

Demesne Arable Farming in Coastal Sussex during the Later Middle Ages

By P. F. BRANDON

IN the early fourteenth century only parts of Kent among all the provinces of England exceeded the wealth of coastal Sussex.¹ The prosperity of this tract was derived from many sources but its primary basis lay in its sheep-and-corn farming which rested upon exceptionally favourable physical conditions, easy access to tide-water, and close proximity to markets in maritime England and on the Continent.² The quality of its flock management, the widespread substitution of a legume course for bare fallow, and densely sown fields producing grain yields higher than the medieval norm placed it firmly in the vanguard of the agricultural development of its day. The agrarian institutions chiefly responsible for this unusually high level of technical efficiency were manors of the classical type of Seebohm and Vinogradoff, with large demesnes and bodies of dependent cultivators, grouped into extensive honours and archiepiscopal, episcopal, and monastic lordships. They functioned, *par excellence*, as 'federated grain factories' during the period of intensive demesne exploitation, and gave the tract both social and geographical coherence. Indeed, they dominated its economy by the immense scale of their operations,³ largely conducted with increasing flexibility within consolidated demesnes which were separated from the *tounmanneslonds*, the attenuated common fields of the servile tenants.

The origins of the agrarian conditions within these manors have long invoked an enquiry which shows no sign of abatement,⁴ but little attention has

¹ F. E. Glasscock, 'The Distribution of Lay Wealth in Kent, Surrey, and Sussex in the early Fourteenth Century', *Archaeologia Cantiana*, 80, 1965, pp. 66-8.

² N. S. B. Gras, *The Evolution of the English Corn Market*, 1915, pp. 50, 285; R. A. Pelham, 'Studies in the Historical Geography of Medieval Sussex', *Sussex Archaeolog. Coll.*, LXXII, 1931, pp. 167-75; Public Record Office, *Calendar of Patent Rolls, Henry VI*, vol. III, p. 345.

³ Examples are the Honour of Arundel which comprised no less than 8,000 acres of demesne arable (M. Clough, ed., *Two Estate Surveys of the Fitzalan Earls of Arundel*, Sussex Record Society, LXVII, 1968, pp. 91-171), the arable demesnes of the Bishop of Chichester which exceeded 3,000 acres, and the large estates of Battle Abbey, the Archbishop of Canterbury, the de Warennes, and others.

⁴ Notable matters being actively debated are the origins of the social structure, the settlement pattern west of the Arun, and the dispersed 'outliers' in the Weald. Jutish influences have been plausibly argued by J. E. A. Jolliffe, *Pre-Feudal England: The Jutes*, 1933, pp. 73-97. A local antiquary, W. D. Peckham, postulated the survival of Celtic features in the settlement pattern of the western part of the coastal plain ('Customary acres in south-west Sussex', *Sussex Archaeolog. Coll.*, LXVI, 1925, p. 155) and this theory has been revived by G. F. G. Jones who discerns in the servile sub-structure of the discrete estates in coastal Sussex and their constituent settlements something of the character of the Welsh *maenor* (*Antiquity*, xxxv, 1961, pp. 221-32).

been given hitherto to the contribution of these large estates to medieval agricultural development.¹ For this purpose the dearth of records earlier than the last quarter of the thirteenth century is compensated for by later *compoti* which are unusually continuous and complete, those for the Sussex estates of the Benedictine foundation of Battle Abbey being especially voluminous.² These documents are supplemented by large numbers of extents attached to *Inquisitions post mortem* and fuller surveys undertaken by manorial officials. There is a fairly even spread of documentation over an area comprising the Sussex coastal plain, the South Downs, the 'foreland' of fertile soils at their foot, and the transitional zone to the north bordering the Weald proper. This fact, and the relative unimportance of such members of medieval rural society as the lesser gentry until the fifteenth century (about whose activities the records are silent), make it possible to discern more clearly than for many parts of England, the outlines of the regional economy.

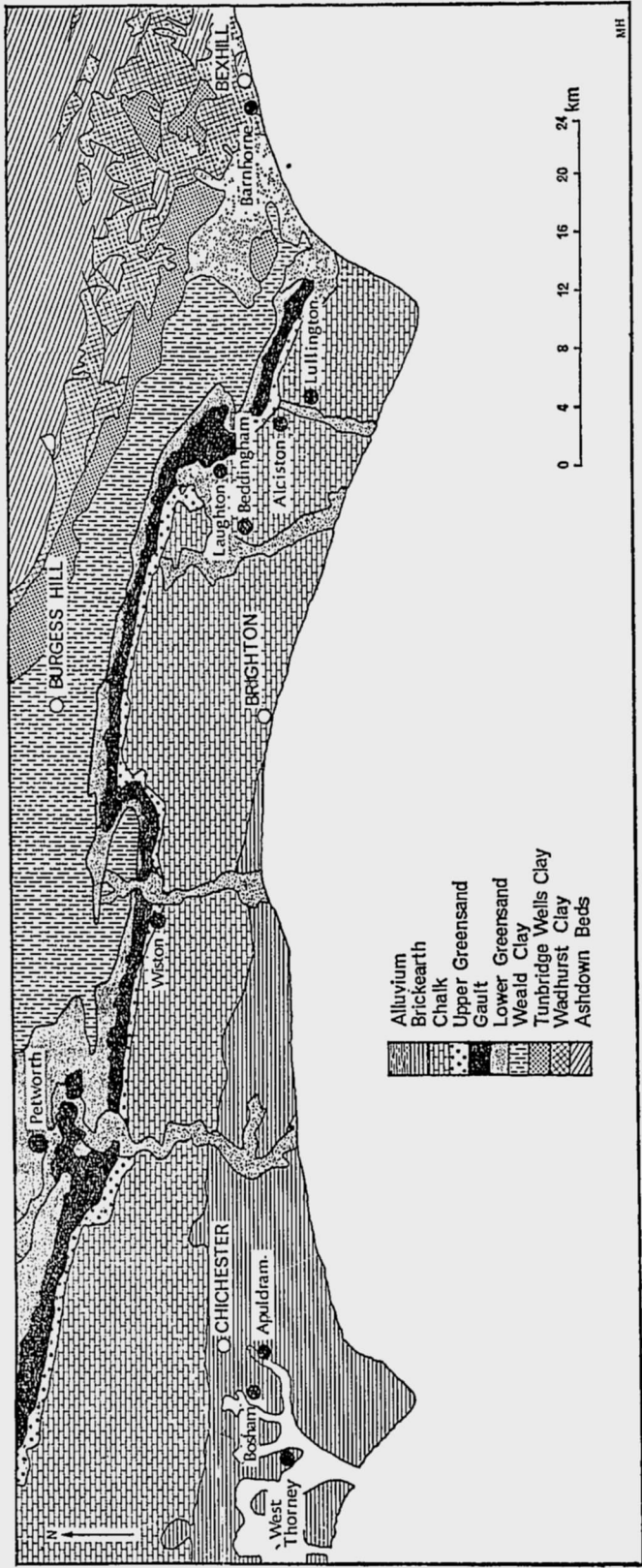
The configuration of the land was everywhere conducive to arable farming and, as a whole, the climate greatly favoured large-scale cereal growing. The only district which appears to have had a serious climatic disadvantage was the extreme western part of the coastal plain. This was prone to drought in spring and summer which reduced crop yields, especially of legumes, which probably suffered most in the seedling stage.³ The soils are diverse but generally of high fertility, and possess mechanical and other properties which made them particularly suitable for arable husbandry in an era when farming was critically dependent on weather conditions. Two soil belts offered especially good opportunities for tillage. One was the Brickearths on the lower parts of the coastal plain, which texturally, and in other respects, are akin to continental loess and comprise part of an area adjudged by Marshall, writing in 1798, to be "the most valuable arable district of equal extent in the island."⁴ The other was the

¹ R. A. Pelham discussed the agriculture of the Chichester estates in 1388 and drew attention to the crop distributions which can be detected from the information given in the Nonae Rolls of 1341.—See 'The Agricultural Geography of the Chichester estates in 1388', *Sussex Archaeolog. Coll.*, 78, 1937, pp. 195–210, and 'Studies in the Historical Geography of Medieval Sussex', *ibid.*, LXXII, 1931, pp. 158–67. E. M. Yates has also used the Nonae returns to demonstrate the high productivity of the western part of the Coastal Plain.—'The Nonae Rolls and Soil Fertility', *Sussex Notes and Queries*, 15, 1962, pp. 325–8.

