown in the south-west. The introduction of spelt was associated with the technique of drying the grain in ovens before threshing. The 'square' field systems, as traced by air-photography and on the ground, chiefly on the chalk areas of the south of England, reflect, if the Welsh and Irish laws mirror the period, a régime in which the basic family unit was subdivided among the sons until the third generation. It would seem, on the other hand, that the Irish 'runrig' system of narrow strips and extreme fragmentation, recorded in Elizabethan documents and subsequently, represents a relatively late phase of that system, produced by the domination of chiefs, not the Early Iron Age system such as is reflected in the Romano-British 'square' fields and the codes. This is rendered more probable by the resemblance between some of the Irish pre-'runrig' patterns, traceable back

<sup>1</sup> H. Helbaek, 'Early Crops in South Britain', *Proc. Preh. Soc.*, XVIII, 2, 1952, pp. 194-233. Cf. H. Helbaek and K. Jessen, *Cereals in Great Britain and Ireland in Prehistoric and Early Historic Times*, 1944.

<sup>2</sup> *Proc. Preh. Soc.*, XX, 1, 1954, pp. 103 sqq.

to the Bronze Age, and English downland 'square field' complexes, e.g. that in the Ashley–Westwood area of south Wiltshire. While the Little Woodbury farm seems to have cultivated about 30 acres, the average Irish 'quarter', containing four to six farms, covered about 300 acres, corresponding to blocks of Romano-British fields in Sussex, where an average of 250–300 acres per village could be calculated.<sup>1</sup>

In the Belgic period certain agricultural advances are traceable. While previous cultivation was mainly confined to the permeable chalk and limestone soils, Belgic settlement began to invade the medium loams and the stream-sides; an improvement of grains is noticeable, a larger ox and horse make their appearance, hides and grain are exported.<sup>2</sup> Farms begin to be sited with an eye to corn-production and communications, and are sometimes worked with slave labour. The heavy plough with broad blade is now found, possibly but not certainly with coulter and wheels, and some examples of ridge-and-furrow fields occur, also fields somewhat larger and longer than in the previous period. Iron tools in general became more abundant in the west and south in the last century B.C., but it was the Belgae who introduced the 'slip-eye' axe. With the Roman conquest, the Belgic *aedificium* or grain-cattle farm formed the first basis for the villa, but the British 'square field' system continued in the uplands and expanded, being associated both with isolated farms and with larger village units.

### III

The Roman conquest did not fundamentally modify the areas in which cultivation was concentrated; these remained predominantly the porous chalks and limestones; however, the Belgic development of the loams (the "gradational" soils of Sir Cyril Fox),<sup>3</sup> which combined maximum fertility with ease of clearance, continued in the Roman period, and a careful statistical site-survey of Kent, Essex, and Berkshire shows the striking preference of villa-owners for these soils, likewise for the margins between gradational and

<sup>1</sup> For the 'Celtic' field system, see O. G. S. Crawford and A. Keiller, *Wessex from the Air*, 1928, *passim*; Ireland: F. Seebohm, *The English Village Community*, 1896; A. Meitzen, *Siedlung und Agrarwesen der West-Germanen*, 1895, 1; Hogan in *Proc. Roy. Irish Acad.*, (c), xxxviii, pp. 176 sqq.; O'Riordáin, *Proc. Roy. Irish Acad.*, xlvi, pp. 142–5, 175 sqq.; Ashley–Westwood: O. G. S. Crawford, *Air Survey and Archaeology*, O.S. Professional Papers, n.s., No. 7, 1924: End Map ii; Sussex: Holleyman, *Antiquity*, xi, 1938, pp. 443 sqq. and fig. 84. Cf. *Proc. Preh. Soc.*, xx, 1, p. 112, n. 2.

<sup>2</sup> A factor which seems to have escaped the attention of archaeologists is the close connection between the introduction of the potter's wheel (first century B.C.) and the increased ability to store large quantities of grain.

<sup>3</sup> *Antiquity*, vii, 1934, p. 473.

heavy clay soils, i.e. the edges of woodlands, indicating that the latter now began to be cleared. In central Essex two well-known parallel Roman roads coincide precisely with the medium loam area, and would seem to represent large-scale deforestation followed by systematic grid-parcellation ('centuriation'). There is some archaeological evidence for assigning this work to the Flavian period, and the unit of measurement used may have been a Belgic one, possibly reflecting an adjustment of native rights with those of new settlers.

Our acquaintance with Romano-British crops has been much increased by the work of Messrs Helbaek and Jessen: the identified grains are *triticum vulgare*, *triticum sativum*, barley, oats, great millet (one isolated find), *triticum turgidum* and *compactum*, spelt, possibly emmer, and rye. Spelt is now a principal crop, and the oat, previously grown but probably not as a cultivated plant, is well established: it is found preponderantly in the north, where its spread is likely to have been encouraged by the introduction of Roman cavalry. Its presence may have contributed to the development of a three-course rotation. Wheat is distributed over most of the occupied area, but barley still competes: Roman site-distribution in Kent, for example, coincides more closely with the areas known for high barley production than with those producing much wheat. Villa-groups also coincide with barley soils in north-east Hampshire; in Essex, Surrey, and west Sussex, on the other hand, there is a close correlation between villa-siting and modern wheat-growing. The spread of wheat in the Roman period is indeed specifically evidenced by its introduction into the newly colonized areas of the East Anglian fens. The grain-finds at Verulamium (*trit. vulgare*, *compactum* and *turgidum*, oats, spelt, beans) may well reflect a winter-spring crop-sequence, implying a three-course rotation, such as is known to have been practised on Carolingian estates where the system of farming went back to Roman times.<sup>1</sup> The grains found at Malton, Yorkshire, on the other hand (various wheats, probably including spelt; barley, emmer, clubwheat, *avena strigosa* or *sativa*), included a majority of summer grains, reflecting what was long afterwards the widespread northern infield and outfield arrangement.<sup>2</sup>

Other known Romano-British plant-finds include the cabbage, broad-bean, parsnip, pea, radish, turnip, celery, carrot, mustard, vetch, tare, and corn-spurry. Flax is now introduced. Several potherbs are found. Turnip and rape were both used as cleaning crops in Gaul, and fed to cattle, and this

<sup>1</sup> See below, p. 82, n. 4.

