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Some Welsh Breeds of Cattle in the Nineteenth Century

By R. J. COLYER

THE quiet revolution in livestock breeding which played so significant a part in the evolution of English farming during the eighteenth century created an awareness among farmers and landowners of the financial benefits to be gained from adopting an enlightened approach towards animal husbandry. The increased demand for meat from an expanding population, coupled with the fact that livestock breeding was "fashionable," encouraged farmers to follow the lead of such men as Webster, Bakewell, and Canley in taking a rational and critical view of cattle improvement.

In general, however, the gentleman farmers of Wales did not share the enthusiasm of their English counterparts with the inevitable result that, in the main, the *pot-pourri* of native stock remained largely unimproved until the latter part of the nineteenth century. As late as 1853, R. H. Jackson wrote to Edward Jones of Glansevern complaining bitterly about the attitude of the Welsh landlords towards stock improvement; "... had the attention of the Welsh gentry been given to the improvement of the native breeds, we should ere this have had a description of cattle indigenous to Wales far superior to any of the Highland or Ayrshire . . . our attention to breeding has been literally worse than nothing; the best stock being invariably sold out of the country, added to which a great deal of prejudice has existed among people of capital and influence against anything Welsh."¹

At this point it is perhaps worth pausing to discuss some of the technical problems which confronted the Welsh farmer who may have considered embarking upon a programme of breed improvement. While the technical capacity to develop a superior strain within a breed of cattle may be available, the effort expended in so doing is justified only if the environment is modified in such a way as to exploit the enhanced genetic potential of the "improved" animals. Thus as the genetic potential for growth-rate and the capacity for fattening increases so must the level of nutrition improve; a fact recognized by Bakewell and Rowlandson among others. In the harsh upland environment of Wales the capital cost of improving grassland was often prohibitive, particularly where the major proportion of farm income was derived from such low-output enterprise as store-cattle production. This was the first obstacle to the improvement of native stock. The second obstacle was also based largely upon economic considerations. The principles of improvement advocated by Bakewell and his associates aimed to fix the breed type by concentrating all the desirable characteristics as a result of close in-breeding. During the process of any close inbreeding programme a considerable proportion

¹ National Library of Wales, Glansevern, MS. 2374.

of the progeny exhibit undesirable characteristics, in particular the characteristics of reduced vigour. In order to prevent the spread of this inferior genetic material throughout the population such individuals have to be vigorously culled. If this were not done inbreeding depression would rapidly reduce the vigour of the race to the extent that its very survival would be threatened. Had the Welsh farmers been sufficiently affluent to undertake long-term inbreeding programmes of the Bakewellian type and to stand the expense of rejecting undesirable material, then the process of inbreeding could have been used to establish a uniform type whilst at the same time preserving important indigenous characteristics such as hardiness and the ability to withstand adverse environmental conditions. However, the majority of Welsh farmers preferred to follow the cheaper method of cross-breeding as a means of upgrading the value of native stock, a policy which was often unsuccessful owing to lack of consideration for environmental factors. Thus, although the imported breeds introduced characteristics of early maturity, the resultant cross-breds were unable to tolerate the harsh climatic conditions of upland Wales.

The absence of attention to the improvement of indigenous Welsh cattle is reflected in their lack of success in an exhibition of livestock held at Gloucester in 1853: "... The Welsh breed was a complete failure: £70 was offered, for which only five animals were shown and these were not worth the amount of the prizes."¹ As hinted above the evidence suggests that gentleman farmers were more interested in experimenting with the introduction of improved English stock than selection within the native breeds. This practice was largely condemned by contemporary agricultural writers, who realized that no significant advances could be achieved by cross-breeding unless the native breeds were initially improved by close inbreeding followed by culling of animals exhibiting undesirable characteristics. In 1887 Morgan Evans wrote of Anglesey cattle: "They cannot be improved by crossing with English breeds. They will not blend with foreign blood; the colour becomes destroyed and the type broken and the produce cannot be reduced to a uniform standard."² However, it appears that some breeders were successful with the English crosses. The Rev. J. E. Vincent noted that in 1832 an Anglesey dealer in a substantial way of business "... gave the greatest price for three year old half-bred Short-horn × Anglesey cattle and that they were the only lot in that drove that he made money of."³ Unfortunately many landowners attempted to introduce English blood into regions which were environmentally unsuited with the result that the performance of subsequent cross-breds was considerably below potential. Accordingly, small farmers became highly suspicious of the supposedly superior English stock. In an edition of the *General View of the Agriculture of Pembrokeshire* held by the National Library of Wales, Charles Hassall condemned the introduction of Leicester blood to Pembroke stock: "These cattle crossed with ours made them altogether ill-calculated for stocking in this district. By this fatal error our farmers

¹ *Journal of the Royal Agricultural Society of England*, xiv, 1853, p. 457.

² See J. Coleman, *The Cattle, Sheep and Pigs of Britain*, 1887, pp. 210-11.

³ N.L.W., MS. 18062.

became more than ever attached to their own breed and prejudiced against anything that bore the name English." An anonymous marginal note in the same edition comments: "I procured the names of the introducers of the new breeds of cattle, but I do not think it necessary to publish them. When they got their oxen fat for market they could find no purchaser. The drovers come into this country for pure Pembroke cattle and for them only." This observation is borne out by the answer of the Rev. Mr Herbert of Dolgellau to a questionnaire included in Kay's *General View of the Agriculture of North Wales*. Regarding the cattle of Merionethshire, he wrote: "Some gentlemen have lately introduced the English breed, but the farmers don't like them so well, as the drovers are not so apt to buy them as the old black breed."

The influence of the cattle trade with the English Midlands upon the development of local breed types in Wales has not been fully investigated, but contemporary evidence would indicate that where a constructive breeding policy was operated animals tended to be selected on the basis of their meat-producing rather than milking potential. In Cardiganshire Thomas Lloyd found the local cattle "... to be less milky than most breeds, but as the country in general places more dependence on the drover than on the dairies, this objection may be no great disadvantage to the farmer."¹ Ironically enough, the drovers, who formed a key link in the chain of trade between Wales and England, have often been cited as obstacles to livestock improvement. One example of this may be seen from a letter written to G. Kay, compiler of the *General View of Caernarvonshire*: "The drovers, I was informed, are great enemies to the improvement of stock; and the reason assigned for it is that were larger and finer cattle reared, they might meet with more rivals in the trade, which is at present in a very few hands by which means they have both credit and prices on their own terms."² In North Wales the drovers tended to prefer the small hardy native breed, which would thrive not only on the rich old fattening pastures of the English Midlands but also on the heavy clay values of Essex. The Northamptonshire grazier, Samuel Arnsby, rhapsodized on the qualities of the North Wales cattle in a letter to the *Farmer's Magazine* in 1859. Having praised the virtues of these cattle as scavenging grazers, he pointed out that "... the North Welsh cattle are second to none in strength of constitution, which is the foundation of sound and profitable breeding; an animal weak in stamina may be compared to a bell without a clapper."³ An important feature of autumn pasture management involves reducing the surplus grass on the pastures to a minimum before the winter frosts. By so doing "winter kill" is reduced and growth of the grass in the subsequent spring is not retarded. In 1866 Moscrop noted that in Leicestershire there was a considerable demand for Welsh runts to scavenge the autumn pastures. These 4-5-hundredweight animals were stocked at the rate of one beast per 10 acres "... by which means the hardy Welsh runts improve in condition throughout the

¹ *General View of the Agriculture of Cardiganshire*, 1794, p. 22.

² G. Kay, *General View of the Agriculture of Caernarvonshire*, 1794, p. 19.

³ *Farmer's Magazine*, January 1859, p. 71.

Winter.”¹ Westley Richards, while complaining about the high store-cattle prices of the 1880’s, commented “. . . that in a grazing district stores must be had to eat the grass even if we have to pay too much for them.”²

There seems little doubt that the selective introduction of English bulls into areas which were environmentally favourable would have improved the potential of local breeds of native stock. Indeed, in the lowland areas of Caernarvonshire the introduction of “Bakewell and Warwickshire” breeds was highly successful and cross-bred animals were fetching £2-£3 per head more than native pure-breds when sold at three years old. Such a situation apparently did not appeal to the drovers, for as Kay’s correspondent pointed out: “The general improvement of stock by the introduction of English blood would be a great inducement to many other drovers to come into the country to purchase cattle with ready cash, instead of credit which is at present the practice, whereby many an honest farmer is duped out of his property in whole or in part.” This observation corroborates the views of John Lawrence (1805) who noted that “. . . the drovers it seems are averse to the improvement, preferring the inferior breed and price.”³

In spite of the importance of the store-cattle trade to the rural economy of Wales, it is difficult to accept that the drover’s rather negative attitude was a serious barrier to stock improvement in the nineteenth century. It is perhaps more realistic to suggest that a combination of adverse climatic conditions, shortage of capital, lack of mutual confidence between landlord and tenant, and unwillingness on the part of many farmers to accept the new turnip husbandry were some of the more important obstacles to stock improvement.⁴ Furthermore, lack of education and suspicion of innovation were certainly contributory elements and indeed may have been among the root causes. In 1849 Read wrote of the education of the Welsh farmer: “. . . not only is it totally deficient in providing a scientific knowledge of his future occupation, but the common rudiments of a sound and plain education are frequently dispensed with.”⁵

Stock improvement may be most rapid and effectively achieved by selection of superior male animals. In view of this the widely adopted practice of selling the best male animals to the drovers and keeping back the poorest calf to rear as a stock bull would have the effect of progressively worsening the quality of the animals in a given herd. Read observed “that there is not much prospect of the cattle in the

¹ *J.R.A.S.E.*, 1st ser., xxii, p. 296. ² *Journal of the Farmer’s Club*, May 1889, p. 75.

³ John Lawrence, *A General Treatise on Cattle*, 1805, p. 56.

⁴ Although the turnip husbandry had been established in certain areas of the border counties and along the river valleys by the first decade of the century, it had not achieved much significance in the upland regions. Edward Williams, antiquarian, poet, and agriculturist, wrote in 1810: “Artificial grasses, crops, turnips and clover are properly enough adapted to the views of Bakewell’s disciples of puffing up large oxen and sheep for Smithfield and grossly feeding paunch-bellied cockneys and for supplying royal navies and merchant ships with large supplies of coarse beef *manufactured* from turnips.”—N.L.W., MS. 13147A. He argued that the piecemeal adoption of the four-course system in Glamorgan would be doomed to failure. As far as the upland region was concerned this argument was no doubt tenable. In lowland areas, however, the cause of livestock improvement would have been greatly assisted by the provision of more adequate supplies of winter feed in the form of fodder root crops.

⁵ C. S. Read, *J.R.A.S.E.*, x, 1849, p. 149.

interior of the Principality improving as too little attention is generally paid to the selection of the male animal."¹

Contemporary commentators attached a great deal of value to the hardiness and adaptability of the native breeds to local conditions. They rightly argued that quality cattle could not be produced unless priority was given to land improvement and the provision of better grazing and winter feed. According to Rowlandson: "the first object ought to be to produce nutriment capable of sustaining superior breeds; until then the old breed will maintain its ground and under the present circumstances will prove the best."² In an annotated edition of the *General View of the Agriculture of Brecknockshire* now in the National Library of Wales, the compiler John Clark, railed against the poor quality of the local cattle; but in a marginal note Walter Davies commented that "... the breed of cattle in the country are not despicable . . . nothing is wanted but to cultivate more turnips. The turnip crops are shamefully neglected not one acre in thirty being down to the Norfolk system." In view of this it is hardly surprising that the cattle of superior type were found in areas favourable to grass growth and in which the turnip husbandry had been accepted and incorporated into the farming system.

In spite of the relatively favourable environment in the counties of Pembroke and Glamorgan the proportion of good grazing land to that of total pasture area was very small. Notwithstanding, these regions produced cattle which were held in high regard by English graziers. In particular there was a steady demand for store cattle of the Pembrokeshire breed. "The Pembrokeshire ox always finds a ready market in the feeding counties. Kent and Sussex have usually been the principal places of sale with our drovers; and of late years great numbers of our cattle are driven to the Midland counties."³ John Bannister saw many Pembroke cattle on the rich lands of Sussex, particularly in the region of Pevensey "... where the goodness of the soil will throw out a head of grass sufficient for the purpose of fattening these large beasts."⁴ Furthermore, numerous Pembrokeshire cows were taken to London and used for milk production.⁵ According to Read the Pembrokes were coal black, "having a clean light head and a bright prominent eye."⁶ Youatt's statement that "... a few have white faces or a little white about the tails or udder"⁷ was strongly contested by Evans who insisted that any such marking indicated the influence of "strange blood." Observers of the Pembroke breed agreed unanimously that given good management the cows possessed excellent milking qualities, being capable of giving 6-7 pounds of butter per week during the summer months. Charles Hassall felt that this performance could be further improved by careful attention to feeding. The Pembroke cattle of the poorer regions of Carmarthenshire were considerably inferior, however, "being a short-bodied coarse kind of beast, ill-shaped and unprofitable to the pail." It is possible that these were the Pembrokeshire cattle observed by Lawrence which had deteriorated due to crossing

¹ *Ibid.*, p. 140. ² T. Rowlandson, *J.R.A.S.E.*, vii, 1846, p. 582.

³ C. Hassall, *General View of the Agriculture of Pembrokeshire*, 1794, p. 41.

⁴ J. Bannister, *A synopsis of husbandry*, 1799, p. 47. ⁵ Coleman, *op. cit.*, p. 212.

⁶ Read, *loc. cit.*, p. 139. ⁷ W. Youatt, *Cattle, their breeds, management and disease*, 1834, pp. 72-3.

with the Longhorn in an unsuccessful attempt to improve milk yield, "... thereby making the carcass coarse and long."¹ In view of the prevailing local conditions the Pembroke cow could be fed and bred 15 per cent cheaper than the Hereford or Shorthorn breeds, which apparently had to be housed for three weeks longer than the Pembroke over winter. Both Read and Evans expressed enthusiasm over the meat-producing qualities of the breed which, in spite of its deficiency in width and roundness of rib, would weigh between 7 and 8 hundredweights at four years old. Although his praise for the Pembroke was unbridled, Evans admitted that "Capitalists holding sheltered or luxuriant pastures, having extensive farm buildings, and who aim at producing large prime fat beasts may there, as elsewhere, keep Shorthorns to greater advantage than any other breeds. . . ." In the main, however, "... persons of limited means, living on poor land, and with small farmyards, cannot do better, I think, than maintain and cultivate the indigenuous breed of the country."²

Within the broad framework of the Pembrokeshire breed which extended throughout Pembrokeshire, Carmarthenshire, and South Cardiganshire were two important sub-varieties.³ These sub-varieties arose in the areas of Castlemartin in South Pembrokeshire and Dewsland in the northern part of the county. Owing, perhaps, to the enterprise of the farmers in the anglicized Castlemartin district, the local breed achieved greater popularity than the cattle of the Welsh-speaking area around Dewsland. Evans, however, insisted that by the late nineteenth century the larger Dewsland type was of equal, if not greater, merit than the Castlemartin. Eventually both these sub-varieties, together with the Anglesey and North Wales types, were amalgamated in the Welsh Black breed for which a herd-book was opened in 1874. The efforts of such enthusiasts as Lord Cawdor of Stackpole Court resulted in dramatic improvements in the breed after the opening of the herd book. Its subsequent popularity is evidenced by the fact that some 25,000 "South Wales Blacks" were annually taken to England towards the close of the century.⁴ The influence of English farming practice, and accordingly of English cattle breeds, was strongly felt in the border counties of Wales where, by the closing years of the nineteenth century, the "pure" local breeds had all but disappeared. Indeed, as early as 1797 Clark noted that in the border counties "the native small black breed is mostly out in consequence of a mixture with that of Hereford and Shropshire. The Herefordshire breed, it is true, always dwindle away and grow smaller in proportion, as they are carried higher into the mountainous country."⁵ Although there are abundant descriptions of a distinct Glamorgan breed during the mid- and

¹ Lawrence, *op. cit.*, p. 54. ² Coleman, *op. cit.*, pp. 212-13.

³ In the upper regions of Cardiganshire local cattle had been much improved by the introduction of Pembroke stock. Even so, it was considered that selection within the native breed would precipitate more rapid improvement.—S. Meyrick, *The History and Antiquities of Cardigan*, 1808, p. cclxxix. As early as 1800, Thomas Johnes of Hafod, Cardiganshire, was crossing local stock with Hereford bulls. These hybrids were fattened intensively in a purpose-built "beast-house" at Hafod.—Thomas Johnes, *A Cardiganshire landlord's advice to his Tenants*, Hafod Press, 1800, pp. 78-9.

⁴ J. Barrow Wall, *J.R.A.S.E.*, 2nd ser., xxiii, 1887, p. 78.

⁵ J. Clark, *General View of Brecknockshire*, 1797, p. 70.

late nineteenth century, the Rev. J. E. Evans protested in 1804 that he was unable to notice any difference between the cattle of Pembrokeshire and those of Glamorgan; indeed, "... many Pembroke are purchased and sold as the breed of Glamorgan."¹ However, according to Read, the Glamorgan was "... generally a muddy brown with white along the back and belly."² Youatt described Glamorgan cattle with white faces, although it is likely that such animals contained some Hereford blood. The Glamorgan breed was widely distributed throughout Glamorgan, Monmouth, and Brecon, but according to Walter Davies was only rarely to be seen west of the River Dulais where the Pembroke breed predominated.³ The cows, which were particularly good milkers, averaging 16-18 quarts per day, were held in high regard by George III. This notable judge of stock had a herd of Glamorgan cows on his Windsor farm for which he frequently drew replacements from Welsh country fairs. Glamorgan oxen also were used for all the carting, harrowing, and rolling in the King's park.⁴ However, neither Davies nor Read was particularly enamoured of the beef potential of the Glamorgans, which "... are commonly handsome in the forequarters but want for symmetry from the loins backwards." Read complained that the Glamorgans "... had too often flat backs and high rumps." In spite of these deficiencies in conformation Glamorgan oxen were capable of achieving weights of 12-14 scores per quarter and of providing meat of very high quality. Edward Williams (Iolo Morgannwg), an enthusiastic devotee of the Glamorgan breed, declared that the true Glamorgan animals were greatly preferable to crosses with any other stock, maintaining that nine out of every ten attempts at crossing had resulted in failure. He regarded their docility and "length of leg which makes them useful at a cart" as most valuable characteristics. Although the Glamorgans were much sought-after by the graziers of the Midland counties, Williams considered that their condition deteriorated substantially if they were driven for long distances. He mentioned a Mr Davies of St Athan (1810) "... who buys great numbers of the Glamorgan cattle, but never drives any further than Bristol, Bath or Gloucester. In these markets they are in very high request, but driven farther they would very much fall away, more so than the black western breed."⁵

In spite of Williams's comments upon the iniquities of cross-breeding, it is clear that crosses by Hereford, Ayrshire, and Shorthorn bulls became more common as the century wore on. Hassall was amazed at the "extraordinary prices" paid for the hiring of Hereford bulls in Abergavenny. When these bulls were put to Glamorgan heifers the progeny produced a greater weight of beef at five to seven years of age while at the same time preserving the essential "activity" of the pure Glamorgan, a

¹ J. E. Evans, *Letters written through South Wales*, 1804, p. 32.

² Read, *loc. cit.*, p. 40. Read's description is verified by that of H. Rees in *A description of the counties of Glamorgan, Pembroke and Radnor* of 1810. Rees found the Glamorgan cattle to be "... of middling size, handsome in their make and of a fine brown colour, occasionally presenting black and other varieties." It is likely that these animals of black-coat colour came about as a result of crosses with cattle of the Pembrokeshire type which were widespread throughout Glamorgan and western Monmouthshire. Such, no doubt, were the beasts described by Evans.

³ N.L.W., MS. 1659.

⁴ *Victoria County History, Berkshire*, II, 1906, p. 334.

⁵ N.L.W., MS. 13147A.

vital characteristic if the animal was to perform well at the yoke.¹ Youatt agreed that meat production was increased in the hybrid, although he held reservations about the quality of this meat which he contended was inferior due to early maturity. With the expansion of coal-mining in South Wales, local demand for milk and milk products was stimulated, encouraging some farmers to experiment with the introduction of the Ayrshire breed, noted for its capacity to produce milk of high butterfat content. The experiment met with considerable success. Not only were milk yield and quality enhanced in the cross-bred animal but also a more acceptable beef carcass was produced when the cow was eventually slaughtered.

By the close of the century the effect of cross-breeding had been such that no pure Glamorgan herds remained. However, repeated cross-breeding was not the sole cause of the decline, and there is some evidence to support the assertion that many farmers, particularly the more affluent ones, were selling up their Glamorgan herds and restocking with Hereford or Shorthorn cows quite early on in the century. Thus in a letter to the *Farmer's Journal* in 1824, J. B. Smythe predicted that Herefords and Shorthorns would soon completely supersede the Glamorgan. In support of this prediction he pointed out that two-year-old Hereford steers had fetched between £5 and £10 more than six-year-old Glamorgans at Tredegar Show.² That a price differential existed is certainly true, but a study of contemporary farm accounts indicates that its magnitude was considerably less than that suggested by Smythe. The boom in corn production which accompanied the Napoleonic Wars was in part responsible for the eventual disappearance of the breed. The profitability of cereal growing was such that farmers in Glamorgan ploughed every available and readily croppable acre, with the result that the stock were relegated to less fertile corners of the farm and there they remained while the boom lasted. Thus stock improvement was largely ignored, and existing stock were forced to eke out a precarious existence on poorer pastures of the holding.³ This situation was aggravated by the advanced demand for hay from the pit owners of the South Wales coalfield which was such that it was more profitable for a farmer to sell his hay for the sustenance of pit ponies than to use it for cattle production.⁴ The yield of hay from the peaty meadows of the Glamorgan lowlands did not usually exceed 7–8 hundredweights per acre. If, as is likely, the best hay was then sold off to the pit owners, it may be assumed that overwintered stock languished under conditions of considerable nutritional deprivation.

Beyond the mountains of Brecknockshire which supported "... an innumerable store of oxen which are well stocked and return thousands to the country,"⁵ the Radnor or Builth breed held sway. These cattle, of which little appears to be

¹ C. Hassall, *General View of the Agriculture of Monmouth*, 1812, p. 14.

² *Farmer's Journal*, 26 January 1824, p. 26.

³ According to Youatt, the breed did not deteriorate to the same degree in the upland regions where the proportion of arable land was substantially less than that in the vales.—*Op. cit.*, p. 78.

⁴ Samuel Lewis, *A Topical Dictionary of Wales*, 1845.

⁵ W. Davies, *General View of South Wales*, II, 1815, p. 220. "White faced cattle have now invaded the Vale of Usk . . . as far as Trecastle, where the native blacks make a stand against their further progress. In the Vale of Wye they reach up as far as the winds of Irfon in Buallt [Builth Wells]"

known, were "... superior to that of most of the mountainous districts of South Wales, weighing from 10-20 stones/quarter."¹ It is unlikely that this comment referred to pure-bred local animals, for the evidence suggests that the lack of uniformity and lightness of flesh characteristic of the local type were largely the result of indiscriminate matings with North Wales cattle. Youatt, an eloquent advocate of cross-breeding, declared that the introduction of Hereford bulls to these "scrub" cattle "had produced a beast too large and too capable of yielding beef to be perfected upon their poor land, but they have obtained one that will thrive and pay everywhere else and that will consequently find a ready market." Youatt also paid tribute to the husbandry expertise of the farmers of the uplands of Brecon and Radnor who "... rarely overstock their ground and the cattle have plenty of food both in Winter and Summer ... however coarse it may be." Some years later it was noted that the cattle of these upland areas had markedly improved, largely as a result of the introduction of West Highland cattle by the Duke of Newcastle.²

In the early part of the century Walter Davies noted that a new type "... of the long legged high red colour without any spots and with smoky or dun faces"³ was assuming some importance in the area around the Severn Vale. These cattle, which were known as the Montgomeryshire Smoky Faced breed, were believed to have come originally from Herefordshire through the Bishop's Castle area and into Montgomeryshire. Smoky Faces it appears were also found in the uplands of Radnorshire in the earlier part of the century, for, "There were formerly some good red smoky faced cattle in the hilly parts of Radnor, but they have lost much of their distinctive character by crossing with the Shropshire and Hereford cattle."⁴ The breed was apparently adapted to a wide range of conditions, being both extremely hardy and of good fattening potential. Writing after the dispersal of the last herd in 1886, J. B. Morgan observed that the breed had been preferred by butchers and graziers above all other Welsh cattle.⁵ According to Davies, Mr Croxton of Oswestry, "a grazier of good judgement and great experience," preferred the Montgomeryshire cattle from the vales of the Severn and Vyrnwy to any other breeds of Welsh cattle, "... because they collect bulk on the most valuable parts ... after 9 months feeding with hay or turnips they will add about three score pounds weight to each of their quarters."⁶ A four-year-old ox of the Montgomeryshire breed would weigh 6-7 scores per quarter if reared on the hill, and 9-11 scores per quarter if reared in the vales. The disappearance of this breed, which apparently possessed so many good qualities, came about largely as a result of cross-breeding with Hereford cattle. In the early 1860's an attempt was made to stem the inflow of Hereford blood, as it was believed by many that the offspring of the cross-bred animal were too "coarse" to meet the requirements of the dealers. It is doubtful that breeders were successful in this endeavour, for when the Mont-

¹ J. Clark, *General View of Radnor*, 1794, p. 18. ² H. Keary, *J.R.A.S.E.*, ix, 1848, p. 440.

³ N.L.W., MS. 173D. ⁴ Read, *loc. cit.*, p. 140. ⁵ J. B. Morgan, *Powysland Club*, xix, 1886, p. 1130.

⁶ W. Davies, *General View of North Wales*, 1810, p. 313.

gomeryshire Agriculture Society offered prizes for the breed in the 1870's it was found that good examples of the Smoky Face were restricted almost entirely to the herd of Colonel Heyward of Guilsfield.¹ Thus repeated crossing with Hereford blood had gradually diminished the numbers of pure-bred Smoky Faces until eventually the breed shared the fate of the Glamorgan in being cross-bred out of existence.

Of the cattle of North Wales, the Anglesey and Lleyn types were undoubtedly of the greatest importance. Indeed, the cattle of the remainder of Caernarvonshire and the highlands of Merioneth and Denbigh were, in the main, diminutives of these two types. Davies stated that "An Anglesey runt should be of coal-black colour with white appendages, remarkably broad ribs, high and wide hips, deep chest, large dewlap, flat face and long horns turning upwards."² In these respects the Anglesey was not dissimilar to the Castlemartin. Evans, however, believed the former to be "coarser in the forepart, but having better hindquarters and broader loins than their southern rivals."³ The importance to the local economy of cattle exports to England is suggested by the fact that cattle to the value of £142,000 were sent from Anglesey and the Lleyn peninsula in 1801. As late as 1870 Beever was extolling the virtues of the Anglesey breed, of which many still found their way to Northamptonshire and the eastern coastal counties of England "... where they fatten on the scraps of more favoured and fastidious kine."⁴ The majority of these animals would be two and three years old, and after a twelve-month period at grass would fatten at between 8 and 11 scores per quarter. Where the cattle had been used for draught purposes and subsequently fattened at eight to nine years old they were reputed to be capable of achieving weights of 11-15 scores per quarter. Davies contended that many graziers preferred cattle which had been previously worked as they not only could be purchased more cheaply but also gained weight more rapidly than animals which had not been used for draught purposes. The performance of the Anglesey and Lleyn types could not be matched by their diminutives in other areas. Indeed, the cattle of Merioneth, Denbigh, and the uplands of western Montgomeryshire "have little to recommend them save their extreme hardiness and consequent cheapness of rearing."⁵ However, Mr Corbet had successfully crossed mature Merionethshire cattle with (unspecified) English stock to considerable advantage. Having subjected pure-breed natives and cross-breeds to similar conditions of management he was able to sell the latter for twice the sum fetched by the local-purchased stock. In view of Youatt's comment that the native cattle of Merioneth were "... at the very bottom of the list and disgracefully neglected,"⁶ this result is hardly surprising.

In the hilly areas of North Wales, large quantities of butter and cheese were made for sale in the markets of Holywell, Chester, Shrewsbury, and Bridgenorth. Consequently the milking potential of the Angleseys and their diminutives was of

¹ Report of Royal Commission on Land, in Wales and Monmouthshire, 1896, Cmnd. 8222, p. 748.

² Davies, *North Wales*, p. 311. ³ Evans, *op. cit.*, p. 209.

⁴ W. H. Beever, *Notes on Fields and Cattle*, 1870, p. 21.

⁵ Davies, *North Wales*, p. 312. ⁶ Lawrence, *op. cit.*, p. 56; Youatt, *op. cit.*, p. 73.

considerable importance. Milk yield apparently ranged from 5 to 15 quarts daily according to locality and quality of food. Davies contended that cattle which did not give above 5 quarts of milk per day "... generally manifest a greater disposition to fattening than milking, and should not be kept a week longer on a dairy farm." To illustrate the potential of the North Wales cattle, Davies instanced a cow in Flintshire which produced 4026 quarts of milk and 358 pounds of butter over a period of 183 days. Cows continued to be profitable milkers for eight to ten years, although in the herd of Mr Wynne of Ryton were three cows which "... continued to give milk in abundance until they were each eighteen years old."¹ Their productive life over, the cows were dried off, shod, and eventually driven to the fattening lands of the border counties or the English Midlands.

Attempts to introduce improved breeds to North Wales were generally unsuccessful. Scottish cattle had been introduced on the west coast, particularly around Llwyngwil in Merionethshire, although with little success for as Rowlandson pointed out, "several gentlemen have introduced the Ayrshire and Galloway breeds, but the cattle are looked upon as whims of the gentry."² During the first decade of the century improved English cattle had been brought into west Caernarvonshire. This importation improved the indigenous stock to a limited degree, but Davies was sceptical regarding the future of such a policy: "the difference of climate and of quality of pasture, will at length dwindle the mixed breed, after repeated crossings, nearly to the original native size."

There is little doubt that adverse environmental conditions of both North and South Wales operated against the effective implementation of an improvement plan based upon the importation of English stock. Such stock improvement which did take place was achieved almost entirely in the lowland regions of Wales where pasture quality could be advanced at a relatively low cost and the improved stock thereby supported. It is difficult, however, to escape the conclusion that in the main the neglect of local stock in upland and marginal areas resulted largely from an unwillingness of the larger farmers to commit their limited capital to expensive programmes of stock improvement based upon the principles pioneered by Bakewell. Indeed, even if the more progressive landowners had succeeded in achieving some degree of improvement within their own herds, it is likely that the reactionary and suspicious nature of the impecunious small farmer would have severely reduced the chances of facilitating a widespread and permanent upgrading of native stock.

Despite these limitations to livestock improvement, the trade in Welsh cattle with the English Midlands, which had expanded dramatically following the Irish Cattle Act of 1666, continued to play a vital part in the rural economy of Wales during the nineteenth century.³ The demand for hardy Welsh stock, both from the graziers and yard feeders of the Midland and South Eastern Counties, persisted

¹ Davies, *North Wales*, p. 315. ² Rowlandson, *op. cit.*, p. 582.

³ 18 Car. II, c. 2, 1666. For a discussion of some aspects of the Welsh cattle trade see R. J. Colyer, 'Welsh Cattle Drovers in the Nineteenth Century, Part I', *National Library of Wales Journal*, xvii, 4, 1972, pp. 392-409. Part II of the series is in the press for 1973-4.

throughout the last century, and indeed still persists today. The fact that these "unimproved" Welsh beasts were so highly prized suggests that their performance, in terms of growth rate and ability to fatten on the superior nutritional régime of the Midland grazing pastures, may reflect the stimulus of compensatory growth arising from previous nutritional deprivation.

APPENDIX

WELSH CATTLE WEIGHTS IN THE NINETEENTH CENTURY

In 1929 Dr Fussell drew attention to the size of cattle in the eighteenth century in relation to the supply of beef for the expanding urban population.¹ He maintained that while the size and weight of cattle increased substantially throughout the century, the total cattle population did not advance dramatically. Accordingly he concluded that the expansion of meat supplies arose largely as a result of increased slaughter weight coupled with earlier maturity. The latter factor reflected the increasing use of horses as draft animals and hence the release of oxen for earlier fattening. There is certainly little doubt that by the turn of the eighteenth century many farmers were beginning to realize the advantages, in terms of efficiency of food utilization, to be gained from providing animals which reached slaughter condition at a relatively early age. In 1805 Charles Gordon Grey explained to the Bath Society "... that in the rich soils of the kingdom where large oxen have usually been fed, the graziers there (generally) are feeding Scotch, finding the smaller most profitable."² Five years later, it was contended that on good-quality pasture-land (45s. per acre) "... a large ox with quick aptitude to fatten sometimes increases in twelve months as much as a small ox weighs." Nonetheless, the writer held the view that although smaller beasts did not make the same profit on good land, on poorer land (30s per acre), they would fatten earlier in the year thereby coming to market before the autumn "glut."

There is some evidence to suggest that consumers were beginning to react against the fat and often enormous cattle which were arriving at Smithfield in the early nineteenth century. In the *Farmer's Magazine* of January 1800, we are told of the arrival in London of a bullock from Buckinghamshire weighing 300 stones live weight, and of such bullocks being slaughtered in the streets around Blackfriars Bridge, being unable to stagger on to Smithfield! Numerous correspondents to the *Gentleman's Magazine* witnessed the arrival of these monsters, and in their comments they echoed the aversion of many people to the excessive quantities of fat on butcher's meat at the time. One correspondent, signing himself as "A friend of the Golden Days of Good Queen Bess", declared: "... the cattle produced ... are in general so loaded with blubber that we may suppose, and with reason, that their feeders are more in the interest of the tallow chandler than the butcher. To introduce the custom of killing sheep or oxen so enormously fat ... and in consequence rendered almost useless for the table can never be attended with any good effect."³ If contemporary reports, prints, and lithographs are to be trusted, there is little suggestion that the apparent demand for more lean meat was satisfied as the century progressed. McDonald wrote of an ox of 4½ years of age being slaughtered at Smithfield in 1829, the internal fat of which constituted one-quarter of the carcass weight.⁴ At the Christmas fatstock show of 1893

¹ G. E. Fussell, 'The Size of Cattle in the Eighteenth Century', *Agricultural History*, 1929, pp. 160-81.

² Charles Gordon Grey, *Letters to the Bath Society*, x, 1805.

³ *Gentleman's Magazine*, August 1801, p. 717. See also *ibid.* May 1801 and July 1802.

⁴ J. B. McDonald, *J.R.A.S.E.*, xvii, 1881, p. 359.

we read of Welsh runts of between 2,240 and 3,000 pounds.¹ The fat content of such animals must have been extremely high. However, it is unlikely that the later reports of Smithfield fatstock shows represent realistic average weights of cattle of the day. The "prize" animals arriving at Smithfield were carefully chosen and hand fed, "with the mark of the shovel on their mouths." Accordingly weights of cattle from the Metropolitan Market and Smithfield Club Shows which are included in the following tables should perhaps be regarded as atypical.

The tables, compiled from contemporary sources, show the weights of some of the Welsh cattle types throughout the century. Irish and Scots cattle weights are included for the purpose of comparison. All weights have been converted into pounds.