² The series of *compoti* used for this article are those for Alciston, Apuldram, Barnhorne, and Lullington (estates of Battle Abbey) and the lay manors of Beddingham, Bosham, Chalvington, Stoke, Stoughton, Thorney, and Wiston.

³ For example, the *compoti* of Apuldram and Bosham invoke drought as an explanation for crop losses, reduced yields, and poor pasture in ten seasons between 1344 and 1363.—P.R.O. SC6/1016/8, 9, 13, 15, 16, 18 (Apuldram); West Sussex Record Office (hereafter W.S.R.O.) Acc. 939, 2, 6, 7, 8, 9 (Bosham). The present-day climatic liability of the district is discussed by J. M. Hodgson, *Soils of the West Sussex Coastal Plain*, Harpenden, 1967, pp. 18–19. The present author discusses the meteorological factor in Sussex medieval farming in a forthcoming number of the *Transactions of the Institute of British Geographers*.

⁴ W. Marshall, *The Rural Economy of the Southern Counties*, 1798, vol. II, p. 239.



COASTAL SUSSEX: THE GEOLOGICAL BASIS OF THE SOILS

soil derived from the Malmstone which lies at the foot of the Chalk escarpment and receives added downwash from the Chalk.¹ The soils developed on the South Downs varied from the thin, flinty soils at high elevations (the low-valued 'dry and stony' arable of extents)² to the fine red loams along their southern flanks. West of the Findon dry gap there are more extensive surfaces covered with Clay-with-Flints and associated deposits, and this yields badly aerated soils deficient in minerals which for centuries have been largely under woodland.³ The only other soils which medieval farmers considered inferior were those derived from the belt of marine gravels lying at the southern edge of the Chalk, and known locally as 'shravey' which give rise to light, stony soils now highly esteemed but which have been much improved by enclosure, drainage, and other techniques of agricultural improvers since the eighteenth century.⁴

As one of the most suitable tracts for tillage in England, coastal Sussex was well settled even in 1086.⁵ Much new land was subsequently reclaimed from marshes, woods, and heaths. It is most notably represented by the new crop of farms, cultivated in severalty, in the precinct (*precinctus*) of the Manwood attached to the Bishop of Chichester's manors south-west of Chichester;⁶ by the 'breaches' made by almost every demesne in the coastal plain; and by such place-name elements as 'innome', 'reading' or 'reed', of frequent occurrence in medieval and sixteenth-century surveys of the downland and scarp-foot zone. Surviving as lightly grazed areas when the process of reclamation petered out in the mid-thirteenth century were the sandy districts and saltmarshes, important elements of the coast of west Sussex (which had a markedly different configuration from that of the present day), and the almost unbroken series of commons, parks, warrens, and parks on the 'shravey'. Elsewhere, apart from abundant pasture in the valley floors above the level of spring tides and every manor's little woodlot, utilized mainly for building timber, fencing, and fuel, the vistas were heavily grazed sheep-walks and great expanses under corn.⁷

¹ Rev. A. Young, *A General View of the Agriculture of the County of Sussex*, 1813, p. 6. The high values placed on arable on these soils in the fourteenth-century extents suggest that medieval assessments of fertility were similar to those of Marshall and Young.

² P.R.O. C135/162/11 (Findon and Kingsbarns Manors).

³ Hodgson, *op. cit.*, pp. 45-60; P.R.O. C133/104/21; C134/103/1; C135/24/28-9; British Museum (hereafter B.M.) Add. MS. 5701, fol. 143.

⁴ P.R.O. C133/127/9 (Bosham, Funtington, Stoke, Stoughton, and Thorney). For deprecatory sixteenth- and seventeenth-century judgments, see P. F. Brandon, 'The Commonlands and Wastes of Sussex', unpublished Ph.D. thesis, University of London, 1963, p. 312. Cf. Marshall, *op. cit.*, pp. 238-9.

⁵ S. H. King in H. C. Darby and E. M. J. Campbell, eds., *The Domesday Geography of South-East England*, 1962, pp. 432-7, 444.

⁶ The name manwood is derived from the Anglo-Saxon *maene wudu*, common wood.—A. Mawer and F. M. Stenton, eds., *The Place-Names of Sussex*, English Place Name Society, VI(i), 1929, p. xxii.

⁷ For a fuller account see Brandon, thesis cited, pp. 210-13, 229-37, 256.

With long stretches of low shorelines and much land below the level of near high tides,¹ coastal Sussex was particularly vulnerable to frequent flooding, which was a consequence of the fall in the relative level of land to sea and the increased frequency of storm-tides in the later Middle Ages. The acreage reported wasted was mainly saltmarsh and meadow but increasingly at hazard were the extensively tilled marsh and fields bordering the maze of creeks where cereal production required special methods of cultivation.² Early 'forerunner' floods such as the 'great flood' at Apuldrum in 1274-5 were manifestations of a rapid submergence leading to the great storm of 1287 which destroyed Old Winchelsea and was responsible for severe flooding all along the coasts of Sussex and Kent.³ Between 1291 and 1341 much land was lost⁴ and thereafter severe and recurrent inundations, particularly those of the 1380's, 1400's, and 1420's caused crop losses at several points along the coast and in the lower reaches of valleys. The most seriously affected localities were the Pevensey marshes and the coast west of Bognor; elsewhere crop losses were sporadic⁵ but frequent and serious enough to warrant defensive measures. The resultant deterioration of drainage was doubtless a factor in the development of convertible husbandry which is observable from the end of the fourteenth century.

The marked degree of intensive demesne farming is reflected in the tenemental organization of the estates and in the dependence on large bodies of wage-earning labourers after the commutation of work services became general. The classes of tenants which predominated throughout coastal Sussex in the late thirteenth century were villeins (*villani* or *rustici*) who held small yardlands at low money rents and cottars, who were exceptionally important. The social structure of Apuldrum in 1300 which had nine 'major' cottars

¹ J. A. Steers, *The Coastline of England and Wales*, 1964, p. 311; Marshall, *op. cit.*, pp. 219-20; A. Ballard, 'The Sussex Coast-line', *Sussex Archaeolog. Coll.*, LIII, 1910, pp. 5-25.

² In all the low-lying districts of West Sussex, which have retentive strong loams, it was the medieval practice to sow the winter corn on narrow ridges called stitches with a water furrow, regularly cleansed, dividing them, two such stitches comprising a typical arable strip (*hilf*) of about half a customary acre. The item '*pro sulcris aquarum mundand ad salvandum semen yemale. . .*' is regularly entered on the Bosham compoti. This method of cultivation continued into the late eighteenth century when it was commended by Marshall.—P.R.O. SC6/1020/16-23; Marshall, *op. cit.*, p. 235; W. D. Peckham, *Sussex Notes and Queries*, 8, 1941, p. 88.

³ P.R.O. SC6/1019/22; P.R.O. *Calendar of Patent Rolls, Edward I, 1281-92*, pp. 320, 290; L. F. Salzman, 'The Inning of the Pevensey Levels', *Sussex Archaeolog. Coll.*, LIII, 1910, p. 37. The present author has made a fuller study of this aspect in a paper entitled 'Agriculture and the effects of Floods and Weather at Barnhorne during the Late Middle Ages', *Sussex Archaeolog. Coll.*, forthcoming.

⁴ A. R. H. Baker, 'Some Evidence of a Reduction in the Acreage of Cultivated Lands in Sussex during the early Fourteenth Century', *Sussex Archaeolog. Coll.*, 104, 1966, p. 4. It is uncertain to what extent the flooding during the period before 1341 resulted in the permanent loss of land. At Barnhorne and Hoo, where losses were considerable at that time, they were regained in the latter part of the fourteenth century, only to be lost again in the 1420's.