<sup>2</sup> On this agricultural pattern, see H. L. Gray, *English Field Systems*, 1915, Ch. v; cf. Estyn Evans, *Irish Heritage*, 1942, p. 7.

may well have been the case also in Britain. Their growing would have depended on freedom from an open-field system, and have been peculiar to private estates able to enclose; the wintering of cattle in villas is well evidenced (see below). Fruits known from the Roman period are the cherry, medlar, plum, damson, bullace (probably domesticated), apple, and mulberry; among flowers, the rose and (on philological evidence) the lily, violet, and pansy. Although the cherry is specifically stated to have been introduced into Britain in A.D. 47, a specimen has actually been found in Britain in a Middle Bronze Age context. The vine, evidenced in the Roman period at Silchester, Tooley Street (London), Boxmoor, and Gloucester, possibly had already been introduced by the Belgae;<sup>1</sup> the fig and almond are also known. Trees first found in Britain in the Roman period are the Spanish chestnut, horse chestnut, sycamore, walnut, holm-oak, and possibly the Spanish laurel. The box, found at several sites in funerary deposits, was not a Roman introduction, but may have been encouraged for this and other uses.

## IV

The problem of the Romano-British field system is closely bound up with the character of the ploughs used during the period. As already stated, pre-Roman fields continued in use over wide areas, and the system even expanded; hence clearly the small pre-Roman plough (like that of the Pierce-bridge model) also went on being used. The evidence of shares and coulter shows, nevertheless, that several types were used in the province; some, coulterless, had double ground-wrest and arrowhead share, ploughing one way; some, likewise without coulter, (apparently) a reversible mould-board for two-way ploughing,<sup>2</sup> and were possibly drawn by beasts in line ahead; others a symmetrical share turning the soil simultaneously to right and to left.<sup>3</sup> Both the latter types would imply the formation of strip-fields. There was also in use a plough with large coulter cutting from six to twelve inches, and high-pitched plough-beam. Most of these coulters engaged to the left,

<sup>1</sup> Wine was being imported by the Belgae.—Fox in *Proc. Preh. Soc. E. Ang.*, VII, 1941, p. 160 and pl. v, 6c. The vine appears on the coins of Verica.—J. Evans, *Ancient British Coins*, 1864, p. 173, pl. ii, 9; cf. Stevens in *Aspects of Archaeology in Britain and Beyond* (ed. C. W. Phillips), 1951, p. 342 and n. 75.

<sup>2</sup> The Lewes model, *Arch. Jour.*, CIV, 1948, p. 97, pl. 8, whose slots at the base of the stilt were perhaps for reversible mould-boards. A share from Hartlip, Kent (C. Roach-Smith, *Collectanea Antiqua*, 1848, II, pl. vi, 8), resembles an example on a model plough from Cologne (K. Schumacher, *Der Ackerbau in Vorrömischer Zeit*, 1922, pp. 20-1, Abb. 10), which is set to turn the furrow-soil to the left.

<sup>3</sup> The Frindsbury share.—*Arch. Cant.*, XIII, 1871, pl. ii, p. 190, fig. 1. Cf. M. Nightingale, *ibid.*, LXV, 1952, p. 156, pl. 1; p. 157.

so (presumably) raising a ridge, but one such appears to have engaged to the right, suggesting that alternating coulter were used to avoid ridging. This would also suggest that large fields were sometimes ploughed by two joint ploughs working narrow sectors divided by drainage furrows. The symmetrical share mentioned above was found in the Cliffe district of north Kent, where Roman allotments into square *centuriae* have been traced;<sup>1</sup> these appear to have been subdivided into strips of some five *iugera* or three acres, possibly corresponding to the old French *bunmier*, to be found on Carolingian estates originating in Roman times. The Cliffe fields, which lay on heavy loam, were ridgeless, and although there is no doubt that ridge-and-furrow fields existed in Roman Britain, the big coulters referred to earlier need not inevitably have raised ridges, since ploughing techniques exist whereby ridges can be avoided even by non-reversible ploughs.<sup>2</sup>

While 200-jugera squares subdivided into strips have been detected in the Cliffe district, a fragment of field-system attached to the villa of West Blatchington, Sussex, and revealed by air-photography and excavation,<sup>3</sup> although laid out as a chessboard 'grid' system, consisted of a mosaic of small squarish plots of varying sizes, more 'Celtic' in character than Roman. This system originated at the end of the second century, contemporarily with the erection of a house of 'basilican' plan, replacing an earlier farm of native type; the site yielded evidence of intensive corn-production. Another basilican villa at Eastfield near Thruxton in Hampshire, on the other hand, was associated with a 'Celtic' field-system, which however appears to have undergone a partial revision at some date, larger strips being adopted.<sup>4</sup> This revision seems to have been part of a process extending over a larger area. An inscription on a fourth-century pavement from this house coupled the name of a Roman citizen with a Celtic name, either of a person or a group.

The King's Worthy villa, Hants, was shown by air-photography to have replaced an Early Iron Age farm.<sup>5</sup> It seems to have superseded a 'Celtic' field-system with a different pattern, probably composed of long strip-like fields. A villa at Bury Lodge, Hambledon, Hants, was associated with several long-strip lynchet fields, from 700 to 1,200 ft long. By contrast, the fields of the Little Milton villa, Oxfordshire, were small and squarish like those seen

<sup>1</sup> Stevens and Nightingale, *loc. cit.*, pp. 150-9.

<sup>2</sup> P. Leser, *Die Entstehung und Verbreitung des Pfluges*, 1931, pp. 8 sqq.; Abb. 2 and 3.

<sup>3</sup> *Suss. Arch. Collns.*, 89, pp. 1-56; Air Ministry Photograph 4110, 20 April 1950, which I was able to examine thanks to the courtesy of the Archaeological Section of the Ordnance Survey, Chessington.

<sup>4</sup> Air Ministry Photograph 2097, 30 Aug. 1946, examined by courtesy of the Ordnance Survey Archaeological Section.