IRISH AND SCOTS CATTLE WEIGHTS

Breed	Age	Date	Dead weight (lb)	Source	Comments
Irish	?	1790	560-700 980-1,120	W. Marshall, <i>Rural Economy of the Midland Counties</i> , I, p. 364	Imported cattle
Irish Long-horn	5 years	1847	1,400-1,600	J. M. Wilson (ed.), <i>Rural Cyclopaedia</i> , Edinburgh 1847, I, p. 745	"Do not have the fine quality of the Galloways and West Highlands" "... can be brought to great weights"
Irish	19 months 22-24 months	1878 1878	1,008 840	J. Clark, <i>J.R.A.S.E.</i> , 2nd ser., XII, 1878, p. 27	Suckled and fed turnips and oilcake after grazing. "Beef was most beautiful and not at all vealy as some may suppose"
	?	1889	677	A. Pell, <i>J.R.A.S.E.</i> , XXV, 1889, p. 459	59% liveweight—maiden heifers
	?	1889	599	<i>Ibid.</i>	54% liveweight—maiden heifers
	?	1889	622	<i>Ibid.</i>	54% liveweight—maiden heifers
Irish Shorthorns	?	1889	842	<i>The Times</i> , 4 November 1889	Second quality—shown at Metropolitan Meat Market

¹ Youatt, *Cattle, their breeds, management and diseases*, 13th edn, 1899, p. 46.

IRISH AND SCOTS CATTLE WEIGHTS—*continued*

<i>Breed</i>	<i>Age</i>	<i>Date</i>	<i>Dead weight (lb)</i>	<i>Source</i>	<i>Comments</i>
Polled Scotch Galloways+	?	1808	700	R. Parkinson, <i>General View of . . . Rutland</i> , 1808, p. 118	
	?	1810	560-840	R. Parkinson, <i>Treatise on the breeding and management of livestock</i> , 1810, I, p. 53	
	3-4 years	1819	640-1,040	<i>Farmer's Journal</i> , 25 October 1819, p. 337	Not worked
	?	1827	640-680	U.C.N.W. Bangor, MS. 6572	
	4½ years	1829	1,040-1,120	J. McDonald, <i>J.R.A.S.E.</i> , 2nd ser., xvii, 1881, p. 373	Exceptional—showed at Smithfield, when the inside fat was found to be one-quarter of the dead weight
	4 years	1847	700-840	<i>Rural Cyclopedia</i> , I, p. 738	In favourable circumstances may attain 980-1,120 lb
	5-6 years	1847	Sometimes 1,400	<i>Ibid.</i>	"Beef of fine quality"
	?	1848	784-946	H. Keary, <i>J.R.A.S.E.</i> , ix, 1848, p. 442	
	Not exceeding 2 years	1889	1,170	Smithfield Club Show, 1889, in A. Pell, <i>J.R.A.S.E.</i> , 2nd ser., xxv, 1889, p. 459	70% of live weight. Daily live-weight gain 2·38 lb
	Not exceeding 3 years	1889	1,444	<i>Ibid.</i>	70% of live weight. Daily live-weight gain 1·92 lb
	Not exceeding 4 years	1889	1,464	<i>Ibid.</i>	64% of live weight. Daily live-weight gain 1·65 lb
	?	1889	742	<i>The Times</i> , 4 November 1889	Second quality, Lincs.-grazed—shown at Metropolitan Meat Market

WELSH CATTLE BREEDS

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IRISH AND SCOTS CATTLE WEIGHTS—*continued*

<i>Breed</i>	<i>Age</i>	<i>Date</i>	<i>Dead weight (lb)</i>	<i>Source</i>	<i>Comments</i>
Highland	?	1802	560	'A Farmer', <i>Rural Recreations</i> , 1802, p. 127	
	?	1809	420	Rev. W. Bingley <i>Memoirs of British Quadrupeds</i> , 1809, p. 413	
	4 years	1847	420-500	<i>Rural Cyclopaedia</i> , I, p. 744	First-rate grazers—thrive equally well on turnips
	?	1848	504-604	Keary <i>loc. cit.</i> , p. 443	

WELSH CATTLE WEIGHTS

<i>Breed</i>	<i>Age</i>	<i>Date</i>	<i>Dead weight (lb)</i>	<i>Source</i>	<i>Comments</i>
Anglesey	3-4 years	1805	480-960	J. Lawrence, <i>A General Treatise on Cattle</i> , 1805, p. 57	"No cross would improve these islanders"
	3-4 years	1810	640-880	W. Davies, <i>General View of the Agriculture of North Wales</i> , 1810, p. 311	Oxen worked at the yoke
	8-9 years	1810	1,040-1,200	<i>Ibid.</i>	
	4 years	1849	784-896	C. S. Read, <i>J.R.A.S.E.</i> x, 1849, p. 145	
Cardigan	3-4 years	1814	480-560	W. Davies, <i>General View of . . . South Wales</i> , 1814, p. 215	"When crossed with Herefords weigh 800-960 lbs"
Carmarthen	?	1848	504-664	Keary, <i>J.R.A.S.E.</i> , ix, 1848, p. 440	"Little propensity to fatten"
Glamorgan	3-4 years	1814	640-800	Davies, <i>South Wales</i> ,	Cows
	?	1814	960-1,120	<i>Ibid.</i> , p. 218	Oxen (some heavier)
	4-5 years	1848	784-896	Keary, <i>loc. cit.</i> , p. 440	"Coarser than the Pembrokes and inferior in early maturity"

WELSH CATTLE WEIGHTS—*continued*

<i>Breed</i>	<i>Age</i>	<i>Date</i>	<i>Dead weight (lb)</i>	<i>Source</i>	<i>Comments</i>
Montgomery	?	1800	784	Garrard, <i>Description</i> (quoted by G. E. Fussell, <i>Ag. Hist.</i> , 1929, pp. 160-81)	Montgomery cow beef 560-800 lb
	4 years	1810	480-660	Davies, <i>North Wales</i> , p. 313	} Cattle reared on hills
	5 years	1810	640	<i>Ibid.</i>	
	4 years	1810	720-880	<i>Ibid.</i>	} Cattle reared in vales
	5 years	1810	880-1,040	<i>Ibid.</i>	
Radnor	?	1800	520-720	N.L.W., MS. 1895B	
	?	1815	480-960	T. Rees, <i>A Topographical and Description of . . . South Wales</i> , 1815, p. 880	"Superior to most mountainous districts of South Wales"
Pontypool	?	1809	480	W. Pitt, <i>General View of the Agriculture of Northamptonshire</i> , 1809, p. 200	
Pembroke	4 years	1805	640-1,120	Lawrence, <i>op. cit.</i> , p. 54	"... comes early ripe"
	4 years	1814	720-800	} Davies, <i>South Wales</i> , p. 216	} Oxen Cows
	4 years		480-560		
	4 years	1848	700-784	Keary, <i>loc. cit.</i> , p. 440	"Best found in Castlemartin and Roos Hundreds"
Castlemartin	4 years	1814	800-960	Davies, <i>South Wales</i> , p. 215	
North Wales	6-7 years	1800	1,120	W. Youatt, <i>Cattle, their breeds, management and diseases</i> , 1834, p. 73	"beautifully veined and marbled"
	4 years	1848	560-700	Keary, <i>loc. cit.</i> , p. 439	
Welsh Runts	?	1805	720-1,200	A. Young, <i>General View of the Agriculture of Hertfordshire</i> , 1805, p. 185	

WELSH CATTLE WEIGHTS—*continued*

<i>Breed</i>	<i>Age</i>	<i>Date</i>	<i>Dead weight (lb)</i>	<i>Source</i>	<i>Comments</i>
Welsh Runts	4 years	1889	658	A. Pell, <i>J.R.A.S.E.</i> , 2nd ser., xxv, 1889, p. 459	55% of liveweight
	?	1889	776	<i>The Times</i> , 4 November 1889	Good second-quality cattle shown at Metropolitan Meat Market

It is clearly necessary to exercise considerable caution in drawing conclusions from the subjective estimates of contemporary observers. Very few cattle were weighed before the latter half of the nineteenth century and thus the accuracy of his assessment depended entirely upon the skill and judgement of the observer. The figures shed little light on the question as to whether there was any significant change in cattle weights throughout the century, for the wide variation in dead weights within a period render inter-period comparisons relatively meaningless. Furthermore, the fact that contemporary observers saw and assessed these cattle under a broad spectrum of management conditions makes it impossible to draw conclusion about the genetic potential for meat production of the various breeds. Thus the figures tend to reflect environment and plane of nutrition rather than genetic potential. This is well illustrated by a comparison of the dead weights of cattle from upland Wales with those of Pembrokeshire for a given period. The superiority of carcass weights of the Pembroke breed may reflect a more amenable nutritional régime, and an environment capable of producing a store animal which would feed to heavier weights than similar animals reared in the harsh upland regions of Wales. A further complication arises from the fact that most of these weights relate to animals reared in Wales but fed in England. Accordingly, the final weight of the animal would depend as much if not more on the quality of Northamptonshire fattening pasture or the expertise of the Essex stall fattener as it would upon the genotype of the store beast.

The Stocks held by Early Nurseries

By JOHN H. HARVEY

THE history of trade nurseries in England before 1660 is almost a blank. Some evidence appears by 1670, when Leonard Meager printed a list of sorts of fruit trees, furnished by Captain 'Garrle' (identifiable as Leonard Gurle, c. 1621-85), "my very Loving friend . . . dwelling at the great Nursery between Spittlefields and White-Chappel, a very Eminent and Ingenious Nursery-man, who can furnish any that desireth with any of the sorts hereafter mentioned, as also with divers other rare and choice Plants."¹ Gurle was a citizen and vintner of London and some of his bills for trees and plants have survived.² In 1677 he succeeded the famous John Rose as King's Gardener and died early in 1685.³ The other important London nurseryman after the Restoration, George Ricketts of Hoxton, was well known by 1665 but was declining in 1691, when his nursery was said to be large.⁴ He bought an orchard of 3 acres in 1672, but must already have had substantial grounds.⁵ A number of nurseries, mostly small, had been established by 1691.⁶

The trade was revolutionized by the founding of a really large nursery at Brompton Park in Kensington. This was only part of a vast horticultural scheme set forth in 1681 by four distinguished gardeners: Roger Looker, Moses Cooke, John Field, and George London.⁷ The senior partner, Looker, gardener to the Queen, died in 1685;⁸ Field died in 1687, and in 1689 Cooke retired. George London, who in 1687 had taken Henry Wise into the partnership, was left in control until his death in 1714.⁹ The firm concerned itself with correct standard naming of varieties of fruit and with garden design, formation, and planting, as well as with the sale of trees and plants. There is some doubt as to the area of ground covered, which has been put as high as 100 acres, though about 50 is more probable; in the latter days of the nursery around 1800 the acreage had dropped.¹⁰

In 1705 it was said that the plants in the nursery, if valued at only 1d. each, would

¹ L. Meager, *The English Gardener*, 1670, pp. 82-8.

² Society of Genealogists, Boyd's *Citizens of London*, 1765; Vicar-General's Marriage Licence of 4 September 1676; R. T. Gunther, *The Architecture of Sir Roger Pratt*, 1928, pp. 305, 307-8, a reference for which I am indebted to Dr E. A. Gee; see also M. Hadfield, *A History of British Gardening*, 1969, p. 146.

³ *Calendar of Treasury Books*, v, pt i, pp. 828-9; viii, pt i, p. 290.

⁴ For Ricketts see Hadfield, *op. cit.*, pp. 145-6.

⁵ Survey of London, viii, *St Leonard Shoreditch*, 1922, p. 68. Ricketts died in 1706 (will, P.C.C. 184 Eedes, P.R.O., Prob. 11/490), but he had been assisted in his business since 1678 at least by his son James (W. Roberts in *R.H.S. Jour.*, 63, 1938, p. 425). Rickett's catalogue of evergreens, trees, shrubs, and plants was printed in 1688 by J. Woolridge in *Systema Horti-culturae*, 3rd edn, pp. 268-70.

⁶ J. Gibson in *Archaeologia*, xii, 1796, pp. 181-92.

⁷ B.M., Harl. MS. 6273, fols. 50-6. ⁸ Will, P.C.C. 35 Cann, P.R.O., Prob. 11/379.

⁹ D. Green, *Gardener to Queen Anne*, 1956.

¹⁰ D. Lysons, *The Environs of London*, ii, pt ii, 1811, p. 842, put the area at 50 acres, but this seems to be roughly double what is shown on Thomas Milne's land-use map of the London area (1795-9), which marks nursery grounds distinctively (B.M., K. TOP. vi-95). For the history of the Brompton Park Nursery see *Gardener's Chronicle*, lxxiv, p. 218.

be worth over £40,000, implying a total of roughly ten million plants.¹ It is easy to understand how London and Wise, when stocking the gardens of Blenheim in that same year, could send trees and plants of many kinds by tens of thousands at a time.² For ten years more Brompton Park was also sending large consignments to great estates all over the country and enjoyed a near-monopoly of the business. Yet within fifteen or twenty years substantial nurseries were springing up in different places.³ Generally we know very little of the numbers or varieties of the plants they stocked.

Nurseries, then as now, were of various sizes but it is rarely possible to be sure even of the total number of acres occupied. Brompton Park was probably about 50 acres in its heyday, but most of the early nurseries were much smaller. It was usual for scattered parcels of land to be leased from different owners, perhaps in several parishes. Since hardly any muniments of the early firms have so far become accessible,⁴ our picture of the working of any given nursery is partial and inaccurate, and only in a very few instances is there anything like a complete stock-list.⁵ Fortunately at least two detailed probate inventories survive for nurseries of standing in the outer-London area.⁶

It happens that both of these nurseries were mentioned by Batty Langley (of Twickenham) in his book *New Principles of Gardening*, published in 1728. In writing of peas he described "the several sorts of *Hotspurs*, of which those are the best that were first raised and improved by Mr. Cox, late of *Kew Green* near *Richmond* in *Surrey*, Nursery Man, deceased." He also stated that another kind of Hotspur Pease "called and known by the name of *Master's Hots*, were first raised and improved by an ingenious Gardiner and Nursery Man of that Name now living at *Strand in the Green*, near old *Brentford* in *Middlesex*." Further on, in referring to the Norway (spruce) fir, Langley wrote that "the only Nursery, that I know of, as has this Tree, with all other Ever-Greens, Fruit and Forest-Trees, Flowering Shrubs &c., in their best Perfection, is that of the ingenious Mr. *Peter Mason*, Nursery-Man at *Isleworth* . . . who, I dare to affirm, has one of the best Collection of *English* Fruits of any Nursery-Man in *England*; and on whom every gentleman may safely depend of

¹ J. Bowack, *Antiquities of Middlesex*, quoted in Hadfield, *op. cit.*, p. 149. ² Green, *op. cit.*, pp. 107-9.

³ John H. Harvey in *Yorks. Arch. Jour.*, XLII, 1969, pp. 352-7; in *The Northern Gardener*, XXIV, no. 5, September 1970, pp. 153-5; XXV, no. 2, March 1971, pp. 50-7; in *The Garden History Society Newsletter*, no. 15, November 1971, pp. 6-7; no. 16, February 1972, pp. 9-10.

⁴ Owing to bankruptcy, many of the books of the firm of Henry Hewitt, later Harrison & Bristow, of Brompton, were preserved and are now in the Greater London Record Office (B/HRS/1-753), but they give only partial cover, and that only in the later period of the firm, 1775-1833 (stock-list of seeds and plants in 1812). In the Lincolnshire Archives Office are records of the firm of Pennells of Lincoln, but these begin only in 1830; also (Falk 5) a ledger of 1827-31 and associated documents (including stock-lists of 1831) of the bankrupt nursery of G. Tuxworth at Louth. The business papers of an Edinburgh merchant and seedsman, Arthur Clephane, for 1706-30 have been studied by T. Donnelly in *Agric. Hist. Rev.*, 18, pt II, 1970, pp. 151-60.

⁵ The Harrison list of 1812 (see footnote above) is a full valuation (B/HRS/11) covering vegetable and flower seeds, greenhouse, American, and herbaceous plants, and utensils, and is complemented by a stock-book of seeds, 1811-32 (B/HRS/12). The stock of Tuxworth of Louth in 1831 includes forest trees, shrubs, and greenhouse plants.

⁶ Both are among the inventories of the Prerogative Court of Canterbury, Public Record Office: that of William Cox is Prob. 3/21/77; that of Peter Mason, Prob. 3/29/111.

having, not only every kind of Fruit exactly of the right Kind desired, but the very best Growth, and at reasonable Rates."¹

Who, then, were these outstanding nurserymen, Cox of Kew, Master(s) of Strand-on-the-Green, and Mason of Isleworth? The parish registers of Richmond show that on 29 December 1704 William Cox senior of Kew, gardener, was buried, and that his son William Cox junior of Kew, baptized on 9 February 1679/80, was buried on 18 March 1721/2. It was probably the younger Cox, dead only a few years when Langley wrote, who had improved the Hotspur pea in the period 1705–21.² George Masters, probably the nurseryman from just across the river, was one of the valuers of Cox's stock in 1722, and "Master's Hotspur Pea" or Short Hotspur, continued to appear in seed lists as late as 1828.³ At Isleworth, we find from the registers that there were likewise two gardeners called Peter Mason, father and son. The elder was buried on 23 August 1719, and his son Peter Mason the younger (baptized on 16 April 1680), on 15 February 1729/30. In both cases the deceased gardener was entered as "Mr. Peter Mason," implying a substantial standing in the parish.⁴

The younger William Cox and the younger Peter Mason died intestate and detailed inventories were prepared in the course of legal administration of their estates. The values assigned to the parcels of trees described are probably very low and have little economic significance, but the numbers of each sort of tree and shrub provide explicit evidence of a rare kind. To anticipate, the totals show that Cox in 1722 had over 30,000 plants at Kew, as well as 7 acres of barley, 3½ acres of peas, and 1 acre of beans. In 1730 the Mason nursery at Isleworth contained more than 115,000 trees and plants. Cox, whose business evidently included farming, had "one Plow and 2 Harrows" valued at £1 5s., also 3 carts (£10 10s.), 4 horses (£7), and 5 "Cowes" (£12). Mason at Isleworth, exclusively a nurseryman, had only "one Black Carthorse vallued at £1. 4. 0," and a long list of book debts, of considerable interest.

It is hard to say how typical these numbers were for nurseries of the period, but there is a little more evidence of an analogous sort. John Berry, of Tytherington,

¹ B. Langley, *New Principles of Gardening*, 1728, pp. 128, 151. I am most grateful to Mr Ken Spelman for his generous loan of a copy of this valuable work. The nursery at Kew Green was still in existence in 1795–9, when it was surveyed by Thomas Milne and marked on his land-use map of the London area (above, p. 18, n. 10). In 1692–5 the elder William Cox had supplied seeds, fruit trees, etc. to Viscount Irwin for Temple Newsam, Yorks., to the value of £10 2s. (Leeds City Library, Archives, TN/EA/12/11), and in 1696–1703 appears as a Kew freeholder (Surrey R.O., from the kind information of Miss M. Gollancz, County Archivist). In c. 1731–51 the Kew Nursery belonged to one Butt, who in March 1750/1 supplied £29 19s. worth of trees and shrubs for Kew New Garden (the beginning of Kew Gardens) to Frederick, Prince of Wales. This was doubtless the Richard Butt who in 1749 had supplied the Earl of Uxbridge with 700 trees and shrubs for Dawley Lodge near Harlington, Middlesex, for £9 2s. 6d. (Bucks. R.O., Lee of Hartwell papers, D/LE/C6/9, 17; Staffs. R.O., D.603/F/1976). Butt's or Golden Hotspur Pea (the earliest kind) was offered in some seed lists of the later eighteenth century. It is uncertain whether Masters's nursery at Strand-on-the-Green was the same occupied by Henry Woodman (below, p. 22, n. 1) from 1727 to his death in 1758 (information from Chiswick Rate Books, by the kindness of Mrs R. K. Judges). There were several Isleworth nurseries.

² *Parish Registers of Richmond 1583–1780* (Surrey Parish Register Society, 1, III).

³ Inventory of Cox's stock (above, p. 19, n. 6), along with Andrew Pope; both Masters and Pope were evidently in the trade, as the valuers of Cox's household goods were John Martyn and Thomas Flavell.

⁴ Society of Genealogists, MS. transcript of Isleworth parish registers.

Glos., about ten miles north of Bristol, was sued by the vicar for tithes and the papers in the case (see Appendix 1) show that Berry admitted a stock of some 5,000 trees and shrubs in an average year of the period 1714-21.¹ He was a market gardener, though on a very small scale, as well as a nurseryman, and in his will of 1726 (proved 19 September 1727) he describes himself as a yeoman "aged and sick", and mentions his "Shop Goods." He also held grounds in the parishes of Frampton Cotterell and Stowell (the latter bearing "moveable Trees" bequeathed to his granddaughter Sarah Pullen).² The nursery was evidently only part of Berry's business, but included other stock as well as that involved in the Tytherington tithe-suit.

Later in the century two detailed sale catalogues provide fairly explicit information. James Clarke, a nurseryman of Dorking, Surrey, went bankrupt in 1767, and over 20,000 plants were put up at auction, besides beds of seedlings.³ In 1783, after the death of Henry Clark of Barnet, Herts., his stock (largely cedars, magnolias, and rarities) comprised 1,250 items besides over twenty-five beds of fir, holly, pine, roses, whitethorn, and small fruit. The uncommon exotics were bought by Mr Lee and Mr Lodigz, doubtless the famous nurserymen James Lee of Hammersmith and Conrad Loddiges of Hackney.⁴ Finally, it may be worth mentioning that two private nurseries on the Bruce estates in Yorkshire, at Rookwith and Carthorpe, in 1791 contained 72,000 forest trees as well as beds of seedlings.⁵ In the last quarter of the eighteenth century it is reasonable to suppose that the larger provincial nurseries held stocks of well over a million plants at least, and that a few of them equalled the ten million of Brompton Park.⁶

So much for mere numbers. The different kinds of trees and shrubs, and the relative demand for them, are another matter (see Appendix II). It is convenient to divide the whole stock according to the classification normal in the early catalogues: forest trees, fruit trees, and evergreen and flowering trees and shrubs. Until a fairly late date the categories of herbaceous plants and bulbs were mainly held by specialist florists rather than by general nurserymen. Among forest trees it is remarkable that both Cox and Mason had great numbers of yews: 2,250 or about 7½ per cent of Cox's whole stock, and over 13,500 or more than 11 per cent of Mason's stock. Cox had over 1,200 elms, 900 or so hornbeams, 600 horse-chestnuts, 450 sycamores and 440 limes, but only 200 walnuts and 80 spruce fir. Mason held over 8,000 English and 6,000 Dutch elms, besides 1,670 wych elm, 6,400 hornbeam, more than

¹ Gloucester City Library, Diocesan Archives, B4/T2/18.4. The vicar's claim alleged large numbers of trees etc. sold, but this was refuted by Berry with precise statements apparently taken from detailed records of his business in each year 1714-21.

² Gloucester City Library, Glos. Wills.

³ P.R.O., C.110/174 (Chancery Masters' Exhibits), a printed catalogue for the auction to be held on 22 and 23 April 1767. I owe this reference to the kindness of Mr M. F. Thick.

⁴ Herts. R.O., 52600, a printed catalogue of the auction held on 20 and 21 February 1783, interleaved with the names of purchasers and prices for each lot, in MS. For Lee see E. J. Willson, *James Lee and the Vineyard Nursery, Hammersmith*, Hammersmith Local History Group, 1961; for Loddiges see A. M. Coats, *Garden Shrubs and their Histories*, 1963, pp. 387-8.

⁵ Wilts. R.O., Savernake Papers 10/13c (B).

⁶ See John Harvey, *Early Gardening Catalogues*, 1972, pp. 38-9, and for forest trees, below, p. 22, n. 1.

4,000 horse-chestnuts, and 1,500 Spanish chestnuts, 3,600 beeches, 3,250 limes, and over 3,000 hollies. He had also about 1,300 each of poplars and sycamores, 1,200 mountain ash, and 2,000 walnuts. It was, however, in conifers that Mason showed a new trend, with some 5,000 Scots firs, 2,700 silver firs, 5,370 spruce (the Norway firs of Batty Langley's encomium), a few "Pines" (probably pinasters), and 111 cypress. The beginning of a vogue for the plane was marked by 100 standards, 350 old, small, or unspecified trees, and twenty stools with layers. The birch too was represented by 300 of different sizes, and there were 500 seedling ash.

In fruit trees the pear was still favourite as it had been since the thirteenth century, but the apple was moving up towards first place by 1730. The peach and nectarine, much grown by the gentry in the seventeenth century, were still in demand. Cherries and plums were popular and, rather surprisingly, the filbert. Currants (red and white rather than black), and to a less extent gooseberries, were of substantial importance, and (black) mulberries were adequately stocked; but for medlars and quinces there was not much sale, then as now. Pineapples and strawberries, not included in the earlier inventories, had arrived by 1767.

From the viewpoint of many modern gardeners the most interesting section of the list is that of ornamental trees and shrubs. In rural Gloucestershire John Berry had only 50 laurustinus and 5 bay trees, besides 350 yews, 100 hollies, 30 cypress, and 14 "Firr." Cox at Kew, in the same period, had barberry, box, Spanish broom, guelder rose, honeysuckle, Persian jasmine (i.e. lilac, *Syringa persica*), laurel, laurustinus, common lilac, bladder senna, and syringa (*Philadelphus coronarius*). A definite movement towards hardy flowering shrubs, as against tender evergreens, was setting in and within a few years reached major proportions. This is specifically evidenced in the case of Henry Ellison of Gateshead Park, who "had no great Veneration for greens," and ordered from the nursery of Henry Woodman (c. 1698-1758) at Strand-on-the-Green a thousand mixed flowering shrubs for £12 10s.; the low price of 3d. each shows that mass production of newly popular lines had begun.¹

Woodman, in 1732, could supply 100 each of cyttisus, St. John's wort, scorpion senna, Spanish broom, lilac, syringa, and "Spiraea Frutex" (*S. salicifolia*), but we have no means of knowing what proportion of his total stocks went into this one large order.² Mason's inventory shows that two years earlier a neighbouring nursery had held a total of 100 each of scorpion senna, Spanish broom, and spiraea, 400 lilacs, and 180 syringa, but no cyttisus or St John's wort. Even so, Mason had about forty kinds of shrubs against only half that number listed by Henry Wise a quarter of a century earlier.³ It looks as though the interest in shrubberies, becoming marked by about 1730, was closely linked to the reaction against the old formalism

¹ Central Library, Gateshead, Co. Durham, Ellison Papers, letter from Woodman to Mr Woolley, 17 February 1731/2. For the kinds of forest trees grown and sold by the thousand, and their prices c. 1670-1850, see John H. Harvey in *Quarterly Journal of Forestry*, LXVII, no. 1, January 1973, pp. 20-37.

² "...as to Flowering Shrubs I have as great Variety as any of the Trade".—Henry Woodman to Mr Woolley, Ellison's gardener, 15 December 1731 (Ellison Papers, Gateshead Central Library).

³ Green, *op. cit.*, list of trees and shrubs reproduced from MS. book of Henry Wise as Pl. 53.

and the onset of the landscape movement in English gardening. This is confirmed by the wide variety of shrubs included in the famous illustrated catalogue of Robert Furber of Kensington, *Twelve Months of Flowers*, published in 1730, a clear indication of fashionable taste at the highest level.¹

The change in horticultural fashion became more definite after the middle of the century and this is reflected in the sale catalogues of 1767 and 1783 already mentioned (see Appendix III). The Dorking nursery sold up in 1767 had a modest collection of fruit, notably plums of different kinds, substantial numbers of a few sorts of forest trees (2,000 seedling Spanish chestnut, some 3,000 Scotch fir, about 2,500 spruce, over 700 larch, and 1,000 pinaster). But a great contrast with the holdings of the first half of the century is seen in the wider selection of ornamental trees and shrubs. In this department the total number of sorts, without counting variegated plants, had risen from Mason's forty to over 100. Another important departure is evidenced in the 1783 sale at Barnet. The catalogue of the late Henry Clark's nursery is not really comparable to any of the earlier lists. Clark was already a specialist in rarities, working on a small scale for a high-priced market. That this was possible at all indicates the onset of the great age of plant introductions. The earliest printed trade catalogues to show this were those issued by leading London firms within a few years of 1770: James Gordon (60 pages), William Malcolm (1771, 70 pages), Kennedy & Lee (1774, 76 pages), Conrad Loddiges of Hackney, and John Brunton of Birmingham (both 1777).² The importance of Clark's small collection is shown by the fact that James Lee and Conrad Loddiges thought it worth while to attend the sale and buy in most of the exotic shrubs: andromedas, magnolias, and rhododendrons.

In little more than two generations the horticultural scene had changed completely. For the first twenty-five years of the eighteenth century there were still nurserymen who combined the sale of plants and trees with market gardening, or whose businesses were a specialized offshoot of farming, as in the case of William Cox of Kew. In the last quarter of the century it was possible to grow almost exclusively new and rare exotics which commanded extremely high prices and needed special skill and attention. Here was a new means of livelihood for a growing class of gardeners: some went bankrupt, but for others had opened a path to success and even to renown.³

¹ For the list of plants illustrated by Furber in 1730, see Harvey, *Early Gardening Catalogues*, 1972, pp. 176-82 and plates.

² Copies of Gordon's catalogue of c. 1770 exist in the Lindley Library of the Royal Horticultural Society and at Cambridge University Botanic Garden; of Malcolm's of 1771 in the British Museum (B. 81 (3) and 443.d.27 (6)), R.H.S., and The Queen's University, Belfast; of Kennedy & Lee's in B.M. (B.67.3), also B.M. (Natural History), Linnean Society, Hammersmith Public Library, and The Queen's University Belfast; of Loddiges' of 1777 in B.M. (B.67.4); and of Brunton's of 1777 in B.M. (B.116(3)) and Birmingham Reference Library, Local Studies no. 57720; cf. John Harvey, *Early Horticultural Catalogues—a Checklist* (University of Bath, 1973).

³ See above, p. 19, n. 4; p. 21, n. 3. The long list of Peter Mason's book debts (see Appendix II) shows the large sums for which nurserymen might have to wait, even for years. A letter-book of Harrison & Bristow for 1818-29 (G.L.R.O., B/HRS/13) and papers concerning the collection of debts due to Samuel Harrison (B/HRS/53-251) also demonstrate this.

APPENDIX I

THE STOCKS OF JOHN BERRY AT TYTHERINGTON, 1714-21

(extracted from the papers of a tithe suit against John Berry, yeoman, instituted by Samuel Hall, vicar of Tytherington, now Gloucester Diocesan Archives in Gloucester City Library, B4/T2/18.4)

The vicar claimed that in each of the eight years 1714-21 Berry had sold 500 each of various kinds of fruit trees, mostly at £5 per hundred, and 1,000 each of cypress, yew, holly, fir, laurustinus, hazel, bay, maple, and willow, all at £10 per hundred. Berry admitted only to smaller stocks in most cases, and to small sales at very much lower prices. In the following table the details have been set out in simplified form.

FRUIT TREES AND STOCKS

		<i>Average yearly stock</i>	<i>Sales</i>	<i>Price per hundred (s.)</i>
Apple	—Crab stocks grafted	150	50 p.a.	50
	Kernell stocks grafted	20	10 in all	50
	Crab stocks ungrafted	300/500*	300 in all	18
	Kernell stocks ungrafted	800 (1719-21)	none	9s. 4d.
Apricot		10	†	80
Cherry	in 1714-1717	200	600 in all	50
	in 1718-1721	400		
Filbert		24	†	8s. 4d.
Medlar		2	2 sold at 4d. each	
Nectarine			†	
Peach			†	
Pear		100	40 in all	50
Plum	in 1714-1718	10	40 in all	30
	in 1719-1721	30		
Walnut		80	†	100

*300 in the years 1714-19, 500 in 1720-1.

†Total sales of apricot, filbert, nectarine, peach, and walnut 40s.

FOREST AND ORNAMENTAL TREES

Bay		5 in all	50
Cypress	30	14 in all	18
Fir	14	14 in all	50
Holly	100	60 in all	70
Laurustinus	50	60 in all	50
Yew	350	250 in all	70

APPENDIX II

STOCKS OF TREES AND SHRUBS HELD BY WILLIAM COX AT KEW IN 1722, PETER MASON
AT ISLEWORTH IN 1730, AND JAMES CLARKE AT DORKING IN 1767

(for sources see p. 19, n. 6; p. 21, n. 3)

To obtain totals it has been necessary to reconstitute the sorts from scattered parcels in different fields or beds. The Kew Nursery consisted of the following plots of land: Thames Close, the Further Garden, Well Close, Pine Close, the Old Ground, and 11½ acres of land cropped with barley (7 acres), peas (3½ acres), and beans (1 acre).

The Isleworth Nursery consisted of ground leased from three proprietors, Mrs Gumley, Fauntleroy, and Mr John Johnson. The last, by far the largest, was held on a lease which in 1730 had four years to run and was rented at £30 per annum.

The Dorking Nursery was near the parish church and comprised about 2 acres of ground, a large stove for pines (pineapples), and two fish-ponds, held as copyhold of the manor of Dorking. The plants were described as growing in four "Quarters," the Slope behind the House, the Slope below the Yew Hedge next the ponds, and "Exoticks" in the Bark Pit. This was probably identical with Ivery's nursery grounds, seen in a painting of Dorking of c. 1770-85 (*Surrey Archaeological Collections*, LIV, 1955, pp. 142-3).

FRUIT TREES AND STOCKS

	Kew, 1722	Isleworth, 1730	Dorking, 1767
Apple		3,000	
yearling	150		
small	840		
dwarf (i.e. bush trees)		100	243 plus
old	100	900	
Crab stocks	1,500	3,680	(407 plus)
Crab Quick		5,000	(3 beds)
Paradise stocks			251
Apricot			113
and Peaches mixed	640		
and Nectarines mixed		100	
Cherry	440	1,360	91
old		1,700	
Duke			4
Morello			6
stocks	3,000	about 1,500	244
yearling	2,000		
Damson		17	
rough		50	
(and Almonds mixed)		100)	
Fig		10	
Blue			12
Grapevine		100	33
Medlar		15	
Mulberry	60	260	12
small			9
stools		20	1

FRUIT TREES AND STOCKS—*continued*

	<i>Kew, 1722</i>	<i>Isleworth, 1730</i>	<i>Dorking, 1767</i>
Nectarine and Peaches mixed	120		
See also Apricot, above			
Peach	40		31
old standard		26	
dwarf			6 plus
and Almonds and stocks mixed		600	
and Plum stocks mixed		400	
See also Apricot, Nectarine, above			
Pear	50		
old		40	
Primitive			1
White, stocks			86
(trees) and stocks		3,900	
stocks	4,200	1,200	35 plus
Plum		120	
old		350	
rough etc.		250	
dwarf			69
"Standard Apricock"	100		
Blue Perdigon			2
Green Gage			8
Green Gage, standard			6
Orleans			4
Seed			2 rows
stocks	50	300	391
(trees) and stocks		1,060	
Pear, White Pear stocks		500	1 bed
Mussel stocks	3,480	1,800	275 plus 1 bed
Brussels stocks			24
Quince		56	30

NUTS ETC.