⁵ East Sussex Record Office (hereafter E.S.R.O.), Glynde MSS. 998-1002; Lambeth Palace Muniments, CR.248, 881; P.R.O. SC6/1020/11-18; E.S.R.O. CP.151.

(holding four acres each), six 'minor' cottars, and ten virgate holders (holding between eight and twenty-four customary acres),¹ originally performing work services on demesne arable exceeding 500 statute acres, was a typical example of a Benedictine estate. The estates of the Archbishop and of the Bishop of Chichester similarly contained large numbers of tributary tenants. At Bosham, which had 155 customaries and 17 cottars performing onerous work services, the appendant hamlets were composed of colonies distinguished by different tenures, and at Westbourne, another large lay manor, no less than 90 cottars, additional to 92 customaries, held small parcels of land in a single common-field.²

A regular staff of wage labourers made an early appearance on some of the Church estates³ and the final demise of labour dues after the Black Death created critical seasonal labour problems on the diminishing number of big corn-growing manors. The extent of the difficulty and its solution is most apparent in documents relating to east Sussex where by the end of the fourteenth century manors near Lewes and Seaford regularly employed reapers for about five weeks who migrated southwards from the overcrowded assarted districts in the depths of the Weald, from places as far as ten to fifteen miles away. For nearly a century, at least, some 50-80 inhabitants of Framfield, Heathfield, Hellingly, Waldron, and Walberton found seasonal employment at Alciston and Lullington,⁴ both properties of Battle Abbey. The custom of hiring forest peasants was also practised at Glynde, whence Mayfield sent men,⁵ and doubtless generally in the locality of Lewes in the late fourteenth and the fifteenth centuries. Occasionally pestilence disturbed the flow,⁶ and in rainy weather the carts provided to take the reapers' corn allowances back to their villages had difficulty in negotiating the Wealden byways.⁷ In times of low

¹ S. R. Scargill-Bird, ed., *Customs of Battle Abbey*, Camden Soc., N.S., vol. XLI, 1886-7, pp. 53-7.

² P.R.O. C133/104/21 and C133/127/10. Cottar holdings were concentrated at Creed and virgaters at Walton.—Brandon, thesis cited, pp. 368-9.

³ The Bishop of Exeter had ploughmen, carters, reapers, and threshers on his estate at Chidham in 1277 and Apuldrum had twenty-three farm servants in 1286 and harvest work was paid for in cash.—P.R.O. Assize Roll 924, m.70d; P.R.O. SC6/1016/5.

⁴ E.S.R.O. G.44/51 (1398 A.D.) and *passim* (Alciston); P.R.O. SC6/1026/9 and *passim* (Lullington). Some of the Hellingly labourers may have held land of the Abbey but it had no lands and tenants in the more distant parishes and thus the seasonal migration was essentially extra-manorial. The origins of the custom probably date from the insistence that virgaters in Wadhurst were to undertake work services on the Archbishop's estate of Stonham near Lewes.—A. E. Wilson, 'Farming in Sussex in the Middle Ages', *Sussex Archaeolog. Coll.*, 97, 1959, p. 113.

⁵ E.S.R.O. Glynde MS. 1075 (1371/2 A.D.).

⁶ As in 1426 (E.S.R.O. G.44/77). This outbreak has previously been considered to have been confined to London. See J. M. Bean, 'Plague, Population and Economic Decline in England in the Later Middle Ages', *Econ. Hist. Rev.*, xv, 1962-3, p. 428.

⁷ In 1428 extra expenses were incurred after heavy rains '*propter vias nocinas defectas et irrationabiles*'.—E.S.R.O. G.44/79.

wheat prices, as in 1463 and 1464, they were powerful enough to withhold their labour until an agreement was reached to substitute generous board 'at the lord's table' for their traditional allowance of corn.¹

Some demesnes were fragmented into strips, intermingled with the tenants' lands similarly disposed, and dispersed over all the township fields. H. L. Gray detected several instances of this arrangement, which he termed 'open fields' (using the term synonymously with *common* fields) and equated the system of land division and management with his 'Midland System'.² Most of his examples were of the familiar three-field, or more strictly, three-course type, involving a triennial fallow, and the ubiquity of this rotation has been established by later work.³ Additionally, Gray identified two examples of what he regarded as 'two-field' townships (where half the arable was fallowed in any one year) and Pelham and Cornwall have contributed a few more examples of this type.⁴ According to Fussell, the 'two-field' system was developed on the northern slopes of the Sussex Downs.⁵ None of the 'two-field' examples yet cited, however, can be regarded as proven since the diagnostic traits adopted to define them are distinctly dubious.⁶ A more detailed examination of the available evidence made by the present author⁷ has failed to bring to light a single unequivocal instance of the biennial cycle of cropping with a fallow each alternate year. If, indeed, such a two-course system was ever adopted in coastal Sussex it would seem to have been superseded at the latest by the middle of the thirteenth century by which time evidence of more intensive rotations becomes steadily available.

The medieval court rolls of Sussex manors assume, almost invariably, the form of an economic document recording fines and amercements accruing to the demesne and financial loss resulting from livestock deaths. They are silent on the regulations for cropping the common fields and the grazing of the fallows, which matters presumably were settled by a majority voice. Enrolments of manorial regulations begin to appear at the end of the fifteenth century but are

¹ E.S.R.O. G.44/111, 112. ² H. L. Gray, *The English Field Systems*, 1915, pp. 63, 498-9.

³ See Brandon, thesis cited, pp. 277-9.

⁴ Gray, *op. cit.*, p. 498; Pelham, *op. cit.*, 1937, p. 197; J. C. K. Cornwall, 'The Agrarian History of Sussex, 1560-1640', unpublished M.A. thesis, University of London, 1953, pp. 44-6.

⁵ In his introduction to Lord Ernle's *English Farming, Past and Present* (sixth edn, 1961), p. xlvii.

⁶ Gray's Broadwater example is based on evidence deduced from an Enclosure Award which makes reference to two common fields but also to older enclosures which Gray left out of his reckoning. His medieval example of Amberley is based on a survey which exists only in a transcript which could be corrupt as larger sowings (and also demesne leases) are recorded in other extant medieval documents. Pelham's classification of field systems is partly based on the ratio of fallow to the total arable recorded in a survey of the Chichester estates in 1388. This cannot be regarded as acceptable since it makes no allowance for the likelihood of convertible husbandry on all or some of the fields. Two of Pelham's examples result from an over-statement of the extent of arable, and by his reckoning should actually be classified as 'three field'. For a fuller discussion see Brandon, thesis cited, pp. 273-6.

⁷ Brandon, thesis cited, pp. 273-9.

not common until a century later. By this time they were clearly an attempt to give permanence to ancient customs then being rapidly eroded by wilful tenants who were sowing the fallows and choosing their crops and the times of their sowing unilaterally. Some of these references to earlier practices are invaluable. At Jevington in 1584 the order was enrolled that: "all the tenants observe this ordinance in ploughing and sowing the common fields, one year with wheat (*triticeo*), another year with barley, and the third year they should not sow the said common fields or any of the fields called the lanes of this manor contrary to the ancient custom, but shall permit the fields . . . to be each third year unsown according as they were used before."¹ At Worthing in 1560 it was required of tenants that those: "having land in the common fields called the Eastfield and the Westfield shall sow their season or laynes for wheat altogether and for barley altogether and their tares and *peason* in like sort, so as one of them shall not hurt another by reason of their land lying lay. . ."² Other enrolments in sixteenth-century court rolls testify that fields with intermingled arable strips in coastal Sussex functioned as common fields in the most rigidly defined sense,³ with regulations enforcing the simultaneous sowing of each of the courses (*laynes* or seasons) and the strict observance of a regular fallow and its collective grazing. Communal shepherds or herdsmen were elected to supervise the livestock, and their duties included the oversight of the ewe couples grazing young corn in common until mid-May, and the folding of the village sheep on each strip of the arable fallow.⁴

For evidence as to medieval communal cultivation and grazing the main sources are the extents attached to *Inquisitions* of the late thirteenth and fourteenth centuries. Some of these extents record the proportion of the demesne which could be sowed yearly and place no value on the residue in fallow because it lay in common (*iacet ad warectam et nihil valet quia in communi*). As Gray himself noted this statement is not entirely free from ambiguity since the disposition of the demesne arable is not clarified,⁵ but the testimony of its intermingled character amidst tenants' lands is afforded by other sources.⁶ Certain other demesnes are recorded in fourteenth-century extents, or in other documents, as being cultivated by the lord in severalty but within enclosures taken down after the harvest to enable collective grazing on the fallows until

¹ E.S.R.O. CP.193, m. 17.