<sup>5</sup> The photograph was shown to me by courtesy of Commander W. H. C. Blake.

at West Blatchington; it is possible to demonstrate that they were modified at a later period, some fields being enlarged.<sup>1</sup>

At Great Wymondley, Herts, the open-field system surviving till 1821 was laid out on a Roman road and surrounded the Roman villa.<sup>2</sup> This medieval pattern showed clear traces of a Roman grid-division into 200-jugera squares. The medieval strips could be demonstrated in a number of cases to be subdivisions of the Roman *centuriae*, averaging some 750 by 230 ft. A Romano-British village near Great Wymondley church, within this area, seems to have been evacuated in the later second or third century, when the villa was built, and the layout may have originated at that date. It may be of interest to note that the fields of Great Wymondley manor belonged, in the Middle Ages, to the two-field system.

A summary of the above evidence shows that Great Wymondley, Bury Lodge in the Cliffe district, and Eastfield had fields of two approximate sizes: viz. 600–700 by 230–250 ft, and 1,200 by 200–330 ft respectively. Fields corresponding to both these classes can be cited from other points in Hampshire and Sussex. It is notable that such fields are distributed equally among measured 'grids', on unmeasured arable, and on terraced slopes. The evidence therefore agrees with that of Romano-British ploughshares and coulter, indicating that the Romano-British field, when it was not of the 'square' Early Iron Age type, was a broad strip, not necessarily ridge-ploughed. But the 'square field' system is occasionally associated with villas in Hampshire and Berkshire.

## v

Known Roman agricultural tools in this country include the sickle, the billhook (or 'slasher'), the two-hand scythe, the mower's anvil, the pruning hook (frequently difficult to distinguish from the small scythe), the hoe-rake, the mattock, hoes and spuds of various types, the rake, iron spade, iron fork, turf-cutter, ox-goad, carding comb, and axe. The use of carts is evident at various villas. Of the above tools, the Romans introduced the balanced sickle, the two-hand scythe, the mower's anvil, the hoe-rake, the turf-cutter, the mattock, the iron rake, fork, and spade. The slip-eye axe also became common only after the Roman conquest. The most important of these innovations were the two-hand scythe, which made possible the close-cutting of hay and other fodder crops, and the iron spade, which would have had an important impact on field-drainage. There is further evidence that

<sup>1</sup> *Jour. Rom. Studies*, XL, 1950, pl. vi, and p. 102; Photograph, Cambridge University, O.61.

<sup>2</sup> The map of these fields is reproduced by Seebohm, *Eng. Vill. Community*, facing p. 432.



the Romans introduced the water-mill and greatly superior querns into these islands.<sup>1</sup>

## VI

It is more difficult to establish the degree of amelioration of livestock in the Roman period, since much remains to be done in the study of animal remains found on Roman sites. The Romano-British sheep was of a breed resembling the modern Soay, known since Neolithic times, and termed *Ovis aries Studeri*; its female was for a long time erroneously identified as a distinct race, termed *Ovis aries palustris* or the 'Turbery'. A specimen possibly of a different, larger, breed has been noted at Barr Hill, Scotland. The Studer was bred essentially for wool, and was the source of the extensive Romano-British wool industry in the later Roman period. Mutton was less favoured than beef or pork as the diet of the Roman forces in the province, but sheep bones were better represented at Barr Hill, held by a Syrian unit, and at Corbridge, where there is evidence of an oriental element in the population. The absence of the liver-fluke in salt water probably explains the Romano-British settlements situated on the fringes of the Essex and Kent salt-marshes, which may well have been devoted to sheep-rearing.

Goats are well evidenced throughout the country, both a small short-horned breed and a type allied to *Capra Ibex* being found.

The preponderant race of cattle was *Bos longifrons brachyceros*, resembling the Kerry cow or Irish shorthorn, widely found on both pre-Roman and Roman sites. Remains of larger animals have been regarded as the result of cross-breeding with imported Roman cattle, but a larger animal already occurs in the Belgic period. At Newstead and Corbridge a race resembling the modern 'Chillingham' was noted. Dr Wilfrid Jackson further isolated at several sites a long-horned animal possibly akin to the Neolithic cattle, and to be connected either with *Bos primigenius* or with a hypothetical Megalithic (southern) group. The parallel existence of shorthorn cattle and animals with long erect horns is independently attested by escutcheons and bucrania of the Belgic and Roman periods. In this country, beef was the preferred meat ration of the Roman army, which had at least one cattle-depôt of its own, and evidence for the increase of cattle-rearing in south Britain in the third and fourth centuries is well marked.

The horse, not widely employed in agriculture in ancient times, was nevertheless used for threshing, harvesting, and transport, and to round up free-ranging cattle herds bred for meat and hides. This latter use is doubtless

<sup>1</sup> Watermills: J. C. Bruce, *Handbook of the Roman Wall*, ed. I. A. Richmond, 1947, pp. 80, 147, 166. A donkey-mill: *London in Roman Times* (London Museum Guide), 1930, pp. 109, 110. On the evolution of querns, *Antiq.*, XI, 1938, pp. 140 sq.

the explanation when horse- and cattle-bones are found together in quantities as they have been at some villas and farms.<sup>1</sup> The predominant remains, known from the Early Iron Age onward, are those of *equus agilis* and *robustus*, somewhat resembling the New Forest Pony; but at one or two sites a larger breed, possibly imported, appears in the Belgic period. At Newstead, Scotland, more complex finds suggested, besides *equus agilis* and *robustus*, the presence of crosses of two varieties of *equus agilis*, an Arab breed, and cross-breeds of several varieties traceable to Gaul and Germany. Corbridge also yielded a larger race thought to be a Roman introduction. An inscription from Irchester, Northants, is probably to be interpreted as evidence of local governmental horse-rearing.

The ass is found at one or two sites, including a villa. The presence or absence of mules, common in Gaul, remains an uninvestigated problem.

The remains of pig found on Romano-British sites show that pigs were kept on a large scale in romanized farms, being closely associated with woodlands; and evidence of grain-fattening in sties is available at several, in two cases within communicable distance of the legionary base at Caerleon, where pork was consumed only less than beef.<sup>2</sup>

The domestic fowl, though occurring at some Belgic sites, was introduced as a bird of economic value by the Romans, and is found widely, though not everywhere. One distinctive biggish variety is known, and other specimens possessing developed spurs were evidently bred for cock-fighting.

The domestic goose was also a Roman innovation, and has been found at various places; a specific British variety, the Cheneros, is mentioned in the Flavian period. The pheasant too is first found under Rome.