Almond—see *Fruit trees*, Damson, above; *Evergreen etc. shrubs*, below

Filbert 1,160

small 800

Hazel, Cob 29

Walnut—see *Forest trees**Small Fruit*

Currant 750 126 plus

small 200

Currant, Black 40 34

Gooseberry 250 145

large 100

Pineapple 50

stools 47

Raspberry 50 8 rows

Strawberry 93 pots plus

EARLY NURSERY STOCKS

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FOREST TREES

	<i>Kew, 1722</i>	<i>Isleworth, 1730</i>	<i>Dorking, 1767</i>
Ash			50
seedling		500	2 beds
Ash, Scotch (? Mountain Ash)	400		
Ash, American			37
Ash, American White			97
Ash, Flowering			49
Ash, Mountain (and see Ash, Scotch, above)		1,190	18
Beech	some	3,480	
small		120	
Birch		300	1
Cedar of Lebanon			16
large			2
Cedar, Red Virginian			1
stool			1
Cedar, White Virginian			10
stools			2
Chestnut, Horse-		1,550	140
standard		500	
small	600		
seedling			75
bedded		2,100	
Chestnut, Scarlet Horse-			2
Chestnut, Spanish		1,400	2,056
small 'English'	200		
seedling in beds		100	2,000 plus 1 bed
Cypress		111	
Cypress, American Deciduous			45
Elm, English		4,240	1
standard and espalier		3,203	
bedded		150	
hedge		400	
small	220 plus		
'snagling',		200	
and Dutch mixed	1,050		
Elm, Dutch	3 parcels	5,360	
standard		602	
stools		160	
Elm, Wych		70	(? 19)
standard		1,600	
Elm, Yellow		20	
Fir, Balm of Gilead			651
small			45
Fir, 'Pine'		10	
Fir, Scotch		3,090	2,947 plus 7 beds
middle-sized		200	
smaller		1,100	

FOREST TREES—*continued*

	<i>Kew, 1722</i>	<i>Isleworth, 1730</i>	<i>Dorking, 1767</i>
Fir, Scotch— <i>continued</i>			
bedded		180	
seedling		400	
Fir, Silver		2,492	169 plus 1 bed
large		26	
small		200	
Fir, Spruce	80	770	2,343 plus 2 beds
small		1,800	
bedded		800	
seedling		2,000	
Fir, Black Spruce			62
Fir, Hemlock Spruce, stools			2
Holly, Green	1 parcel	1,598	325
rough		623	
small			40
large Fan		360	
round-headed		70	
Holly, Striped		700	13
rough Fan		19	
Holly, Hedgehog			1
Hornbeam	some	1,700	
large		800	
small	900	3,900	
Larch			724
Lime		2,160	29
standard		473	
small	440		
stools and layers		68	2
Lime, White		650	
Oak, English, standard		60	
unspecified		30	
in beds		50 plus 7 beds	
Oak, Evergreen, large		80	2
in beds		500 plus 1 bed	
Pinaster			984
Pine		78	
Pine, 'Hemlock', stool			1
Pine, Jersey			1
Pine, Stone			120
small			150
Pine, Lord Weymouth's			189
Plane		50	
standard		100	
old		50	

EARLY NURSERY STOCKS

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FOREST TREES—*continued**Kew, 1722 Isleworth, 1730 Dorking, 1767*

<i>Plane—continued</i>			
small		250	
stools		20	
Plane, Eastern, stools			2
Plane, Western			95
stools			4
Poplar, Abele		1,200	1
bedded		100	
Poplar, American Abele			5
Poplar, Carolina			14
large			1
Poplar, White			80
Sycamore		1,333	50
small	450		
Thorn, Quickset			150
Thorn, White			42
Walnut	200	2,099	4
old		12	
Willow			1 piece
Willow, Weeping			104
Yew		8,122	78
standard		136	
large	300		
rough	900	3,011	
rough Pyramid		55	
Yew, Fan		1,721	479
large		400	
Yew, Hedge	150		76
small	900		
Yew, Pyramid		80	
See also Yew, rough Pyramid above			

EVERGREEN AND FLOWERING SHRUBS ETC.

Acacia, Common		27
Acacia, Triple Thorn		6
stools		2
Acacia, Water		12
Agnus Castus		1
Almond, fruit-bearing, standard	100	16
old	150	
dwarf	20	
unspecified	330	
and Damson mixed, see <i>Fruit trees</i>	100	
Almond, Double Flowering		2
Almond, Single Flowering, dwarf		some
Almond trees and stocks	100	
Althea Frutex	13	52
in beds	150	

EVERGREEN AND FLOWERING SHRUBS ETC.—*continued*

	<i>Kew, 1722</i>	<i>Isleworth, 1730</i>	<i>Dorking, 1767</i>
Arbor Judae			2
Arbor Vitae, Common			79
stools			2
planted		200	
in beds		100	
Arbor Vitae, Chinese			7
stools			2
Arbutus, stools			4
Barberry	200	1 bed	1 parcel
Bay, Sweet		120	186
small		130	
'Bean Tree, French'			4
Bladder-Nut, Five-leaved		54	
Bladder-Nut, American 'Triennial'			8
Box	400	20	70
rough		840	
Box, Guilded		4	
Box, Silver-edged			2
Box, Variegated			3 plus 1 bed
Box, Dwarf (in yards)		1,000	120
Box, Rough Fan		39	
Broom, Lucca, stool			1
Broom, Spanish	700	100	1
Caragana			83
Cassioberry Bush, South Sea Tea Tree			1
Cereus			3
Cherry, Common Bird		175	
Cherry, American Bird			39
large			2
Cherry, Perfumed			2
Cherry, Cornelian		14	19
stools and layers		11	2
Cistus, Gum			6
Cistus, Laudanum			46
stools			2
Citron			2
Cytisus of Naples			1
Cytisus Secundus			60
stools			12
Dogwood, Black			2
Dogwood, Red			58
Dogwood, Red American, stools			4
Geraniums			4 pots
Geranium, Variegated			4 pots
Guelder Rose	520		20
stools			4
Guelder Rose, American			3

EVERGREEN AND FLOWERING SHRUBS ETC.—*continued**Kew, 1722 Isleworth, 1730 Dorking, 1767*

Guelder Rose, Italian			40
Hickory			5
Honeysuckle	100	3	2 parcels
dwarf		500	
cuttings		1,000	
Honeysuckle, American Upright			1
Honeysuckle, Elder-leaved, stools			2
Honeysuckle, ? White ('Whitbine')		200	
Hypericum Frutex		250	70
stools			3
Ivy, Headed		16	
Jasmine, White		100	
cuttings		200	
Jasmine, Yellow		3	1 parcel
'Jasmine, Persian'	50		40
stools			12
Juniper		220	6
Laburnum, Common		100	43
small		40	
Laburnum, Scotch			2
Laurel, Common	1 parcel	280	552
large			2
stools and layers		500	
Laurel, Portugal			243
large			1
Laurustinus	some	193	422
large			4
Laurustinus, Deciduous, large			1
stools			3
Laurustinus, Rough-leaved		20	
Laurustinus, Shining-leaved, small			2
Lilac	1,800	202	rows
small	50	200	
Lilac, Persian—see 'Jasmine, Persian', above			
Maple		100	
Maple, Scarlet-flowering			12
Maple, Sugar			11
Maple (Virginian), Ash-leaved			38
Mespilus, Snowy			20
Mezereon			48
small		12	15
Mulberry, White			2
Myrtle			84
Myrtle, Candleberry, stools			6
Myrtle, Chestnut			3
Olive, Wild			7
Orange			139
Peterswort, St			20

EVERGREEN AND FLOWERING SHRUBS ETC.—*continued*

	<i>Kew, 1722</i>	<i>Isleworth, 1730</i>	<i>Dorking, 1767</i>
Phillyrea, True stools	125		2
Phillyrea, Hyssop-leaved, stools			2
Phillyrea, Olive-leaved, stool			1
Phillyrea, Alaternus stools			52
Phillyrea, Gold blotch Alaternus, stools			20
Phillyrea, Silver-striped Alaternus stools			12
Prickwood or 'Nonemuch'			5
Privet			2
small	200		3
Pyracantha	20		6 plus
Rose	607		1 bed
Rose, Monthly			30 plus
Rose, Moss Provence, stools			3½ rows
Rose, Pompone			3
Rose, Velvet Double			5
Rose, Yellow Double			8
Rose, Sweet Briar	150		4
Rosemary, Sage-leaved			12
Savin, Common			2
Savin, Striped, stools			1
Senna, Bladder	100	100	5
Senna ('Colutea'), Oriental, stool			4
Senna, Scorpion		100	seedlings
Service		92	1
Silk Wood Tree			40
Spiraea Frutex		100	1
Styrax or Liquidamber, stools			11
Sumach		50	2 rows
Sumach, Velvet			2
Sumach, Yellow			12
Syringa	70	180	15
Taccamahacca			4
Tamarisk, French stools			rows
Thistle, Torch, large			100
small			10
Thorn, Cockspur, large stool			2
Thorn, Glastonbury			1
Thorn, Water			1
Thorn, Egyptian	100		1
small	110		
'Double Blossoms'	3		

EVERGREEN AND FLOWERING SHRUBS ETC.—*continued*

Kew, 1722 Isleworth, 1730 Dorking, 1767

Thuya, stools	2
Toxicodendron	12
Tulip Tree, stools	5
Tutsan, Spreading	1 bed
Tutsan, Tree	1
Viburnum	16
Walnut, Black	1

Besides the items listed above, a few plants in the catalogue of James Clarke's nursery are described as "unknown"; and in the inventory of Peter Mason there are 100 "Carpenter's Cap", not known as the name of a tree or shrub (from the context just possibly a conifer, perhaps stone pine). For an attempt to identify the trees and shrubs listed in two standard, priced catalogues of 1775-7, see John Harvey, *Early Gardening Catalogues*, 1972, pp. 84-116.

THE BOOK DEBTS OF PETER MASON OF ISLEWORTH IN 1730

At Mason's death there were 115 debts owing to him on his books, and listed in the inventory. In many cases only a surname is given but a few of the debtors are identifiable with certainty or with a high degree of probability. These are:

Bincks, Mr, £8 3s. 2d., probably Mr William Bincks, Seed Merchant, Thames Street, London (subscribed to *The Practical Husbandman and Planter*, 1733).

Burlington, Earl of, £171 3s. 2d., of Chiswick Park.

Butts, Mr, £2 14s. 9d., probably Richard Butt of the Kew Nursery (see above, p. 20, n. 1).

Clarke, Sir James, 1s. 6d., probably of Molesey, Surrey.

Clitheroe, James, esq., 12s., probably of Brentford.

Driver, Samuel, £2 17s. 6d., probably the nurseryman of Lambeth.

Dunmore, Lord, £1 2s., the 2nd Earl, 1710-52; of Richmond, Surrey.

Fitzwilliams, Lord, £1 16s. 2d., the 3rd Earl, 1728-56; of Richmond, Surrey.

Forrester, Lady, 12s. 6d., probably of Richmond, Surrey.

Greening, Thomas, £9 11s. 8d., Gardener to the King (1684-1757); buried at Isleworth.

Gumley, Madam, £91 os. 10d., owner of a small part of the land leased by Mason for the nursery; presumably the widow of John Gumley of Gumley House, Isleworth, cabinet-maker, who in 1712 had subscribed to John James, *The Theory and Practice of Gardening*.

Hamilton, Dowager Duchess of, £65, widow of James, 5th Duke (d. 1723).

Hopson, Lady, £1 7s. 6d., probably widow of Sir Thomas Hopson, Admiral (d. 1717); of Weybridge, Surrey; she died in 1740.

Hunt, Samuel, 6s. 0d., probably the nurseryman of Putney, Surrey, a member of the London Society of Gardeners (c. 1695-1763).

Oram, Mr, £7 11s. 5d., possibly Mr William Oram, gardener of Brompton, who subscribed to *The Practical Husbandman and Planter*, 1733.

Pagett, Lord, £7 12s., presumably son of the 1st Earl of Uxbridge.

Sayers, Mr, £1, possibly Mr Nicholas Sayers, Seedsman, Pall Mall, a subscriber to Philip Miller, *The Gardener's Dictionary*, 1731.

Shrewsbury, Lord, £1 2s. 2d., the 13th Earl, 1717-43; had a villa at Isleworth.

Spyers, Joshua, £2 10s., probably the nurseryman and surveyor of Twickenham (fl. 1748-50).

Walcot, John, £3 15s. 1d., of Isleworth; owed this sum for seed of parsley and spinach, quicksets, and wheat, but declined to pay on the ground that Mason owed him a greater sum.

Waldegrave, Lady, £28 1s. 8d., possibly the wife of the 2nd Baron, later Earl Waldegrave, 1722-41.

Woodman, Henry, £6 os. 7d., probably the nurseryman of Strand-on-the-Green, Chiswick (c. 1698-1758): see above, p. 20, n. 1; p. 22, n. 1.

Also mentioned is Mr Minors of Isleworth, deceased, landlord of part of the nursery leased by Peter Mason at a rent of 15s. a year; about four years of this lease were still to run in 1730. A Mrs Minors, very likely his widow, owed Mason 17s. 3d. Another person referred to is George Monday, who had been servant to Peter Mason in the nursery, and who seems to have carried on the business at Mason's death, paying into the estate some £4 for trees sold. The total of book debts amounted to £654 19s. 6d.

APPENDIX III

THE STOCK OF HENRY CLARK, DECEASED, AT BARNET, 1783 (reconstituted from the sale catalogue, Herts R.O., 52600)

Clark's nursery was small but rather highly specialized, with a hothouse and succession pit. The numbers of plants are less carefully specified than in the other lists, and in addition to the named plants there are not less than 185 under the heading of Miscellaneous. The following abstract is in one alphabet.

<i>Sorts of plants</i>	<i>Number</i>
Acacia	sundry
Aletris guineensis	2
Andromeda	9 4 bought by Loddiges
Arbor Vitae	48
Arbutus	61
Azalea	24 2 bought by Lee; 8 by Loddiges
Benzoin	2
Borassus flabellifer	2
Cactus Cereus flagelliformis	6
Calycanthus florida	2
Cedar of Libanus	509 plus bed plus parcel
Ceratonia siliqua	1 bought by Lee
Cherry stocks	some
Cycas circinalis	1
Dirca palustris	8 1 bought by Lee; 5 by Loddiges
Erica, unspecified	2 1 bought by Lee
Erica longiflora	2
Erica mediterranea	2
Erythrina corallodendron	3
Fir	a parcel
Fir, Scotch	1
large	11
Fir, Siberian	1 bought by Loddiges
Fir, Spruce	3 beds
Fir, American Spruce	1
Gardenia	9
Gingko biloba	1 bought by Loddiges

<i>Sorts of plants</i>	<i>Number</i>
Gooseberry and Currant	5 beds and sundry
Hibiscus mutabilis	3
Hollies	10 beds
Honeysuckle, American	1
stools and layers	4
Juniper	2
Kalmia angustifolia	3
Kalmia latifolia	1
Kalmia thymaeifolia	1
Laurel	20
Laurel, Portugal	sundry
Laurus Sassafras	1
Laurustinus	1
Magnolia acuminata	5 3 bought by Loddiges
Magnolia glauca	133 10 bought by Lee; 65 by Loddiges
Magnolia grandiflora	20 2 bought by Lee; 3 by Loddiges
Magnolia tripetala	55 4 bought by Lee; 13 by Loddiges
Myrica cordifolia	1
Myrica quercifolia	1
Nerium	4
Nerium lativariegatifolium	8
Olea odoratissima	1
Philadelphus	4
Pine, Swamp	1 bought by Loddiges
Pine, Weymouth	3 beds
seedlings	1 bed
Raspberry, double-bearing	1 bed
Rhododendron maximum	10 3 bought by Lee
Roses	1 bed plus sundry etc.
Rose, Pennsylvania	9 4 bought by Loddiges
Rose, Sweet-leaved	about 30
Spiraea frutex	3
Teucrium	1
Thea virida	1
Vaccinium	2 1 bought by Loddiges
Whitethorn	2 beds
Zanthoxylon	6

Lee paid a total of £2 8s. 6d. for the lots he acquired, and Loddiges £9 18s. Lot 2 in the second day's sale (12 Hand Glasses, 3s.) and Lot 54 (4 Cedars of Libanus, 4s.) were bought by Mr Emmerton, probably Isaac Emmerton senior (1736-89), a distinguished nurseryman, florist, and seedsman of Barnet; his son of the same name (1769-1823) published a famous *Treatise on the Culture of the Auricula* in 1815.

The Agriculture Act, 1920 and its Repeal— the “Great Betrayal”¹

By EDITH H. WHETHAM

SUMMARY

IN 1917, faced with a drastic shortage of imported foods, the government of Mr Lloyd George introduced a food production campaign to stimulate the output of grain and potatoes from British farms. The financial basis of this campaign was secured partly by the fixed prices paid by the Ministry of Food, and partly by the provision, through the Corn Production Act, 1917, of guaranteed minimum prices for two cereals, wheat and oats, for the harvests up to and including that of 1922, thus covering a period equivalent to the normal cropping rotations of four or five years. These guaranteed prices were continued in a modified form by the Agriculture Act, 1920 for an indefinite period, and the Act included a clause stating that four years' notice would be given if parliament intended to abolish them. When the expected fall in cereal prices began in the spring of 1921, and the guarantees would have begun their task of protecting British farmers from serious financial loss, the Agriculture Act was repealed just before it came into effect, in spite of the clause about four years' notice. This paper describes the background to the legislation on agricultural policy between 1917 and 1921, and assesses its effects both on war-time production and on the relationships between the government and the agricultural community.

INTRODUCTION

During the seventy years which followed the repeal of the corn laws, the national policy for British agriculture was limited to paying farmers, for the food and raw materials they produced, prices determined by competition in markets increasingly dominated by overseas produce. This policy was considered so fundamental to the welfare of the country that when grain and meat prices fell sharply in the last quarter of the nineteenth century, and successive governments showed real concern over the agricultural depression, protection by way of tariffs was never contemplated for any of the basic foods. At any time up to 1916 there was strong opposition to any policy which provided support for British farmers by raising the prices of imported grain, meat, or dairy produce.

In 1916, after nearly two years of war and of rising prices for foods, the then Prime Minister, Mr Asquith, appointed an agricultural policy sub-committee of the Reconstruction Committee to advise on the post-war problems of agriculture;

¹ I am indebted to Mr Richard Mather, who summarized for me the relevant cabinet and parliamentary papers on this topic; and also to the late Mrs Orwin, who gave me a draft of a paper on agricultural policy between the wars begun by her husband, the late Dr C. S. Orwin, the first Director of the Agricultural Economics Institute, Oxford.

its chairman was Lord Selborne, himself a former President of the Board of Agriculture. As an afterthought, the sub-committee was also asked to consider the question of an appropriate policy for the current emergency. Its interim report was published in January 1917, when German submarines were gathering for unrestricted warfare against ships approaching British ports; the Selborne sub-committee then recommended the introduction of guaranteed minimum prices for two corn crops, wheat and oats, to extend over at least four years. Such a guarantee would ensure that farmers could recoup, over the period of a normal crop rotation, the high cost of ploughing their grassland and the investment in implements required to increase immediately the output of cereals for human consumption. (Barley was omitted from the guarantee in deference to the temperance movement.)

In their interim report, and also in their final report published in March 1918, the Selborne sub-committee argued the case for the adoption by the state of a positive agricultural policy for the post-war years. The sub-committee urged the value to the nation of a greatly increased area of arable land as the basis of a stable and efficient agriculture, providing a higher proportion than in the years before 1914 of the nation's food, with less dependence upon imported feeds for animals.

In recommending that there should be a permanent increase, compared with the early years of the century, in the area of arable land and therefore in the area of corn crops, the Selborne sub-committee were influenced by three factors. There was impressive evidence, recently marshalled by Sir Thomas Middleton of the Food Production Department, that arable land, properly cultivated on a four- or five-course rotation, yielded more food per acre for human consumption than the average acre of grassland.¹ Grain and fodder crops, including grass leys, taken in rotation round a farm provided both cash crops, such as wheat and potatoes, and also meat and milk from the animals kept to consume the fodder, grass, and straw and to provide manure. Good grassland could be intensively grazed to provide a high output of livestock products, but then it was liable to become infested with parasites and weeds which seriously reduced its output and affected the health of the animals grazing on it; there was at that time no effective treatment for most internal parasites other than removing animals to clean pastures. In practice, therefore, the intensive grazing required to yield a high output from grassland could not be maintained for any length of time, except on a few favoured sites, such as the coastal marshes or the famed fattening pastures in the midlands.

Secondly, good arable farming with its balance of crops and livestock employed twice or three times as many men per 100 acres as were employed on the ordinary permanent grass which dominated large areas of the English midlands. One man and his pair of horses were needed at that time for every 30, 40, or 50 acres of arable land, according to the type of rotation and the quality of the soil, while stockmen and shepherds were also required. The Selborne sub-committee deplored the "drift from the land" which had occurred in the past forty years, and which they associated

¹ T. H. Middleton, *The Recent Development of German Agriculture*, Cd. 8305, 1916; *Report of the Agricultural Policy Sub-Committee of the Reconstruction Committee*, Cd. 8506, 1917, and Cd. 9079, 1918.

with the conversion of arable to grass; they were anxious to ensure that more families were employed in rural areas after the war, either as farmers on newly created smallholdings, or as employees on well-managed arable farms.

Thirdly, the experience of war showed that arable farms equipped with horses and implements could easily and quickly grow more grain as an emergency measure, while the grassland farmers no longer had the horse-power, the manpower, the implements, or the knowledge to embark on arable farming. Their livestock, especially the dairy cows, were large consumers of imported grain and cattle cake, and in time of emergency, such as 1917, they were direct competitors with human beings for the limited volume of imports, while arable farmers had the by-products of the crops as winter food for their animals. On all counts, therefore, an extension of arable farming was judged to be desirable as a permanent policy for the post-war years, but arable farming imposed higher costs, more investment, and greater risks of a variable income than most forms of grassland farming. If national policy required the maintenance of arable farming over a larger area than would normally result from the operation of market forces, some inducement must be given by way of profitable crops which provided the immediate cash incomes of arable farmers.

As a long term policy, therefore, the Selborne sub-committee recommended that prices of two cereals be guaranteed indefinitely at a level which would generally cover the costs of ordinary arable farming. To ensure that the workers on the land were lifted out of the abyssmal poverty which had engulfed the southern and eastern counties of England, the sub-committee also recommended that wages boards should be set up, on the lines of the wages boards for sweated industries, with powers to enforce minimum wages for all able-bodied men. The sub-committee advised against any control of rents, on the ground that landowners would be required to invest considerable sums in new buildings, field drains, water supplies, and more repairs to the existing structures, and that they were therefore entitled to higher rents as an inducement to take a more active part in the welfare of the land.

Finally, the sub-committee strongly recommended that the agricultural departments should retain, in perpetuity, some of the powers to control land use which they had assumed in December 1916 under the Defence of the Realm Act (DORA). If there were to be guaranteed prices and wages for farmers and workers, the nation should require in return a minimum level of efficiency in the use and management of its land. A detailed survey of all farms and woodlands should be followed by warning notices to occupiers or owners of land that, for any reason, was not making its proper contribution to production. If no improvement followed after a reasonable time, then the agricultural departments should terminate the tenancies of defaulting occupiers, or take over, for a minimum period of five years, the management of a neglected estate. The sub-committee called for a positive policy to improve the general efficiency of agriculture by an active partnership between landowners, farmers, and more powerful agricultural departments; by more pro-

vision for research, education, and advice on technical matters; by state investment in small-holdings, land reclamation, and forestry; by better organization through county agricultural committee and advisory councils in Whitehall and Edinburgh; and by a host of minor administrative improvements.

CORN PRODUCTION ACT, 1917

It can seldom have happened that any official committee found its recommendations implemented so fully as were those of the Selborne sub-committee. Within two years of the final report, legislative or administrative action had been taken on all the major recommendations. The Corn Production Act, 1917 provided guaranteed minimum prices for wheat and oats somewhat below the current buying prices of the Ministry of Food for the harvests of 1917 and 1918, and then on a descending scale for three further years. A minimum wage of 25s. a week was imposed immediately, causing a considerable increase in earnings in some of the low-wage areas, though earnings over most of the country had already reached or exceeded this level under the stimulus of a scarcity of able-bodied men. Wages boards were also set up in each county of England and Wales to provide from the end of 1917 a continuing review of wage rates linked to a standard working week. The Scots were satisfied with their existing system of voluntary negotiating committees, and so the proposal embodied in the Bill to establish wages boards there was dropped from the Act in its final form. Tenant farmers were further favoured by a clause which forbade landowners from raising rents because of the guaranteed prices provided by Part I of the Act, and tenants faced with a claim for higher rents could insist on arbitration to ascertain if the claim was illegally taking advantage of the guarantees. The existing powers of the agricultural departments to control cropping and land use were given a permanent form in the Bill, but here both Houses of Parliament insisted on considerable modifications.

Six months' experience of the working of the current powers under DORA, exercised on behalf of the agricultural departments by agricultural executive committees in each county, had led to a few cases where farmers or landowners felt themselves aggrieved by what they considered unreasonable cropping orders, or dispossession without adequate cause. Under the existing system a complainant could appeal only to the local commissioner of the agricultural departments and through him to the higher officials in London or Edinburgh, all members of the same organization from which came the original source of complaint. The Lords insisted that any powers over cropping, and any proposal to evict tenants or to take control of an estate, must be subject to the right of an appeal to an independent arbitrator. After much political bargaining the final compromise embodied such rights of appeal into Part IV of the Corn Production Act, which was to come into force at the end of one year or at the end of hostilities, whichever occurred first.

Meanwhile, the powers of the agricultural departments under DORA remained in force. In the eighteen months between January 1917 and June 1918 some 1½ million acres of permanent grass and half a million acres of temporary grass had been

ploughed and planted with grain or potatoes to feed a beleaguered nation (table 1). The county committees issued compulsory cropping orders in thousands, but only to give tenant farmers protection from any post-war claims for breach of their leases, which very often forbade the ploughing of established grass. Few of these

TABLE I
AREA UNDER GRAIN IN GREAT BRITAIN, 1914-21 (in thousands of acres)

	<i>Wheat</i>	<i>Barley</i>	<i>Oats</i>	<i>Potatoes</i>	<i>Temporary grass</i>	<i>Permanent grass</i>
1914	1,868	1,699	2,849	614	3,917	17,607
1915	2,247	1,381	3,071	608	3,879	17,579
1916	1,912	1,502	3,075	558	4,125	17,495
1917	1,918	1,619	3,300	656	4,038	17,251
1918	2,557	1,654	4,024	803	3,490	15,896
1919	2,221	1,683	3,675	630	3,700	15,782
1920	1,875	1,842	3,304	707	4,125	15,846
1921	1,976	1,606	3,161	712	4,073	15,906

Source: Agricultural Statistics.

compulsory cropping orders were ever opposed by their recipients, with whom the desired action had normally been agreed before the order was signed. The food-production campaign was primarily an exercise in self-government by the farming community, based on the persuasion and experience of the respected farmers, estate agents, and landowners who composed the county committees.

CORN PRODUCTION (AMENDMENT) ACT 1918

In the summer of 1918, when the German armies were once more threatening the gates of Paris, Part IV of the Corn Production Act was due to come into effect. The agricultural departments felt convinced that the right of appeal against cropping orders, rarely as it might be exercised, would hinder the work of the county committees in adding yet another half-million acres of grassland to the area under corn for the harvest of 1919, when a continuing shortage of imports was certain, whatever else remained unknown. The President of the Board of Agriculture, Mr Prothero (later Lord Ernle), therefore introduced into parliament the Corn Production (Amendment) Bill, continuing indefinitely the existing powers of the agricultural departments under DORA. He admitted that the Bill broke the bargain formerly made with the House of Lords, but pleaded the national necessity. Members of both Houses dealt roughly with the proposed legislation, partly because the final report of the Selborne Committee, recently published, recommended that similar powers to those in the Corn Production Act should be continued in perpetuity. It looked to many members of the general public, in and out of Parliament, that the government was trying to perpetuate into times of peace drastic measures

of control only tolerable in the emergency of war. Farmers and landowners had nobly responded to the appeals for greater output of human food, and although they had lost to the armed services almost all their fit young men, they had planted nearly 9,000,000 acres of land in Britain with grain and potatoes, the largest harvest within living memory. Many of them objected to the prospect of finding themselves, at the end of this gigantic effort, subjected permanently to a form of control which, however designed to improve efficiency, might involve the loss of their land, their homes, and their livelihoods, a form of control which was not to be imposed on any other industry. The amending Act was eventually passed, but the able Director-General of the Food Production Department, Lord Lee of Fareham, resigned his post in view of the censure cast on his department in the course of the debates.

The conflict of opinion over the 1918 Act arose partly from the different visions of the post-war world. For many farmers and landowners, the end of the war should be followed, as speedily as possible, by a return to the conditions that ruled in the pre-war world, where each farmer ran his own business, subject to no interference but that of his landlord, with whom he had a working arrangement embodied in a written lease or sanctioned by local custom. In those days also, farmers struck their own wage bargains with their men, finding that the market generally gave them the upper hand within a certain range set again by local conditions; once engaged, and in a tied cottage, the insecurity and poverty of the agricultural workers, especially in southern and eastern England, enabled a good many farmers and landowners to exercise authority in minor matters of daily life over those living on, and from, the land. Although many farmers welcomed the wage boards and the greater uniformity of wages which resulted, there were others who resented the very idea of representatives of the workers sitting as equals with the farmers on committees which regulated minimum wages and enforced the payment of overtime rates on every farm in the county; through the county agricultural committees representatives of the workers were currently taking part in decisions whether or not a farm was over-staffed and must spare a man to the army. And the growing scarcity of men had turned the bargaining power in the labour market against the employers, so that a threat to give notice became, for the first time in living memory, an effective weapon against a farmer who could not get on with his men. There were many farmers who could not tolerate this reversal of the pre-war balance of power between employers and employed. On the other hand, the reports of the Selborne committee, and of the Milner committee which reported in 1915 on measures to increase production during the war, embodied a different view of the post-war world.¹ Here, strengthened Ministries of Agriculture in London, Edinburgh, and Aberystwyth, controlled by men of education, technical knowledge, and vision, would formulate a national policy for agricultural production, to be implemented partly by controlled prices and regulated wages, and partly by the regular supervision of all farms and estates through permanent committees of the ablest farmers

¹ *Interim Report*, Cd. 8048, 1915, and *Final Report*, Cd. 8095, 1915.

and landowners in each county. Instead of thousands of acres of neglected pasture and water-logged land, members of these committees saw well-cultivated arable fields, worked in approved rotations by contented and well-paid workers, producing vastly increased quantities of grain for the nation, and also supporting larger herds and flocks without the need for expensive imports of grain. The incompetent, the drunkard, the "practical man who practised the errors of his forefathers" would be eliminated in favour of technically trained young men, who had been taught not only the wisdom of their predecessors but also the agricultural sciences and the mysteries of book-keeping, so that they could calculate their costs of production to a fraction of a penny per gallon of milk. Colonies of smallholders, newly established by government loans on land reclaimed from moor and marsh, would loyally support co-operative marketing and buying societies, carrying into civilian life the discipline they had learnt in the armed services. Just how the increased rural population, employed on the land at high wages and living contentedly in improved cottages, could be combined with higher profits for the employing farmers and with food prices acceptable to the urban buyers was not explained; the existing scarcity and high prices of food, and the prospect of still greater stringency in the immediate post-war period, were arguments enough for supporting a permanent policy of agricultural expansion.

POST-WAR POLICY

With the end of the fighting in November 1918, the descending scale of guaranteed prices embodied in the 1917 Act became of immediate importance. After a brief halt in the winter of 1918-19, wholesale and retail prices began again to rise. The new wages boards increased minimum wage rates to keep pace with the cost of living, and by the spring of 1919 farmers were paying at least twice the pre-war rates; the low-wage counties in the south of England, where farmworkers before the war were earning 15s. a week or less, had experienced an even greater rise, with minimum wage rates at 37s. 6d. or 40s. a week, increased in May 1920 to a range of 42s.-46s. a week. The guaranteed minimum prices for wheat and oats written into the 1917 Act were completely out of line with the buying prices of the Ministry of Food, which had risen year by year; but when that wartime Ministry disappeared and markets were again open to unrestricted imports, the farmers foresaw that they would be left paying wages at current rates but with only derisory minimum prices for two commodities as the reward for their wartime investment of money and effort. For it had been expressly stated that the new wage boards set up under the 1917 Act were to be a permanent innovation which would continue into the post-war world, while the guarantee of prices ended with the harvest of 1921. Moreover, the impact of four years of rising costs and stable rents on the finances of landowners led in the immediate post-war years to huge sales of land from estates at prices which reflected the profits of the period of belligerence, rather than the uncertain prospects of the post-war world. Farmers buying their own farms on mortgages, and ex-service men taking up smallholdings or buying themselves a home and a business,

were alike in pressing upon the government the necessity for a new formulation of the established policy of maintaining arable farming at a profitable level.

The usual response of government to political pressure is another enquiry, and a Royal Commission was duly appointed in 1919 to "enquire into the economic prospects of the agricultural industry in Great Britain with special reference to the adjustment of a balance between the prices of agricultural commodities, the costs of production, the remuneration of labour and hours of employment." The four volumes of the evidence given to the Commission, and the supplementary reports on profits of farming and earnings of workers, provide an invaluable picture of the development of British agriculture during the First World War, but it was the three interim reports presented in December 1919 by a majority of twelve, a minority of eleven, and a minority of one that are of importance in the history of agricultural policy.¹

The majority report noted that cereal prices seemed likely to remain high because of the current shortage; but that farmers had no assurance that they would be maintained at a level which covered their costs in view of increased production abroad and the eventual return of normal conditions in the shipping trade. It therefore recommended that the government should give adequate guarantees for the maintenance of cereal prices, for at least the period of a normal crop rotation, in order to make effective the official policy of encouraging arable farming and a high output of both grain and crops from our own land. In spite of the objections of the temperance movement, there were strong reasons for including barley, as well as wheat and oats, in the guarantee, which should be continued indefinitely until Parliament gave four years' notice of withdrawal. In view of the uncertainty over future costs the majority report suggested that the minimum prices should be linked to changes in "ascertained costs of production"; the base of such adjustments should be prices of 68s. per quarter for wheat, 59s. per quarter for barley, and 46s. per quarter for oats of the 1919 crop, which should be regarded as covering the costs of that crop. These prices can be compared with those established by the 1917 Act of 55s. and 32s. per quarter for wheat and oats respectively of the 1918 and 1919 crops, falling to 45s. and 24s. per quarter for the three years 1920-1-2. At the time the Royal Commission was deliberating, the Ministry of Food was buying wheat from British farmers at an average price of 75s. 6d. per quarter for the 1919 harvest; in the winter of 1920-1 it was paying an average price of 85s. 6d. per quarter for British wheat while buying North American wheat c.i.f. at British ports at over 100s. per quarter. British farmers then had reason to complain that they were being underpaid in relation to what they could have secured with free markets.