² W.S.R.O. Add. MS. 453, fol. 12, The Middlefield was evidently to be fallowed in that year.

³ J. Thirsk, 'The Common Fields', *Past and Present*, 29, 1964, p. 3.

⁴ W.S.R.O. Wiston MS. 5244; Brandon, thesis cited, pp. 287-90.

⁵ Gray, *op. cit.*, p. 46.

⁶ The demesnes concerned are: Amberley and Rackham (B.M. Add. MS. 6165, fols. 215-16); Applesham (P.R.O. C135/43/9); Eckington in Ripe (C135/56/36); Itford (C135/47/10); Kingston-by-Shoreham (C135/158/26); Pyecombe (C135/69/45); Sutton-next-Seaford (C135/43/9); and Bulsham in Yapton (C135/94/2). The intermingled condition of the demesnes at Applesham, Eckington, Kingston, and Sutton is indicated by later evidence.—Brandon, thesis cited, pp. 218, 360, 364, 380, 381.

Lady Day or Easter.¹ It thus seems unlikely that the late thirteenth- and fourteenth-century usage of the intermingled arable strips differed materially from later practice.

Previous writers on Sussex medieval agriculture have concluded, or taken for granted, that the intermingling of the demesne arable with tenants' lands and its usage in conformity with peasant practice was general.² A detailed study of the available evidence does not support this view which can be seen in retrospect to have been unduly influenced by the generalized accounts of the so-called 'Midland System' of common-field farming. Most demesnes reported to have been 'in common' appear to have been the smaller estates, not held by the greater magnates or those in townships with few customary tenants and thus with lands not inconveniently disposed. The greater estates in the second half of the fourteenth century incorporated tenements vacated at the Black Death and absorbed into the demesne whenever they could not be let. Such lands naturally assumed the form of dispersed strips amidst the remaining tenanted land in each of the three *laynes*, but such arable never formed more than a small proportion of demesnes and its identity was perpetuated on the grange exit (*Exitus Manerii*) on the dorse of the accounts by the use of customary, as distinct from statute measures normally adopted for the remaining demesne fields.³

By 1300 the majority of demesnes in coastal Sussex appear to have been cultivated in severalty. The archbishop's Sussex demesnes were so farmed, it seems, from the thirteenth century, if not always separated off by physical barriers from the tenants' common fields;⁴ so were those of Battle Abbey; and, with the exception of the Amberley estate, so were the properties of the Bishop of Chichester. Consolidated demesnes were not confined to Church estates because these were to be found at Bosham, on the estates of Thomas Tregoz near Goring, and at Wiston.⁵ Further light is thrown on this matter by the valuations in the *Inquisitions* of grazing on demesne fallow (this was not counted when the fallow was collectively grazed); these exceeded in number and greatly in acreage demesnes recorded in the same sources as being 'in common'.⁶

¹ Barnham, Walberton, and Middleton (P.R.O. C135/85/6); Halnaker (C135/85/6); Bepton (C135/136/24); Laughton SC11/877); Southerham (Sussex Record Soc., 57, p. 131); West Thorney (W.S.R.O. Acc. 939).

² W. Melville, 'The Pastoral Custom and Wool Trade of Medieval Sussex', unpublished M.A. thesis, University of London, 1932, p. 72; Pelham, *op. cit.*, 1937, p. 197; A. E. Wilson, ed., *Custumals of Sussex Manors of the Archbishop of Canterbury*, Sussex Record Soc., 57, 1958, p. xxxii.

³ P.R.O. SC6/1016/5-23. 1020/11-24; P. F. Brandon, 'Arable farming in a Sussex Scarp-Foot Parish during the Late Middle Ages', *Sussex Archaeolog. Coll.*, 100, 1962, p. 62.

⁴ F. R. H. du Boulay, *The Lordship of Canterbury*, 1966, p. 132. The present author's conclusions were identical (see thesis cited, p. 270).

⁵ The evidence for and against cultivation in severalty is presented in Brandon, thesis cited, pp. 267-72.

⁶ Beeding (P.R.O. C135/162/11); Birling (C135/137/18); Drayton (C135/56/34); Findon

The consolidation of the Sussex demesnes and their state of several cultivation did not necessarily leave an outward mark on the countryside. On the coastal plain the demesne fields were generally surrounded with a ditch. Standing trees were planted along the hedgerows (rewes) and afforded grazing for tenants' cattle. On the downs and at the scarp-foot, especially in east Sussex, such permanent enclosures were unusual, presumably because it was the lord's custom to lease for payment his sheep to fold the tenants' arable¹ and in these circumstances temporary wattle hurdles more appropriately protected the lord's corn in 'open fields'.

The abundance of river meadows and marsh at the head of silting creeks provided grazing for more cattle than were normally kept in corn-growing districts of medieval England,² but cow-keeping was a relatively subordinate enterprise. Grain-growing dominated activities and for this purpose the size of demesne fields was extremely variable ranging in size from huge fields at Apuldrum and Bosham,³ for example, to small open-field furlongs at Alciston and elsewhere. In actual practice, however, the larger fields were invariably subdivided by temporary fences for folding and sowing purposes, and each ephemeral parcel newly created in this way underwent different rotations contemporaneously, a system which readily lent itself to the flexibility increasingly adopted on arable demesnes in the fourteenth century.

The leading crop throughout coastal Sussex was wheat. The stiff Chalk Marl of the scarp-foot and the loamy soils of the coastal plain were both ideal for the crop but even on the thin soils of the Downs it was the prime objective, although only slightly more dominant there than barley. Rye, which was sown for the use of the *famuli* only on the poorer soils such as the 'shravey', on the sandier formations beyond the scarp-foot and on 'upland' fields bordering marshes in east Sussex, was never an important crop. Oats were generally of less importance than barley and were sown on heavier soils to break pasture. The crop was locally dominant on the Lower Greensand in the transitional zone bordering the Weald and a large production was obtained from low-lying arable in the valley floors of the coastal plain.

(C135/162/11); Keynor in Sidlesham (C135/84/13); Kingsbarns in Parish (C135/162/11); Lordington (C135/210/11); Milton Street in Arlington (C135/85/5); Portslade, *ibid.*; Poynings (C135/213/1); Pulborough (C135/77/7); River (C135/88/10); Streat (C132/42/6); Tadesham in Eastbourne (C135/88/10); Washington (C135/162/11). Most of the arable at Sutton and Applesham was also in this category (C135/43/9). The many manors with demesne cultivation in excess of the traditional two crops and a fallow, to which reference will be made, must also have been farmed in severalty. On demesnes farmed in severalty the grazing of fallows was regarded as a valuable perquisite but the facility was purely discretionary and sometimes withheld.—W.S.R.O. Acc. 939.

¹ E.S.R.O. G.44/1 (Alciston and Lullington).

² M.M. Postan, 'Village Livestock in the Thirteenth Century', *Econ. Hist. Rev.*, xv, 1962-3, p. 237.

³ The main arable field at Apuldrum exceeded 150 statute acres and at Bosham several fields were large enough to constitute single farms when leased out to tenants during the fifteenth century.—P.R.O. SC6/1016/5-23 and W.S.R.O. II/A/14-17.