Pigeons are recorded from a few sites, and though their dung was recommended by Roman agricultural writers, it cannot be proved that they were widely bred in Britain.

## VII

We now turn to the buildings of the Romano-British farm. The main residence of the Romano-British villa can be traced to a combination of two ancient plans: the first is the so-called basilical or barn plan, a long hall divided into nave and aisles by two parallel rows of posts; the second, a two-room dwelling, one part of which housed the family, the other the livestock. The basilical type appears in ancient Irish and Welsh literature and is found, for example, at Tara in Ireland; it survives in Frisia, and as a self-contained farmhouse containing men, crops, and animals, was common in medieval

<sup>1</sup> Rockbourne Down, Hambleton (Bucks), Appleton (Norfolk).

<sup>2</sup> Pitney (Somerset) and Woolaston Pill (Glos.).

Germany.<sup>1</sup> The two-roomed type, found, for instance, in the Early Iron Age in Scandinavia, is still to be seen in Scotland and Wales. It is traceable among Roman houses in Britain, Gaul, and Germany, usually as an outbuilding for hands and crops, sometimes as an independent farmhouse. The 'basilican' house appears in Roman Britain and in the north-west provinces of the empire, sometimes as an independent farm, sometimes as the quarters for hands and livestock attached to the residence of the owner. The residence, normally a 'corridor' house, originally developed from a fusion of the two older types, i.e. a two-roomed building containing one or more rows of posts, to which wings and a frontal verandah were later added. (This process is clearly traceable in Germany.) In course of time the large 'hall' shrank to one of a series of rooms behind the verandah, and the flanking rooms, which first served for stock, storage, etc., were converted to residential uses, their economic functions being transferred to outbuildings. In Britain the dwelling-houses of most villas soon became purely residential, and the relegation of agricultural tasks to outbuildings was correspondingly rapid, which spells a less patriarchal and more sharply divided society.

This is not true of the independent basilical house. Though this type is certainly pre-Roman, no proven pre-Roman case is known in Britain, and none of the Roman examples can be dated before the second century, while most belong to the third or fourth centuries.<sup>2</sup> Three cases at least were associated with the 'Celtic' field system; the West Blatchington example, as we have seen, was erected in association with a new field system of Roman pattern but containing small plots recalling the 'Celtic'. Another case at Tidbury Ring, Hants,<sup>3</sup> lay within a hill-fort, in this resembling a Dark Age example (sixth to seventh century) excavated within the hill-fort of Castle Dore, Cornwall. In some cases, basilican houses, originally self-contained, were later subdivided into rooms for residence and their quarters for hands, stock, and crops relegated to outbuildings.

<sup>1</sup> On the 'basilican' house, see I. A. Richmond, *Jour. Rom. Stud.*, XII, 1922, pp. 96 sqq.; Ward, *Rom. Era Brit.*, pp. 174-82; Seebohm, *op. cit.*, pp. 239-42; C. Guest, *The Mabinogion*, 1849, II, pp. 393-5; *Germania*, XX, 1936, pp. 41 sqq.; Meitzen, *op. cit.*, I, p. 95; *Jour. Royal Inst. Cornwall*, 2nd ser., I, 1951, pp. 60 sqq. On the 'two-room' dwelling, *Antiq.*, XI, 1938, pp. 162 sqq. (Jutland); A. Grenier, *Manuel d'archéologie préhist. gauloise et gallo-romaine*, VI, 1934, II, p. 750; R. de Maeyer, *De Romeinsche Villas in Belgie*, 1937, *passim*; *Germania*, V, 1921, p. 65; *Arch. Jour.*, CIV, pp. 55 sqq. (Iwerne); *Antiq.*, X, 1937, pp. 448-59 (Wales).

<sup>2</sup> Early instances at Park Street, Herts (*Arch. Jour.*, CII, 1946, p. 24), and Knowl Hill, Berks (*Berks Arch. Jour.*, XXXVI, pp. 28 sqq.; XXXVIII, pp. 75 sqq.), are hardly convincing. It is difficult to accept some of the cases defined as basilican by J. C. Berry (*Jour. Rom. Stud.*, XLI, 1951, pp. 25 sqq.).

<sup>3</sup> As revealed by an air-photograph kindly shown to me by Mr F. Cotterill. Cf. *Proc. of the Hants Field Club*, XVI, 1951, p. 38.

## VIII

The evidence of Celtic literature and of archaeology (e.g. in Frisia) shows that the basilican house originated among a cattle-rearing people, the stock being housed in the aisles. Basilican buildings were certainly used to house cattle outside several Romano-British villas. This and the study of Flemish farm-types closely comparable to Belgian villas, as well as comparison with the dimensions found in old Irish and Welsh farms, prehistoric steadings, and the outbuildings of Roman villas both in Britain and abroad, enable us to identify cow-houses and stables in various villas in this country. These prove that in some of them (e.g. Bignor, Hartlip, Spoonley Wood) considerable herds of cattle were maintained in winter.

Professor Hawkes's careful study of the evolution of the Cranbourne Chase farms, which were essentially of Iron Age character, showed that their economy in the later Roman period suffered the important modification of the addition of wells (unknown in the pre-Roman period), the increase of cattle-enclosures, and the installation of corn-drying furnaces. The significance of these changes was that the water-supply made it possible to winter stock in the farms, with consequent increase of manure and rise in yields. Fully romanized farms, on the other hand, show a devolution of agricultural functions into outbuildings, which are placed round one, two, or even three yards. The early appearance of fully developed 'corridor' houses (e.g. Ditchley, Bignor) indicates a rapid economic development. A general feature is the attention to water-supply, while the provision of a separate yard enabled stock to be kept close at hand and manure to be accumulated. The erection of byres, stables, and sties aided the latter process and improved the health of the stock. In some villas, a close association between barns for hay or grain storage and the stock buildings is noticeable (Bignor, Brading, Pitney, Hartlip), indicating the presence of a grain surplus for fodder, and possibly the use of legumes and roots for feeding.<sup>1</sup> At Bignor and West Dean (Wiltshire) water-meadows almost certainly played a part in the fattening of cattle. Part of the flock also seems to have been wintered at Bignor. At Pitney a connection is seen between pig-sties and grain-storage, indicating systematic fattening, also evident at North Wraxall (Wiltshire), Woolaston Pill, and possibly at Hambleden (Bucks).