The eleven members of the Royal Commission who signed the minority report were unfortunate in writing on their first page that "the evidence submitted to us does not show that there is any prospect for some years to come of a fall in cereal prices to a level unremunerative to the farmer. Indeed all the evidence goes to prove to the contrary." Having thus summarized expert opinion on the subject of market

¹ R.C. Agriculture, Cmd. 473, 1919.

prices, they argued that the guaranteed minimum prices at the levels proposed by the majority report would be unlikely to encourage an increased output of cereals, given the level of existing production and of current costs; even the much higher prices being paid by the Ministry of Food for the crops of the 1919 harvest had failed to prevent some decline in the area under grain between June 1918 and 1919, as farmers put under temporary grass fields which had carried more than the usual succession of crops. They considered that it would be damaging to the best interests of agriculture if it were to conduct its operations on the uncertain basis of guaranteed prices offered by a Parliament which could not bind its successors in office.

It was left for a second minority report, signed by Mr (later Lord) Cautley alone, to point out the existing relationship between the guaranteed prices provided by Part I of the 1917 Act and the wages boards set up under Part II. No witness before the Royal Commission had ever suggested the repeal of Part II of the 1917 Act, and Mr Cautley himself regarded the maintenance of the wages boards as essential to the well-being of the farming industry. Although other trades with wages boards had no guaranteed prices from the government to offset the costs, Mr Cautley felt that in agriculture they were politically linked together, if only by the statement made by the Prime Minister, Mr Lloyd George, on 23 February 1917 that "if the government guarantees prices, labour must also be guaranteed." Rather reluctantly, therefore, this second minority report supported the idea of a guarantee of minimum prices for cereals for at least four years ahead.

Given this diversity of expert opinion, it is perhaps surprising that the Agriculture Act, 1920, adopted so whole-heartedly the recommendations of the majority report.¹ As introduced by the Parliamentary Secretary, Sir Arthur Boscawen, into the House of Commons, the Agriculture Bill continued indefinitely those provisions of the Corn Production Act, 1917, which authorized guaranteed minimum prices for wheat and oats (not for barley); the new minimum prices were those proposed by the majority report, with the same adjustment annually to take account of changes in costs of production. These minimum prices were to continue indefinitely, until four years' notice had been given of their termination by Order in Council:²

we put in the four years' notice as a clear indication of the intention of Parliament today that a guaranteed price shall not be terminated unless four years' notice, equal to an ordinary rotation, is given to the farmer.

Sir Arthur went on to say that the minimum prices were not intended to provide a high level of profits, but to guarantee farmers against serious loss on their arable farming if prices fell drastically on the free market; the proposed minimum prices were thought to be somewhat below the average cost of production. The guarantees continued the mechanism set up by the Corn Production Acts of deficiency pay-

¹ Many of the recommendations of the Selborne Committee for the better administration of agriculture were also implemented by the Ministry of Agriculture and Fisheries Act, 1919.

² *Hansard*, 7 June 1920.

ments equal to the difference between the market price and the guaranteed price; these deficiency payments were to be made not on sales but on assumed yields of four quarters of wheat and five quarters of oats to the acre, as returned in the annual census in June. Farmers therefore would receive deficiency payments in any year in which market prices fell below those guaranteed, whether they sold their crops or fed them to their own livestock. These arrangements thus left untouched the level of market prices so that the cost of supporting the output of cereals would fall on taxes, not on the prices of foods.

The provisions in the Bill for controlling the standards of cultivation and of estate management generally repeated those originally inserted into the 1917 Act, and were again severely criticized by both Houses of Parliament, and particularly by many of their lordships, including the Earl of Ancaster, who was shortly to become Parliamentary Secretary to the Minister of Agriculture. As the Bill emerged from a long attack, it provided that orders issued by county committees, enforcing minimum standards of cultivation and of estate maintenance, were subject to appeal to an independent arbitrator; they could only be valid if they did not affect injuriously the persons interested in the land, or alter the general character of a holding. These amendments made by the Lords were reluctantly accepted by the Commons just before the Christmas recess of 1920 under pressure from the government to get the Bill passed as soon as possible. The Ministry of Food was under sentence of death, its arrangements for relinquishing control of cereals in the summer of 1921 were far advanced, and the government was anxious to have the new arrangements for guaranteed minimum prices publicized before the spring sowings for the crops to be harvested in 1921, when Part I of the new Act was due to come into effect.

THE BREAK IN PRICES

There had been short crops of grain in the northern hemisphere in 1919 and 1920, and the abundant harvests of the southern hemisphere could not be shipped to Britain in the immediate post-war years. Prices of all cereals continued to rise in the early months of 1921 as the supplies of the previous harvest ran out, but with the arrival of spring there came also rumours of gigantic harvests impending in North America, and of loaded ships on their way to Britain across the South Atlantic and the Indian Ocean.

In May and June the Cabinet considered a paper by the agricultural ministers setting out current estimates of the sums likely to be required in the next winter to meet the guarantees given in the Agriculture Act. The Wheat Commission tentatively forecast that the price of North American wheat might fall by the autumn to half of its level in the early spring; at a price of around 50s. a quarter for wheat c.i.f. British ports, deficiency payments might amount to £12 million on that crop, and £17 million on oats, assuming a normal relationship between these prices. It is recorded that the Cabinet "felt that it would be out of the question to continue to pay the heavy subsidies involved in the Act without adequate return in the form of an increase in corn production"; it learnt with concern from the

agricultural ministers that the area under corn in June 1921 was likely to be hardly changed from that recorded in 1920, which was a little lower than that of 1919.¹

Now it seems odd, to say the least, that a Cabinet concerned with the prospect of paying large sums to farmers to implement the guarantees given under the Agriculture Act, 1920 should consider that an increase in the area under corn was desirable when every extra acre grown added to those sums. One would have thought that, as the contingency developed which had been foreseen, and farmers were faced with the prospect of heavy loss from market prices, the Cabinet would have rejoiced in the fact that the expansion programme originally launched for 1919—the ploughing of another half-million acres of grassland to be planted with cereals—had been abandoned by the county committees after the armistice, and that farmers, left to their own judgement in what they planted, had slightly reduced the area of corn. Moreover, in the previous December, when the Agriculture Bill was being discussed in Parliament, the Chancellor of the Exchequer had suggested to the Cabinet that the guaranteed prices might involve paying to farmers sums ranging from £12 million to £80 million, depending on the level of the market, and that the guaranteed prices should be reconsidered in order to reduce so huge a liability. At that time the Cabinet had agreed with the agricultural ministers that, in spite of the reduced powers to control cultivation, the government was

deeply pledged to the policy of guaranteed minimum prices, coupled with the control of cultivation, and that it was impossible at this stage to retract from those specific pledges. Further, the prices in the Agriculture Bill were based upon the findings of the Royal Commission on Agriculture, who had examined a number of expert witnesses on the subject. Consequently, any departure from the prices would be regarded as a serious breach of faith by the farming community.²

THE REPEAL OF THE AGRICULTURE ACT, 1920

Although in December 1920 the Cabinet had pushed the altered Agriculture Act through a reluctant House of Commons by emphasizing its importance for the forthcoming harvest, in June 1921 it decided that Part I of the Act, which continued from the Corn Production Acts the provisions for guaranteed prices, must be cancelled forthwith, without any reference to the four years' notice; as a sop to one section of agricultural opinion, dominating the National Farmers' Union, the wages boards were also to be killed.³ The agricultural ministers were authorized to revoke these sections of the Act at once, and to bribe the farmers into acquiescence by

¹ P.R.O., Cab. 23/25/38(21), 11 May, 1921; Cab. 23/26/46(21), and Paper CP-2995, 1 June 1921; Cab. 23/26/47(21), 2 June 1921; Cab. 23/26/50(21), 16 June 1921; Cab. 23/26/52(21), 22 June 1921. U. Hicks, *Finance of British Government 1920-1936*, 1938, p. 90, gives the following figures for expenditure on agriculture in Great Britain in the five post-war years:

	£ million				
	1920	1921	1922	1923	1924
Ordinary expenditure:	15.5	8.6	4.9	8.4	5.8
Corn Production Acts (Repeal) Act payments, wheat, and oats:	—	19.7	—	—	—

² P.R.O. Cab. 23/23/71(20) 16 Dec. 1920 and Paper CP-1313.

³ *Hansard*, Lords, 2 Aug. 1920, col. 139, speech by Lord Strachie.

offering, for the current harvest only, a payment for each acre of wheat and oats, the total sum to be smaller than the expected deficiency payments for 1921-2 under the guarantees.

In July 1921, thirteen months after (as Parliamentary Secretary) he had introduced into the Commons the second reading of the Agriculture Act, 1920, Sir Arthur Boscawen (then the Minister for Agriculture) introduced into the same House the Corn Production Acts (Repeal) Bill, which abolished the most important sections of the previous legislation dealing with minimum prices and minimum wages.¹ Sir Arthur claimed that the government had been impelled into this action by absolute necessity. The fall in cereal prices had been heavier and more sudden than anyone had expected; the financial position of the country was infinitely worse than it had been six months ago, and the need for retrenchment in government expenditure even more urgent. In addition, he argued that as the provisions relating to efficient cultivation of land and management of estates had been virtually eliminated by the amendments of the House of Lords, Parliament was justified in withdrawing from the bargain with the agricultural interest which had been embodied in the first draft of the Agriculture Act, now that the cost of the guarantees had greatly increased beyond what had formerly been expected.

There were of course those, like the minority of eleven on the Royal Commission, who could legitimately say, "We told you so," and who approved of the removal of state subsidies and state control in favour of the no greater uncertainties of the market mechanism, both for prices and wages. Such was the Earl of Ancaster, who had recently become Parliamentary Secretary in the Ministry of Agriculture, and therefore was responsible for introducing into the House of Lords the repeal of the legislation which he had opposed in the previous December. There were others, both in parliament and outside, who were willing to abolish guarantees for prices, but who sought to maintain the wages boards as essential for the defence of an exploited minority of workers. Sir Arthur Boscawen argued that the Scottish system of voluntary conciliation committees could better serve the needs of the English farmworkers than statutory wage boards whose minimum rates were enforceable by law, but there were strong differences between the two countries. The Scottish workers were engaged for a year or half-year, and those changing jobs did so together at the many half-yearly hiring fairs, which provided excellent opportunities for the local organizers of the Scottish Farm Servants Union to set minimum wages on an agreed pattern. Some of the northern counties in England worked on the same half-yearly engagements, but the vast majority of farmworkers south of the border were engaged indefinitely subject to a week's notice; there was therefore a continuous trickle of dis-engagements and re-engagements occurring in each parish, and there was no formal market for the unions to organize. Moreover, unemployment had begun to rise ominously in the spring of 1921, partly because of the strikes in the coal-mining industry and the shipyards which had reduced employment in other industries; nearly two million unemployed were recorded in

¹ *Hansard*, 4 July 1921.

July 1921, so that a downward pressure on agricultural wages, inevitable as retail prices began to fall, could only be intensified by the abolition of the formal mechanism for securing minimum wage rates.

Those sections of the Corn Production Acts which provided guaranteed minimum prices for wheat and oats, and a statutory mechanism for enforcing minimum wages, were duly repealed on 19 August 1921. Farmers were to be given grants of £3 per acre for wheat and £4 per acre for oats of the 1921 harvest; as a late concession a special fund of £1 million was established for the furtherance of agricultural education, research, and advisory work in Britain. Otherwise all that remained of the legislation of 1919 and 1920 for a permanent agricultural policy were the provisions elevating the old Board of Agriculture under a President into a Ministry under a Minister; the newly formed county agricultural committees, shorn of their powers to secure efficiency in the use of land but charged with the promotion of technical education and advisory work; central advisory councils for England and Wales and for Scotland, which, incidentally, were never consulted by the government on this reversal of agricultural policy;¹ and an increase in the compensation payable to tenant farmers who received notice to quit.

This repudiation of the four years' notice written into the Agriculture Act, designed to protect farmers against serious financial loss in the post-war depression, was instantly called by farmers the "great betrayal". The Lloyd George government no doubt saved a considerable amount of money by this action, and thereby lightened the load of taxation, and it undoubtedly was supported by a strong body of opinion in favour of abolishing state controls of, and state support to, the agricultural interests. But the "great betrayal" had precisely the effect foreshadowed by Mr F. D. Acland (who had been Parliamentary Secretary of agriculture in the coalition government from May 1915 to December 1916) in a notable and moving speech in the House of Commons on the second reading of the repeal Bill. He emphasized that greater efficiency in farming depended upon trust and co-operation between the farmers and landowners on the one hand, and the scientists and administrators on the other. The repeal of the government's pledge would inevitably lead to the breakdown of that trust and co-operation, and the financial disaster facing many arable farmers would be blamed upon the government and all its successors in office. "It is important that farmers should regard the experts of the Ministry of Agriculture, not as tricky or ignorant bureaucrats, but as anxious to assist them. Now the Board and all its servants will be handicapped for years." The same opinions were voiced in the House of Lords on 3 August 1921 by Viscount Milner and the Earl of Selborne, chairmen of the two war-time committees on food production.

When I recently interviewed farmers in connection with the agricultural history of the inter-war years, it was noteworthy how the older men went back, unprompted, to the repeal in 1921 of the Corn Production Acts as the cause of financial difficulties for themselves or their fathers in the years immediately after the First

¹ *Hansard*, Lords, 3 Aug. 1921, cols. 171-2.

World War. The British government could not, of course, be blamed for the post-war fall in prices which was a world-wide phenomenon bound to cause financial distress to all entrepreneurs. But what farmers resented was the immediate withdrawal of all but token assistance when the implementation of the four-year guarantee would have enabled them to recoup the costs of converting their war-time farming to more normal patterns. Much arable land was still out of its proper rotation in 1921 as a result of the extra courses of cereals taken in 1917, 1918, and 1919, and required expensive cultivations to conquer weeds before it could even be put down to grass. Profits made during the war carried many families through the lean years which followed 1921, but the financial disasters prophesied by Mr Acland did indeed overtake many of the ex-service men who came into farming after the war, as well as many of those families who were forced, by the sale of estates, into buying their farms in the post-war years on borrowed money.

Notes and Comments

VALE OF EVESHAM RESEARCH PAPERS

Volume IV of *Research Papers*, published by the Vale of Evesham Historical Society, contains articles by C. J. Bond on the estates of Evesham Abbey, G. B. Stow, Jr. on the *Vita Ricardi* as a source for the reign of Richard II, S. H. Grylls on Elmley Castle sundials, and J. A. Johnston on the Vale of Evesham 1702-8: the evidence from probate inventories and wills. The volume, price £1.50 (plus postage and packing), may be ordered from the Publications Manager, Vale of Evesham Historical Society, Almonry Museum, Evesham, Worcestershire.

DANISH AGRICULTURE

One of the few works on Danish agriculture available in English, Erik Helmer Pedersen's *The Danish Agricultural Industry 1910-39*, has recently been published by the University of Copenhagen Institute of Economic History. A limited number of copies are available, and may be obtained by writing to the author at the Institute of Economic History, Norregade 7 C, DK-1165 Copenhagen K.

ENGLISH FIELD NAMES

A paper by John Field, author of the recent volume *English Field Names: a Dictionary*, has

been published by the Dacorum College of Further Education. The paper, entitled "Compliment and Commemoration in English Field-Names", was read at a meeting of the Names Council of Great Britain and Ireland in March 1973. It may be obtained from the Librarian, Dacorum College, Marlowes, Hemel Hempstead, Herts HP1 1HD, price 20p.

OPEN SEMINARS AT READING

Readers living within reach of the University of Reading, Whiteknights Park, may be interested in attending one or more of the Lent Term Open Seminars arranged by Dr E. J. T. Collins of the University's Institute of Agricultural History. The meetings, which will be held in the Palmer Building, Room G. 01, at 3.30, are as follows:

- 13 February Mr C. Dewey (University of Leicester): The causes of agricultural stagnation in Bengal, 1858-1947.
- 20 February Dr E. J. T. Collins (University of Reading): Old wine in new bottles—cereal eating in Britain in the twentieth century.
- 27 February Dr R. Bradley (University of Reading): Some recent approaches to pre-historic agriculture in Britain.

continued on page 53

The Study of the Agrarian History of Denmark: a Brief Introduction to the Literature

By CLAUS BJØRN

WITH the growing interest in comparative history, and the important connections between this country and the changes in Danish farming, readers of THE AGRICULTURAL HISTORY REVIEW may find the following brief discussion of the literature on Danish agrarian history of value.

The study of the history of Denmark in the last half-century has shown a turning-away from the state-centred political and diplomatic history towards a growing interest in the history of the different elements of Danish society. It is a natural consequence of this development that a number of historians in recent decades have taken up the field of Danish agrarian history. A break-through took place in the late 1930's and early 1940's when a considerable number of books and important articles were published. Hans Jensen (1890-1945) concentrated on the eighteenth and early nineteenth centuries—the period of the great land reforms. The major contribution of Hans Fussing (1897-1956) was his treatises of manorial farming, and the relations between squire and leaseholders in the seventeenth century. F. Skrubbeltrang (1900-) has studied the history of the cottagers between 1660 and 1800, and in several articles he treated methodically the quantitative sources of eighteenth-century agricultural history. C. A. Christensen (1906-) is a specialist of the agrarian history of the Middle Ages, while Gunnar Olsen (1910-62) studied the seventeenth century, his principal work being a study of the balance between manorial and peasant farming from 1525 to 1774. C. Rise Hansen (1911-) also studied seventeenth-century peasant conditions, and Sigurd Jensen (1912-) concentrated on the economy of the peasants in the late eighteenth century. In this context Axel Steensberg (1908-) should be mentioned as a stimulating force in the study of the technical-ethnological aspects of past Danish agriculture.

Peasant economy and the peasant community from the late Middle Ages to the beginning of the nineteenth century have been the prevailing interests of the historians mentioned above. Their approach—though of course there were many differences—might be described as more sociological than economic. A review of some of the important contributions of this generation from the 1940's is given by Axel Steensberg in *Modern Research in the Agrarian History of Denmark* (L.A.O.S., Stockholm, 1951, pp. 187-201). A number of younger historians have taken up the field of agricultural history, many of them taught by F. Skrubbeltrang, who was associate professor of agrarian history at the University of Copenhagen from 1956 to 1971. In general, the younger historians have concentrated on what more precisely should be defined as the study of the history of the different elements of agrarian society in Denmark.

As an introduction to the review of literature of Danish agrarian history in other languages than Danish—predominantly English—I should add a little information about publications on Danish history in general. Since 1953 the review periodical *Excerpta Nordica Historica* has published the titles, and in many cases also a summary, of all books and articles of some significance. In 1950 *Historisk Tidsskrift*, the leading periodical of historical science in Denmark, began to present summaries of published articles. The German-reading public will find many Danish historical publications competently reviewed in *Zeitschrift für Schleswig-Holsteinische Geschichte*. Today summaries are published of most doctoral theses and many other publications of scientific interest, and as in the two periodicals just mentioned, English is the language normally used. There are examples of summaries guiding the reader not only on the main points of the book or article but also on the documentation. *The Scandinavian Economic History Review* (abbreviated *S.E.H.R.*), founded in 1952, has included some articles of agrarian history and several instructive reviews. However, though since 1952 the editing of this periodical has been in Danish hands, Danish historians are not the most numerous among the contributors. Povl Bagge, 'Die Lage der Geschichtsforschung in Dänemark', *Historisches Zeitschrift*, 1970, Heft 211/1, is relevant to mention here as giving a bird's-eye view of the study of history in Denmark since the 1930's.

In spite of the date of publication, A. Nielsen (ed.), *Dänische Wirtschaftsgeschichte*, Jena, 1933, is still considered a good introduction to the agrarian history of Denmark. The Middle Ages are treated by Erik Arup, and the period from about 1500 to the late nineteenth century by O. H. Larsen. This publication should be supplemented by F. Skrubbeltrang, *Agricultural Development and Rural Reform in Denmark*, F.A.O. Agric. Studies no. 22, Rome, 1953, describing the history of the agrarian society of Denmark from about 1750—the beginning of the great land reforms—to the middle twentieth century. The book consists in part of a general historical description, together with a fairly detailed history of a typical rural community. Though meant for a wider public, it has been written with full regard to recent research in the field of agricultural history, to a great extent carried out by the author himself. For the period from 1750 to 1940 this book should be regarded as the standard text on agricultural conditions of Denmark. Einar Jensen, *Danish Agriculture*, Washington, 1937, is as the subtitle indicates "a description and economic analysis centring on the free trade epoch, 1870–1930," and bears the stamp of the author's profession as an economist.

Though not purely agricultural in scope, attention should be called to two publications concerning Danish prices. Astrid Friis and K. Glamann, *A History of Prices and Wages 1600–1800 I*, London, 1958, is an important contribution to the economic history of Denmark, and contains an elaborate introduction to the price material. Jørgen Pedersen and O. Strange Petersen, *An Analysis of Price Behaviour 1855–1913*, Copenhagen and London, 1938, is also a valuable source to mention here. The gap between the periods covered in the two publications, from 1800 to 1855, still remains to be filled.

An aspect of Danish agrarian society widely known outside Denmark is agricultural co-operation. A book written by Harold Faber, the long-time Danish state adviser in London, *Agricultural Cooperation in Denmark*, 2nd edn, London, 1931, is a sober and well-balanced description. The Central Committee of Agricultural Co-operation in Denmark is now preparing a publication in English with a historical introduction taking the account up to date.

The trade in agricultural products is one of the main themes in Birgit Nüchel Thomsen and Brinley Thomas, *Dansk-engelsk samhandel 1661-1963/Anglo-Danish Trade 1661-1963*, Aarhus, 1966. The part of the book written by Professor Thomas, treating the period since 1914, is in English, and there is also a very detailed summary in English of the discussion by Mrs Nüchel Thomsen covering the rest of the period. This summary will enable the English reader to understand the tables and figures in the text, as well as the development of Anglo-Danish trade relations since the seventeenth century. Attention should be called to a competent review by E. Helmer Pedersen, *S.E.H.R.*, xviii, 1970.

The founding of the Danish village system is treated by F. Hastrup, *Danske Landsbytyper [Danish Village Types]*, Aarhus, 1964, having an English as well as a German summary. The agrarian crisis of the late Middle Ages can be studied in articles by C. A. Christensen in *Historisk Tidsskrift*, II. række, 6. bind, 12. række, I. bind, 1962-4, both with summaries. The main thesis of Erik Ulsig, 'Danske Adels-godser i Middelalderen' ['Great Danish Estates in Middle Ages'], Copenhagen, 1968, is summarized in English in pp. 373-90 of the book. The agricultural history of the sixteenth and seventeenth centuries is dominated by the nobility and their economy. E. Ladewig Petersen has produced *The Crisis of the Danish Nobility 1580-1660*, 1967, published by the Odense University Press, and a translation into French can be found in *Annales*, 1968, pp. 1253 ff. Svend Gissel, *Landgilde og Udsæd [Manorial Rents and Crops]*, Copenhagen, 1969, has a German résumé, and in *Geographische Zeitschrift*, Beihefte 1968, the same author has published 'Die Dreifelderwirtschaft auf Seeland bis 1700'. Gunnar Olsen's *Hovedgaard og Bondegaard [Manor and Peasant Farm]*, Copenhagen, 1958, centring on the seventeenth century, has an English summary and is reviewed in *S.E.H.R.*, viii, 1960. An English summary is included also in H. Fussing, *Stiernholm Len*, Copenhagen, 1951, a study of the local administration of the seventeenth century, which has much information about the conditions of farming and the rural population.

C. Rise Hansen and Axel Steensberg, *Jordfordeling og Udskiftning [Land Distribution and Enclosure]*, Copenhagen, 1951, covering the period from the land taxation in 1682 to 1770, has an extraordinarily long and instructive summary in English, pp. 423-85. This summary contains in fact a vocabulary of Danish agricultural terms translated into English. The social development of the tenancy system in the eighteenth century has been studied by F. Skrubbeltrang, who has published a survey of his research in 'Developments in Tenancy in the 18th Century as a Move towards Peasant Proprietorship', *S.E.H.R.*, x, 1962. Recently H. C. Johansen has written about the population structure in the rural communities in 'Some

Aspects of Danish Rural Population Structure in 1787', *S.E.H.R.*, xx, 1972, based on the first detailed census in Denmark. Holger Munk has studied the social and economic conditions of a special group of peasants: *Rytterbonden* [*The Cavalry farmer*], Copenhagen, 1958, also with an English summary.

For the nineteenth and twentieth centuries there are but few studies to mention. The history of heath cultivation in Denmark has been treated by F. Skrubbeltrang, *Det indvundne Danmark* [*The reclaimed Denmark*], Copenhagen, 1966, reviewed in *S.E.H.R.*, xv, 1967, and in *The Economic History Review*, xxi, 1968; and also by E. Helmer Pedersen in *Hedesagen under forvandling* [*The Heath question under Transformation*], Copenhagen, 1970, the latter volume having a résumé in English. Holger Gad, *Befolkning og arbejdskraft-problemer i dansk landbrug I-II* [*Changes in Population and Labour problems in Danish Agriculture*], Aarhus, 1956-7, is an economist's view of this aspect of agrarian history since the late eighteenth century and is also summarized in English.

NOTES AND COMMENTS *continued from page 49*

6 March Mr T. A. B. Corley (University of Reading): The British biscuit industry, 1800-1970.

13 March Mr A. Pittwood (University of Reading): Rural industries in England and Wales since 1920.

THE WINTER CONFERENCE

The one-day conference of the B.A.H.S., was held at University College, London, on Saturday, 1 December 1973, on the subject of 'Changing patterns of diet since 1800'. The subject was introduced by Professor John Burnett (Brunel University) who spoke on 'The nineteenth century: general influences on dietary change', in which he discussed the major determinants affecting the gradual improvement in diet during the century. He was followed by Dr D. J. Oddy (Ealing Technical College) who considered 'Trends in working-class food consumption, 1790-1913', based on the analysis of diets by calory, protein, and other nutritive components. This showed that even by 1913 the poorer sections of the working-class still had diets deficient in many respects, especially women and children. There was a marked absence of fresh fruit and vegetables in all working-class diets. After lunch Dr E. J. T. Collins spoke on 'Old wine and

new bottles: cereal consumption in Britain in the twentieth century'. He showed that contrary to the expected trend the proportion of income spent on cereals has not declined owing to new and attractive ways of processing and marketing them. He illustrated this from the history of the Hovis flour firm and the various (mostly American) breakfast cereal firms. Studies of old advertisements were skilfully used to embellish a paper which was amusing as well as informative. This was followed by a lively panel discussion which showed that there is much interest and research in this expanding subject.

FUROR HORTENSIS

Furor Hortensis is the title of a volume of essays on the history of the English landscape garden to be published in memory of H. F. Clark, the distinguished landscape architect. The book will be published early in 1974 in a limited subscription edition, and proceeds will be devoted to the establishment of an H. F. Clark Memorial Prize in Landscape Architecture at the University of Edinburgh. The essays will deal with Switzer, Bridgeman, Sir John Clerk, Kent, Gilpin, Repton, and Loudon; the editor is Peter Willis. Subscriptions (£6 per copy) should be sent to Elysium Press Ltd, 24 Castle St, Edinburgh EH2 3HT.

Myths, Miners, and Agricultural Communities

By JOHN HATCHER

THE nature of the interdependency of the various sectors of the medieval economy is an interesting and important topic of investigation, and a substantial literature already exists in which historians have attempted to reconstruct composite national and international economic developments. Less attention, however, has been devoted to the analysis of interrelationships between agriculture, industry, and trade on the local level, and the progressive increase in our knowledge of the particular estates, regions, industries, trades, and even individuals which comprised the medieval English economy now makes such analyses potentially fruitful, if complex, exercises. In recent years the links between agriculture and industry have perhaps received most attention, and new light has been thrown upon many rural industries, including textiles, pottery, glassmaking, and mining, both from the perspective of their demands upon local agriculture for raw materials and foodstuffs and from that of the relationship between landholding and industrial employment.¹

I

Dr Blanchard's forthcoming work on the British lead industry in the later Middle Ages is especially welcome since it promises to concern itself with these matters, and also to reveal further examples of the phenomenon of local land rents, boosted by non-agrarian pursuits in the vicinity, moving against the general trend. Notwithstanding, his recent article on the lead miner in a period of acute industrial depression, stimulating though it is, cannot be allowed to masquerade unchallenged as a microcosm of the medieval miner.² The intention of estab-

lishing a model applicable to miners of all minerals is intimated in the title and is constantly re-emphasized thereafter in phrases such as "it is thus the purpose of this essay to investigate the relationship of mining and agricultural activity"; furthermore the belief that such a mission has been successfully accomplished is concisely expressed in the phrase, "The picture of the medieval miner that has thus emerged," which introduces the final paragraph.³ If further confirmation of the author's intention is required it is provided by the odd reference to the stannaries of south-west England. We are thus being asked to replace what Blanchard terms the prevailing "legal" and "economic" archetypes of the medieval miner with a stereotype forged from the limited evidence supplied by records of lead-mining in the fifteenth and sixteenth centuries.

It has been necessary to establish clearly the aims of Blanchard's article because the purpose of this note is to demonstrate, using evidence drawn mainly from the stannaries, that the characteristics of the lead miner and of his relationship with the agricultural community, at least as they have been described to us, may have stronger claims to singularity than to universality.

There were many fundamental differences between the lead and tin mining industries of medieval Britain, a number of which were especially pronounced in the century and a half after the Black Death. The production of lead at this time was not only far less than that of tin, by weight as well as by value, it was also far more widely dispersed: whereas lead was mined in at least a dozen English and Welsh counties, to say nothing of the deposits in the

¹ For textiles see in particular E. M. Carus-Wilson, 'Evidences of Industrial Growth on some Fifteenth Century Manors', *Econ. Hist. Rev.*, 2nd ser., IV, 1951; for pottery see H. E. J. Le Patourel, 'Documentary Evidence of the Medieval Pottery Industry', *Medieval Archaeology*, XII, 1968, pp. 110-11, 122-3; for glassmaking and other forest crafts see J. Birrell, 'Peasant Craftsmen in the Medieval Forest', *Agric. Hist. Rev.*, 17, 1969.

² 'The Miner and the Agricultural Community in Late Medieval England', *Agric. Hist. Rev.*, 20, pt 2, 1972.

³ *Ibid.* pp. 94, 104.

Isle of Man, Scotland, and Ireland,¹ tin was extracted in Cornwall and Devon alone. The inevitable result was that lead fields usually operated on a far smaller scale than tin fields and employed far fewer workers, a fact which emerges clearly from Blanchard's article as well as from the works of other historians of lead-mining communities. In the Mendip lead fields, for example, according to surviving records there were only 44 miners at Ubley in the 1430's, a mere 5½ tons of lead were produced at Priddy in 1457-8, and Chewton in the 1540's, with a mining community of little more than 60, appears to have produced not more than 18 tons of lead per annum.² Even in Derbyshire, which undoubtedly contained the most productive lead mines in Britain, the important Wirksworth fields rarely appear to have produced more than 30 tons of lead in the fifteenth century and usually managed barely half this figure.³ A wide range of evidence from other British fields suggests that the Mendip and Derbyshire output and employment figures were, if anything, higher than average.⁴ In fifteenth-century Cornwall, on the other hand, annual tin output, although depressed, rarely sank below 350 tons, and before 1430 and after 1490 averaged almost 500 tons; whilst in Devon output which had averaged 50-60 tons before 1450, rose to more than 100 tons by the end of the century.⁵ Furthermore, within Cornwall the bulk of the tin was produced in just two of the four

stannary districts, and within Devon Dartmoor was the sole source of tin. It is also significant that a ton of tin was worth on average at least five times as much as a ton of lead,⁶ and that it came almost exclusively from the "streaming" of alluvial deposits rather than from true mining.⁷

It was inevitable that such pronounced differences in scale between lead- and tin-mining in the later Middle Ages should have resulted in marked dissimilarities at almost every stage of their respective structures. Thus we find that in stark contrast to the picture drawn by Dr Blanchard of lead mines owned and worked by wealthy free miners with large landholdings and sufficient resources to supply the ore smelters with credit,⁸ the organization of the stannaries, particularly in Cornwall, was highly capitalistic with both a marked division of labour and a marked division between capital and labour. Immense power was wielded in the stannaries by small groups of merchant tanners, and the work force was composed of what at first sight appears to be a confusing miscellany of labourers—full-time and part-time, permanent and casual—in the form of free tanners working their own claims alone or in partnership, and labourers working either for a fixed wage, a share of the product, or some combination of the two. The ownership of the tin works was similarly diverse, with owners consisting of lone prospectors, partnerships of working tanners, partnerships of

¹ In addition to the references given by Blanchard (*ibid.*) see W. J. Lewis, *Lead Mining in Wales*, Cardiff, 1967, pp. 3-4; A. Raistrick and B. Jennings, *A History of Lead Mining in the Pennines*, 1965, xvi-xviii.

² Blanchard, 'The Miner', pp. 96 n, 99; J. W. Gough, *The Mines of Mendip*, rev. edn. Newton Abbot, 1962, p. 65. Owing to the possibilities of evasion and fraud these figures should be taken as minima.

³ A very approximate calculation based upon the formula and figures given in I. S. W. Blanchard, *Economic Change in Derbyshire during the later Middle Ages* (London Ph.D. thesis, 1967), pp. 273-4, 307. Unfortunately Fig. IV (Blanchard, 'The Miner', p. 105) is not as enlightening as it might be: we are not told how the money received from the sale of ore rendered for the payment of lot and cope has been turned into loads/dishes, and we are given no indication of the size of the load/dish or the amount of smelted lead it would produce; furthermore one is invited to view the load and the dish as equal measures, whereas it is generally assumed that there were 9 Derbyshire dishes to a Derbyshire load.—Blanchard, *Thesis*, p. 274.

⁴ Lewis, *Lead Mining in Wales*, pp. 29-38; Raistrick and Jennings, *op. cit.*, ch. 3 *passim*; Blanchard, 'The Miner', p. 99.

⁵ G. R. Lewis, *The Stannaries: A Study of the Medieval Tin Miners of Cornwall and Devon*, Cambridge, Mass., 1908, p. 253; J. Hatcher, *Rural Economy and Society in the Duchy of Cornwall, 1300-1500*, Cambridge, 1970 p. 289.

⁶ In the fifteenth century the price of lead in pigs appears usually to have fluctuated between £3 and £5 per ton, and that of block tin between £20 and £30 per ton. For lead prices see J. E. T. Rogers, *A History of Agriculture and Prices in England*, 7 vols., Oxford, 1866-1902, IV, p. 488; Blanchard, *Thesis*, pp. 284, 288 n.; tin prices are discussed in my forthcoming book *English Tin Production and Trade before 1550*, (Oxford).

⁷ Lewis, *Stannaries*, pp. 1-7; A. K. H. Jenkin, *The Cornish Miner*, 3rd edn, 1962, pp. 41-5, 54-61.