Like the economically advanced district of east Kent, with which it had distinct geographical affinities, coastal Sussex was one of the leading legume producers of medieval England. A great increase in legume cultivation in England generally has been observed from the late thirteenth century¹ and on the Sussex Downs and elsewhere in Sussex an increase in legume sowings, synchronizing with this broad trend, is detectible.² The manors of the coastal plain are a special case. From the earliest extant *compti* of the decade 1270–80, they emerge as major producers, regularly sowing leguminous crops on a field basis as part of an established rotation, to the extent of 20–30 per cent and even more of the total sowings, and this proportion was normally maintained throughout the Middle Ages.³ The previous history of legume cultivation on these coastal plain manors is obscure,⁴ but its origin is evidently much earlier than in most of England for which its maritime position close to the Continent and to Kent, another precociously developing region, is presumably partly responsible.

In terms of acreage vetch (*vesce*) was the main leguminous crop on all the soils of coastal Sussex. Its importance lay in its availability in spring to sustain ewes and lambs before nourishing grass could be provided. Since most manors in coastal Sussex had large sheep flocks it was invariably sown as a preparation for wheat, for which its nitrogenous and weed-smothering properties made it admirable.⁵ *Haras*, the medieval Latin name for the 'horse-meat' extensively grown in south-east England during the sixteenth and seventeenth centuries, was also important.⁶ Pulse was used for fattening but its main use in Sussex was for potage (*potagium*), and thus, as commutation proceeded and the numbers of

¹ T. A. M. Bishop, 'The Rotation of Crops at Westerham, 1297–1350', *Econ. Hist. Rev.*, o.s., ix, 1938, pp. 43–4; R. A. L. Smith, *Canterbury Cathedral Priory*, 1943, p. 139.

² Vetch and pulse, minor crops in the 1280's at Stoke and Stoughton on the Chalk become important early in the fourteenth century.—P.R.O. SC6/1030. At Chalvington and Laughton, on the southern margin of the Weald, legumes were insignificant until 1339 and 1341 respectively. Peas and beans were merely garden crops at Chalvington in 1278 and as late as 1295 they were being grown, probably experimentally, 'on small pieces of ground'.—E.S.R.O. CH.244, 246, 249–82 (Chalvington); M. Clough, 'The Estates of the Pelham Family in East Sussex before 1500', unpublished Ph.D. thesis, University of Cambridge, 1956, p. 58.

³ P.R.O. SC6/1016/5–23; 1020/11–24; 1030/1–30.

⁴ All the leguminous crops are mentioned in the mid-thirteenth century custumals of manors of the Bishop of Chichester.—W. D. Peckham, ed., *Sussex Custumals*, Sussex Record Society, 31, 1925, p. 5 *et passim*.

⁵ It was also adopted as a useful stand-by for feeding livestock in times of fodder shortage, particularly after a long hard winter when it would give energy to the plough-oxen and horses and fatten swine. It was also fed off as a standing crop (*in campestre*) and its versatility must have permitted a heavier livestock stocking of better quality animals which in turn would have improved the quality of wool and increased the supply of manure. The vetch was spring sown. The practice of 'double-cropping' with both a spring and an autumn crop, thus yielding a supply of fresh fodder throughout the year, appears not to have been introduced in the fourteenth century.—P.R.O. E372/148 fol. 29r; W.S.R.O. Wiston MS. 524; Alciston E.S.R.O. G.44/4; P.R.O. C133/4/15. The custom is detectible from seventeenth-century probate inventories.—P. F. Brandon, thesis cited, p. 297.

⁶ B.M. Add. MS. 29794; P.R.O. SC3/1030/23; SC6/1016/5; SC6/1020/12; Eric Kerridge, *The Agricultural Revolution*, 1967, p. 31.

regular servants on the big corn-growing manors increased, so did the pulse sowings needed to provide the liveries. Conversely, as lords reduced their farming activities generally in the later fourteenth century the ratio of pulse to other crops tended to diminish and, exceptionally, peas and beans were no longer cultivated.

As to the place of legumes in crop rotations our present information is extremely meagre. The rotations involving legumes so far reported fall into the single category of the familiar two- or three-course incorporating a fallow (except for occasional instances of 'inhoking'), and legumes were thus grown at the expense of other spring sown crops.¹ The complete suppression of fallowing by the substitution of legumes, or its substantial reduction by this 'bean husbandry' (which was an early development in parts of Italy and is traceable in Flanders in the fourteenth century) is a development which has drawn little comment in England, although it is likely to have been general in east Kent from at least the end of the thirteenth century.² The ancient persistence of the orthodox rotation involving a regular fallow until the introduction of roots and clover in the eighteenth century indicates that earlier departures from this practice were not widespread in England, but its likely development has been noted in populous districts where the waste had already been substantially reclaimed and where sea or river transport facilitated the marketing of produce.³

Coastal Sussex was one such district. 'Internal conquests' had virtually ceased by the late thirteenth century⁴ and the larger manors were obliged to bring under cultivation the heavier clays in distant 'outliers' within the Weald.⁵ In the circumstances an intensification of the arable farming was a natural development. One aspect of this was the high sowing rates which prevailed generally. As a rule all the manors in coastal Sussex sowed seed more densely in the first half of the fourteenth century than the sample of Winchester manors

¹ Bishop, *op. cit.*, pp. 43-4; P. D. A. Harvey, *A Medieval Oxfordshire Village: Cuxham, 1240-1400*, 1965, pp. 18-19, 48-9, 164-5; R. H. Hilton, *The Economic Development of Some Leicestershire Estates in the Fourteenth and Fifteenth Centuries*, 1947, pp. 65-6, 152-6; A. J. Roderick, 'Open-field Agriculture in Hertfordshire in the Later Middle Ages', *Trans. Woolhope Naturalists' Field Club*, 33, 1949-51, pp. 57-8.

² It has yet to be shown whether this is correct but intensive arable cropping in east Kent (Gray, *op. cit.*, pp. 301-2) was associated with a prodigious output of legumes on the estates of the Archbishop of Canterbury and on those of Canterbury Cathedral Priory.—Smith, *op. cit.*, pp. 40-1, and B.M. Add. MS. 29794. See also A. Smith, 'Regional Differences in Crop Production in Medieval Kent', *Archaeologia Cantiana*, LXXVIII, 1963, pp. 147-60.

³ Examples of such districts, termed *Intensitätsinseln* by Riemann, are quoted by B. H. Slicher van Bath, *The Agrarian History of Western Europe*, trans. O. Ordish, 1963, p. 15.

⁴ At Stoughton, on the Chalk, an exceptionally late *innome* was manured and planted with trees and hedges in 1283-4.—P.R.O. SC6/1030/16.

⁵ For example, Wiston manor was cultivating land at Ashurst before the Black Death which had not been sown before (*non seint adhuc*) and Alciston manor tilled land at *Sternershe*, *Swynelond*, *Hege*, *Binorthelondfriche*, and other places at Hellingly whose very names betoken its marginal character.—W.S.R.O. Wiston MS. 5247 and E.S.R.O. G.44/1-8.

selected by Beveridge;¹ and the sowing rates are also substantially higher than those recommended by Walter of Henley and his contemporary.² Wheat was normally sown at the rate of 3–4 bushels per statute acre (the same rate as in the late eighteenth century), the lower seeding being typical on the rich soils of the coastal plain and the 'maam', and the higher on the Chalk where growing conditions are always more adverse. Six bushels of barley to the acre was standard on the coastal plain; $6\frac{1}{2}$ – $7\frac{1}{2}$ bushels to the acre were sown on the east Sussex 'maam', and even this was exceeded by the practice at Lullington on the Chalk where 8 bushels to a statute acre were regularly sown throughout the period 1360–1409. Oats were generally sown at the rate of 5–6 bushels to an acre. The divergence in seeding rates between medieval and modern practice is greatest in the case of the spring-sown grains. The medieval farmer's insistence on dense sowings is probably to be partly explained by his need to smother unclean ground, the problem of weed control doubtless being intensified with the reduction of bare fallowing, and his inability to obtain a good tilth in spring with the inefficient means of ploughing available. There is also some evidence that modern varieties of grain tiller rather more profusely than older strains.³

The sowing rates in the late fourteenth century were slightly reduced at certain manors, but marked declines were reserved for the fifteenth century when more lightly sown demesnes were normal, and this downward alteration in seeding rates is particularly noticeable on the manors of Battle Abbey. This manipulation of seed rates on large estates has been observed elsewhere⁴ and it appears to have been widely adopted as an expedient for adjusting, within certain limits, grain production according to costs and market factors.⁵

The other development which is very marked in coastal Sussex was the elimination of the fallow period on the best arable fields, and its shortening generally on all but the most impoverished and intractable land. The evidence for this vigorous spurt forward in agricultural techniques is afforded by many sources. The most unambiguous are the particulars as to the proportion of the demesne arable which could be cultivated in any one year, such details being normally confined to the late thirteenth and early fourteenth centuries when the extents attached to *Inquisitions post mortem* are particularly detailed. In east Kent at this time many demesnes were said to be capable of being cropped

¹ W. H. Beveridge, 'The Yield and Price of Corn in the Middle Ages', *Economic Jnl*, 1927, 2, p. 161.