<sup>1</sup> A calculation of total manure available at the Bignor villa on the basis of the livestock accommodation, checked against granary capacity, ox-stalls, and the natural boundaries of the estate, suggested an approximate dunging of 28 cwt. per acre annually. On the other hand, farmyard manure available for concentration (including human sewage) amounted to 12,000 tons per annum, which, in view of the evidence for the wintering of some 12 ox-teams and 55 head of other cattle, is in favour of its use for the growing of root-crops.

In some villas a degree of specialization may be supposed. Woodchester may have had a brewery; it is generally thought that Titsey, Darenth, Chedworth, and perhaps Hucclecote, had fulleries, and some farms in Kent and Essex are sited in a manner suggesting that they combined flock-grazing in salt-marshes with other branches of husbandry—in Essex perhaps also with oyster-rearing. A number of estates certainly supplemented their economy with industrial activity.<sup>1</sup> Grain-production, however, became predominant in the third and fourth centuries, as shown by the discovery in various country houses of drying furnaces whose insertion is frequently secondary and late, in a manner suggesting a lowered standard of living and brutal utilitarianism, perhaps under pressure of the state.<sup>2</sup> Such a theory is supported by the occurrence of some of the earliest examples at Woodcutts (second century) on what is believed to be a crown domain, and at West Blatchington, where the laying out of planned fields (second to third century) suggests state action.

The study of villa development from a sociological point of view reveals three stages. These are: first, centralization, in the sense of the concentration of man-power (slaves, clients, kindred) and means on one estate; this is most clearly exemplified in the self-contained basilican villa, which housed the chief and his kinsmen. As most of these dwellings belong to the late second and third centuries, their appearance suggests a legitimization of the Celtic social structure and its integration into the villa system in such a manner as to subordinate kindred to their clan-head in the capacity of an estate owner. This hypothesis would explain the resurvey and redivision at West Blatchington, in the Severan period, attributable to state action; it has been noted that the Eastfield house was associated with 'Celtic' fields, later modified.

The second stage is one of residential decentralization, hands and agricultural functions being transferred to outbuildings ranged about the yard (e.g. Ditchley, Clanville, Stroud, Brading, Mansfield Woodhouse). The further association of basilican houses with 'corridor' residences as outbuildings for hands, stock, and crops, suggests that kinsfolk and clients, rather than slaves, were the victims of the growth of centralized estates and social differentiation.

The third stage is devolution, the restriction of staff and stock accommodation, implying the out-settlement of slaves or hands in colonate hold-

<sup>1</sup> For a summary of the relevant evidence, see J. Liversidge, *Roman Villas in Britain*, 1949 (MS., Cambridge University Library).

<sup>2</sup> This explanation was first proposed by Mr R. G. Goodchild, *Ant. Jour.*, xxiii, 1944, pp. 148 sqq.

ings. This is illustrated at Ditchley, perhaps at Hartlip and North Wraxall; I have also found indications of peripheral holdings dating from the late Roman period in the Basingstoke district.<sup>1</sup> At Stroud and East Grinstead bath-accommodation in excess of the house's needs, and other factors, showed these farms to have been part of large estates. Traces of a Roman survey embracing several villas in the Andover district are probably also to be interpreted as evidence of a large domain. The Wiggonholt villa (Sussex) is closely associated with three or four minor sites which are explicable as tenancies, and Bignor villa occupies the centre of a tract which contained several subordinate sites in its western half. The land of Great Wymondley was systematically subdivided at a given period (third century?) presumably to accommodate tenants. Absentee proprietors seem to be indicated at Gayton Thorpe, and at a late stage at Llantwit Major. The 'barbarous' character of the late phases of occupation in many villas (e.g. Atworth, Great Witcomb, Stanton Chare) may sometimes betoken the breakdown of an economic system, when slaves or tenants remained on the estate after the proprietors had retired or fled; in some cases it may represent mere squatting after complete evacuation.

## IX

The continuity of occupation from native farm to villa, now known at various sites, shows that a proportion of the villa-owners were Britons, and it is recorded that both the Emperor Claudius and Seneca lent large sums of money to British notables; as the urban development was then still to come, these sums may be presumed to have been lent for agricultural development. Round Basingstoke there is some abandonment of native sites between A.D. 50 and 100, Roman villas appearing there between 60 and 70, and this is the period of their origin in many other areas. At this time a fusion of pottery-styles in the Surrey area indicates growth of population, and various hill-forts are abandoned up and down the province. Some rural temples (Frilford, Weycock, and Lowbury if one agrees to classify it as a sacred enclosure) now come into intensive use. The Flavian deforestation of central Essex has been alluded to, and to this time also belongs the settlement of the Fenland marls of Cambridgeshire and East Anglia; both projects may well have been state concerns.<sup>2</sup> There is a hint that by

<sup>1</sup> *Proc. Hants Field Club*, xviii, ii, 1953, pp. 126-7.

<sup>2</sup> The two projects are perhaps alluded to by Galgacus in his famous speech (*Tac., Agric.*, 31) in the year 84: "manus silvis ac paludibus emuniendis . . . coneruntur." The first to suggest that these words were not simply rhetorical was, as Mr C. E. Stevens reminds me, W. Dugdale, *History of Imbanking and Drayning*, 1662, pp. 16, 17. It is of interest that Vettius Bolanus,

this time the state cadastral survey of the province had been completed.<sup>1</sup>

The prosperous era of town life between the later first century A.D. and the third century is certainly bound up with the growth of prosperous estates owned by the urban aristocracy, and parallel conditions of development can be archaeologically demonstrated between Verulamium and its hinterland on the one hand, and between Cirencester and its hinterland on the other. Many country houses, some the centres of large estates, were founded in the second century, and in Surrey a number of village sites have been shown to have been evacuated in the early years of the century, evidently to make room for villa-estates. Burial customs in eastern England suggest that wealthy landholding immigrants came thither from central Belgium in the later first and early second century. In the second century agricultural intensification is evident in Somerset, in Cranbourne Chase, and at such points as West Blatchington, Park Street (Herts), and Bignor, while heavy Romano-British ploughshares are found as far afield as Lowland Scotland.