⁸ The unusual phenomenon of credit flowing from miners to smelters is stressed in Blanchard, *Thesis*, pp. 298-9.

tinners with one or more members contributing hired labour or money in place of personal labour, and merchant tinners, many of whom as individuals or more commonly in partnership owned numbers of tin works and exploited them using hired labour. Quantification is not an easy task, but there can be no doubt after studying stannary documents of the fifteenth century that a substantial proportion of tin works were owned by entrepreneurs and worked by hired labour, and that shares in a substantial proportion of the remaining tin works were held by persons who contributed only capital or hired labour rather than their personal labour. The importance of wage labour is attested in a wide variety of sources, not least the stannary court rolls in which, after the Black Death, the number of cases concerning the employment of labour was exceeded only by cases involving debt.¹

It must be stressed, however, that this contrast may have been exaggerated by imperfections in the sources for lead-mining, at all events it is clear that it was not always so sharply drawn. In more prosperous times, such as the early fourteenth and the later sixteenth centuries, parts of the lead-mining industry also possessed the characteristics of capitalist enterprise.²

II

On the question of the relationship of the miner to the agricultural community Blanchard seeks once again to drive us from one intemperate generalization to another; namely

from one in which all miners are assumed to have been completely divorced from landholding to one in which the typical miner was a substantial landholder who devoted a little of his time to mining each spring, and consequently had no need to purchase foodstuffs: "farmers to whom mining was an insignificant sideline."³ In practice neither position is supportable. Blanchard's opening remarks concerning the errors of previous historians of mining who are held to have assumed "that the miner or quarryman lived an alienated existence from the rural society in which he resided" has all the symptoms of being a classic example of Aunt Sally erection.⁴ A superficial perusal of lead-, coal-, and tin-mining literature written from the mid-nineteenth century onwards, including that cited by Blanchard, reveals that historians have invariably drawn attention to the fact that many miners were part-time husbandmen and many husbandmen in mining regions were part-time miners.⁵ It must be admitted, however, that it is only in recent years that the precise relationship between mining communities and landholding has been tackled systematically. Furthermore it is patently false to assert, as Blanchard does in his concluding paragraph, that such a lack of specialization was typical only of the Middle Ages or pre-industrial England, and that it gave way to a distinct division of labour as the centuries passed. On the contrary a mass of evidence from the seventeenth century to the time when Maitland was writing, and even beyond, attests the fact that the miner-cum-farmer and the farmer-cum-miner continued

¹ Some of the matters discussed in this paragraph have received attention in previous histories of the stannaries; detailed references and supporting arguments will be found in ch. III of my forthcoming book.

² For example, Gough, *op. cit.*, p. 56; R. H. Tawney (ed.), Introduction to T. Wilson, *A Discourse upon Usury*, 1935, p. 50; Raistrick and Jennings, *op. cit.*, pp. 63, 182-90; J. W. Gough, *The Rise of the Entrepreneur*, 1969, pp. 133-4.

³ 'The Miner', p. 98. ⁴ *Ibid.*, p. 93.

⁵ For the medieval and Tudor miner and landholding see *inter alia*: J. U. Nef, *The Rise of the British Coal Industry*, 2 vols., 1932, II, pp. 135-6; Gough, *Mines of Mendip*, p. 12; Raistrick and Jennings, *op. cit.*, p. 182; Gough, *Rise of the Entrepreneur*, p. 146; J. Thirsk (ed.), *The Agrarian History of England and Wales*, IV, 1967, pp. 12, 20, 31, 76, 107; Lewis, *Stannaries*, pp. 186-8; *Victoria County History: Cornwall*, I, 1906, pp. 525, 559; J. F. Willard, W. A. Morris and W. H. Dunham (eds.) *The English Government at Work, 1327-36*, Cambridge, Mass., 1950, III, p. 94; L. F. Salzman, *English Industries of the Middle Ages*, 1913, p. 70; H. P. R. Finberg, *Tavistock Abbey: A Study in the Social and Economic History of Devon*, Cambridge, 1951, pp. 71, 177-8, 182; A. L. Rowse, *Tudor Cornwall, Portrait of a Society*, 1941, p. 61; W. G. V. Balchin, *The Making of the English Landscape*, 2: *Cornwall*, 1954, pp. 48-50; C. Gill (ed.), *Dartmoor: A New Study*, Newton Abbot, 1970, p. 106; J. Hatcher, 'A Diversified Economy: Later Medieval Cornwall', *Econ. Hist. Rev.*, 2nd ser., XXII, 2, 1969, pp. 217, 224; Hatcher, *Rural Economy and Society*, pp. 31, 93-4, 168-9, 222-3, 234; for the involvement of leading landholders and burgesses in the tin trade see *ibid.*, pp. 225-52.

to be a major element in mining communities, and that much of the labour force, particularly in the stannaries, continued to be casual in nature and composed of fishermen, women, and children, and smallholders seeking to supplement the income from their farms.¹

But it is fallacious to proceed from the proven fact that many miners possessed some land to the conclusion that mining communities were self-sufficient as far as their food supplies were concerned. Given the now extensive literature on the subject, there can surely be no doubt that in all but the least prosperous eras major mining communities exerted a powerful influence on the local and regional land market, an influence which usually manifested itself through the demands of those communities for both land and food. Whether we are dealing with medieval Cornwall, seventeenth-century Derbyshire, eighteenth-century Cornwall, or the north Pennines in the eighteenth and nineteenth centuries, it is indisputable that many miners, although attempting to satisfy part of their food requirements from infertile smallholdings upon which they grew vegetables and perhaps a little grain, and moorland pastures upon which they kept an animal or two, depended upon the market for a substantial part of their subsistence. The very fact that freedom from tolls was one of the most common of the ancient privileges granted to miners emphasizes their dependence upon the market for purchases of necessities. Although there may well have been some within these communities who were self-sufficient, this net result cannot be disputed.

Blanchard, it is true, is mainly concerned

with the century and a half following the Black Death when "conditions of falling population and a slack land market prevailed". But, once again, his penchant for generalization leads him into error, for even within this unique era in documented British history it is manifest that the experience of the small acutely depressed lead-fields of Mendip or Wirksworth cannot be taken as typical of the mining industries as a whole or used to cast doubt on the relationship established for the Cornish stannaries and the regional land market in the overpopulated years of the early fourteenth century. And what are we to make of Blanchard's claims for the self-sufficiency of the fifteenth-century Derbyshire miners when we learn that, at least from the latter part of this century, it became customary to permit poor lead miners with only a few dishes of ore to dispose of them before they were measured in order that they might provide themselves with food and drink?² Certainly population decline produced a discernible shift in many mining areas away from mining and into farming—in these more spacious times mining was more likely to have been pursued from choice rather than necessity; indeed, the exercise by many of a preference for farming rather than mining was one of the major factors in the unhappy performance of the extractive industries in the fifteenth century. But this much having been acknowledged, there was a world of difference between say Penwith and Kirrier or Blackmore stannary and Wirksworth in the early fifteenth century. Wirksworth, one of the largest lead-fields at this time, probably gave employment to no more than 200 miners,³ whilst on Penwith

¹ For references to miners and landholding from the seventeenth to the twentieth centuries see *inter alia*: N. J. G. Pounds, *The Historical Geography of Cornwall* (London Ph.D. thesis, 1945), pp. 311–13; J. Rowe, *Cornwall in the Age of the Industrial Revolution*, Liverpool, 1953, pp. 28, 225; Jenkin, *The Cornish Miner*, pp. 271–3, ch. vi *passim*; Rowse, *Tudor Cornwall*, p. 61 n.; J. Hawkins, 'On the intercourse which subsisted between Cornwall and the other commercial states of Antiquity: and on the state of the Tin-trade during the Middle Ages', *Trans of the Roy. Geological Society of Cornwall*, III, 1824, pp. 113–4; *Agrarian History of England and Wales*, IV, pp. 493, 756. For an excellent detailed account of the demands of lead mining communities for both land and foodstuffs see C. J. Hunt, *The Lead Miners of the Northern Pennines in the Eighteenth and Nineteenth Centuries*, Manchester, 1970, ch. vii, viii.

² Blanchard, *Thesis*, pp. 282, 298.

³ There are numerous ways of estimating the number of miners at Wirksworth between 1417 and 1432 from the information given by Dr Blanchard, although all of them are extremely inaccurate. For example, if one assumes, following Blanchard ('The Miner', p. 100) that the average income of the miner was 15s. to £2, then with the current price of lead at 8s. per load (Blanchard, *Thesis*, p. 288 n.) and current annual production at between 100 and 200 loads ('The Miner', fig. IV) then one could estimate the workforce in round numbers at

and Kerrier stannary there were substantially more than 3,000 tanners and a further host of ancillary workers: charcoal-burners, carpenters, smiths, smelters, carters, chandlers, mine owners, money lenders, tin dealers, ale-house keepers, etc.¹ Is it to be wondered at that a community of this size exercised a major influence upon the rents on neighbouring manors and stimulated commercial agriculture? Such a conclusion is emphasized by the knowledge that in 1377 the total recorded adult population of the hundreds of Penwith and Kerrier, excluding tanners who were exempt from taxation, was less than 8,000.² Even in the depths of the fifteenth century depression this stannary found work for well over 1,000 tanners each year.³

Certainly there was a seasonal ebb and flow in mining activity in the stannaries, with perhaps the periods of most intensity concentrated between early spring and late summer, but this is not to say that there was not a significant level of year-round activity. In this the climate of the south-west must have helped, with mild winters and abundant rainfall ensuring a plentiful supply of the water essential for streaming so that lengthy periods of enforced idleness resulting from frost or drought were rarely encountered. In late medieval Cornwall the stannary courts met at three-weekly intervals throughout the year, and in the early fourteenth century no less than 31 separate coinage sessions were held between early November 1305 and 21 September following at Lostwithiel, Bodmin, and Truro, while in 1303 in Devon more than 20 coinage sessions were

held at Chagford, Ashburton, and Tavistock between January and September.⁴ It is also clear that there was a sizeable body of permanent tanners—at least in Cornwall. The richer tin works no doubt justified as continuous an exploitation as possible; similarly the larger tin works with extensive capital equipment consisting of complex series of conduits and adits together with pumps, tyes, and ruddles, would certainly have required constant supervision and maintenance, and it would scarcely have been worthwhile completely to reconstruct them each year.⁵

In the second half of the sixteenth century, when production was usually lower than at the turn of the fourteenth century and the early sixteenth century, it is manifest from the comments of a wide range of observers that much tanning in Cornwall was a year-round activity, and that permanent tanners, both hired and independent, constituted a very substantial proportion of the total work force—indeed for some observers they were the only group worth considering at length.⁶ Furthermore from the multitude of labour cases contained in late-medieval stannary court rolls it is apparent that contracts lasting a number of months or even a year were not uncommon. Yet once again we must beware of generalization, for it is clear from Devon stannary records that the industry of this county operated on a far smaller scale than that of Cornwall: its organization was less specialized and less highly capitalized, its individual units of production were generally far smaller, and furthermore the overwhelmingly prepon-

between 40 and 110. Or, alternatively, if one assumes that the output per man was usually 1–2 tons of ore per annum (Blanchard, 'The Miner', pp. 98–9) then at approximately 4 loads to the ton (Blanchard, *Thesis*, p. 274) one could estimate the workforce at between 12 and 50. Yet another method is to multiply the receipts from lot and cope, a toll of the thirteenth dish, by 13; then as receipts varied between £2 14s. 2d. and £10 between 1417 and 1432 (*ibid.*, p. 307), and income per head can be assumed to have been 15s. to £2, one could estimate the workforce at between 17 and 170.

¹ Hatcher, *Rural Economy and Society*, pp. 31–2.

² Pounds, *Historical Geography of Cornwall*, p. 90.

³ In the mid-1460's, when Cornish tin output was at its lowest point, the farm of tribulage dues was £7 5s. od., equivalent to almost 900 persons at 2d. per head, taking no account of the manifold evasions or farmers' profits.

⁴ P.R.O. E. 101.261/1, 260/24.

⁵ Some stream works employed upwards of 50 labourers, and the discharge of silt and rubble from a series along a valley sometimes even threatened major harbours such as Lostwithiel, Fowey, Falmouth, and Plymouth. —P.R.O. SC.2.156/26; *Registers of Edward the Black Prince, 1346–1365*, 4 vols. (1930–3), ii, 110, 121, 156; C. Gill, *Plymouth: A New History*, Newton Abbot, 1960, p. 21.

⁶ See, for example, Beare's account of the stannaries, written in 1586 (B.M. Harleian MS. 6380, especially fos. 6–8, 56–9), and that of Carew, written about the same time (*The Survey of Cornwall*, 1769 ed., pp. 10–11).

derant element in its work force consisted of occasional and short-term labourers.¹ The Devon industry was also far more seasonal than that of the neighbouring county: between 1445 and 1449, for example, only 5 to 13 per cent of the annual tin output of Devon was produced between Michaelmas and late June, whilst in Cornwall the comparable figure was 25 to 35 per cent.²

The degree to which the occasional miner or tinner depended upon the market for his sustenance is obviously a matter of conjecture and must have varied widely according to individual circumstances, nevertheless it would be unwise to argue that only those who devoted the major part of the year to this activity purchased foodstuffs and drink. The numbers employed in the Cornish stannaries were such that labour had to be attracted from considerable distances, and relatively few could have enjoyed the advantages of commuting daily from home. It is also probable that many occasional tanners did not hold substantial amounts of land, and that others were landless and drifted from fishing, farm labouring, building, and other manual work according to the season and the demand for their services. Furthermore even those with adequate landholdings would hardly have been willing or able to migrate to the stannaries complete with all their sustenance, particularly towards the close of the farming year.

But if this evidence is not direct enough a brief inspection of the extensive Cornish documentation—manorial, stannary, legal, etc.—will show that what is logical in principle is also demonstrable in practice. Late fourteenth- and fifteenth-century stannary court rolls, for example, reveal a mass of cases involving the sale to tanners and mine owners of foodstuffs and other necessities, ranging from semi-luxury items such as pepper, wine, and oysters, to meat, and through to the pedestrian basic grains, vegetables, salt, and, of course, ale. We can also identify the general dealers who

stocked a wide range of goods, encompassing woollen and linen cloth, canvas, wood, salt, meat on the hoof and salted, as well as grain and vegetables. Finally, to make a more general point, but nevertheless a crucial one for this subject, the greater part of the vast sums which were required to finance the tin industry each year, and which proceeded via a chain of credit from London and foreign tin dealers through local merchant tanners to individual labouring tanners, was designed to provide the latter and their families with basic necessities before tin was sold or even produced.³ There is really no need to draw analogies from other periods but it would be a pity to ignore Carew's observations on "times past", presumably the first half of the sixteenth century, when because of the importance of tinning tillage "came farre short of feeding the Inhabitants mouthes, who were likewise supplied weekly at their market from those places [Devon and Somerset], with many hundred quarters of corne and horseloades of bread."⁴

III

Thus there was a stark contrast in the fifteenth century between the Cornish stannaries and the lead fields of Wirksworth. Indeed, considering the slowness of the mining activities of the latter, far from attempting to draw a general conclusion from the correlation between lead output and arable rents from 1417 to 1432, one is tempted merely to marvel that such a correlation should have existed at all—even one so stunted and so localized as not to have affected Brassington manor, a mere four miles or so distant. But when one does attempt to examine the correlation, one finds that there are a number of specific points at which Blanchard's own explanation is open to question. In his anxiety to demonstrate that the causal link between rents and mineral output was not the conventional one exerted by miners' demands for foodstuffs and land, Blanchard adduces some dubious arguments

¹ Salzman, 'Mines and Stannaries', p. 94, Lewis, *Stannaries*, p. 187; H. P. R. Finberg, 'The Stannary of Tavistock', *Transactions of the Devon Association*, LXXI, 1949.

² P.R.O. E. 364/82, memb. E; E.364/85, memb. B.

³ A detailed exposition will be found in my forthcoming book.

⁴ Carew, *The Survey of Cornwall*, p. 19. Cornish tin production in the early sixteenth century, although at a peak, was little higher than at the turn of the fourteenth century.

from the limited sources at his disposal. The determination of the precise influence that mining exerted on rents is an extremely complex problem to unravel, particularly in a period of low or declining population, but whilst not wishing to argue that in this particular instance the demands of miners for food and land did lead to increased arable rents, an examination of the validity of Blanchard's assumptions that they did not is called for.

To support the contention that miners were not "stimulating the commercial production of grain by their purchases and causing rents to rise à la Ricardo" we are told that the toll of Wirksworth's weekly market and annual fair "steadily dwindled in size", and that this is "suggestive at least of dwindling commercial activity within the manor."¹ For a number of reasons it is strange to find declining market tolls being used to determine the absence of purchases of foodstuffs by the Wirksworth miners. In keeping with many fifteenth-century financial records, receipts from tolls appear to have suffered from inadequate supervision and imperfect rendering of accounts; as Blanchard himself has remarked on Derbyshire tolls in another work "between 1425-75 many people evaded tolls with alleged exemptions," and he has concluded that "the decline between 1425-75 may be viewed as more administrative than real."² But there is really no need for speculation of this sort. The evidence of declining tolls can be summarily dismissed; it is irrelevant because Derbyshire lead miners and lead merchants were explicitly granted exemption from all tolls and market dues.³

To support the contention that the explanation of the correlation between rents and lead output "does not seem to lie in the migration of people into the manor in response to profitable opportunities for the production of lead," we are told that Wirksworth manor possessed reserves of vacant land and that the amount of arable land in occupation seems to have de-

clined between 1417 and 1432.⁴ In this context it is important to realize both that the extent of the fluctuations in lead output in the first half of the fifteenth century was inconsiderable, and that such fluctuations took place at a level far below previous peaks. The improvement between 1412 and 1434 was, in fact, no more than a "slight recovery," and only "rarely was the value of lot and cope half as high as its level of £13 6s. 8d. in Richard II's reign and often it was very much less"; furthermore, even the output of Richard II's reign was probably substantially below that of the early fourteenth century and little more than a fifth of that of the second decade of the sixteenth century.⁵ Thus it is scarcely surprising that a slight recovery in a severely depressed industry operating on a small scale in a period of population decline exerted a less than dramatic influence upon a land market suffering from a severe and progressive contraction in demand. But Blanchard's novel hypothesis that the increased rents of this period resulted from the imposition of a "lordly tax" administered through a means test rather than from an increase in the demand for the holdings,⁶ if applied to the national land market with strict though admittedly bizarre logic, would be expected to have produced sharply increased rents throughout England in the century and a half after the Black Death as a consequence of the substantially enhanced real wages enjoyed by the mass of the people.

IV

Finally there is the miner himself. From the detailed examples given by Dr Blanchard it is clear that he would see the miners of fifteenth-century Derbyshire and early sixteenth-century Mendip as men of virtual yeomen status, amongst the richest in their villages, with 35 to 50 acres of arable, sizeable flocks grazing on extensive pastures, and other interests and responsibilities ranging from juror to money lender.⁷ However, it seems most unlikely that

¹ Blanchard, 'The Miner', p. 102. ² Blanchard, *Thesis*, pp. 341-2.

³ Brit. Mus. Add. MS. 6682, f. 68 (quoted Lewis, *Stannaries*, p. 164). See also *Cal. Pat. Rolls 1485-94*, pp. 69-70; Lewis, *Lead Mining in Wales*, p. 33.

⁴ 'The Miner', p. 102. It is not made clear why Blanchard chooses to limit the discussion to arable land and exclude pasture.

⁵ Blanchard, *Thesis*, pp. 287-8, 307.

⁶ Blanchard, 'The Miner', p. 104.

⁷ *Ibid.*, pp. 96-8.

a man of such substance would actually perform personally the hard physical labour of mining, and that "each year, with spring ploughing and lambing past, he would pick up his basket of tools, don his leather 'bradder', and set off each day from about the middle of April to the hills overlooking his farm to grub for ore."¹ It was natural that men such as these, along with men of even greater substance, should have become involved in the production of ore, but as mine owners or lessees, and as ore dealers or smelters, rather than as labourers. The experience of the stannaries has taught us that the mere possession of a mine, ore, or smelted metal need not imply that the possessor was a labouring tinner,² and furthermore that only a small proportion of labouring tanners appear on the coinage rolls and court rolls.³ The scale of operations in late medieval Derbyshire and Mendip was, as we have seen, far smaller than in the south-west, but it seems likely that beneath men such as John Philips jr,

Thomas de Waterhouse, and John Helot there existed a scarcely recorded but nevertheless significant body of labourers and sub-tenants who, along with younger sons and relatives, actually produced the ore. Such a state of affairs, which appears to have existed in some lead-fields before the Black Death, and was certainly the norm from the later sixteenth century onwards, would remove one further support from Blanchard's hypothesis of the self-sufficiency of mining communities.

But we must not go too far in drawing analogies from tin-mining. Whilst the fecundity of stannary documentation may help in providing comparative information on mining, Dr Blanchard's evidence of lead-mining in a period of depression is a salutary warning against excessive generalization, both on conditions within different mining industries, and on conditions within the same industry at different points in time.

¹ Blanchard, 'The Miner', p. 100.

² Hatcher, *Rural Society and Economy*, pp. 235-52.

³ In the first decade of the fourteenth century when approximately 2,000 Cornish tanners were assessed to pay tax, no contemporary coinage roll contains more than 200 names; and at the close of the fourteenth century when the Cornish mining population was perhaps more than 5,000 strong, less than 2 per cent of this number appeared each year on coinage rolls.

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Rejoinder: Stannator Fabulosus

By IAN BLANCHARD

IN considering, by way of a rejoinder, the broad sweep of mining history scanned by Dr Hatcher in his reply to my article on the miner and the agricultural community in late medieval England,¹ it will perhaps be convenient to group the arguments outlined in the preceding pages under four main headings. The first two concern the miner as a producer:

I seeks to differentiate the Cornish and Devonian *stannator* from other miners,² and particularly those in the lead industry on the basis of differences in

- (a) the size and
- (b) the degree of concentration of production in the Stannaries;

II seeks further to differentiate the tin miner because of his involvement in a different form of industrial organization.

The next section, III, considers the miner as a consumer and seeks to establish that he was dependent on his work with a pick for a livelihood and accordingly bought a significant proportion of his bread-grain in the market-place.

Finally under point IV may be grouped a series of disparate criticisms of my original study.

In the following pages each of these arguments will be considered in turn from two aspects, namely whether (1) the picture presented therein is a factually accurate one, and (2) the point made is a relevant one to the original argument.

I

Firstly, it is suggested that miners in the tin and lead industries were differentiated, in some undefined way, because of the greater size of and degree of concentration in the former industry. Factually, this alleged difference does not exist, and logically the size and degree of concentration of the *industries* are irrelevant to whether the late medieval miner should be characterized as a "farmer, to whom mining was an insignificant side line" or a person "with only a small plot of land and perhaps a cow" who was "dependent on his ore sales for a livelihood."³ Concerning the size of the two industries, the lead-production data presented above, drawn not always accurately from the records of one or two minor jurisdictions,⁴ reveal very imperfectly the size of this major English industry which so impressed one Italian visitor that he wrote of this realm as possessing "... an infinity of lead and

¹ *Agric. Hist. Rev.*, 20, pt II, 1972, henceforth referred to as *loc. cit.*

² Due to the constraints of an article, I restricted myself to examples from the two industries which contemporaries thought of as important—tin and lead (see, e.g. *Camden Soc.*, O.S. xxxvii, 1847, pp. 10–11). In the light of the criticisms above, however, other examples, from outside the two great staples, are given below.

³ *Loc. cit.*, pp. 98, 93.

⁴ Of the lead-production statistics presented, the only accurate one is that for Priddy in 1457/8. Concerning "Chewton" production and labour force, a manorial figure for manpower is juxtapositioned with an output figure drawn from an extra-manorial jurisdiction (J. W. Gough, *Mines of Mendip*, 1930, p. 65, n. 7). With regard to the "Wirksworth calculation," a somewhat more satisfactory result would have been obtained in tracing the derivation of the "unenlightening" fig. IV if the sources quoted (*loc. cit.*, p. 102, n. 4, referring to p. 101, n. 2) had been consulted. These give all the relevant data: total value of lot and cope (R, in shillings); nature of dues; nature of measures (1 load=9 dishes); price of ore (P, in shillings per load), from which total output may be derived (T, in loads) by applying each of these variables to a formula derived from the nature of the dues:

$$R = \frac{1}{13} TP + \frac{6}{13} T$$

This formula, moreover, would have given better results than those obtained by either combining a series of *Wirksworth* lot and cope revenues (I. Blanchard, *Economic Change in Derbyshire in the Late Middle Ages, 1272–1540*, unpubl. London Ph.D. thesis, 1967, p. 307) with a formula for converting seigneurial dues on *Mendip* (*ibid.*, pp. 273–4) and then converting the whole by a smelting ratio of unknown origin or simply multiplying the total revenue from lot and cope by a multiplier of 13.

tin."¹ Accordingly in table I some preliminary research statistics are presented to facilitate inter-industry comparisons.²

The two industries thus emerge, in terms of output by weight of the finished product, as being very similar in size.³ Again, with regard to the degree of concentration therein the differences are more apparent than real. The tin industry is described above as comprising

at some undefined date five stannaries or fields of which two held a major position in the industry, and three, including the Dartmoor field (which up to 1450 produced about 50 tons per annum), assumed a minor one. Unfortunately, no means of disaggregating total production is provided,⁴ and it is hoped that the following approximate description does not violate reality too much as it may have existed

TABLE I
LEAD AND TIN PRODUCTION IN ENGLAND AND WALES DURING
THE LATER MIDDLE AGES: SOME PRELIMINARY FIGURES
(in tons)

Date	Devon	Tin Cornwall	Total	Derbyshire	Lead Durham	Others	Total
1300	35	365	400	380	Nil	335	715
1400	50	500	550	220	45	120	385
1450	50	350	400	130	70	200	400
1500	100	500	600	425	100	100	625

in the 1430's. At that date the greater part of tin production seems to have been concentrated within Penwith-and-Kirrier and Blackmore Stannaries which probably produced about 125 tons of tin each annually, whilst the minor centres including Dartmoor produced about 50-60 tons each per annum.⁵ Viewed within such a framework, the industries do not seem so different, for within the lead industry

there were the same large fields with their satellites of small ones. The morphology of the lead-fields was unstable over time but the picture of the 1430's would not be very different from other periods, only the names would be changed. In the 1430's the Peak lead-field (Derbyshire), slightly smaller in area than either of the major stannaries, produced about 150 tons of lead each year, a figure not much

¹ C. A. Sneyd (ed.), 'A relation, or rather a true account of the Island of England about 1500,' *Camden Soc.*, O.S. xxxvii, 1847.

² For a full description of these statistics, the reader will have to await the publication of my book on the lead industry. However in the interim he may examine their derivation, at least with regard to the Derbyshire fields between 1190 and 1505 and Durham in the early sixteenth century, by reference to two articles in *Northern History*, viii, 1973, and *Derbys. Arch. Journ.*, xcii, 1972, which it is hoped will be in print by the time this note appears.

³ In value terms (which are not relevant to this point), the tin industry is larger, though as no series of prices is provided above it is impossible to say by how much. Even the figures in p. 55, n. 6, suggesting a price differential of 1:6/7, lacking provenance and derivation, are not very helpful, for both the Beveridge and Rogers price statistics derived from county of origin (a statistic inferior, for our purposes, to smelting price) suggest a ratio of only 1:2.

⁴ Unfortunately, in Cornwall the coinage towns were not located in a position synonymous with each of the stannaries, and further although there were five such towns mentioned in the 1305 charter, G. R. Lewis, (*The Stannaries. A Study of the English Tin Miner*, 1908, henceforth referred to as Lewis 1908) believed that only two were used throughout most of the period before the sixteenth century, Lostwithiel for the eastern stannaries and Truro for the western (Lewis 1908, p. 149). Yet again with regard to the distribution of the labour force the restriction of tribulage accounts to Blackmore and Penwith-and-Kirrier prevents inter-stannary comparisons with the "smaller fields" (*ibid.*, pp. 140-1).

⁵ This is based upon the assumption that Dartmoor is not atypical of the other minor fields and that the residual from total output is divided between the two major ones.

greater than the output emanating from the neighbouring Yorkshire mining area which if anything covered a slightly smaller geographical area.¹ About these two larger centres were a number of smaller ones such as the Derwentwater (Cumberland) or Mendip (Somerset) complexes which were like the Weardale (Durham) field that covered an area similar to Dartmoor and produced about 45–50 tons of lead each year.² Other dates could be chosen and the analogy would be the same but lacking disaggregated stannary information through time this one comparison will perhaps suffice to show that in terms of size and structure the two industries were very similar, a fact which contemporaries were well aware of.³

Yet having gone to some length to establish statistically a fact which contemporaries in a somewhat more elegant, if imprecise, way had already done, it may well be asked of what relevance this is to the problem in hand, viz. the nature of the late medieval miner. Those factors which caused an entrepreneur, within a given technology, to desire a permanent labour-force, as opposed to those which, like demographic pressure, forced the farmer into the position of an industrial worker through lack of land, were rooted not in the size of the industry or even the field *but* in the nature of the basic productive unit—the mine. This

being the case, the real division within the late medieval mining scene was not between tin- and lead-mining which shared basically similar production techniques⁴ but, as previously noted,⁵ between the silver-lead industry and other mining industries, be they tin, iron, or lead. In the Middle Ages silver was notoriously the only metal which required for its successful production the most extensive and costly mining equipment. The geology of argentiferous deposits requires that silver-mines must be driven deep into the ledge, creating a whole complex of tunnels and drainage adits. Fixed capital costs were thus high, and the shafts had to be continuously worked and maintained to prevent decay. Every rainstorm threatened extensive flooding, every earth movement, the collapse of a tunnel. Thus a *sine qua non* of such hard-rock operations was a full-time labour force with as many as 200 workers in the one mine.⁶ This is however, a far cry from other late medieval mining operations, when each summer individuals scratched along an exposed lead-rake, excavated an iron-stone bed, or dug their shallow trenches in the beds of alluvial tin. Such work was characterized by a high degree of seasonality, which was particularly pronounced in the tin industry, and which contrasted markedly with conditions in silver production.⁷

¹ For the geographical extent of the Stannaries, see J. Hatcher, *Rural Economy and Society in the Duchy of Cornwall 1300–1500*, 1970, fig. 1; for the Peak field, fig. 1 of the article in *D.A.J.*, xcii, 1972 referred to in p. 63, n. 2, and for the Yorkshire mining area, A. Raistrick and B. Jennings, *A History of Lead Mining in the Pennines*, 1965, and B. Jennings, *A History of Nidderdale*, Huddersfield, 1967. For production in these centres, see p. 62, n. 4, and p. 63, n. 2. To set the Wirksworth “field” (referred to above, p. 55) in perspective during the 1430’s the output emanating from each of the sub-constituent parts of the Peak field (not published in *D.A.J.*, 1972) are given below: Wirksworth, 6 fothers (4 per cent); High Peak, Forest Jurisdiction, 34 fothers (22 per cent); extra-forestral jurisdiction, 110 fothers (74 per cent); total 150 fothers. Sources: *Rutland MSS.*, 1092, 1098; *P.R.O.*, DL29/183/2908–16, 184/2917–19; 22/376–80.

² On the geographical extent of, and size of output from, the Weardale complex in the 1430’s, see *Business History* xv, 2 (July 1973), pp. 97–100.

³ See the anonymous quotation referred to in G. N. Clark, *The Wealth of England*, 1947, p. 49.

⁴ It is hard to see what can be said about “the extensive capital equipment” allegedly used in the late medieval tin workings (above, p. 58), for on p. 55 above it is declared, in accord with Lewis, that tin came “almost exclusively from the ‘streaming’ of alluvial deposits.” Yet amongst the miscellaneous collection of items listed on p. 58 are adits and pumps, neither of which have anything to do with streaming, but which are applicable to vein working, a practice only begun in the late sixteenth century (Lewis 1908, pp. 8–9). A full explanation of late medieval tin-mining and dressing technology is given below.

⁵ *Loc. cit.*, p. 98, n. 6.

⁶ On what contemporaries regarded as the optimal labour force for such a silver-mine, in this case one of the Devon mines, see *P.R.O.*, E368/69, m. 51, c. 2.

⁷ See table II. Sources: lead, *loc. cit.*, p. 99; tin calculated from p. 59, above. The figures for each of the three quarters between 29 Sept. and 28 June are averages and do not show possible interquartile variations. Silver, *P.R.O.*, E101/262/20. It is good to see (above, p. 58) that the influence of weather conditions, which reinforce the socio-economic factors elsewhere, may be eliminated in Cornwall.

TABLE II
QUARTERLY VARIATIONS IN LEAD, TIN, AND SILVER
PRODUCTION DURING THE LATER MIDDLE AGES
(quarterly production expressed as a percentage of annual output*)

	Lead†	Tin		Silver
		Cornwall	Devon	
29 December–28 March	9	10	3	11‡
29 March–28 June	54	10	3	21
29 June–28 September	28	70	91	30
29 September–28 December	9	10	3	38
Total	100	100	100	100

* For absolute levels of annual *per capita* output, see table III.

† In the case of quartile distributions of lead production, the time periods vary slightly: 29 Sept.–1 Jan., 2 Jan.–3 April (average); 4 April–25 June (a loss of nine days in the quarter); 25 June–28 Sept. (a gain of three days to the quarter).

‡ The first quarter's lowness is partly explicable by the loss of three weeks' labour due to the Christmas vacation.

Indeed, seasonality and discontinuity of operation were such common characteristics in the mining of base metals that the authors of the late medieval mining codes, in framing the normal "year and a day" clause, took such temporary abandonment as being the normal situation, for in spite of a basically different geological base the lead and tin industries both enjoyed a similar mining technology which is noted for its low fixed-capital intensity.¹ The ore was normally excavated simply by sinking a shallow trench, rarely more than 18 feet deep,² into the metalliferous deposits, which in the case of the tin industry had been exposed by the diversion of a stream over the potentially stanniferous soils.³ Timbering was usually unnecessary⁴ but where it was used the annual cost rarely exceeded a few pence.⁵

Initially the ore could be thrown up from the working on to the edge of the "groove" or "mere", the length along the vein which constituted one working, but with greater depth some method of hoisting ore and "dead work"—the non-metalliferous rock—to the surface was required. This took the form of a simple windlass which was used to lower a bucket on a rope.⁶ By this means ore and rubble were raised to the surface. In the case of the lead industry this method was used for bailing any water out of the workings, whilst in the alluvial tin deposits of the Cornish valleys water evacuation was accomplished by digging a trench or "level" to the nearby river. This, then, was the mining operation. Within the workings the miner required some rope, a leather bucket, a pick, some wedges, a

¹ See Figure 1. It is hoped that this diagrammatic representation of late medieval mining and ore-dressing technology will prove helpful to the reader in following the outline of that technology presented below.