² E. Lamond, ed., *Walter of Henley's Husbandry*, 1890, p. 19; the anonymous author of *Dite de Hosbandrie*, *ibid.*, p. 67.

³ For this last statement I am indebted to Mr W. E. H. Fiddian of the National Institute of Agricultural Botany, Cambridge.

⁴ Smith, *op. cit.*, pp. 133–4.

⁵ As recently as the 1940's farmers increased sowing rates in the expectation, largely unfounded, of higher yields.—H. Jackson and J. B. Page, 'Seed Rates of Spring Barley and Winter Wheat', *Experimental Husbandry*, 1957, 2, pp. 1–11.

annually in their entirety.¹ That the same was true in coastal Sussex is indicated by the phrase '*possunt seminari quolibet anno*' which is attributed to the demesne arable at Ford and Rustington in 1284 and to that at Eastbourne in 1338.² Since most demesnes in coastal Sussex comprised some arable on low-lying land on the coastal plain or on heavy clays beyond the scarp-foot, the complete sowing of the demesne was rarely practicable but the hard-worked nature of the best tillage ground is shown by the cropping of 110 out of 130 arable acres said to be cultivable yearly at Folkington and the 80 per cent which could similarly be sown at Lordington.³

Further light on intensive cropping in excess of the traditional three-course husbandry is afforded by comparing the sown acreages recorded in manorial *compoti* (which disclose that the sowing of legumes was invariably in the *leyne* which would normally have been fallowed) and the extent of demesne arable calculated from these documents, or provided by contemporary manorial surveys and the extents attached to *Inquisitions* (TABLE I). It seems evident from such sources that the sowing of a large proportion of the 'fallow' with legumes was ubiquitous in the thirteenth and fourteenth centuries.

Information as to the crop rotations adopted and the lengths of continuous tillage on specific fields is obtainable from several sequences of *compoti* with detailed grange exits. The earliest evidence of yearly sown fields is provided by the accounts of Bosham where the sowings and fallowings of thirty-seven named fields (the entire demesne) were meticulously recorded for the years 1294/5 to 1296/7.⁴ The Bosham fields fall into two groups. One group amounting to 340 customary acres (31 per cent of the total arable) was sown in each of the three years whilst the residue of the demesne, with the exception of a single field which was not cropped, was fallowed once during that time. An almost identical cropping programme, with a similar proportion of arable cropped without intermission, was pursued between 1357/8 and 1364/5,⁵ when field names were once again entered on the manorial exits. It is not possible to trace the field croppings at Bosham for other periods but from the uniformly high sowings throughout the period 1284-1302 (after which date a long gap occurs in the extant records) it can be inferred that the pattern disclosed by the detailed accounts of 1294-7 was maintained during the longer spell. The fields triennially fallowed were sown with wheat and oats in succession. The con-

¹ Gray, *op. cit.*, pp. 301-2.

² P.R.O. C133/39/9 and C135/56/36.

³ P.R.O. C135/85/5 and C135/210/11.

⁴ P.R.O. SC6/1020/21-3. There is no thirteenth-century manorial survey of Bosham extant, but the size of each recorded field remains virtually constant and thus the total acreage of each can be ascertained from the manorial accounts. The fields in fallow are mentioned on the obverse of the rolls.

⁵ W.S.R.O. Acc. 939. The details of vetch and bean sowings in 1362 and 1363 were not recorded because they were utter failures as a consequence of drought, but this omission does not obscure the cropping programme.

TABLE I
DEMESNE CROPPING IN COASTAL SUSSEX

<i>Manor</i>	<i>Demesne arable acreage</i>	<i>Date of survey or field measurement</i>	<i>Date of sowing</i>	<i>Wheat (acres)</i>	<i>Barley (acres)</i>	<i>Oats (acres)</i>	<i>Legumes (acres)</i>	<i>Total sown acreage</i>	<i>%Fallow</i>
Alciston	205*	1380-4 (5 yr. av.)	1380-4 (av.)	81	49	9	44	183	10.8
Beddingham	210*	1362-88 (25 yr. av.)	1362-88 (av.)	74	65	7	29	175	16.7
Bishopstone	262	1388	1388	107	88	11	24	230	12.2
Bosham	343*†	1357-64 (7 yr. av.)	1357-64 (av.)	136	55	25	105	321	6.4
Eastbourne	126	1345	1345	36	37	4	24	101	20.0
Ferring	214	1388	1388	71	40	20	40	171	20.1
Pepperering	60	1397	1397	16	16	7	10	49	18.3
Preston	300	1388	1388	112	100	20	18	250	16.7
Sidlesham and Greatham	277	1388	1388	100	38	50	68	256	7.6
Stoke (by Bosham)	150†	1307	1301	24	41	35	35	135	10.0
West Thorney	96	1307	1297	26	16	5	42	89	7.3
	76*	1351	1351	27	6	13	18	64	15.8
	76*	1352	1352	25	7	20	22	74	2.6

* Main arable fields only. † Customary acres.

Sources: E.S.R.O. G44/37-41; Glynde MSS. 996-1003; B.M. Add. MS. 6165 fols. 211-20; W.S.R.O. Acc. 939; P.R.O. C145/269/5; C133/127/9-10; SC6/1148/1; SC6/1020, 1030.

tinuously cropped land also followed a three-course rotation consisting of wheat, barley (or oats), and legumes as a substitute for fallow. This rotation is identical to the old Kentish 'round-course' strongly approved by Tusser, in one of his little jingles, nearly three hundred years later.¹

A detailed comparison of the field cropping in 1294/7 with that of 1357/65 is instructive. Some of the fields were cropped continuously over both the spells covered by the detailed documents and these in turn can be identified with fields described in 1578 as being "the best corn ground as it yieldeth generally six, seven, or eight bushels of wheat for one bushel of seed."² There would thus seem to have been a core of arable which might be appropriately called 'every year's land'. Other fields in which the fallow had been suppressed in 1294/7 were fallowed more frequently in 1357/65 and others substituted in their place for continuous cropping. The frequency of fallowing overall, therefore, was evidently considerably less than the traditional one year in three. It will be observed that the simple expedient of 'stealing a fallow' by means of the legume course was no different in essence from the widespread custom in medieval England of making an occasional 'inhok' into the 'fallow' field. It is the scale and regularity of the practice at Bosham which mark a distinct advance.

The grange exits of Alciston manor, the principal estate of Battle Abbey, form a complete series between 1369 and 1399³ during which period field names were systematically recorded on the grain exits. As earlier at Bosham a substantial proportion of the demesne was cropped for long periods together with only occasional fallowings over the whole thirty years covered by the detailed documents. The cropping programme, however, had considerably more flexibility than the inexorable three shifts at Bosham and the principle of only fallowing when it was strictly necessary seems to have been firmly established. Some fields were fallowed traditionally every third year; on others the proportion fallowed triennially was only approximately half the total acreage, the remainder being under legumes, and although the precise subdivisions of the fields cannot be ascertained it would appear from the regularity of the practice that such land was being worked on a double three-course shift with a fallow each sixth year.⁴ Some fields were sown on the unorthodox system of several white crops in succession and rested for only an occasional year, and even on others, where the fallow was a normal proceeding, it could be interrupted by a legume course or some other sowings.⁵

¹ Hall and Russell, *op. cit.*, p. 23; Thomas Tusser, *Five hundreth pointes of good husbandrie*, 1590 edn, p. 38.