The Severan age witnessed some displacement of villa-owners by civil war, and initiated a determined attempt to increase the production of the province both in agriculture and in other spheres. New estates were founded—displacement of peasants for this purpose is traceable in Suffolk—and the new villas sought the margins of the heavy soils for purposes of corn-growing. Cults in Cambridgeshire and Essex in the later second and third centuries bespeak the entry of new elements from Belgium and the Rhineland; new estates in Gloucestershire also evince links with Belgium, Gaul, and the Rhine valley. The development of villas in western Somerset is likewise intensive. The possibility of some significant social change in land-tenure at this epoch has already been mentioned, in the form of the transformation of chiefs into landlords of their kin. The traces of this process are still slight, but the notion of continuity between native kinship units and certain villa-estates gains some support from the areas of arable attached to the latter, in so far as these can be tentatively calculated from their ox-stalls, granary capacities, and natural boundaries. Thus Eastfield would seem to have cultivated some 320 acres, three other villas in the Andover district 380, 270, and 340 acres respectively, North Warnborough 250 acres, Pitney 312, Stroud 187, Wiggonholt 370, Cherington 300, Rodmarton 240, East Grinstead 230, Callow Hill 300. These areas recall the Irish 'townlands'

Vespasian's first British governor (69-71), is referred to by Statius as an energetic land-surveyor and clearer of forests—a citation I owe to Professor E. Birley, *Roman Britain and the Roman Army*, 1953, p. 15. But Julius Frontinus (governor 75-8) also had a reputation as surveyor.

<sup>1</sup> *Trans. Lon. and Middlesex Arch. Soc.*, 2nd ser., x, 1951, p. 226.

(c. 325 acres average), Figheldean Down (370 acres), and the already cited averages of Romano-British villages in Sussex (300, 252, 304 acres).<sup>1</sup>

The later second- and third-century villas show signs of economic growth and increased production (Bignor is a striking example). In this period cattle enclosures at Rockbourne Down and elsewhere, and the appearance of fulleries at several villas, point to an expansion of cattle- and sheep-rearing. Such intensification may have been encouraged by the contemporary inflation of the currency, which increased the value of material produce, and by the German invasion of the Rhineland and Northern Gaul, the loss of whose production Britain would have been called upon to make good. But in the second half of the century some country houses show symptoms of disturbance. Ditchley, Saunderton, Magor, Park Street, and other villas are abandoned, and in Gaul peasant discontent leads to the rebellious movement of the Bagaudae. The Emperor Carinus, who reigned only one year (A.D. 285) and suppressed these risings,<sup>2</sup> left milestones at Bitterne (Southampton) and near Andover, where traces of a large (imperial?) estate are to be detected. Some coastal villas were evacuated in the face of attacks by the Irish and Saxons towards the end of the century.

Constantine's reconquest of the island involved disorder and expropriation, but was followed by another great restorative effort. The number of villas now rehabilitated indicates government assistance. Generally, the agriculture of the province continues stable, and literary evidence indicates that Britain was regularly exporting grain to the continent; this is borne out by the grain-drying furnaces now widely to be found in villas, and perhaps to be connected with the increased need of drying wet-cut crops in a deteriorating climate, under pressure of state demands. There is however a general impression of lowered standards of living and absentee proprietorship. At Ditchley the last rough fourth-century occupation is characterized by intensive corn-production, but the absence of drying furnaces at the villa could be explained if they were present in surrounding tenant holdings, while the neglect of the residence may imply that Ditchley had now become absorbed into a larger estate (? Northleigh).

Evidence is now found, as we have seen, for the out-settlement of *coloni*. The colonate in Britain is mentioned in the Theodosian Code, and there existed in the province the main constituents which made for its growth and

<sup>1</sup> Larger estates naturally existed: e.g., Bignor, 1,900 acres; Ditchley, 1,000 acres; Cromhall, with a huge granary, perhaps 2,000 acres or more. Woodchester must have been the centre of a very large farm indeed. Some sites in the Andover district would appear to have possessed tracts of approximately 600-900 acres.

<sup>2</sup> Eutropius, 9: 20.



legalization, viz. the lowered standard of town life and the concomitant increased importance of the landowning class; the existence of crown domains to serve as tenurial models;<sup>1</sup> the ownership of large estates by non-resident proprietors;<sup>2</sup> the displacement of native holders by villa-estates (e.g. Surrey, Suffolk); the abandonment of some estates, necessitating colonate settlement by the government; the increased pressure to maintain supplies; and the settlement of barbarian troops (*foederati*) and prisoners (*laeti*) on the soil.<sup>3</sup> The result may well have been an agrarian social picture much like that presented by the French Carolingian cartularies (e.g. that of St Remy of Reims), which record estates directly derived from Roman villas, in which demesne farms (*fisci*; *mansi dominicati*) are surrounded by dependent holdings (*mansi*) held by free *coloni*, *lidiles* (*laeti*), and *serviles*, who contribute heavily in produce and labour to the *mansus dominicatus*.<sup>4</sup> East of Reims, the archaeological map shows the *mansi* distributed in circles about the domain villas, and something similar is perhaps to be traced in the Basingstoke district in the fourth century, likewise in the Ditchley–Northleigh region. The Carolingian system is characterized by a three-course agriculture and open-strip field pattern, and the Great Wymondley evidence suggests, either that

<sup>1</sup> On an imperial estate in Somerset, CIL, VII, 62 (Combe Down); near Silchester, *Ephem. Epig.*, IX, 1267; a probable imperial stud-farm (Irchester), CIL, VII, 78; the *regionarius* recorded at Bath (CIL, VII, 45) is likely to have been responsible for domains in Salisbury Plain. Cf. Collingwood and Myres, *Rom. Brit. and the Eng. Settle.*, p. 224. For the suggestion that the Fens comprised imperial property, R. G. Collingwood in Frank, *Econ. Survey of Anc. Rome*, III, 1937, Britain, p. 86, possibly confirmed by an inscription from Sawtry, Hunts, *Jour. Rom. Stud.*, xxx, 1940, p. 186; cf. Stevens in *Rev. arch.*, 110-1, 1937 (i), pp. 26 sqq. Hawkes's view that Cranbourne Chase was *saltus Augusti* is expressed in *Arch. Jour.*, CIV, pp. 11-12.