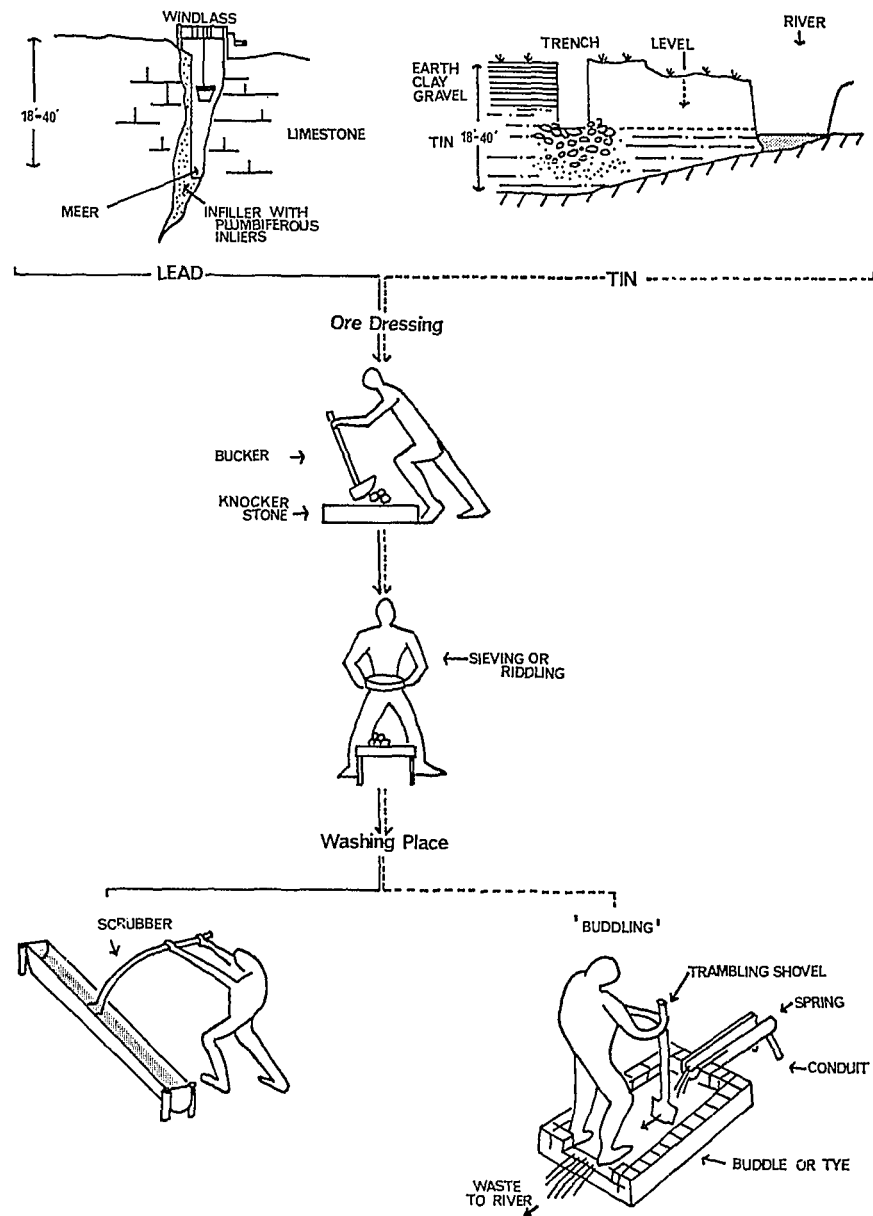
² The deepest lead-mine I have discovered was the Harthope mine, Co. Durham, which was sunk in the fifteenth century to a depth of c. 34 feet, about the same as the maximum potential depth of a "stream work."—Lewis 1908, p. 9.

³ *Ibid.*, pp. 4–5.

⁴ For an illustration of a vein excavated by such methods to a depth of about 40 feet without any need for timbering, see N. Kirkham, *Derbyshire Lead Mining through the Centuries*, Truro, 1968, facing p. 19. For similar methods of tin excavation, Lewis 1908, pp. 6–7.

⁵ Unfortunately, to my knowledge, no contemporary financial accounts of a "stream works" or smelting-plant in the tin industry have survived. Accordingly the figures below relate to costs in the lead industry as derived from a number of such accounts which exist therein, e.g. *Rutland MSS.*, 1013.

⁶ *Ibid.*, 1014.



1. Lead and Tin Mining and Ore Dressing Techniques in the Later Middle Ages

"maule" or long-handled hammer, and a shovel, and if the mine went to any depth some candles. Total cost would be at most a few shillings,¹ and all would be taken home at the end of the season, leaving only the "groove," which would hardly come to any harm over the winter, and the windlass, which would take about a day to repair or rebuild should it be necessary.

Following the excavation of the ore it had to be prepared for smelting, an operation which normally took place at the "washing place" or "streamworks".² The object of this was to grade and concentrate the ore. After an initial hammering³ the larger ore stones—"bing" in lead production—were set on one side, whilst the remaining "bouse" was carried to the "knocker stone."⁴ This was a round, flat, hard stone on which the ore was crushed by a man using a "bucker"—a heavy piece of iron with a curved under-surface and a handle—who by rocking the implement produced small pieces of ore and rock.⁵ To grade this "bouse" it was passed through a sieve or "riddle" and the fine deposit was ready for separation.⁶ Here the two technologies diverged. In the lead industry the ore was washed in a large trough with a long-handled "scrubber", the action of the water against the "bouse" causing the heavier lead to be deposited at the head of the trough, the lighter limestone at the base.⁷ In the tin industry the same process was carried out in a "buddle" or "tye"⁸—a trough made of wood or stone, some 6 feet long by 3 feet wide by 1 foot

deep—to which water was directed from a spring via a "conduit"—usually a hollowed-out trunk—and in which a man stood with bare feet. With a "trampling shovel" he threw the ore to the head of the "tye" and, as the water moved the fine ore down a slight slope, separation was caused by his agitation of the material with the shovel and his feet. The waste materials flowed out with the water into the river, there, with the deposits engendered by the initial prospecting operations, causing a nuisance to navigation.⁹ Again, the most expensive items were the metal implements (the "bucker", "riddle," and "scrubber" or "trampling shovel") and these would barely cost a pound. Moreover, they would be taken home at the end of each season and used over and over again. The immovables (the "knocker stone," "buddle," and "trough") would cost even less, and would hardly deteriorate during the dead seasons—where made of stone they have survived to this day.¹⁰ Accordingly the late medieval miner, be he *stannator* or *plumbarius*, was under no technological constraint continually to work his mine,¹¹ and with the removal of demographic pressures, which had deprived him of land, he could again become a farmer to whom extractive work was an insignificant sideline.

II

Secondly, the tin-miner is said to have been differentiated from other miners because of his involvement in a "capitalistically" organized

¹ See *ibid.*, 1013.

² E.g. P.R.O., SC6/1146/11. In the lead industry the ore had to be carried some distance to the washing place from the arid limestone uplands where the veins existed, whilst in the Stannaries mining and washing operations were closely juxtapositioned.

³ *Ibid*; Lewis 1908, p. 14.

⁴ The distinction between "bing", "bouse", and "water" or "wash" ores (i.e. the "bouse" after washing operations are completed) is found in many ore accounts, e.g. P.R.O., SC6/773/1.

⁵ P.R.O., SC6/1146/11; Lewis 1908, p. 14. ⁶ Rutland MSS., 1013; Lewis 1908, p. 14.

⁷ N. Kirkham, *op. cit.*, p. 74.

⁸ The "buddle," according to Lewis 1908, p. 15, n. 1, is first mentioned in Cornwall at the very close of the Middle Ages. It was not introduced into Derbyshire until the late seventeenth century when the washers were accused of poisoning streams.

⁹ In addition to the references given above, p. 58, n. 5, see also Lewis 1908, p. 4, n. 2.

¹⁰ Lewis 1908, p. 14, nn. 2, 5.

¹¹ Nor did the requirements of the smelter in either the tin or lead industries necessitate a continuous flow of raw materials, thereby creating a desire on his part for a year-round labour force in mining. His plant, be it "bole" or "blowing house," cost little to build, and was normally operated for only a few days each year and then closed down. See, e.g., Lewis 1908, p. 17; *Cal. Carew MSS.*, 1867, 270.

industry, and accordingly the wage-labouring *stannator* is contrasted with the free-mining lead-miner.¹ Such a distinction in the form of organization in the two industries is no more real than their supposed differences in size. Both wage labourer and free miner existed side by side in tin- and lead-mining. The self-employed miner who worked his own "mere" was found in both industries.² Yet equally characteristic of both was the wage labourer who worked in a "groove" not owned by himself. From Yorkshire, Derbyshire, Wales, and even that home of free mining, Mendip, examples may be given of labourers who, in the later Middle Ages, worked in "meers" owned by others, to set alongside those recorded as working in the Stannaries.³

Moreover, it may well be asked again what relevance this has to the discussion. The question originally posed was not whether the late medieval miner was a labourer or not, but whether he (as either a wage labourer or a free miner) was a "farmer to whom mining was an insignificant side line" or a "person with only a small holding who was dependent on his ore sales for a livelihood." The status distinction was irrelevant in a period when economic differentiation was virtually non-existent. Examples may be given of the careers of labourers, which will not only further widen the evidence available to the reader concerning the nature of the late medieval miner but also illustrate the dangers of translating by analogy the socio-economic stigmatism applied to mining labourers in a later age back to the century and a half before the demographic explosion of the sixteenth century.

Those despised, poverty-stricken "... Lewd vagrant and wandering persons ..." who "waste their goods in most lewd and viscious

manner"; those mining labourers⁴ of the late sixteenth century were no more characteristic of the late medieval mining labourer than were the poor late Tudor free miners comparable with their prosperous late medieval counterparts. William Oldeland, for instance, was a contemporary of John Philipps, jun.,⁵ on Mendip and a fellow miner, though he worked not his own "meer" but that of another at Hasildon (Chewton parish), and accordingly enjoyed the status of labourer. His labours yielded him a similar amount of ore to that mined by his contemporary, though this three-quarters of a ton belonged to another. Yet like John Philipps, jun., the true centre of his life lay not on the barren wastes of Stock Hill, where he spent some weeks each summer, but in the villages of Blagdon and Ubley, for in the latter he was heir apparent to the largest landholding and in the former he worked with his father the substantial holding which made him one of the richest men in the village.⁶ Certainly he was not a typical labourer but his story does illustrate that whether a man was a labourer or not was irrelevant to his position in either the village or the mining camp. It also provides a salutary lesson concerning the dangers inherent in translating by analogy stigmas of a later age, when wage labouring and landlessness were becoming synonymous, backwards through time. Much more typical of the mine labourers' story are the final two examples, chosen from outside the two great mineral staples, from the coal and iron industries of the first quarter of the sixteenth century. Robert Walker was a labourer who worked for Thomas Leek, digging ironstone in Shittlewood, Bolsover. During one year of his service for his master he excavated slightly more than two and three-quarter loads of

¹ Above, pp. 55-6.

² Most of the works listed above, in p. 56, n. 5, where they concern themselves with free miners, provide references to the existence of this group in both industries.

³ On the labourer in the Stannaries, see Lewis 1908, p. 189, as well as those references given above, pp. 56, 58. On the labourer in the lead industry, see, amongst many other references, Jennings, *op. cit.*, pp. 67-73; references below, in n. 6, and Blanchard, *thesis*, 299-300.

⁴ Gough, *op. cit.*, pp. 122-3. Similar contemporary descriptions of mining labourers will be found in Lewis 1908, pp. 216-17, which may be set in a general context by reference to C. Hill, 'Pottage for Freeborn Englishmen: Attitudes to Wage Labour in the Sixteenth and Seventeenth Centuries', in C. Feinstein (ed.), *Socialism, Capitalism and Economic Growth, Essays Presented to Maurice Dobb*, Cambridge, 1967.

⁵ On whom see, *loc. cit.*, 96.

⁶ Somerset Record Office, C924/DD/WG 16/6; P.R.O., E179/169/169; Bristol R.O., *Ashton Court MSS.*, AC/M.21/8, 9.

"drosse yrenstone" worth 2s.-3s.¹ What he was paid we do not know but it could have been of but small importance to a man whose bequests to his son made the latter the second-richest man of the neighbouring village of Stainsby.² Similarly in the case of his contemporary John Spittlehouse, *colyer*, who laboured in the neighbouring coal-mines leased by James Marsden from the king, his labouring activities were but a minor sideline to one who was a member of the largest landholding family in Bolsover.³ It is hoped that these examples will suffice to show that the late medieval miner (be he labourer or free miner) cannot be adequately described by a process of analogy with his late sixteenth-century counterpart, with regard to either his material welfare or his social position.

III

Turning to the third point, the miner comes under consideration as a consumer rather than as a producer and the question posed is whether he should be characterized as a peasant farmer who met most of his requirements for bread grains from his own holding or as a person who, with only a small plot of land and perhaps a cow, was dependent on his ore sales to buy the major part of the grain required for his livelihood, thereby as in the late sixteenth century providing the basis for a grain trade, such

as described by Carew in 1602.⁴ Concerning this point, a number of points are made above, two of which may be dealt with very quickly, for as no details of "the now extensive literature" regarding the demands of late medieval mining communities for food or of their "major influence in stimulating commercial agriculture" have been cited,⁵ it is perhaps necessary to pass on to the evidence of the mining laws and Stannary court rolls. The latter record transactions involving those in the industry which illustrate the variety of wares which it is claimed they could not produce on their holdings.⁶ These products might be found not only in Cornish commerce but in the trade of any county: they represent the purchases of lord and peasant alike, for few would claim that the late medieval farmer was self-sufficient in pepper, wine, meat, cloth, canvas, or at all times even for grain—harvest failures were not unknown!

Of the mining laws and the allegedly "most common of the ancient privileges granted to miners", viz. exemption from toll to allow the purchase of necessities,⁷ a perusal of these documents reveals how singularly uncommon this clause is. None of the mining laws of Derbyshire, Mendip, or the Welsh fields records its existence, nor for that matter do the later iron-mining laws of Dean.⁸ As to the

¹ P.R.O., DL3/4 RI, C. 6. The local measures contained herein are to say the least, obscure. However, a comparison of the prices in this account with those of contemporary or near-contemporary iron-masters' accounts suggests that the "dozen" (of sacks) is approximately equivalent to the cart "load" (or about 18 hundredweights). If this identification is correct, then there were about six "horseloads" each of two "sacks" to the "dozen". The "horseload" is normally reckoned at about 3 hundredweights. Thus Walker's average annual output would be reckoned at about 2½ tons. This, however, represented an output well below that of his fellow workers whose labours yielded about 20s. of ore *per capita* per annum. Yet in making inter-industry comparisons the difference between shovelling ore from open beds of ironstone and working veins of lead-ore should be borne in mind, for this resulted in the above-average production, yielding 20s., being the product of less than three weeks' work. I should like to thank my colleague Dr G. Hammersley for many helpful discussions on iron-mining. Of course, the responsibility for any conclusions derived from these is entirely mine.

² P.R.O., DL3/4 RI CI-8; E179/91/91.

³ Nottingham University, Dept. of MSS., Clifton MSS., CL.M. 125. P.R.O., E179/91/91; CP40/1048A.

⁴ R. Carew, *Survey of Cornwall* (1769 ed.), p. 19 quoted p. 59 above. ⁵ Above, pp. 57-8.

⁶ Above, p. 58. ⁷ Above, pp. 57, 60, and n. 3 therein.

⁸ Derbyshire: *Victoria County History, Derbyshire*, II, p. 326; *Cal. Inq. Misc.*, III, 222 (1288); Sir John Pettus, *Fodinae Regales*, 1670, p. 93; P.R.O., E101/273/4 (1550-4); Nottingham University, Dept. of MSS., *Middleton MSS.*, 4/126/11 (1566). Wales, Flint: A. Jones (ed.), 'Flintshire Ministers' accounts, 1301-28', *Flints. Hist. Soc.*, III, 1913, p. 9 (reference to a code of c. 1282, now lost); D. L. Evans, 'Some notes on the history of the principality of Wales at the time of the Black Prince', *Trans. of the Soc. of Cymmrodorion*, 1924-5, App. 4, pp. 107-10 (1352). Wales, Minera: D. Pratt, 'The Lead Mining Community at Minera in the Fourteenth Century', *Trans. Denbigh Hist. Soc.*, XI, 1962; B.M. Add. MSS., 10013, fols. 33-4v (1391). Mendip: the mining customs of the various mineries were not codified before the sixteenth century. The Chewton customal dates from the second quarter of that century (Gough, *op. cit.*, p. 76) whilst the general codification dates from 1554 (J. W. Gough, 'Mendip Mining Laws and Forest Bounds', *Somers. Rec. Soc.*, XLV, 1930). Dean: C. E. Hart, *The Free Miners of the Forest of Dean and the Hundred of St. Briavels*, Gloucester, 1953, pp. 37-45.

references to the Derbyshire miners' alleged exemption, none refer to Derbyshire and only one refers to such an exemption—in a code drawn up in 1486 for the guidance of the newly established silver-mines administration.¹ And this highlights the one clear case where such an exemption was made, namely for the one mining industry where, as has already been noted,² the existence of a permanent labour force did require an adequate supply of foodstuffs.³ Regarding the Stannaries, the evidence is to say the least ambiguous. The charter of 1305 (but not that of 1201) declares that the miners are quit of a variety of dues on their own goods,⁴ presumably their tin, a presumption confirmed when amongst the levies is recorded stallage, that is, the due for hiring

a stall. Why else should they wish to hire a stall, in their capacity as tanners, but to sell tin?

Finally, there is the question of capital flows in the industry which are regarded as being designed to provide individual tanners with the means of buying basic necessities.⁵ Such credit flows bear a strong resemblance to those present in the lead industry in the late sixteenth century, when finance passed from the London dealers to local smelters, and finally on to the capital-poor miner. However, there is again a grave danger inherent in translating such a picture backwards through time. During the late fourteenth and fifteenth centuries, in Derbyshire at least, the flow between miner and smelter was reversed, funding passing from the former to the latter,⁶ from farmer-

¹ This latter reference—*C.P.R.*, 1485-1494, 69-70—is dealt with below, in n. 3. The story of the other two references is a much more involved one for both relate, directly or indirectly to a corrupt edition of the 1352 Flintshire code. Lewis (*Lead Mining in Wales*, p. 33) refers directly to a translation of this code taken straight from the *Cal. Black Prince's Register*, III, 71-3. Unfortunately this mistranslates the relevant clauses:

Et serront mesmes les minours et marchantes quits des toune, pannage et toutes autres custumes es toutes choses touchantes la sustenance de eux . . .

See the Evans edition quoted in n. 2, p. 69, above, or the original from which the above transcription is taken, *P.R.O.*, E36/279, fols. 42 f., for this passage, which may perhaps be more accurately rendered:

And the same miners and merchants shall be quit of tonnage, pannage and all other customs and all things touching upon their livelihood . . .

This passage is particularly interesting in the context of the above discussion for it highlights the fact that in attempting to improve the miners' livelihood the Black Prince considered this would be best served by making exemptions from levies on agricultural production—pannage—by which the miner obtained the basic necessities of life; and by making exemptions on imported luxuries like wine—tonnage. Concerning the palatine levies on wine, see K. P. Wilson (ed.), *Chester Customs Accounts, 1301-1566*, *Lancs. and Cheshire Rec. Soc.*, cxi, 1969. The transference of this code to Derbyshire is based upon J. U. Nef's comment on the similarity of it with an unspecified "Derbyshire code," a text which from his description is probably the same as that referred to Lewis 1908, p. 164 (Lewis, *Lead Mining*, p. 39, n. 40, refers to Nef's comment in *The Rise of the British Coal Industry*, I, 1932, p. 276, n. 5). This document is a very inaccurately printed seventeenth-century pamphlet of English mining laws (B.M. Add. MSS. 6682, fols. 65-75v) which the Derbyshire antiquarian Wooley collected and annotated, and which includes various laws. The pertinent section (B.M. Add. MSS., fols. 67v-9v) is in fact printed not from exchequer documents as stated (B.M. Add. MSS., fol. 65) but from an undated and very corrupt copy of the Flint laws (*P.R.O.*, DL41/11/27), probably of sixteenth-century provenance, which some anonymous duchy of Lancaster clerk misattributed to "the Highest Peake, and in all other places in England and Wales."

² See above, pp. 64-5.

³ Administrative codes applicable to royal (silver) mines: "Carlisle mines": *Cal. Doc. relating to Scotland*, II, 41; *Cal. Inq. Misc.*, III, 81; *C.P.R.*, 1354-8, 459-60; *C.C.R.*, 1354-60, 281-2. These documents of the thirteenth and fourteenth centuries represent the attempts of commissioners, appointed by the Crown, to reconstitute on the basis of witnesses' evidence the lost "laws" of the twelfth-century mines; Devon mines: the basic code of 1298 (*P.R.O.*, E368/69, m. 51) was supplemented by various administrative orders. See *C.P.R.* and *C.C.R.* 1292 *et seq.* Each of these codes remained in force until the administration of the silver-mines was unified under Royal Commissioners. On the occasion when a new group of Commissioners was appointed in 1486 to administer the Crown's rights in the defunct "Carlisle mines," the declining Devon ones, and the unfruitful new workings in Cumberland, Northumberland, and Yorkshire, a new code was issued—*C.P.R.*, 1485-94, pp. 69-70.

⁴ Lewis 1908, p. 238 (1201); *ibid.*, pp. 239-41 (1305). ⁵ Above, pp. 55, 59.

⁶ See Blanchard, *thesis*, pp. 298-9, referred to above p. 55, n. 8. A pattern similar to, though not completely analogous with that in the contemporary wool trade.—E. Power, "The Wool Trade in the Fifteenth Century," in E. Power and M. Postan (eds.), *Studies in English Trade in the Fifteenth Century*, 1933, pp. 62-6.

miners with sufficient substance to be able to lend part of their income for industrial investment. Whether a similar situation existed in the Stannaries is uncertain. Accordingly, whilst reiterating a plea for more information on this relationship,¹ it is perhaps necessary here to present such evidence as a brief exploration into stannary history has brought to light. An examination of Blackmore Stannary during the early years of Richard II's reign reveals a great diversity in mining conditions. On the one hand, there were rich mine owners like John Treggorak, who possessed mine workings and employed labourers therein.² These were men of considerable substance who leased large agricultural properties, such as the 160 acres of wood and pasture rented by Treggorak in Tewington or the fisheries and mills which also formed part of his landed empire. Alongside them were lesser men like John Symon, who probably laboured in his own mine workings and who held a peasant farm of about 25-30 acres, or John Kendal, jun., who lived with his widowed mother Alice on their 7-acre tenancy at Penlyn. These latter were the men who, with the anonymous but undifferentiated labourers, formed the backbone of the industry. Travelling each day during the summer months from their homes to the nearby stream workings,³ they produced the ore upon which the fortunes of the industry were founded.⁴ Whether opulent mine owners or sturdy farmer-miners, however, they had one thing in common, they delivered their tin *in advance of payment* to

another group of individuals who did not hold land in the villages, and who as purchasers of tin may perhaps be identified as local merchants or at least as intermediaries thereto.⁵ This study most certainly cannot be presented as conclusive—it is too restricted in time and space for that—but some evidence is required on this point and it is suggestive at least that in the tin industry, like the lead industry, the late fourteenth and fifteenth centuries witnessed the existence not of an impoverished capital-poor miner but of a man who was of sufficient substance to stand alongside his more opulent entrepreneurial brother in providing some small part of his income for industrial investment.

IV

These, then, are the three main substantive points. The remaining criticisms of the original study may perhaps be grouped together under one heading. Firstly, concerning the alleged statements supposedly made in that work on mining in other periods than the late Middle Ages,⁶ the reader may perhaps be referred to the original statement contained therein (*loc. cit.*, pp. 93-4). It hardly constitutes a denial of the historical existence of the "miner-husband-man." The question originally posed was not whether the farmer-miner was characteristic of pre-industrial England⁷ but whether the *poor* farmer-miner of the late sixteenth and early seventeenth century, lacking an adequate holding and largely dependent on his ore finds for his subsistence,⁸ was the product of a speci-

¹ *Loc. cit.*, p. 95, n. 1.

² Mine owners with as many as fifty people in their employ were found in the stannaries (Lewis 1908, p. 189, as well as above, p. 58) as they were in the contemporary lead industry (Henry Vernon, for instance, employed some twenty-four men within his "meres" on Nestles rake alone in 1470.—P.R.O., DL43/1/25, bk 1, fol. 13). Yet there is no direct economic relationship between the size of the unit of ownership and the unit of production. These owners held domain over a multitude of nuclear one- or two-man "meres" such as described above, on p. 65.

³ Reference to the ordnance survey map will show the close proximity of the village of Penlyn to the stream works on the alluvial deposits on the Fowey immediately below Lostwithiel, or the ease of access that the inhabitants of Tewington manor had to such rich deposits as the "stream" of tin on St Austell moor, three miles south of the old town.

⁴ The evidence is slight but certainly does not support the unsubstantiated statements made above (p. 59) about the long-distance migratory habits of the late medieval tinner.

⁵ The preceding section is based upon: P.R.O., E306/2/3, E101/263/19, and SC2/156/27-8.

⁶ See above, pp. 56-7.

⁷ Indeed in *loc. cit.*, pp. 104-6, it was declared that this is what is to be expected in pre-industrial societies.

⁸ As described above, on p. 58, as well as in many of the works listed in *loc. cit.*, p. 93, nn. 1-3, and in the studies of late Tudor and Stuart mining listed above, in p. 56, n. 5, and p. 57, n. 1. Indeed evidence from

fic situation of overpopulation; or whether, as suggested by so many writers, he should be regarded as the archetype for all miners, including those of the late fourteenth and fifteenth centuries, in pre-industrial England; or indeed, as suggested by one author, as the archetype for all miners up to and including those of the twentieth century.¹

Secondly, with regard to the declared disbelief that the miners, whose careers were originally chronicled, were either miners or typical.² Some considerable effort was expended to show that these were miners,³ and the word "typical" was chosen with some care. For absolute clarity, however, the usage of the original study may perhaps be usefully specified here. Take for instance John Philipps, junr.,⁴ whose identification as a miner was based on his inclusion in the records of Chewton minery, on rolls which record the levies exacted from "diverse workmen upon the lord's hill of Mendip."⁵ He was certainly not the least or the most substantial member in his mining community, but enjoyed a typical or more precisely a modal position therein.⁶

Thirdly and lastly, as to the alleged "dubiousness" of the original arguments about the influence of mining activity on rents,⁷ the specious basis of the alleged exemption of Derbyshire miners from toll has already been

exposed,⁸ and now it remains necessary only to look at the supposed evasion of the Wirksworth tolls. Whilst not questioning that all tax records must be used with caution, the "quotation" from another work of mine does seem somewhat strange,⁹ for an examination of the passages on Derbyshire tolls referred to will reveal that the remarks quoted relate to evasions in High Peak during the stewardship of the Blounts,¹⁰ an administration notorious for its slackness, and not to the more southerly Wirksworth jurisdiction. Indeed, on the same page it is stated of the Wirksworth tolls that such evidence as was available was "at least suggestive of the veracity of these toll records."¹¹

Moreover, by a somewhat emotive evaluation of the statistical data presented in the original study, the view is presented above that the "slight" fluctuations in Wirksworth lead production may be explained in terms of migrations of miner-farmers to and from the manor, movements which would have no effect on a land market "suffering from a severe and progressive contraction of demand."¹² Such a view need only be expressed in statistical terms to display the "reality" of its position. The amplitude of the fluctuations displayed in fig. iv¹³ amounted to as much as 200 loads, and was frequently in the range of

another study of mine is "quoted" in the preceding note, which shows the emergence, under conditions of overpopulation from 1520's, of just such a group of poor farmer-miners. Unfortunately the evidence is misdated therein (above, p. 57). An examination of the references quoted will reveal that (on p. 298, Blanchard, *thesis*) this practice was delimited to the period between the reigns of Henry VII and Elizabeth I, and then more specifically on the basis of the evidence presented in a case brought in Duchy Council and Star Chamber to the period from the 1520's to the 1540's (Blanchard, *thesis*, pp. 281-2).

¹ Above, p. 57 and n. 1 therein. ² Above, pp. 60-1. ³ *Loc. cit.*, pp. 94-5.

⁴ Whose career is traced *ibid.*, p. 96.

⁵ The heading runs, in unextended transcription thus: ... *de divers' operar' super montem domini de Mendepp* ... S.R.O., C/924, DD/WG 16/3 *passim*.

⁶ Established by plotting a frequency distribution of (a) value of holding, (b) taxable income of members of the Chewton mining community, as derived from S.R.O., C/924, DD/WG 16/3 f.; P.R.O., E179/169/143, E315/385 fols. 30v *et seq.*

⁷ Above, pp. 58-9. ⁸ Above, p. 70 and n. 1 therein.

⁹ Blanchard, *thesis*, pp. 341-2, quoted above, pp. 58-9.

¹⁰ The governance of High Peak was plagued by maladministration not only under the Blounts, who were the subject of a special investigatory commission in 1474, but also subsequently under Sir John Savage, who was dismissed for this reason in 1498. On their inactivity and its effect on tolls in High Peak, see nn. 4-5 and the discussion on pp. 341-2, Blanchard *thesis*, referred to above, p. 60. One of the documents referred to there has been subsequently printed in *Derbys. Rec. Soc.*, III, 1971, doc. A2, p. 25. For a wider study on the works of the investigatory commissions, see R. Somerville, *History of the Duchy of Lancaster*, I, 1953, pp. 249-51, 265.

¹¹ Blanchard, *thesis*, p. 342, n. 3. ¹² Above, p. 60. ¹³ *Loc. cit.*, p. 105.

50-100 loads, the production of some twelve to fifty farmer-miners. Now one question only need be asked: would the entry or exit of such a number of tenant-farmers not affect the land market of a township with a total tenant population of about ninety?¹ Yet the sudden augmentation of tenant population by a supposed 50 per cent between 1417 and 1421, for instance, merely resulted in a fall in the amount of land in use! Such a situation was rejected as hardly credible and the view substituted that what is being observed during these years is a village population producing on average 0.1 loads *per capita* in 1417-18 and slightly over 2.0 loads each in 1421-2, an increase in average *per capita* productivity not incompatible with the type of mining earlier described—an increase in productivity, moreover, which would certainly yield them a reasonable additional cash income from which it was suggested the lord levied a 3-4 per cent “tax” in increased rents.² Yet this last conclusion was deemed “bizarre”³ for taken to its logical conclusion would not this mean, firstly, that those who earned high wages would have a similar “tax” levied on their earnings and, secondly, that therefore the mass of the population would pay such a “tax” and rents all over England would rise. An examination of another study of mine reveals that the impact of wage-rate changes on rents had already been considered, and that some rents might include an element of payment for “the opportunities available for wage labouring on large farms” was deemed possible.⁴ Yet to jump from that position to the next one, that the mass of the population enjoyed increased wages and, therefore, rents all over the country would rise, was certainly not envisaged. Long ago Professor Postan suggested that the group

who received a significant monetary income from wage labouring was small and dwindling in numbers during the latter middle ages, an epoch when in England a peasant society displayed a high propensity to consume its own products.⁵

V

These, then, are the main points contained in the preceding discussion. The main difficulty inherent in any attempt to assess the degree of uniqueness enjoyed by the tin-miner in relation to his counterparts in other late medieval extractive industries unfortunately lies in the nature of the records themselves. The present author needs no reminder of the difficulties inherent in stannary documentation,⁶ for having abandoned in searching for the fabled tinner the coinage rolls, for reasons outlined in the original article and reiterated in the previous paper,⁷ some weeks were spent trying to track down certain *operarii* recorded on the Stannary court rolls whose existence might be corroborated in other documents of manorial, governmental, and judicial provenance. The results were slight, the difficulties of identifying the participants in the industry—miner, mine owner, smelter, tin merchant, and tradesman—immense.⁸ It is thus with some considerable pleasure that some slight, indirect evidence concerning the *stannator* of Penwith-and-Kirrier has come to light in the previous discussion, permitting certain comparisons which may be tentatively presented to the reader. Information concerning his productivity may be derived⁹ which can be presented comparatively in two ways. Firstly, the tin-miner may be compared with his counterparts in the lead and silver industries in his capacity as a producer.¹⁰

¹ On average output per man, *ibid.*, p. 99; for extent of fluctuations, *ibid.*, p. 105; and for the total tenant population of Wirksworth, P.R.O., DL42/4, fols. 72-6v.

² Total income generated by an increase in production of about 200 loads of ore is about £90 of which the lord of the lead-field takes about 13 per cent, the Church 10 per cent, and the manorial lord 3-4 per cent.

³ Above, p. 60. ⁴ *Econ. Hist. Rev.*, 2nd ser., xxiii, no. 3, 1970, p. 433.

⁵ M. M. Postan, ‘Some Economic Evidences of Declining Population in the later Middle Ages,’ *Econ. Hist. Rev.*, 2nd ser., ii, no. 3, 1950, pp. 243-4, and the same author in *Cambridge Econ. Hist. of Europe*, ii, Cambridge, 1952, p. 195.

⁶ Above, p. 61. ⁷ *Loc. cit.*, pp. 94-5, and above, p. 61. ⁸ *Loc. cit.*, p. 98, n. 2, and above, p. 71.

⁹ From information concerning labour force-size (above, p. 58) and output (above, p. 55, and also p. 61, n. 3).

¹⁰ See table iii.

TABLE III
MINING PRODUCTIVITY IN THE TIN,
SILVER, AND LEAD INDUSTRIES OF THE
FOURTEENTH AND FIFTEENTH CENTURIES*
(in Derbyshire loads, *per capita*, *per annum*†)

Tin-miner	I
Lead-miner	4
Silver-miner	24

* Sources for the tin-miner, above, pp. 55, 58; the lead-miner, *loc. cit.*, p. 99; the silver-miner, P.R.O., E372/145, m. 22 f., E368/69 m. 51.

† The diverse ore measures have been standardized in the following manner. Average production of tin *per capita* converted to ore at the rate of 3 'footfates' to 105 pounds of refined metal (Lewis 1908, p. 5), and 'footfates' to Derbyshire loads at the rate of 8 quarts ordinary measure to 3 'footfates' (*ibid.*) and 20 quarts to a Derbyshire load (*D.A.J.*, LIX, 1939); for the relationship of the Devonshire to the Derbyshire load, see references in n. *, above.

In every respect the *stannator* and *plumbarius* are much more like each other than like the full-time professional silver-miner with regards to the level of production emanating from, and the amount of time spent in, their extractive work. Secondly, from regarding him as a producer the miner may also be considered as a consumer. If, as has been suggested, he should be regarded as a man who with his fellows provided the basis for a commercial grain trade, then how much grain could he buy with his mining income? Broadly his ore

sales would yield him 20s.-22s., or approximately the same as was earned by his lead- or iron-mining counterpart.¹ A pitiful sum for the support of a family, in providing it with the greater part of its bread grains, for this would buy but 3 quarters of grain a year,² or 75 per cent of what contemporaries regarded as the *minimum* sustenance of a *single* man. Such an income could not provide for the support of a mining family largely dependent for its grain on purchases in the market-place, but it could provide a useful cash supplement for a man who, having provided for his family's needs for basic foods from his own holding, now wished to purchase such luxuries as pepper, oysters, or wine, or who wished to set some cash aside to tide him over a bad harvest.

The evidence is slight, but suggestive; only with more examples, particularly from the Stannaries, will the picture become clearer. Until then, however, it may perhaps be tentatively suggested that such evidence as is available concerning time allocation to, and seasonality of, mining, as well as about the possible dependence of farmer-miners on purchased food grains, all reveals the elusive *stannator* not as a man apart from but as a member of that *communitas minerarum et rusticorum*, that body of workers in the late medieval extractive industries to whom mining was an insignificant sideline in relation to their more important agricultural pursuits.

¹ This may be derived in two ways (1) by taking average output of ore *per capita* (table III, nn. *, †) and multiplying by the price of ore per 'footfate' (derived by taking the 1290 price (Lewis 1908, p. 5) and adjusting it by a wage-inflationary index of 2), i.e. 22s., or (2) average output of tin *per capita* multiplied by the price of tin in Cornwall (p. 63, n. 3), although this may include a smelter's profit margin, i.e. 20s.

² Based on a grain price of 6s. 8d. a quarter. See J. E. T. Rogers, *A History of Agriculture and Prices in England*, IV, Oxford, 1866-82, p. 292.

Annual List and Brief Review of Articles on Agrarian History

By DAVID HEY

These brief comments are intended to draw attention to some of the more significant contributions made in recent periodical literature. The numbers in brackets refer to the numbered list which follows, where the full details of the articles are given.