² W.S.R.O. Add. MSS. 2275, fols. 85r, 85d.

³ E.S.R.O. G.44/19-53.

⁴ Many fields on other manors, e.g., at Beddingham, appear to have been cultivated on this rotation.—W.S.R.O. Glynde MS. 996-1003.

⁵ Some of the irregularities occurred on demesne strips interspersed amongst the tenants' lands in

At Wiston, for which manor *compoti* with a sequence of field-names are extant for the years 1376–87, the departures from the orthodox three-course husbandry are the most marked.¹ Here none of the fields was cast into three seasons and the principle of sowing two successive corn crops followed by a recuperative crop or fallow was abandoned. Instead, as Godman noted in 1911, “there appears to have been no recognized rotation of cropping but wheat was cultivated on the land most suitable for it and as often as it permitted.”² Here is another echo of ancient Kentish practice and a sign of the depth of the historical roots in the sixteenth- and seventeenth-century husbandry of coastal Sussex.³

It is thus evident that much of the demesne arable of coastal Sussex was cultivated much more intensively and flexibly than most other districts in England during the late thirteenth and fourteenth centuries, if not before. The development of this process from the orthodox three-course husbandry cannot be precisely ascertained, but the cropping programme described at Bosham would appear to have been representative of an initial stage, while those at Alciston, Wiston, and at Beddingham,⁴ being more sophisticated (and later) divergences, are signs of the greater innovations practised towards the end of the fourteenth century. The standard rotation on better arable appears to have been the ‘round course’ of wheat, barley, and legumes, but this was far from immutable. Consistent with the maintenance of fertility, the contingencies of the weather and those deriving from the unsettled economic conditions of the later fourteenth century were allowed to influence cropping.

The introduction of the more advanced techniques associated with legume husbandry did not lead to the neglect of older practices. The preparation of a bare fallow for wheat⁵ remained one of the most important tasks in the farming year. It was thrice ploughed (the time-honoured *rebinatio*), and dunged either directly by the sheep-fold or with manure carted from the yards, in which case it was mixed with earth, as custom demanded.⁶ Marl, and where obtainable, slush, and even mud from pits in the village street,⁷ were applied to land re-

the common-fields (*toummanneslonds*) and, since this land had been customary land comprising several tenements before the Black Death, it is probable that the tenants were conforming to the same rotations, but there is no positive proof of this.

¹ W.S.R.O. Wiston MS. 5256–66.

² P. S. Godman, ‘On a Series of Rolls of the Manor of Wiston: the Agriculture of the Fourteenth Century’, *Sussex Archaeolog. Coll.*, LIV, 1911, p. 140 and Table 1.

³ Eric Kerridge, *The Agricultural Revolution*, 1967, pp. 46–53.

⁴ E.S.R.O. Glynde MS. 996–1003.

⁵ A high proportion of wheat followed the legume course but the yield after a bare fallow was normally greater. The value of the wheat crop following the *rebinatio* in comparison with that on continuously sown land is not clear in the fourteenth century, but as late as 1676 an acre of wheat after a summer fallow was valued at nearly 40 per cent more than other wheat.—Brandon, thesis cited, p. 295.

⁶ As on the Archbishop’s manors in Sussex.—P.R.O. SC6/1128/11.

⁷ P.R.O. SC6/1030/21 (Stoughton, A.D. 1271–2).

quired for the wheat or barley 'season'. The proportion of the demesne arable under recuperative crop or rested and dunged could be very substantial. At Bosham in 1295/6, when 126 acres were under legumes in place of a fallow, a further 35½ acres were dunged by carting and slush was spread on another 16 acres; additionally, the sheep-fold was in use.¹ On the Archbishop's manor of Bersted in 1348, of 83½ acres fallowed, 45½ acres were dunged by carts and another 12 acres by the fold.²

The sheep-fold was the principal means of maintaining fertility on manors on the downland and at the scarp-foot and it remained the chief characteristic of Sussex farming for generations. It provided a means of consolidating the light Chalk soils which would not otherwise have been suitable for intensive tillage, and as a method of dunging it was unsurpassed for its cheapness and efficiency.³ The relatively plentiful and flexible supply of dung goes far to explain the thickly sown fields and the adaptability of the device must have contributed to the early development of flexible rotations. The sheep-fold was properly regarded as the very basis of successful corn-growing and manorial customals testify to its importance by minutely specifying the regulations to be observed in its operation.⁴ Its role was naturally more significant on manors with large downland sheep pastures than on the lower coastal plain, where folding was also conducted⁵ but where pastures were less extensive, and much of the lower-lying arable was not sufficiently well drained to permit regular folding. This contrast between the two localities is brought out by the differences in the numbers of sheep stocked per acre of arable (statute measure) which on the lower coastal plain did not exceed 1·80 in the fourteenth century whereas on the downland and scarp-foot manors the ratio never fell below 3·00.⁶

A detailed discussion of the grain yields of coastal Sussex is beyond the scope of this paper but at this point some mention is appropriate of the returns achieved by this labour-intensive corn and legume husbandry. The available data are, unfortunately, very fragmentary. They relate mainly to the period after 1350 and largely to the manors of Battle Abbey (TABLE II). The ascertainable yield ratios, it will be noted, are roughly commensurate with the meagre returns associated with medieval husbandry generally. The *net* yields *per acre* (statute measure) are more informative, even if some doubts as to the local peculiarities of measurement render them less reliable.⁷ Of the less densely

¹ P.R.O. SC6/1020/23.

² P.R.O. SC6/1128/11.

³ On the Archbishop's manors in 1333 carting dung and spreading it for wheat cost 5s. an acre; an acre dunged by the sheep-fold cost 4s.—P.R.O. SC6/1128/10.

⁴ Wilson, *op. cit.*, p. 115.

⁵ W. D. Peckham, ed., *Sussex Customals*, Sussex Record Soc., xxxi, 1925, pp. 14, 23 *et passim*.

⁶ P.R.O. C133/127/9-10; C134/100/15; C145/269/5; C136/108; Lambeth Palace Muniments, 959, 976, 1057; P.R.O. SC6/1016/7-23; E.S.R.O. Glynde MS. 998 and G/44/36-44; W.S.R.O. Acc. 939.

⁷ The present author will discuss these matters in a forthcoming paper in *The Economic History Review*.

TABLE II
GRAIN YIELDS IN COASTAL SUSSEX, 1353-1418

Manor	Period (inclusive)	Harvests	Grain exits extant	Approx. extent of demesne (statute acres)	Wheat		Barley		Oats		Approx. no. of sheep per acre of arable
					Yield ratio	Net yield per acre (bushels)	Yield ratio	Net yield per acre (bushels)	Yield ratio	Net yield per acre (bushels)	
Apuldram*	1353-66	14	13	350	3.82	7.21	2.98	10.96	3.15	11.91	1.40
	1369-79	10	10	300	3.44	7.32	3.17	13.02	2.44	8.64	1.40
Beddingham	1362-88	25	24	250	4.06	10.00	2.88	11.75	3.32	11.50	3.10
Wiston	1371-75	5	5	200	2.47	4.41	2.49	7.45	2.29	6.45	3.33
	1378-91	14	13	200	2.58	4.74	3.28	11.40	3.38	11.90	3.33
Alciston*	1376-93	18	17	450	5.11	12.33	3.56	15.87	3.50	13.90	3.33
	1396-1412	17	16	450	4.58	10.74	3.30	13.80	3.98	15.97	3.33
Lullington*	1379-94	16	16	300	3.58	10.32	2.83	14.64	—	—	3.33
	1399-1418	20	20	300	3.29	8.00	2.46	10.80	—	—	3.33

* Manors of Battle Abbey.