<sup>2</sup> A "clarissima femina" who was a *civis Dumnonia*, buried at Salona at the beginning of the fifth century (Diehl, *Inscr. Lat. Christ. Vet.*, I, 1924-31, no. 185), must have had large estates in Devonshire to have been of senatorial rank. Her British mansion may well have been the villa at Uplyme. St Melania the Younger (383-439), who had vast domains in Sicily (*Vit. St Mel.*, 18), also held land in Britain (*ibid.*, 10).

<sup>3</sup> For the settlement of barbarian troops and *laeti* in Britain, cf. Zos. I, 68, 3; *Hist. Aug.*, Prob., 13; Eumenius, *Paneg.*, v, 18; Richmond in *Jour. Rom. Stud.*, xxxv, 1945, pp. 15 sqq. Cf. also the hybrid 'Roman-Saxon' pottery found in East Britain.—J. N. L. Myres in *Dark Age Britain: Studies Presented to E. T. Leeds* (ed. Harden), 1956.

<sup>4</sup> For such estates, see B. E. C. Guérard, 'Capitulare de Villis', *Mém. de L'Ac. de Belles Lettres*, XXI, 1857; *id.*, *La Polyptique de l'Abbaye de St Remy de Reims*, 1853; A. Longnon and B. E. C. Guérard, *La Polyptique de L'Abbé d'Irminon*, 1886-95; M. Bloch, *Les caractères originaux de l'hist. rurale française*, 1931, pp. 67 sqq. On the continuity question, A. Grenier, *Man. d'arch. gall.-rom.*, VI, II, pp. 914 sqq.; 930-41; Arbois de Jubainville, *Recherches sur l'hist. de la propriété foncière*, 1890, *passim*; Imbart de la Tour, *Les paroisses rurales du 4e et du 9e siècle*, 1900, etc. For a more adverse view of continuity in Belgium, R. de Maeyer, *op. cit.*, pp. 236-41.

an open-field strip pattern existed there in the Roman period, or that it grew out of the surviving Roman fields. In Kent, on the other hand, Roman fields survived in the Cliffe district; in the same county Roman centres were perpetuated in the Saxon period, there is evidence of Roman-Saxon continuity in some villas, and medieval tenure has been thought to evince Celtic influences. Here the medieval farms are isolated, not nucleated, and the two- or three-field system, long thought to be absent, has recently been shown to have existed.<sup>1</sup>

## X

When we come to attempt an estimate of the level and productivity of Roman agriculture in Britain, we must acknowledge that it involved advances over the pre-Roman system. A careful comparison of the Roman agricultural writers' works with the details of British villas shows that the Roman handbooks were being used in this country. We have further alluded to evidence for the investment of capital by immigrants from the continent. The introduction of certain new tools and techniques (the two-handed scythe, the iron spade, well-sinking, livestock buildings) meant a rise in production. The new plants and livestock introduced by Rome have been listed. Roman agriculture further understood the reseeded of meadows as part of a rotation, the three-crop course, the value of oats, legumes, and roots. It enjoyed in this country for two hundred years, at least, a stable government, a reliable judiciary, military security, and a vast improvement of communications that opened to it new markets. Yet already in the second half of the third century the towns were finding an insufficient basis for their economic activities in the rural life of the province, in the fourth century many villas were in decline, and by the sixth the chalk and limestone uplands had been drained of their Romano-British peasantry.

Civil war, barbarian invasion, over-taxation, and inflation certainly had a great deal to do with this decline, but they alone do not explain why the Romano-British rural system broke up so soon after the withdrawal of the central administration at the beginning of the fifth century. What other factors contributed to this break-up?

In the first place, the productivity of the villa system was not uniform. The system was not homogeneous, and, as we have seen, a proportion of the villas were rooted in the Celtic social structure and associated with the Celtic 'square field' system. This probably means that the highly developed Roman farming methods were restricted to a minority of the more important estates, some of which were developed by immigrant investors.

<sup>1</sup> By the unpublished researches of Mr M. Nightingale. I am grateful to Dr H. P. R. Finberg for this information.

Secondly, such evidence as we have (and more is needed) points to a climatic deterioration towards higher rainfall and lower temperatures in the latter part of the Roman occupation.<sup>1</sup> Romano-British agriculture developed the gradational loams, and only a slight increase of annual rainfall would have been required to make these soils unworkable in autumn and so occasion crop-failures in the succeeding year. Such a change would have encouraged a transition to stock-farming, for which, indeed, we have evidence, and an increased production of wheat, which is better fitted to moist conditions than barley. Further, both state pressure to produce wheat and wool, and the climatic change, would have affected the Celtic upland farming areas, sited on the permeable soils, and have upset their traditional farming pattern. This depended on a preponderance of summer cereals, whose stubble served in winter to graze the stock which fed in summer on the communal pastures. The growth of cattle-ranching and the expansion of sheep-raising in the later Roman period meant the invasion of the summer pastures by the state and the capitalist villa-owners, while the demand for winter wheat resulted in the reduction of the winter stubbles, leading to the decline of the native livestock and arable alike. Thus in the fourth century, just when increased rainfall should have encouraged intensification on the uplands, their population was on the decrease (a process hastened by the depredations of the invasion and social trouble of 367),<sup>2</sup> and by the tenth century, when a drier climate had set in, the move to the heavier lowland soils was complete.

In the villas themselves, moreover, there appears to have been a social break-up. Mr C. E. Stevens and Professor C. F. C. Hawkes long ago suggested that the thinning off of coin-finds in Roman villas after 367 is to be explained by a peasant revolt like that of the Gallic Bagaudae;<sup>3</sup> Mr Stevens

<sup>1</sup> For the evidence of climatic deterioration, Godwin *et al.*, *Philos. Trans.* 229B, pp. 355-6, 393; 233B, pp. 233 sqq., 275 sqq.; C. W. Phillips in *Aspects of Arch. in Brit and Beyond*, pp. 258-73; *Jour. Ecology*, xvii, pp. 14, 15; *Jour. Anthropological Soc.*, v, pp. lxi sqq.; C. E. P. Brookes, *Climate through the Ages*, 1949, p. 299. For the Dutch evidence, E. Van Giffen in *Congress of Roman Frontier Studies*, ed. Birley, 1949, pp. 399-49; Waterbolk in *Een Kwart Eewe Oudheidkundig Bodemonderzoek in Nederland*, 1947, pp. 86-90.