The usual List of Books has been omitted from this issue; the List of Books for the second half of 1972 and the whole of 1973 will appear subsequently.

ONE of the most pleasing developments this year has been the appearance of a number of competent studies of vernacular architecture, ranging from the examination of single farmsteads and special-purpose buildings to a survey of all the timber-framed houses of Stoneleigh village (2). Topography has fared less well, but there are noteworthy investigations of field systems (9, 50), parks (17), and Anglo-Saxon estate boundaries (1, 7, 8, 47).

Little has been published on the pre-Norman period. In the single substantial article Charles-Edwards (23) puts forward the hypothesis that in origin the hide was the amount of land required to uphold the status of a freeman, and that it was both Germanic and Celtic practice for a freeman's kindred to provide this property.

An important article on medieval agrarian history is Kershaw's detailed study (81) of the scale, severity, and immediate effects of the succession of arable and livestock disasters between 1315 and 1322. He demonstrates the gravity of the crisis, and emphasizes the very varied effects experienced by different regions and localities, by different types of landlord, and by different sections of the peasantry. Further support for "the Postan thesis" comes from Pollard's study (101) of the Whitchurch estates, where the picture of economic decline is clear. Approaches to the study of later crises are outlined by Schofield (110), and demonstrated by Gooder (55), who argues that in Warwickshire the fundamental cause of the great mortality of the late 1720's was harvest

failure. Genovese (53) adds to the debate over the nature of the food riots later in the century.

Medieval and early-modern estate records provide material for studies of several different parts of the country. Hilton (66) discusses medieval Staffordshire, Owen (97) uses an Edwardian survey to obtain a retrospective as well as a current assessment of a Welsh lordship, Heal (63) argues that the sixteenth-century bishops of Ely were never in prolonged financial difficulties, Meredith (89) demonstrates, *inter alia*, the small size of farms in north Derbyshire, and Roebuck (108) suggests that it was the tenant farmers who suffered most from the organizational breakdown resulting from absenteeism in the East Riding.

Several articles are concerned with rural industries. Blanchard (14) argues that medieval landlords thought of lead-mining in terms of consumption and income rather than of investment and production, and Hammersley (59) regards copper-mining merely as a speculation that failed; Crossley's reports (31, 32) on the excavations of glass furnaces are models of industrial archaeology, but agrarian historians will find that, for them, the most important article in the field of rural industry is Chapman's study (22) of the origins and growth of frame-work knitting in the Midlands between 1660 and 1750. Attention is drawn (64) to the use of probate inventories for the study of industry in the early-modern period, and other articles range from the making of potash for soap in medieval Lakeland (37) to a study of pillow lacemaking in Victorian Oxfordshire (69).

It is encouraging to note the appearance of several papers on Scottish agrarian history. Dodgshon (42) shows that the bulk of tenant runrig was removed by a reduction in the number of tenants per farm rather than by a division of each tenant's share into a separate and distinct holding. Durie (43) locates the markets of the important linen industry, Richards (105) discusses the diminution of economic activity and loss of population in the Highlands, and Carlyle (18, 19) is concerned with the movement of livestock. From Wales, Baker (10, 11) and Colyer (28) provide fascinating information about the droving trade, and Howell (70) discusses the life and work of the nineteenth-century agricultural labourer.

There have been some important papers on technological change. Collins (26) concludes that the progressive diffusion of the threshing-machine (which was accepted only slowly in the south) was "a function of a shift in the relative prices of men and machines, of higher average workloads per farm and of a reduction in the social opportunity costs of labour saving," Phillips (99) presents the first detailed study of nineteenth-century underdrainage in order to establish the amount, the chronology, the location, and the type of land affected, and Yelling (137) shows how uniformity of cropping in East Worcestershire was achieved in enclosed parishes much earlier than in open-field villages.

Turner (126) illustrates the extra-award sources for parliamentary enclosure and shows that costs were far greater than has been supposed, Walton (130) considers newspapers as sources for agricultural history, and Crossman (33) analyses occupational distributions from militia returns. McQuiston (84) claims that tenant right was the most important issue in Victorian farming, and examines the history of the Tenant Right Movement, 1847-83, and Horn (67) writes on agricultural trade unionism. Many other aspects of provincial life are touched upon in the shorter articles, but little has been published this year on recent agrarian history.

1. ALCOCK, N. W. *The Clystivicon Charter (Clyst St Mary)*. Trans Devons. Ass., vol. CIII, 1972, pp. 25-34.

2. ALCOCK, N. W., BRAITHWAITE, J. G., and JEFFS, M. W. *Timber-Framed Buildings in Warwickshire: Stoneleigh Village*. Trans Birmingham & Warwicks. Arch. Soc., LXXXV, 1973, pp. 178-202.
3. ALCOCK, N. W. and HULLAND, C. *Some Medieval Houses in East and North Devon*. Trans Devons. Ass., vol. CIV, 1973, pp. 35-56.
4. ARKELL, V. T. J. *An Enquiry into the Frequency of the Parochial Registration of Catholics in a Seventeenth-Century Warwickshire Parish*. Local Pop. Studies, no. 9, 1972, pp. 23-32.
5. ATKINSON, D. R. *A New List of Sussex Pipemakers*. Sussex Arch. Coll., vol. CX, 1972, pp. 37-43.
6. AUSTIN, C. and HALL, Sir R. de Z. *The Medieval Houses of Stocklinch*. Somerset Arch. & Nat. History, vol. CXVI, 1972, pp. 86-100.
7. AUSTIN, D. and HILL, D. *The Boundaries of Itchell and Crondall*. Proc. Hants. Field Club & Arch. Soc., vol. XXVII, 1972, pp. 63-4.
8. BAINES, A. H. J. *The Boundaries of Over Wichendon*. Records of Bucks., vol. XIX, pt 2, 1972, pp. 169-73.
9. BAKER, A. R. H. *A Relatively Neglected Field Form: The Headland Ridge*. Agric. Hist. Rev., vol. XXI, pt I, 1973, pp. 47-50.
10. BAKER, D. *Welsh Drovers in Kent*. Cantium, vol. V, no. 1, 1973, pp. 2-7.
11. BAKER, D. *An Eighteenth-Century Drover: William Williams of Tan-y-Bwlch*. Jnl Merioneth Hist. & Rec. Soc., vol. VI, pt 4, 1973, pp. 368-71.
12. BAKER, D. *Tatlingbury: An Eighteenth-Century Wealden Hop Farm*. Cantium, vol. III, no. 1, 1971, pp. 2-14.
13. BARNES, I. *Burchinshaw's Anglesey Lands, 1718*. Trans Anglesey Antiq. Soc. & Field Club, 1971-2, pp. 98-110.
14. BLANCHARD, L. S. W. *Seigneurial Entrepreneurship: The Bishops of Durham and the Weardale Lead Industry, 1406-1529*. Business History, vol. XV, no. 2, 1973, pp. 97-111.
15. BOOKER, J. *Steam Power in Agriculture, 1860-1910*. Essex Jnl, vol. VII, no. 4, 1973, pp. 92-6.
16. CAKE, R. H. and LEWIS, E. *Paulsgrove House and Seventeenth-Century House Plans*

- in Hampshire and West Sussex. *Post-Medieval Archaeology*, vol. vi, 1972, pp. 160-74.
17. CANTOR, L. M. *The Medieval Parks of Leicestershire*. *Trans Leics. Arch. & Hist. Soc.*, vol. XLVI, 1972, pp. 9-24.
 18. CARLYLE, W. J. *The Away-Wintering of Ewe Hogs from Scottish Hill Farms*. *Scottish Geographical Mag.*, vol. LXXXVIII, no. 2, 1972, pp. 100-14.
 19. CARLYLE, W. J. *The Movement of Irish Cattle in Scotland*. *Jnl of Agric. Economics*, vol. XXIV, no. 2, 1973, pp. 331-52.
 20. CARROLL, D. M. *Air-Photo Interpretation for Soil Mapping in the Yorkshire Pennines*. *East Midland Geographer*, vol. v, pt 6, 1972, pp. 296-303.
 21. CASSELL, W. A. *The Parish and Poor in New Brentford, 1720-1834*. *Trans London & Middlesex Arch. Soc.*, vol. XXIII, pt 2, 1972, pp. 174-93.
 22. CHAPMAN, S. E. *The Genesis of the British Hosiery Industry, 1660-1750*. *Textile History*, vol. III, 1972, pp. 7-50.
 23. CHARLES-EDWARDS, T. M. *Kinship, Status and the Origins of the Hide*. *Past and Present*, no. 56, 1972, pp. 3-33.
 24. CLARKE, B. *Norfolk Licences to Beg: An Unpublished Collection*. *Norfolk Archaeology*, vol. XXXV, pt III, 1972, pp. 327-34.
 25. COLEMAN, D. C. *Essays in Bibliography and Criticism, LXXIV: Early Modern Economic England*. *Econ. Hist. Rev.*, vol. XXV, no. 4, 1972, pp. 690-6.
 26. COLLINS, E. J. T. *The Diffusion of the Threshing Machine in Britain, 1790-1880*. *Tools & Tillage*, vol. II, no. 1, 1972, pp. 16-33.
 27. COLMAN, S. *The Hearth Tax Returns for the Hundred of Blackbourne, 1662*. *Proc. Suffolk Inst. of Archaeology*, vol. XXXII, pt 2, 1972, pp. 113-20.
 28. COLYER, R. *Welsh Cattle Drovers in the Nineteenth Century*. *Nat. Library of Wales Jnl*, vol. XVII, no. 4, 1972, pp. 392-409.
 29. COLYER, R. J. *Some Aspects of Cattle Production in Northamptonshire and Leicestershire During the Nineteenth Century*. *Northants. Past & Present*, vol. v, no. 1, 1973, pp. 45-54.
 30. CROMPTON, G. and TAYLOR, C. C. *Earthwork Enclosures on Lakenheath Warren, West Suffolk*. *Proc. Suffolk Inst. of Archaeology*, vol. XXXII, pt 2, 1972, pp. 113-20.
 31. CROSSLEY, D. *A Sixteenth-Century Wealden Blast Furnace: A Report on Excavations At Panningridge, Sussex, 1964-1970*. *Post-Medieval Archaeology*, vol. VI, 1972, pp. 42-68.
 32. CROSSLEY, D. W. and ALBERG, F. *Sixteenth-Century Glass Making in Yorkshire: Excavations at Furnaces at Hutton and Rosedale, North Riding, 1968-1971*. *Post-Medieval Archaeology*, vol. VI, 1972, pp. 107-59.
 33. CROSSMAN, A. B. *The Buckinghamshire Posse Comitatus, 1798*. *Milton Keynes Jnl*, no. 2, 1973, pp. 20-8.
 34. DANHOF, C. H. *Whither Agricultural History?* *Agric. History*, vol. XLVII, no. 1, 1973, pp. 1-8.
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Book Reviews

MICHEL MORINEAU, *Les faux-semblants d'un démarrage économique: agriculture et démographie en France au XVIII^e siècle*. Cahiers des Annales, 30. Librairie Armand Colin, Paris, 1971. 388 pp. 45,00 F.

In this book Michel Morineau subjects the notion of an agricultural revolution in eighteenth-century France to sceptical scrutiny. French historians, he argues, have taken over the idea from English historians but have seen their own revolution in several different lights, some as a very slow affair of modest proportions, others as a rapid transformation of agricultural techniques producing substantial increases in yields. None has carried out a thorough examination of the statistical evidence, such as the author attempts here. He begins by tabulating and mapping yields in 1840 *after* the so-called agricultural revolution. He then turns back to 1750 and finds very little evidence of any difference. Moreover, such innovations as he does find—the spread of potato cultivation in Lorraine, for example, and of maize in Aquitaine—occurred only when there were grave threats of subsistence, in the first case after the bad years 1737–41, in the second after the dearth of 1693–4 when the peasantry were obviously groping desperately for means of survival. It thus appears to M. Morineau that the evidence of an agricultural revolution which has satisfied local historians of different regions is based on small examples for untypical years or untypical places. Even when the improvements can be substantiated it is clear that they failed to spread; after all they were so often only emergency expedients. M. Morineau admits that the eighteenth century had its peaks and troughs of agricultural production but these were the normal sequence associated with varying seasons. The agricultural revolution did not occur until 1830–40 with the introduction of grain selection, artificial fertilizers, and railways.

When Michel Morineau proceeds to a comparison with English conditions, he does not submit the English evidence of improved yields to such critical examination. He accepts some strange-looking figures printed by

MacCulloch in 1837 of yields, county by county, in which the performances of Devon, Cornwall, and Northumberland appear substantially better than those of East Anglia. He acknowledges an improvement of yields in England between 1789 and 1835 and on this basis suggests that they were 40–50 per cent higher in England than in France.

This essay on the non-existence of an agricultural revolution occupies 95 pages and is followed by another 300 pages of appendices, beginning with tables of yields on which the earlier argument has been based. The author then pursues the question of population trends, for, having demolished the agricultural revolution, his doubts are aroused about the demographic revolution also. Here again, after presenting statistics on a local basis, he finishes up in a sceptical frame of mind, arguing that spurts of population growth in the eighteenth century were short-term episodes following upon bouts of heavy mortality, and that they followed the same logical sequence as in earlier centuries and betokened nothing out of the ordinary; they were not the harbingers of a new demographic age. More statistical tables and maps follow.

The book as a whole is somewhat disjointed and top heavy. It has been unusually long in appearing because the manuscript, originally intended to appear in 1968, was lost at the printers and had to be reconstructed from a defective copy. The author has thus had time for further reflections which he incorporates in the appendix though he does not noticeably shift his ground. The reader will doubtless agree with the author that the term 'revolution' is much misused, but he may also feel that M. Morineau has missed some of the subtleties of the problem by looking for a 'revolution' of one kind, and missing the signs of a 'revolution' of another. It is reasonable to believe with M. Morineau that no agricultural revolution swept through peasant agriculture in the eighteenth century. But it is still arguable that solid progress was made on the farms of some nobility and merchants who had imbibed influences from abroad and from the

capital. Such steps along the path of agricultural progress cannot be expected to reveal themselves in parish statistics, and so M. Morineau had no difficulty in making the "agricultural revolution" disappear. Nevertheless, they may have been substantial enough to be rated as significant precursors of a revolution and so cannot be dismissed altogether. The present reviewer has not the knowledge to judge the qualitative significance of French improvers' undertakings, though it is worth remembering that a number of French historians have attached high significance to them. English readers, however, will readily understand the conflict of viewpoint here disclosed among their French colleagues, for a similar controversy has arisen in England.

Dr Kerridge has postulated a revolution in the sixteenth and seventeenth centuries which other historians contend was not so much a revolution transforming all, including peasant, agriculture as a progressive movement among gentry and yeomen. It made slow but steady headway, and finally in the eighteenth and nineteenth centuries reached down to lower levels of rural society. In short, some historians view the first introduction of new techniques as the revolutionary moment in agricultural history, others the moment when these innovations can be said to have become commonplace. French historians face the same disagreement in the eighteenth century. M. Morineau's challenging book will doubtless have a salutary effect in forcing others to give more precision to their analyses. Much of what he says, in fact, amounts to a pressing plea for more local histories. But there are also blind spots in M. Morineau's own argument which his friendly critics will perhaps help him to eliminate.

JOAN THIRSK

GEOFFREY RICKMAN, *Roman Granaries and Store Buildings*. C.U.P., 1971. 372 pp. 52 plates, 66 figs. £8.

This is a substantial book on a comparatively neglected subject, with important implications for the economic historian as well as for the student of Roman architecture and archaeology. The archaeological record, in the shape of identifiable remains of granaries and other

storage buildings, is rich for some areas, notably Ostia and Rome, much less so for other parts of Italy and for the various provinces. The disparity is naturally reflected in the allocation of space, more than one-third of the text being taken up with the design and structure of storage buildings in Ostia and Rome. Readers of this journal, who may well find a special interest in the later chapters (vi and vii) which are concerned with military storage questions, will find both useful summaries of, and deductions from, the major civil storage sites discussed in detail in the body of the text. The student of the Romano-British economy will find much of interest in the military chapters; for, as the author explains, "in most of the military sites excavated in Britain and Germany, *horrea*, together with the *principia* (headquarters buildings), often form the most notable remains."

Mr Rickman's study is all the more useful in that the great majority of the remains studied by him were excavated without benefit of modern refinements of technique, and great care must be exercised in dealing both with the relative dating of buildings of different types and with developments in their design. Here the author not only presents lucid summaries of the results of excavations but also corrects some errors and gives the results of his own study of these difficult problems of dating and development. Among the most valuable discussions is that on the types of flooring found in British military granaries, including the evidence for raised floors, and the provision of underfloor ventilation to prevent damage to the stored grain. Consideration of structure and roofing leads on to a discussion on estimates of storage capacity. Mr Rickman expresses scepticism about the value of attempts to give detailed estimates (there are too many imponderables), but concludes that the weight of the evidence generally confirms the statement by Tacitus (*Agricola* 22.2) that British forts were capable of storing within the defended area supplies sufficient for one year's consumption by the garrison. Some buildings on military sites previously identified as headquarters buildings are now recognized as courtyard-type stores of the type well known in Rome and Ostia. Mr Rickman suggests that

these capacious structures may well have been designed for the storage of baggage and spares which in a legionary fortress would have required considerable storage space. This theory would account for the remarkable size and massive strength of the storage buildings discovered outside the walls of Trier on the Moselle, which covered an area of about 4,000 square metres.

A rectangular building recently uncovered at Veldidena near Innsbruck in Austria proved to be heavily fortified, in keeping with the security requirements of a frontier supply-base at a key point in the defence system, as revealed by the series of Edicts mentioned in the Theodosian Code. This discussion leads on naturally to a review of the organization of frontier supplies in the late empire, for which there is plentiful evidence. The author treats this topic at some length and draws a clear distinction between the *ad hoc* measures, such as special requisitions, foraging expeditions, and the purchase of grain by the State by way of supplementing these supplies, with the rigid organization of the later empire arising from the introduction of a regular tax in kind (the *annona militaris*), which is fully documented in the Code. He calls in literary and epigraphic evidence to support his thesis that the officials known as "frumentarii," who were well known (and hated) as the emperor's messengers and security agents, were probably employed on guard duty to protect the vital corn supplies while in transit to Italy by sea.

On the system of army provisioning in the late empire Rickman points out that it was well suited to what we know of the disposition of the armies of the fourth century. By contrast with the massive concentrations of the early empire the army was now scattered throughout the provinces and split into small units which drew their rations every few days from state-organized storehouses. The troops stationed on the frontiers drew supplies from *horrea* within the forts and these in turn were maintained from central supply dumps. Excavations at Corbridge and South Shields in Britain suggest that both places contained central supply dumps of this kind. Comparing the state of civil and military storage Mr Rickman points out that whereas in the

troubled times of the late empire the great civil *horrea* were simply kept in repair as far as possible, military store-buildings continued to be erected right through the period of mounting crisis (cf. Trier and Veldidena).

To sum up, the author has handled a difficult technical subject with skill. The text is lucid and the illustrations, both figures and plates, have been carefully selected to give a wide visual coverage of the topics discussed. With all the wealth of information and informed discussion it is surprising that space has not been found for a brief review of the evidence of the Roman agronomists on the design of storage buildings on the farm. In particular, some of Columella's comments (e.g. on the internal arrangements, including the provision of separate bins for different products) provide useful ancillary material to the main theme of the book. It need hardly be said that the publication measures up in all respects to the high standards associated with the Cambridge Press.

K. D. WHITE

JOHN D. GAY, *The Geography of Religion in England*. Duckworth, 1971. xviii + 334 pp. £3.95.

Both the geography and, to a lesser extent, the sociology of religion are neglected fields of investigation in this country, unlike France where considerable work has been done by scholars such as le Bras and Boulard. Dr Gay's book is an ambitious attempt to survey the ground in England, the author attempting to "set out and offer explanations for the geographical distribution of denominational allegiance." The result is certainly an extremely interesting and well-written overview of the subject, with two chapters on the sources and separate sections on the different churches and sects, the whole being rounded off with a useful bibliography, 14 tables, and no less than 59 maps.

The two chapters on sources form one of the most valuable portions of the book. In the first and more general of them Dr Gay indicates the range of sources available for the study of each denomination, the limitations attached to them, and the problems surrounding their analysis and interpretation. The second is

entirely devoted to a discussion of the enormously informative religious census of 1851, the general reliability of which Gay follows W. S. F. Pickering and K. S. Inglis in accepting. His account of the census reminds us of the existence of two areas of high religious practice in the West Country and in the group of counties south of the Wash, and at the same time points out that the lowest church attendance figures were recorded in metropolitan London, Lancashire, and the three northern counties of Cumberland, Northumberland, and Durham.

Separate chapters follow on the Church of England, the Roman Catholics, the older Non-conformists (Baptists, Presbyterians and Congregationalists), the Methodists, and on smaller religious groups. They are of uneven quality.

The Methodists and Roman Catholics, for example, are well covered. On the Methodists, Dr Gay rightly maintains (pp. 145-8) that their distribution in the eighteenth and nineteenth centuries was principally determined by geographical variations in the effectiveness of the Church of England's parochial system. It was the flexibility of Methodist organization—socially rather than spatially based—which enabled Wesley's followers to cope more readily than Anglicans with the challenge of industrialization. "Methodism was to become more influential in the areas where the Church of England had failed to provide for the spiritual needs of the people—in Cornwall, the Black Country, the N.E. coast and the new industrial areas in Lancashire and Yorkshire" (p. 148). Conversely, the south east was a "Methodist desert" because of the strength of the established church. In his discussion of seventeenth- and eighteenth-century Catholicism, on the other hand, Dr Gay stresses two factors: "physical isolation and distance from London and the influence of the gentry and nobility" (p. 85). The geographical and certainly the social pattern of the Roman Catholic Church in this country, however, was radically affected in the nineteenth century by Irish immigration. "It was the Irish immigrants who made Roman Catholicism in England an urban phenomenon" (p. 90). Both strands in Catholicism were

operative in making nineteenth century Lancashire the real stronghold of the old religion; in 1851 Lancashire alone accounted for almost 40 per cent of the total Catholic population of England and Wales.

In contrast to the sections on the Methodists and Roman Catholics, the chapter on the Church of England is rather disappointing—surprising in view of the fact that Dr Gay is himself an Anglican clergyman. It is a pity, for instance, that the author says so little about denominational contrasts between arable and pastoral regions. The historical background section of this chapter, particularly, is very unhappily compressed. For example, it is surely an oversimplification to say that "right up to and including the early decades of the eighteenth century the Church of England was able to cater for the spiritual needs of the people as a whole" (p. 71), and that the established church's "dioceses, the archdeaconries and above all the parishes corresponded to the social and geographical realities of the times" (p. 80).

The defects of this particular chapter illustrate what is a general and perhaps unavoidable weakness in the book as a whole. Chronologically its scope is far too wide to enable full justice to be done to the subjects under review, and as a result the author is forced into excessive generalization. Moreover Dr Gay—clearly a geographer rather than a historian—occasionally leans too heavily on out-of-date authorities. R. G. Usher's *Reconstruction of the English Church* (1910), for example, is frequently cited, while the more recent work of Patrick Collinson and Christopher Hill on puritanism and of John Bossy on the Catholics is ignored or under-utilized. (Dr Gay's book presumably went to press before he could make use of Professor Everitt's stimulating essay on "Nonconformity in Country Parishes" in the Finberg *Festschrift—Land, Church and People*, ed. Joan Thirsk, 1970).

In the final analysis, then, the wide scope of the subject seems too large for this book, and while the author's boldness in attempting such a general and pioneering work can only be admired, from the historian's point of view it would surely have been more satisfactory if Dr Gay had restricted his coverage.

R. C. RICHARDSON

J. BERTIN, J. J. HÉMARDINQUER, M. KEUL, and W. G. L. RANDLES, *Atlas of Food Crops*. Editions Mouton et Cie., Paris and The Hague, 1971. 41 pp. 18 maps. 110 French francs.

This is in several ways an unusual publication. The text is in French and English. The format is large (42 × 32 cm.) and consists of a box cover containing a text which can be lifted out and 18 loose maps. The text itself comprises 13 pages of introductory material followed by 23 pages of very comprehensive bibliography. The project emanates from the École Pratique des Hautes Études of the Sorbonne, and the hope is expressed in the preface that it will be the first step towards a collection of geographical and historical surveys for an atlas of world history.

The maps, one for each of the eighteen selected food crops, are printed in three colours with additional hatchings and are clear and easy to understand. They show the present distribution of each crop, with the period (to the nearest half-century from modern times) at which cultivation began in each area. Crosses are also used to indicate areas where the date of introduction of a crop is uncertain. The largest single space covered by such crosses is the interior of Africa on the banana map. The amount of detail conveyed is impressive. We are shown that wheat reached most of the Azores during the fifteenth century, but the island of Flores not till the sixteenth. And the map showing the distribution of the date palm in Spain rightly excludes the Seville area, where the plant is grown as an ornamental but does not fully ripen its fruit.

There is no doubt that this is a work of meticulous scholarship. It may however be questioned whether it quite reaches perfection in a number of respects. The eighteen food crops chosen for treatment include nine cereals, four root crops, sugar-cane, and some fruits, covering most of man's major sources of food but including some lesser crops such as buckwheat presumably because of their special historical interest. The absence of any legume is a pity. And if only one palm crop could be included, the coconut palm would surely, and oil palm possibly, have been a better choice than the date palm?

At the foot of each map are a few short

paragraphs of explanatory text about the crop concerned. This is used in the case of the sweet potato, for instance, to state that although this crop is shown on the map as being grown in the Pacific only from the seventeenth century there is also evidence which 'poses the problem' of pre-Columbian spread.

The authors decided, evidently after much thought, that the date from which a crop should be shown as present in each area should not necessarily be that of the first known introduction of planting material but the date from which the species was "regularly" grown in practice either on a field or garden scale. This system produces some slightly unexpected datings and sometimes seems to fall between two stools of interest, that of the botanist who is interested in the very first introduction, and that of the economic historian who becomes interested only when the crop is grown on a sufficient scale to acquire commercial significance. But it is perhaps unfair to quarrel with the authors' decision in a very difficult matter.

A few other points might possibly have been better dealt with. The directions of crop spread are indicated by arrows, but in the case of the potato the arrow showing its transit from America to Europe originates in the Atlantic and thus begs the question, so much argued by potato breeders, of the part of the Andean range of this species from which the first tubers were brought to Europe. The maize map is better in showing that Europe received maize from the West Indies and West Africa from the South American mainland, thus explaining why the former got flint maize and the latter flour maize. But was maize really first grown in Spain on the east coast? Most historians seem to think it was in the Guadalquivir valley. It is a bit surprising to be informed that maize was grown in the Niger delta from 1650 to 1700 only when John Leo reported it as common there up to 200 miles inland in 1535. And the potato map shows it as grown in Spain no earlier than 1700 although Salaman has found a record of its being sold as provisions in Seville, which seems to imply "regular" cultivation, in 1573.

These minor queries hardly denigrate from the great mass of scholarship which has gone into the making of these maps, which will

constitute a most valuable working tool for historians. Biologists would no doubt wish that at least some indications of climatic parameters could have been included in the maps as well.

G. B. MASEFIELD

J. D. CHAMBERS, *Population, Economy and Society in Pre-Industrial England*. Edited with a preface and introduction by W. A. Armstrong. O.U.P. 1972. £1.60 (Opus paperback, 75p).

There has been a remarkable growth in historical demography over the past twenty years. Devotees range from the enthusiastic amateur to the professional academic; the former patiently totting up baptism, marriage, and burial entries in his local parish register, the latter presenting his sophisticated statistical manipulations to such bodies as the International Union for the Scientific Study of Population which now includes a special section on the subject at its conferences. The late Professor Chambers ranged across this spectrum. His bubbling enthusiasm, his excitement in discovery, his infinite patience are widely missed.

Population, Economy and Society in Pre-Industrial England is based on the Kent Co-operative Lectures delivered at the University of Kent in May 1967. Until his death in March 1970, David Chambers worked at preparing his lectures for publication. The task has been completed by his one-time colleague, Dr W. A. Armstrong. The book discusses what we know of population change in England from the Domesday Survey of 1086 to the first official census of 1801. All the major issues are dealt with: the determinants of the age at marriage and of changes in fertility and mortality; the impact of population growth on economic development and vice-versa. Readers of this journal will be particularly interested in the discussion of the impact of food shortages on mortality. Professor Chambers in his classic study *The Vale of Trent, 1670-1800: A Regional Study of Economic Change* (1957), was one of the first to suggest that, at least in England from the mid-seventeenth century, food shortages were never such as seriously to set back population growth, whereas epidemic disease, acting indepen-

dently of food supply, was. The debate on this matter continues: the latest contribution coming almost contemporaneously with Chambers's book. For the record it concludes *pace* Chambers, that "the reduction of mortality and rise of population in the eighteenth and early nineteenth centuries were probably due to a significant increase in food supplies, which spread throughout Europe from the seventeenth century." (See Thomas McKeown, R. G. Brown, and R. G. Record, 'An Interpretation of the Modern Rise of Population in Europe', *Population Studies*, vol. 26 no. 3, Nov. 1972, pp. 345-82).

Most studies in historical demography are local in nature. Professor Chambers's own original work, for instance, was confined to the Midlands and centred on Nottinghamshire. If there is a criticism of this book it is that the problems of deriving *national* explanations from *local* findings are not overcome. On at least a couple of occasions Professor Chambers himself errs in this regard. For instance, he compares the shape of two population pyramids: the one for the town of Lichfield in 1688, the other for England and Wales in 1791. He concludes (p. 106): "the fantastically jagged outline of the Lichfield chart for 1688 should be compared with the relatively symmetrically shaped national pyramid of 1791, showing the effects of the victory over epidemic disease which had worked such ravages on affected age groups in 1688." The conclusion is not valid, primarily because one would expect a population of under 3,000 (Lichfield in 1688), no matter what the incidence of disease, to have a less symmetrical pyramid, as a result of chance happenings, than a population of almost eight million (England and Wales in 1791).

A second criticism is of a similar nature. On page 105 Professor Chambers argues that "the simplest, most familiar and, despite the criticisms that have been levelled against it, the most acceptable estimate [of the growth of population of England and Wales] is that of G. Talbot Griffith." He then gives the figures. For 1700 they are 5.835 million and for 1710 and 1720 they are 6.013 and 6.048 million respectively. Later, however, he argues that "between 1690 and 1720 population, in certain

important areas of the country did, in fact, grow substantially. Professor Glass has suggested that the population in 1695 was 5.2 million, while the figure for 1720 is usually put at 6.047 million" [my italics]. This statistical sleight of hand was obviously unconscious. It is interesting, none the less, because it shows how, in this case, Chambers's preoccupation with what was happening in the Midlands led him to a probably inaccurate interpretation of the national picture. On this particular issue the Cambridge Group for the History of Population and Social Structure has come to the opposite conclusion on the basis of data drawn from 290 parishes throughout the country. Writing of this Wrigley notes that "in a high percentage of the parishes . . . the surplus of baptisms over burials was much less in the second half of the seventeenth century and the first few decades of the eighteenth than either earlier or later . . . [this was] most marked in certain parts of the West, North and, surprisingly, in Kent but is less obvious in the home counties and the Midlands" [my italics] (E. A. Wrigley, 'Family limitation in Pre-industrial England', *Economic History Review*, 2nd ser., XIX, no. 1, April 1966, p. 106).

Population, Economy and Society in Pre-Industrial England can be recommended to the student approaching historical demography for the first time. Its success in making an essentially quantitative study readable is quite outstanding. The minor arithmetical error on the second line of page 67 could perhaps be corrected on reprinting.

MICHAEL DRAKE

R. E. SANDELL (ed.), *Abstracts of Wiltshire Inclosure Awards and Agreements*. Wiltshire Record Society publications, vol. xxv. Devizes, 1971. xii + 216 pp. £2.50 excluding postage to non-members, from M. J. Lansdown, 37 Hilperton Road, Trowbridge.

The preface to this book states, rightly, that the "awards contain a great amount of varied material for the history and topography of Wiltshire", and expresses the hope that "their publication in digested form will be useful for many sorts of historical enquiry." It is with

disappointment that the limitations of the book must be mentioned. Unfortunately, the opening sentence of the Introduction raises doubts (including unfounded doubts) about the accuracy of the book. Here Mr Sandell, defining enclosure, refers to land that has formerly been *owned* [my italics] and exploited collectively; this is not a happy start. On the following page he writes of the roadside herbage "allotted to proprietors on either side" as if this was a general practice: here, Mr Sandell does not make it clear whether he is referring to Wiltshire only or making a wider reference; if this is a general statement it is unfortunate, for in the Lindsey division of Lincolnshire and in the East Riding it was much more usual to allot roadside verges to the parish Surveyors of the Highways.

The bulk of the book (pp. 11-148) consists of valuable abstracts of Wiltshire Inclosure Awards comprising 207 items representing 200 awards and agreements. The collection has been confined to the *modern* boundary of Wiltshire, but it may not be complete because (p. 4) "no attempt has been made . . . to search systematically for those [extant formal agreements] that might be enrolled among the Public Records." Each Abstract contains the date of the particular enclosure Act (or Agreement), the date of the Award, the names of the Commissioners and Surveyor(s), together with those of the Lord of the Manor, Rector, Vicar, and lessee of any of them. The acreage to be enclosed is given, all persons who receive allotments are named, the extent of land awarded to the larger owners is given to the nearest acre, but the acreage of private allotments under 15 acres is regrettably not given. This omission deprives the user of these abstracts of useful and perhaps vital information.

The abstracts contain further useful information and much of value appears under *Notes*, though several of these are quite unsatisfactory. Those to Abstract No. 1, *Aldbourn*, mention a claim to free warren: we are not told whether this claim was allowed and, if so, what compensation the owner got for the extinction of his rights of warren; we do not know either whether the right ceased or continued after enclosure. Not all of Mr Sandell's claims are realized. "The abstracts indicate in a

general way the provision made by the awards for the commutation or extinction of Tithes . . .", he writes (p. 9). This is not so. If the first twenty abstracts are examined nine of these do indicate what happened to tithes, the other eleven do not.

This volume does contain a great deal of value: much can be extracted about the enclosure commissioners and surveyors (we can ascertain how many Wiltshire enclosures each was employed on, for example). Future students of enclosure in Wiltshire will use this book, but they would be well advised to consult the Awards as well.

REX C. RUSSELL

JOYCE YOUNGS, *The Dissolution of the Monasteries*. Allen & Unwin, 1971. 264 pp. £3.50 hardback, £1.95 paperback.

After so many county studies on the dissolution of the monasteries we have long needed a general survey of the causes and effects of one of the most important aspects of Henry VIII's policy. Dr Youings, who has steeped herself in this subject at the local level both in Devon and elsewhere, has given us such a survey: it will remain for many years essential reading for all those interested in the ecclesiastical, economic, administrative, and agrarian history of Tudor England. But not only has the author summarized admirably the views of other scholars on that protracted episode, she has also advanced views of her own about certain aspects of it which will cause us all to rethink some of our explanations and conclusions.