Sources: P.R.O. SC6/1016, 1017, 1018, 1019, 1024, 1025; W.S.R.O. Wiston MSS. 5251-69; E.S.R.O. Glynde MSS. 998-1002; G44/28-70.

sown manors, the productivity of wheat and barley at Apuldrum appears to have been approximate to that on the sample of Winchester manors studied by Beveridge which, however, had inferior oat yields to those on the Sussex manors and negligible legume sowings.¹ Wheat production at Wiston was abnormally low and grain production generally poor. This may be a rather exceptional case since mildew was a frequent explanation for low yields. On the other hand, the more densely sown manors, Beddingham, Alciston, and Lullington, the two latter being properties of Battle Abbey and sown at particularly high rates, had outstandingly good *net* yields during the latter part of the fourteenth century. In the light of the little information on yields which is available it would be imprudent to attempt generalizations but at least it may be said that reduced fallowing in coastal Sussex does not appear to have had an adverse effect on corn yields. Hence grain production probably rose on manors where the traditional rotations were least observed. The achievements of the Benedictine monks of Battle, as elsewhere in England, are especially noteworthy.² It has been observed that "medieval enterprise may have been more successful in increasing the area than the productivity of cultivated land."³ There is much evidence in support of this view, but it would seem that both aims were capable of realization under especially favourable conditions of relatively abundant manure, efficiently applied, to land of high natural fertility, as at the scarp-foot of the South Downs or in the Chalk valleys.⁴

Apart from the sheep-and-corn husbandry with its characteristic round course of wheat, barley, and legumes or fallow, the only other method of cultivation of outstanding importance in coastal Sussex was convertible (alternate) husbandry, under which system fields underwent a short bout of continuous cultivation and were then rested for a similar period to recuperate, when they made tolerable pasture and accumulated fertility if adequately grazed. Such a system was more appropriate in districts where livestock farming was the main objective, and where rainfall was sufficient to nourish the grass, and in these circumstances it was of minor significance on the coastal plain. Nevertheless, even during the 'high farming' peak in the late thirteenth and early fourteenth centuries villeins were required to render work services at Selsey when old land was to be broken,⁵ and during the same period at Apuldrum and Bosham a few

¹ Beveridge, *op. cit.*, p. 161; Gras, *op. cit.*, pp. 261-70. The farming system on the Winchester manors is left unexplained; presumably cultivated land underwent a regular fallow.

² R. A. L. Smith, 'The Benedictine Contribution to Medieval English Agriculture', *Collected Papers*, 1947, pp. 103-16.

³ Philip Jones in M. M. Postan, ed., *The Cambridge Economic History of Europe*, vol. 1, *The Agrarian Life of the Middle Ages*, 1966, p. 377.

⁴ The ratio of sheep to each acre of arable land at Alciston and Lullington was about 3.33 in the late fourteenth century. That the number of sheep was not necessarily the prime factor accounting for the high yield is indicated by the fact that the sheep/arable ratio at Wiston was about the same.

⁵ W. D. Peckham, ed., *Sussex Customals*, Sussex Record Soc., xxxi, 1925, p. 14.

fields bordering the innumerable creeks (and doubtless suffering from inadequate weed and water control) were only sown with oats occasionally when it was necessary to restore the sward.¹ By the late fourteenth century the practice of convertible husbandry on the coastal plain increased to a point when, although still subordinate to the higher yielding 'round course', it had encroached upon some of the formerly more intensively tilled arable. The names of some of these fields, such as the *Hamme* and *Breach* field at Apuldram,² suggest that quasi-permanent cultivation had retreated from the poorer arable fields, which tumbled down to pasture between intervening periods under the plough. An explanation for this reduced arable activity is not forthcoming from the manorial documents, but it may reasonably be inferred that it was a response to the major disincentives arising from the fall in grain prices and rising labour costs; this would have exacerbated, by continual neglect, the deteriorating drainage of the coastal districts.³

A very dissimilar farming to sheep-and-corn husbandry, in which convertible husbandry played a major role, was adopted in the transitional zone of moderate fertility between the Weald proper on the north and the sheep-and-corn belt previously discussed. This zone can be identified as a narrow strip from Barnhorne, sited on Alluvium and Wealden beds, through Ripe, Chalvington, Laughton, and Hamsey, and westwards to Petworth and Midhurst. The main geological formations in this zone are the Gault and Weald Clays and the various beds of the Lower Greensand. The low-valued arable recorded in the extents of manors in this zone was said to be capable of being cultivated less intensively than under the biennial system of much of the Midlands, the amount of arable being sown in any one year ranging from only one-quarter at Laughton and Petworth to one-third at Midhurst.⁴ Wheat and barley could be sown only on particularly fertile fields,⁵ and at Little Horsted, where the demesne was not self-sufficient in grain, provision was made for the carriage of grain from the port of Seaford.⁶ On estates with sufficient documentation the arable farming is revealed as a type of convertible husbandry in

¹ P.R.O. SC6/1016/5-23; 1020/11-24.

² P.R.O. SC6/1016/5-23. By the 1420's arable at Apuldram was largely confined to one major field and others cropped irregularly for short spells. The reduced economic activity at this period is indicated by the remission of rents at Ferring (Lambeth Palace Muniments, CR.451) and a fall in rents derived from parcels of demesne at Bosham (W.S.R.O. Acc. II/A/14-17).

³ Arable on the Archbishop's manors had fallen drastically and the convertible nature of some of it is indicated by the valuation of land at Newtimber as 'arable and pasture' at 4d. an acre.—P.R.O. C145/269/5.

⁴ At Laughton 50 out of 213 acres were stated to be cultivable yearly in 1359 (P.R.O. C135/144/12), at Petworth 120 acres of 500 in 1314 (C134/41/1), and at Midhurst 26 acres out of 80 in 1284 (C133/39/9).

⁵ At Hamsey of 220 arable acres 140 could be sown with wheat and barley, and the remainder were suitable only for oats.—C132/42/8.

⁶ P.R.O. C135/47/11.

which a relatively small acreage near the main barns was generously manured and frequently cropped. The plough was taken round the remaining fields in an orderly sequence, and each was sown until it 'ran out' when it was left to recover.¹ On the Gault Clay, fields under this method of husbandry could be sufficiently upgraded in fertility to warrant their temporary inclusion in the more intensive 'leyes' worked under sheep-and-corn farming.² Throughout the zone the arable demanded large artificial increases of fertility or long recuperative periods of rest. Heavy applications of marl are recorded in the first half of the fourteenth century, but later the costs of dressing the land in this way became excessive and cheaper substitutes, such as *sleech* (oozy ditch mud), were used instead.³

All sowings were highly dependent on favourable weather at the times of ploughing and during the growing season. Wheat could not be sown in a wet autumn and heavy winter rains severely reduced yields and sometimes necessitated the resowing of land with spring crops. Conversely, dry weather at the wheat sowing could also cause crop failure.⁴ More successful were sowings of rye and dredge (though both were abandoned with the decline in livery renders) and oats. As a whole the yields of all grains were lower and more erratic than those derived from sheep-and-corn husbandry. A notable trend from the end of the fourteenth century was the decline in arable farming, which was accompanied by the virtual abandonment of sheep-rearing in favour of cattle-keeping. It is not clear whether the marked fall in sheep stocks was due to the high incidence of murrain (summers which were wet and warm constituting the greatest hazard on these heavier soils by providing the necessary pre-conditions for rot which carried off great numbers) or whether the sheep, being valued mainly for their dung, were rendered superfluous by the change in farming objectives.⁵

¹ Brandon, thesis cited, pp. 251-4; *idem.*, *Sussex Archaeolog. Coll.* (forthcoming).

² Several fields at Alciston, such as The Heye and Northwood, were treated in this manner at the end of the fourteenth century.

³ At Chalvington marl was dug *in marleria dominium* and thus was presumably from the upper stratum of the Weald Clay and substantial dressings were given when summer weather permitted it in the first half of the fourteenth century, 11½ acres being marled, for example, in 1347. This operation kept seven men and six boys busily employed in paring off the overburden at the pit and in digging, loading, and spreading, only two of whom were members of the *famuli*. The whole operation cost 7s. per acre.—E.S.R.O. CH.248, 250. By 1388 marling at Ewhurst was costing 13s. 4d. an acre.—E.S.R.O. CH.183. At Barnhorne, in addition to marl, *sleech* was applied to the fields.

⁴ E.S.R.O. CH.246, 250, 253, 257, 260, 267.

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