<sup>2</sup> R. G. Collingwood (*Rom. Brit. and the Eng. Settle.*, p. 223) suggested that "a great depopulation of the Wiltshire Downs was going on in the fourth century." This he thought "to indicate deliberate transplantation of village-dwellers to serve the policy of capitalistic landlords or a socialistic [*sic*] State." Without arguing how far the adjective "socialistic" is relevant to any feature of the later Roman Empire, we are bound to question this hypothesis, since close examination of the evidence of coins and pottery on Salisbury Plain, in so far as it has been recorded, does not confirm that occupation of sites generally died out with Constantine, as Collingwood thought.

<sup>3</sup> Kendrick and Hawkes, *Archaeology of England and Wales 1914-31* (1932), p. 293; cf. Collingwood and Myres, *op. cit.*, pp. 303-4.

has further pointed to a chapter in the fourth-century work, the *Anonymus de rebus bellicis*, as possibly referring to Britain in the same year; it mirrors a genuine revolutionary outbreak.<sup>1</sup> The social process of devolution characterizing villas at this date, in the shape of the out-settlement of *coloni*, also made for technical decline. The centralized villa could enclose its fields and maintain rational rotations, including the growing of roots, controlled pasture, and the winter maintenance of stock. The breaking up of the large estate into tenant holdings meant the devolution of farming into the hands of men who were unable to continue this régime; while concentration of hands increased the possibilities of sedition, the colonate and absenteeism (whether in the person of the proprietor or the state) meant absence of the master's eye and technical decline. There was also a debit side to Roman techniques. It is difficult to prove that livestock was to any extent improved with the exception of the horse, and lack of chemical knowledge caused a static view of the quality of soils that prevented extensive amelioration. In crops the Romans introduced club-wheat and flax, and popularized rye and oats; they may well have brought roots and legumes. But the entire range of Roman agricultural techniques was not universally applied. Part of the villa system and the upland native cultivation remained more or less at pre-Roman level, with some improvements in detail.

It is also doubtful if the population increased to any extent. An investigation of the Basingstoke district from this point of view suggested that the average population was 8–12 per square mile, rising to 20 per square mile in areas near to heavier soils, woodland, water, and communications; and Collingwood's estimate of a total population of half a million in the province may not have been far wrong. In the few cases where we can check granary capacity with ox-stalls and estate areas, we arrive at an average corn-yield of 15–20 bushels per acre, a figure supported by data from Belgium and Germany. On this production, the province would have had little difficulty in both feeding itself and exporting a surplus. How far, however, it could have met the crushing and continuous exactions of the state, is another question. It was not inadequate technique, but inequality of application that was the weak point of Romano-British agriculture. Maladministration, inflation, over-taxation, political insecurity, and the consequent social disturbances, led to economic disintegration; the increased pressure of the Empire's needs added to a factor beyond human control—climatic deterioration—hastened the process of social differentiation and technical decline. It has been claimed that the Roman villa became increasingly autarkic. This view will

<sup>1</sup> *Cumb. and Westm. Ant. Arch. Soc. Trans.*, N.S. L (1951), p. 76, on the *Anonymus de rebus bellicis* (Schneider), 7.

not stand up to archaeological examination of the materials and objects found in country-houses,<sup>1</sup> nor to the inescapable needs of certain essential products (oil, salt) to be obtained only from afar. The breakdown of security and administration therefore meant the end of the villa, and with it, the essential basis of the province's civilization. The break-up of the estates as entities had already begun with the transfer of *coloni* to peripheral holdings. Thus, if the Roman estate survived, on occasion, into the Saxon period (and it is by no means certain that it may not have done so),<sup>2</sup> it was as a series of dispersed peasant holdings perhaps mingled with English settlers, who continued to work its fields as a loose community in the vicinity of the ruined residence.

<sup>1</sup> The wide distribution of New Forest ware in villas in the third and fourth centuries is one of the facts disproving such a theory. Cf. H. Sumner, *Excavations in New Forest Pottery Sites*, 1927, pp. 83-5. Notable also is the distribution of rosette-stamped ware, datable from the latter half of the fourth century.

<sup>2</sup> For a reopening of the rural continuity issue, see H. P. R. Finberg, *Roman and Saxon Withington, A Study in Continuity*: Leicester University, Occasional Papers, no. 8, 1955.

## Notes and Comments

### THE BRITISH AGRICULTURAL HISTORY SOCIETY

The sixth Conference and Annual General Meeting of the Society was held at the Yorkshire (W.R.) Institute of Agriculture, Askham Bryan, York, on Thursday 10 and Friday 11 April 1958. Some thirty-eight members of the Society attended. The Thursday evening was devoted to two short papers on Yorkshire farming. Dr Joan Thirsk, Senior Research Fellow in Agrarian History, University of Leicester, spoke on Yorkshire farming in the sixteenth century, and Mr Harwood Long, Provincial Agricultural Economist, University of Leeds, described developments thereafter. On Friday morning Dr P. J. Bowden, Assistant Lecturer in Economic History, University of Sheffield, gave a paper on sheep farming and wool production in the sixteenth and seventeenth centuries, referring particularly to the diary of Henry Best, whose farm at Elmswell was visited later in the day. After Dr Bowden's paper, the members of the Conference spent the rest of the day on a

tour of the East Riding, during which they visited the deserted village of Towthorpe, where Mr M. W. Beresford led the party, Sledmere House, where they were shown round by Mr R. N. Cardwell, the agent, and Elmswell, where Mr Michael Kirkby of the Castle Museum, York, conducted the party. The Conference was brought to a close on Friday evening by Dr S. R. Eyre, Lecturer in Geography, University of Leeds, with a paper on the significance of the upward limit of cultivation on the East Moor of north Derbyshire.

In the unavoidable absence of the President, the Chair at the Annual General Meeting was taken by the Chairman of the Executive, Mr George Ordish. The retiring officers were re-elected and Mr M. W. Beresford, Mr G. E. Fussell, and Mr Alexander Hay were elected to the Executive Committee in place of Miss W. M. Dullforce, Dr W. G. Hoskins, and Mr R. Lamb who had retired. The meeting heard with regret that Sir James

(continued on page 96)