Firstly Dr Youings argues that the dissolution was not an integral or essential part of the Reformation and that expropriation might have taken place without a breach with Rome, although such a policy was not carried through in countries which remained loyal to the old faith until the eighteenth century. Another new approach is her view that "with the smaller monasteries . . . dealt with, the situation returned almost to normal" (p. 56), and that during 1537 other monasteries did not fear dissolution. It would seem that the author's exposition of "the large numbers of grants of all kinds made to laymen under the conventional seal" (p. 57) somewhat conflicts with her view of a return to near-normality. A com-

plete refutation of the statement that Henry and Cromwell had no intention of dissolving all the monasteries in 1537 or even in 1538 is perhaps impossible, but most politicians have policies up their sleeves and they rarely reveal their full plans at once. Hence one is led to doubt whether the dissolution of all houses was so far from their minds. Dr Youings' interpretation of the 1539 act as being initiated by the grantees who were anxious to secure their titles seems a sensible and correct one.

Agricultural historians will be most interested in monastic land and what happened to it at the dissolution, and this aspect of the subject is admirably dealt with. Any potential researcher in this field is led lucidly through the intricacies of the bailiffs' accounts and the Ministers' accounts of the Court of Augmentations, which administered most of the ex-monastic property, and the Receivers' accounts. These last are the most useful because they show how much of the royal property had been alienated. The court pursued a conservative policy granting, at a time of inflation, twenty-one-year leases which were certainly beneficial to tenants. Details are given as to how grants were obtained and the annual valuation, upon which the purchase price was based, appears to have regarded only current values and not to have taken into account the fact that the land might be worth more when current leases fell in. Tawney's "furore of speculation" is again convincingly disproved and, although a half of all the monastic estates was alienated by 1547 and three-quarters by 1558, it appears that few new estates or even appreciably enlarged ones were created solely or even principally from monastic lands.

The documents, which form half of this book, are well chosen and the introduction makes good use of them. This is an excellent book, useful for the undergraduate, the researcher, and the layman.

G. A. J. HODGETT

R. E. CHAPLIN, *The Study of Animal Remains from Archaeological Sites*. Seminar Press, 1971. x + 170 pp. £2.

There are still after fifteen years of increasing interest in bones in archaeology too few sources of information and too few workers

in the field. Thus any book detailing the approach to the subject is more than welcome.

The book starts with the structure and properties of the skeleton, and of bone, with perhaps too much emphasis on development and growth, and too little on the factors influencing survival of buried bone. Next, planning and organization are covered, and the author rightly points out that bone studies should form part of the overall excavation plan, not only so that adequate finance can be made available, but also so that the archaeologist understands the collecting and handling requirements.

Chapter 3 deals with the problems of identification and the establishment of the necessary reference collection. Since identification is the key to bone studies it is unfortunate that the author regards factual knowledge as outside the scope of the book, and does not even refer to books by Cornwall (1956) and Ryder (1969) which aim to help the reader with identification.

In chapter 4 techniques of study are detailed, some of which are archaeological, and so this is of value to the biologist new to the field, but the attempt to demonstrate the value of bones to the archaeologist is too complicated and is unlikely to convince him of the overwhelming importance of biological remains compared with other finds.

Appreciable space is here devoted to the various methods of counting bones—fragments, weight, and minimum number of animals. With thousands of bones to be excavated, and a dearth of people to do the work, one wonders whether the minimum number method is not a luxury for sites with few bones. Small errors with the minimum number method affect the final percentage more than the same errors in the fragments method, and until statistics has been applied to this field we shall not know which is the best approach.

Chapter 5 deals with the determination of age at death from such factors as tooth eruption, but one would have welcomed some tables of ages rather than the illustrations of tooth sections. Tooth wear is important but is neglected in favour of the specialized incremental growth method. Next detailed are

methods of measurement, but the way measurements can be expressed as length/width ratios is not given. Frequency diagrams are, however, described in the next chapter in considering sex determination. But it is not made clear that more than one mode in a frequency diagram does not necessarily indicate a sex difference; these could be due to wild/domestic or breed differences.

Chapter 8 is a good survey of bone pathology not usually found outside medical and veterinary literature. The next chapter covers interpretation, taking a Saxon farm and a medieval horn workshop debris as examples. It is unfortunate, however, that no comparison is made with the similar horns described by Jewell in *Man and Cattle* (1963). The last chapter discusses animal remains as indicators of past environments which should perhaps provide an antidote to those archaeologists who ignore ecology in their search for cultural explanations of change.

There are many references to the literature, but one would have welcomed summaries of these since books are bought to provide information and not a list of sources. The sophisticated techniques covered should demonstrate, however, that bones can no longer be left to unpaid amateurs in their spare time, but it would be a pity if the specialist approach puts off the archaeologist who has yet to be convinced that animal (and plant) remains are exciting and would repay the same resources that are now applied to artifacts.

M. L. RYDER

J. D. MARSHALL, *Old Lakeland*. David & Charles, 1971, 219 pp. £2.95.

This collection of twelve short essays on widely differing themes well reflects its author's disparate interests within the broad sphere of local history. Unpretentiously subtitled *Some Cumbrian Social History*, the book deals with both agrarian and urban themes concentrating heavily on the eighteenth and nineteenth centuries. One essay studies the survival of distinctively Cumbrian surnames as indicative of the vitality of many old-established families and the limited extent to which post-industrial migration has penetrated one of the most remote parts of England. Another looks at the

impact of Newcomen engines on the Lowther coal mines at Whitehaven. Another traces the fortunes of nineteenth-century bobbin mills in southern Lakeland, with perceptive comments on the tenacity and variable brutality of the child-labour system in remote areas well away from the prying eyes of potential critics or, later, factory inspectors. The development of the Lakeland tourist trade is given two chapters, the second of which studies the nineteenth-century fortunes of two coastal resorts, Seascale and Grange-over-Sands, under the impact of the railways. The grandiose planning schemes for Seascale were only partially realized; but after the opening of the Ulverston to Lancaster railway in 1857 Grange rapidly developed as the largest and most salubrious resort in the Furness peninsula, aided by the business acumen of hoteliers eager to capitalize on the fine views over Morecambe Bay.

The chapters which will be of most immediate interest to agricultural historians, however, are those on "The Lakeland Yeoman," "Drovers," and what Dr Marshall calls "The Ceremonial Regime." It is here also that Dr Marshall's contributions are most valuable. Agricultural historians have long bemoaned the relative dearth of adequate studies of Cumberland and Westmorland. Now, with the rapid expansion of the repositories at Carlisle and Kendal, there is a real opportunity to remedy the defect. Dr Marshall has clearly delved with profit into the voluminous estate archives and, most useful in a short volume such as this, has suggested paths which he and others might subsequently follow. He argues that the legendary independence of the Cumbrian peasant, frequently appearing as arrogant rudeness to gentle southern visitors, may have been exaggerated. The Lowther family operated a viable paternalist system, with deference apparently fully returned, throughout the nineteenth century accompanied by the complete paraphernalia of village banquets, sports, and fetes. Undoubtedly, however, there were important social consequences arising from the fact that a smallholding peasantry was much more tenacious here than in the rest of England. As late as the survey of 1873, more than one-third of landowners

owned less than one acre. It would have been useful to have seen this theme more fully developed, as also the problem of the economic consequences of parliamentary enclosure on such a pattern of landholding. Much material in Carlisle on this important subject awaits serious study. On cattle rearing in Cumbria, Dr Marshall conclusively demonstrates with the use of probate inventories that farmers did not always slaughter their young cattle in the autumn as had been believed, but frequently kept them for three or even four years before selling them at a profit to Yorkshire and Lancashire graziers for fattening.

Any criticisms of such a work as this must be small ones. It reveals some fascinating fragments of Cumbrian life while indicating directions for future more detailed studies. It is a well-illustrated book lucidly written with the general reader in mind, but one from which the specialist can derive both enjoyment and instruction. One further unexpected bonus for the student with a *penchant* for fieldwork: interesting sites and buildings are identified by their National Grid reference.

E. J. EVANS

DAVID JENKINS, *The Agricultural Community in South-West Wales at the turn of the twentieth century*. Cardiff, University of Wales Press, 1971. xii + 291 pp. 5 plates, 16 figs and maps, 9 tables. £3.

A new and rich vein in agricultural history, successfully worked in the last decade or so, has been the oral testimony of those farmers and labourers brought up under the old regime which persisted in many of our rural areas until the years between the wars. Mr George Ewart Evans's *Ask the Fellows who Cut the Hay*, first published in 1956, showed the possibilities of this kind of evidence for serious historical research; his later works have shown how this approach can be adapted to other aspects of rural life. Mr Jenkins's volume might appear at first sight to be another example of this new genre, but even a casual reading will show how much more ambitious are his aims. From a stimulating chapter on "Farm Practice and Social Structure", his discussion develops into a full-scale anthropological analysis of the small rural community on south Cardigan-

shire in which he carried out his fieldwork. The occupation of the holdings and the succession to tenancies are studied from within on the basis of exhaustive personal inquiries. Kinship and marriage are dealt with in considerable detail and there are two chapters which discuss religion and the religious revival which swept through the area in 1904-5. The book is rounded off with a discussion of "The Community and the Nation at large" which includes, among other things, some useful material on the introduction of agricultural innovations.

As its title indicates, the book deals with conditions as they were in the closing years of Victoria's reign and as they were recollected by the old people mainly in the late 1950's. The author's use of this oral evidence is sound and scholarly. He is often able to relate memories to manuscripts in such a way as to present a balanced picture of how farming appeared to those who were formerly engaged in it. The chapter already referred to, dealing with the integration of farm practice and local social structure, shows how misleading it can be if one discusses the size of the small farms of this Cardiganshire community in terms of acres. Local terminology with its fine distinctions between 'cow-place', 'one-horse place', 'two-horse place', and 'considerable place' is soundly based on the reality of everyday experience. An interesting part of this masterly analysis deals with the pattern of co-operation between cottagers and small holders on the one hand and large farmers on the other. Harvest work established a bond which was recognized throughout the year and both sides gained from the co-operation. The increasing mechanization of farming—especially the introduction of the reaping machine—undermined the mutual dependence of the community. Mr Jenkins's feat in this penetrating study has been to show how the social system which was displaced worked. Students of agricultural history will find in it ideas and insights which will be of use in understanding farming practice at the day-to-day level in areas with different agricultural traditions. The volume also has a wider appeal to the anthropologist and rural sociologist.

TREFOR M. OWEN

B. R. MITCHELL and H. G. JONES, *Second Abstract of British Historical Statistics*. C.U.P., 1971. viii + 228 pp. £3.40.

The (first) *Abstract of British Historical Statistics* (by B. R. Mitchell with the collaboration of Phyllis Deane) appeared in 1962, but few of the series went beyond 1938. The major task of the second volume is to extend the series into the post-war period, though it contains in addition "new series of statistics which began too late for inclusion in the earlier book, and some tables which although they begin much earlier than 1938, had to be left out of the previous volume because of lack of space." The *Second Abstract* is organized along similar lines to its predecessor, with chapters for population and vital statistics, labour force, agriculture, fuel and power, iron and steel, non-ferrous metals, textiles, transport and communications, building, miscellaneous production, overseas trade, wages and the standard of living, national income and expenditure, public finance, banking and insurance, prices, and miscellaneous. There are, in fact, relatively few new series. None of the omissions noted by H. J. Dyos in this *Review* (vol. XI, pt II) is remedied.

The *Second Abstract* will be of great value to the historian who has need to pursue his research into the post-war period. The series are clearly linked to the first volume and variations in comparability are indicated. As a work in its own right, however, it is more difficult to justify. The first *Abstract* stated that "nearly all the tables end at the beginning of the Second World War, since the comparable wartime and post-war statistics are easily accessible." The material covered is much the same as can be found in the *Annual Abstract of Statistics* which is, in many ways, a more comprehensive publication. It is useful, of course, to have complete series covering 25-30 years, but one does not generally have to look in more than two or three *Annual Abstracts* to complete a series for 1938-45. A number of the areas now have their own annual publications (such as national income and expenditure, and overseas trade) which are easily accessible. One is drawn to the conclusion that a volume which was more exhaustive in its inclusion of recent statistical material would be of much more value. Under agriculture,

for example, information on farm inputs and incomes is now available.

Perhaps a more serious failing from the point of view of research in the post-war period is the ending of nearly all the series in 1965. The 1971 *Annual Abstract* gives five years' extra figures. Few people are likely to be satisfied with stopping in 1965 and this will become increasingly felt as fresh annual publications appear. Sources are well documented so that readers will be able to update the series themselves, but this rather obviates the usefulness of the volume.

The *Second Abstract of British Historical Statistics* is therefore a valuable aid to the historian who wishes to pursue his use of the statistics of the first *Abstract* beyond 1938. In its own right, however, it does little more than duplicate material easily accessible elsewhere.

CHRISTOPHER RITSON

J. HATCHER, *Rural Economy and Society in the Duchy of Cornwall, 1300-1500*. C.U.P., 1970. 322 pp. £5.00.

The more one studies the regional economy of the Middle Ages, the more one becomes impressed with the great variety of local expressions of common interests. There can surely by now be no such thing as a typical medieval village. Estates were administered, the land was exploited, the local peasantry were organized in a host of different ways throughout the length and breadth of this country.

Such thoughts are provoked by this most recent of local studies, that of late medieval Cornwall. In fact, the study concentrates on a group of seventeen manors which belonged to the Duchy of Cornwall. They were scattered throughout the present county and consisted of an original group of demesne manors. On these estates developed a form of landholding known to contemporaries as "assessing." Each of the customary holdings (and there were "free" holdings within most of the seventeen manors as well) carried its established dues, an annual rent; but in addition the holding was auctioned (or otherwise leased) at the highest increment that the market would accept, the increment being paid over six years of the seven-year lease (later there were

some 14-year, 21-year, and even some life leases).

Such a system resulted in a number of important developments for the historian. First, it needed extensive and regular documentation—mainly of course concerning tenants and rents rather than agricultural practice. The fact that the Duchy was for long periods in the hands of the crown means that much of this documentation has survived. Secondly, such documentation means that the records can provide some indication of the current demand for land, the pressure of population on the land determining the level of the additional rent.

This at least is how Dr Hatcher sees the evidence. Through a mass of great detail and at first sight unpromising material, he has steered his way clearly, surely, and convincingly to a series of conclusions which are of importance, not just to the history of Cornwall but to all students of the later Middle Ages in England. For instance, Cornwall *did* suffer in the Black Death; but the effects of falling population was offset by a rise in industrial and other economic activity (mining, fishing, and textiles), which created a demand for land for market production. Later the system of assessments atrophied; it was in fact relatively short-lived, at least in the sense of being entirely free to economic and demographic pressures.

There are other sections in this book dealing, for instance, with peasant mobility, multiple landholding, sub-leasing, and peasant poverty and the like; there are assessments of the value of the estates and their incidents to the landlords; there are descriptions of estate management and the legal status of the tenants. The whole is clearly presented, pleasantly produced, and very well documented.

It may seem ungenerous to ask for more. But three questions seem inadequately dealt with. First, how typical were these seventeen manors of the Cornish economy as a whole? Secondly, what effect did such a system have upon the topography of settlement within these manors? Did it lead to dispersed farmsteads or nucleated villages? And thirdly, is it possible to trace something of the origins of the system? The facts that the earldom was

very early tied to the royal family and thus was administered by officials close to the government, and that the system received its most systematic expression in the early years of the reign of Edward III, suggest that the answer to this question may be of importance to constitutional and administrative historians of the fourteenth century, as well as to economic historians.

ALAN ROGERS

P. L. HULL (ed.), *The Caption of Seisin of the Duchy of Cornwall (1337)*. Devon and Cornwall Record Society, New Series, XVII, 1971. lxx+189 pp. £2 to non-members.

In May 1337, two months after the creation of the Duchy of Cornwall, an exhaustive survey of the Cornish possessions of the Duchy was undertaken to provide the basic information necessary for running the estates. This is the so-called "Caption of Seisin", a record much used in recent work on medieval social and economic developments in Cornwall (cf. especially Professor Beresford's article in this REVIEW, XII, 1964, Dr Hatcher's article in volume XVIII, 1970, and his book *Rural Economy and Society in the Duchy of Cornwall, 1300-1500*). Mr Hull's careful and scholarly edition of this "key document" (Hatcher, *Rural Economy*, p. 90, n. 1) is, therefore, very welcome.

Most record societies now like to present their documents in translation. There can be little wrong in this in the case of relatively straightforward records (grammatically at least, that is) such as rentals and surveys so long as the original language is given for problematic passages. In his edition of the *Caption* Mr Hull has employed a useful compromise method of providing the first entry of a section in full and in Latin (with added translation) and the remaining entries in English with common form eliminated. His edition is complemented by an appendix of variant readings and two thorough indexes.

The introduction is long, detailed, and painstaking. A lengthy section dealing with the feudal honours is followed by sections on the status of the tenantry, the boroughs, and the size and nature of the tenements. These sections scarcely make easy reading, however.

Overloaded detail often obscures the point and reduces some paragraphs almost to catalogues, a tendency which could have been avoided, at least in part, by the use of a few simple tables (e.g. distribution of knights' fees, number and status of tenants on the various manors, etc.). The quantity of detail has also led to a plethora of references and over-long footnotes (e.g., p. lxvii n. 10 is 27 lines long, and a sample selection on pp. xii-xxi showed an average of some 23 lines of text to 32 lines of references and notes). It is a pity that all this detracts from the value and interest of much that Mr Hull has to say.

Like all estate surveys and rentals, the *Caption* is limited in importance in describing only a single point in time. A static picture of the Cornish estate structure at this date is even more misleading than for many other parts of the country. Dr Hatcher has clearly demonstrated the fluidity and mobility of Cornish rural society in this period (though unfortunately his *Rural Economy* had not appeared when Mr Hull's edition of the *Caption* went to press). Take the tenantry itself: one could not guess from the *Caption* that of the conventional holdings listed there more than a half in some manors and a third in others would have changed hands within eleven years (Hatcher, pp. 57-8). The importance of the *Caption* is therefore as one, but only one, in a splendid series of surveys and assession rolls in the fourteenth and fifteenth centuries.

Still it does provide an opportunity to analyse at this one date the tenemental structure of the Duchy manors. Mr Hull gives no tables stratifying the peasant holdings on the various manors but it can be seen at a glance what wide variations existed—largely to be explained, as Dr Hatcher points out, by soil fertility, non-agricultural opportunities, and other factors. If there are few signs of a "peasant aristocracy" among the conventional and unfree tenants at this date (Hatcher, pp. 228-9), one might add that the sizeable near-landless "rural proletariat", common on so many estates in the early fourteenth century, also seems less than ubiquitous in the pages of the *Caption*, though we do not know how much sub-letting was going on. Only one manor, Tywarnail, seems to have been in dis-

treas in 1337. The holdings here were mainly small (most of them under 10 acres compared, for instance, with Climsland where the great majority were over 20 acres and Helston-in-Kirreir where many holdings were of colossal size). With little space available cultivation had been pushed right down to the sea-shore so that many holdings were suffering from encroachment of the sand. Entries such as "John Cotha: 1 messuage 6 acres English of which 5 acres are under the sand . . ." (p. 80) are common here.

In considering the overall value of the Cornish possessions of the Duchy at the time of the *Caption*, it is worth remembering that out of a total gross income of £4,526 only £657 came from the manors (and this includes £101 from the boroughs). Of the rest, the main items were the coinage of tin, producing £2,000, and revenues from ecclesiastical possessions, which brought in as much as £1,646 (pp. lviii, 134, 140).

IAN KERSHAW

Shorter Notices

GEOFFREY ALDERMAN, *The Railway Interest*.

Leicester U.P., 1973. 344 pp. £5.

British farmers' resentment against the railway companies' preferential rates for the carriage of large consignments of foreign produce in the 1880's and 1890's, and the Southampton Case, heard before the Railway Commission in April 1895, are given brief but authoritative treatment in Dr Alderman's account of the Railway Companies Association and its influence on government policy between 1868 and 1914. Apart from railway rates and charges the main issues that concerned the Association were accident prevention, employers' liability, labour relations, and the passenger duty. The book contains a valuable Appendix of the number of M.P.s of "the effective railway interest" before the First World War.

RICHARD WILKINSON, *Poverty and Progress: An Ecological Model of Economic Development*.

Methuen, 1973. xi + 225 pp. £2.60; paperback £1.25.

Mr Wilkinson's thesis is that economic development results not from the pursuit of progress but from the "ecological pincers" of population growth and scarce resources. The first adoption of agriculture, and subsequently of more intensive farming methods, resulted from the pressure of population increase, and ultimately societies were forced to industrialize by the progressive scarcity of land-based

resources. More sophisticated ways of producing things were not sought by society but forced upon it at the sacrifice of leisure. The argument is developed in chapters on the breakdown of ecological equilibrium through the failure of restrictions on the growth of population, and there are case studies of the industrial revolution in England, and of economic development in America as a country rich in natural resources. The book provides an intriguing approach to a familiar story, and draws on a wide variety of material from various disciplines and areas.

The discussion, nevertheless, is excessively over-simple; and as it proceeds the reader becomes increasingly conscious that the argument is sustained only by making some extraordinary assumptions about the state of primitive societies and the supposed lack of advantages resulting from industrialization, as well as ignoring a great deal of contrary evidence; so that in the end it seems doubtful whether the author's "ecological model" does not rest on foundations as inadequate as those of the alternative models which he seeks to replace.

G. E. & K. R. FUSSELL, *The English Countrywoman: a Farmhouse Social History 1500-1900*. New York, Benjamin Blom, 1971. 72 illustrations, 221 pp.

This valuable contribution to rural social history, first published in 1953, has now been

reissued by an American publisher. The unusually large number of illustrations adds greatly to the inherent interest of the text. The book contains many fascinating little vignettes, and refers to a wide range of contemporary and modern sources. There are, unfortunately, no footnotes.

W. BRANCH JOHNSON, *'Memorandums For . . . ' the Carrington Diary*. Phillimore, 1973. xiii + 200 pp. 4 plates, 2 maps. £3.25.

An earlier version of the Carrington Diary was edited by Mr Branch Johnson and published in 1956. His revised edition contains about three-quarters of the original, and covers the years 1798 to 1810. John Carrington farmed at Bacon's Farm between Tewin and Bramfield in Hertfordshire, and he was a local Chief Constable, Tax Assessor, Surveyor of Highways, and Overseer of the Poor: Mr Branch Johnson contributes a useful introduction to the family and background of the diarist. Though of considerable general interest, there is not a great deal in the diary for the agrarian historian, beyond some references to harvests, local prices, and market conditions. Carrington was, it seems, a man of affairs first, and a farmer second; though in September 1808 he records going to see a "New Threshing Machine" and "3 New patent Plows as made in London."

W. S. GILLY, *The Peasantry of the Border: an Appeal on their Behalf*. Edinburgh, Bratton, 1973. iv + 53 pp. 5 illus. £2.

W. S. Gilly's pamphlet was originally intended as a paper to be read before the Highland and Agricultural Society, and was first published in 1841. In it he made a plea for the provision of more adequate and sanitary cottages for the hinds of the north country border district, and his text included figures relating to village school attendance and the hinds' earnings.

Professor R. H. Campbell provides a brief introduction to this reprint, which is published by a new Scottish house specialising in local history, Scottish history, and industrial archaeology.

M. E. FALKUS, *The Industrialisation of Russia 1700-1914*. Macmillan, Studies in Economic History, 1972. 93 pp. 60p.

Mr Falkus's contribution to the successful Studies in Economic History series sponsored by the Economic History Society traces the course of industrial development in Russia from the time of Peter the Great to the outbreak of the Great War. Farming developments are treated only as necessary background to the progress and problems of industrialisation, though of course Russia was overwhelmingly agricultural, with only 15 per cent of the population in towns as late as 1913. The author provides a valuable guide to his subject, and there is a useful bibliography.

BOOKS RECEIVED

The inclusion of a book in this list does not preclude the possibility of its review in a subsequent issue of the *Review*.

ROBERT O'CONNOR, *Principles of Farm Business Analysis and Management*. Irish U.P., Shannon, 1973. xvii + 442 pp. £5.

AUDREY I. RICHARDS, FORD STURROCK and JEAN M. FORTT, (eds.), *Subsistence to Commercial Farming in Present-day Buganda: an Economic and Anthropological Survey*. C.U.P., 1973. x + 336 pp. 9 maps. £7.60.

ASIYA SIDDIQI, *Agrarian Change in a Northern Indian State: Uttar Pradesh 1819-1833*. Clarendon Press: O.U.P., 1973. xi + 212 pp. Map. £4.50.

CLAUDIO VITA-FINZI, *Recent Earth History*. Macmillan Student Editions, 1973. xii + 138 pp. Hard cover £3; paperback £1.50.

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Museum Procedure: Conservation, materials and methods as used in the Museum of English Rural Life. 17pp.

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CRICHTON, Ruth. *Commuters Village*.

David & Charles, 1964. 109pp £1.05

Fussell, G. E.: *a bibliography of his writings on agricultural history*. vii + 34pp. Over 500 entries.

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PALMER, Felicity A. *The blacksmith's ledgers of the Hedges family of Bucklebury, Berkshire, 1736-1773*. (Research paper no. 2) 12pp.

15p

WHETHAM, E. H. *The London milk trade, 1900-1930*. (Research paper no. 3) 16pp.

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WHITE, K. D. *A bibliography of Roman agriculture*. xxviii + 63pp. An annotated 918-reference bibliography on Roman agriculture; together with a 10,000 word introduction.

85p

Prices do not include postage. Obtainable from the Museum of English Rural Life, The University, Whiteknights, Reading RG6 2AG

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The **AGRICULTURAL HISTORY REVIEW**



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“Leviathan of Wealth”: West Midland Agriculture, 1800–50

By ERIC RICHARDS

FOR the half-century to 1813 British agriculture had grown accustomed to a market horizon of rising prices and profits. A fifty-year upward trend was followed by a steep descent of food prices. This reversal required a marked readjustment in the industry. Capitalization plans had to be reconsidered, expectations scaled downwards, and the farming community had to face two decades of economic uncertainty. Rising productivity, low food prices in Europe, changing consumption patterns, and resource-utilization problems were elements of the radically transformed post-war environment.

The intensity of these problems, and the responses made by the farmers, varied geographically.¹ In general terms, the counties of the west Midlands were relatively well placed. The proximity of rapidly growing urban markets helped. So, too, did the mixed character of local agriculture—commitment to wheat, while considerable, was less pronounced than in other regions. Industry offered alternative employment opportunities. Nevertheless, adjustment was required of agriculture. Its direction depended on many circumstances, some of which were particular to individual landlords. For the most part, in the west Midlands the response seems to have been progressive. Unfavourable price conditions stimulated improved agricultural practice and the rational balancing of crops. There is little evidence of disinvestment in the post-war phase. At the same time it must be said that levels of agricultural investment were not maintained at wartime levels.

Very few landowners in the early nineteenth century were able to match the Leveson-Gowers in their single-minded pursuit of “Improvement.” In 1803 a combination of circumstances persuaded this family to seek the most radical and recommended policies for the transformation of their lands in the west Midlands. They followed an explicit plan to revolutionize their estate along the lines of best practice in progressive agriculture. These improvements involved the entire framework of rural economy: a renovation of the system of estate management, large drainage schemes, enclosures, road construction, new rotation schemes, a reversal of tenurial arrangements, the rebuilding of farms and offices, new tenants and a more systematic rental policy, the introduction of new methods and implements, as well as a general recasting of landlord–tenant relations. The plan, its vicissitudes, and its consequences for rural society in Salop and Staffordshire form the subject-matter of this paper. In part it exemplifies some of the frustrations of improving landlordism in that time of readjustment that followed in the wake of the Napoleonic wars.

¹ See G. E. Fussell and M. Compton, ‘Agricultural Adjustments after the Napoleonic Wars’, *Economic History*, III, no. 14, 1939; J. H. Clapham, *An Economic History of Modern Britain*, I, Cambridge, 1926, ch. XI.

I

"Leviathan of Wealth," "the richest man in England" were epithets which described George Granville Leveson-Gower (1785-1833), second Marquis of Stafford, and (in the year of his death) first Duke of Sutherland.¹ The extraordinary financial resources of the family reduced, but did not remove entirely, the usual constraints on landlord expenditures. It affected significantly the "criteria of investment" on the Leveson-Gower estates.

Their acres in the west Midlands formed the original territorial foundations of the family, dating from a marriage alliance in the seventeenth century. Upon this was built a much greater concentration of wealth which was inherited by Lord Stafford in 1803. It derived principally from his uncle, the Duke of Bridgewater. By 1833 Stafford had received an aggregate free income of £2,084,373 from this source alone. It was an inheritance with strings attached—the Bridgewater will specified that, on Stafford's death, the income should descend to his *second* son.

Even without this condition Stafford would have been required to consider the deployment of his capital very carefully. Some of his fortune went into canals, but more was invested in railways. Yet more was channelled to the Highlands of Scotland, where Stafford's wife owned most of the county of Sutherland. Stafford and his successor, the second Duke of Sutherland, poured prodigious sums into their northern empire—probably more than £2 million by 1861. Concurrently, the great houses of that family absorbed a growing proportion of the income: "Leviathan of Wealth" maintained Stafford House, Cliveden, Dunrobin Castle, Trentham Hall, and Lilleshall Hall. Conspicuous consumption competed with railway, canal, and landed investment for calls on the family purse. But it was not a bottomless capacity. The wealth of the Bridgewater Canal, with complete certainty, would be cut off on the death of Lord Stafford.

The English estates of the Leveson-Gowers were in a special position. The family came to believe that land was the most secure of all investments. Trentham Hall was a great centre of their social life and their oldest possession. A strategy was devised to raise the profitability of the west midland estates by way of improvement. It was a design for the long run. During the lifetime of Lord Stafford large investments could be made: the benefits would accrue to future generations. The intention was to maximize returns for future decades, and the family was prepared to forgo immediate benefits. This notion complemented the family's conception of aristocratic trusteeship, and the fulfilment of paternalistic duties in rural society.

There were three estates in England: Lilleshall in Shropshire (about 17,300 acres), Trentham in Staffordshire (about 12,500 acres), and, much less important, Stittenham in Yorkshire (about 1,850 acres). Together they amounted to less than 40,000 acres, only 4 per cent of the total territorial empire of the family. Yet the English

¹ See Eric Richards, *The Leviathan of Wealth, The Sutherland Fortune in the Industrial Revolution*, 1972, which considers the Scottish and transport investments of the family fortune. I have dealt with the industrial aspect of the west midland estates in a separate paper, 'The Industrial Face of a Great Estate: Trentham and Lilleshall, 1780-1860', to be published in *Econ. Hist. Rev.*, 2nd ser., xxvii, Aug. 1974.

estates yielded more gross rental income than the entire 1½ million acres it held in Scotland. Even without the alliances with the Sutherland and Bridgewater fortunes, the Leveson-Gowers would have remained comfortably within the class of "great landed magnates," as defined by F. M. L. Thompson.¹

II

Of all the Scottish agents employed by the great landed proprietors of England the most influential was probably James Loch (1780-1855). He was certainly "one of those Scottish agricultural experts of whom Cobbett could never speak without explosion."² As "Commissioner" to Lord Stafford, a great deal of the direction of the Leveson-Gower fortune was vested in his hands. He became the line of continuity between the generations as well as the multifarious interests of the family. He was regarded as the most able professional manager of his day. Although he expended most of his efforts in the service of Lord Stafford, he was simultaneously engaged in the management of the estates of Count Flahaut, Earl of Dudley, Lord Carlisle, and Lord Egerton. He was an M.P. and a member of several committees, including that which examined the state of agriculture in 1836. All this was additional to his task of supervising the great Highland policies in Sutherland, and his involvement in the complex negotiations between the railways and canals in the 1820's and 1830's. In terms of these professional commitments, Loch over-extended himself to the detriment of some of his duties. Lilleshall and Trentham were a small part of his responsibilities.

On the succession of the second Duke of Sutherland in 1833, Loch drew up a statement of the financial standing of the English estates. It was part of a general survey of the family finances.³ His estimates for the coming year were based on the most optimistic predictions, but they do serve to indicate the magnitudes involved in estates finances.

	Gross rental	Permanent expenditure	Net income	Allowance for improvement	Income
	£	£	£	£	£
Trentham	18,032	15,304	2,727	700	2,027
Newcastle	2,956	477	2,478	—	2,478
Wolverhampton	5,899	158	5,807	—	5,807
Lilleshall	25,899	8,440	17,459	2,000	15,459
	52,854	24,381	28,473	2,700	25,773
Stittenham	1,886	114	1,772	—	1,772
	54,740	24,495	30,245	2,700	27,545

¹ F. M. L. Thompson, *English Landed Society in the Nineteenth Century*, 1963, ch. 2.

² Clapham, *op. cit.*, p. 142.

³ Sutherland Collection, Stafford County Record Office (subsequently S. C.), D593, Rentals, General View, Nov. 1833.

All this was a statement of good and determined intentions, rather than an accurate picture of the actual profitability of the estates. In the previous twelve years, for instance, the gross rental figure was on average about £45,000. Annual expenditures had been considerably in excess of £40,000.¹ Hence Loch's "income" estimate, showing a decisive increase, was founded on the assumption (heroic and misplaced as it turned out) that the gross rental would expand while expenditures (especially on "improvement") would diminish. This development was considered inescapable. In 1833, the income of the Bridgewater Trust was diverted to the second Duke's brother, Lord Francis Egerton. The head of the family could not longer be termed "the richest noble in the kingdom."

The general trends of rental income are relatively clear.² The gross rental income of the Lilleshall estate rose rapidly during the Napoleonic wars: from £10,595 in 1797 to £14,162 in 1805, and £19,717 in 1810. This experience, of course, fits well the national trend of agricultural rents—the effect of which, in terms of income distribution, F. M. L. Thompson has described as "a sizeable unearned increment" accruing primarily to landowners and farmers.³ At Lilleshall it could not be said that the rent increases were in any way justified by improvement expenditures by the landlord, since these were minimal before 1803.⁴ Pressed forward by the recently appointed James Loch (he came in 1812), the rising trend reached its peak of £24,772 in 1817. From then until about 1840 rentals were comparatively depressed, and it was not until 1841 that rents again matched the figure for 1817. Agricultural rents were most depressed in 1824, 1829, and 1837. The industrial segment of the rental (mines rents and royalties) was more stable and buoyant, and in the 1820's and 1830's contributed about 20 per cent of total estate income. In effect, the total rental income during those decades was close to that level of income achieved in 1814. Lord Stafford was thus fortunate to maintain his rents at the highest wartime levels, and fared better than most other west midland proprietors.⁵ Rents were not at all catastrophically depressed, but they were decidedly less lucrative than had been anticipated during the absurdly optimistic years of war. Only after 1840 did estate income reach a higher plateau. The rental was, on average, 10·3 per cent higher in the 1840's than in the 1830's. The first four years of the 1850's were poor, but in 1856 the trend began to rise again—partly as a result of better farm rents, but also because of a new agreement with the main industrial enterprise, the Lilleshall Company. In the year of Loch's death the Lilleshall estate yielded a gross rental of £27,800, of which a little more than a third came from industrial sources.

¹ Calculated from S. C., D593, English Estate Rentals.

² Detailed figures are set out in Eric Richards, 'James Loch and the House of Sutherland, 1812-1855', unpublished Ph.D. thesis, University of Nottingham, 1967, App. III, and this evidence is discussed on pp. 152-3.

³ Thompson, *op cit.*, p. 215. On this definition one may say that a great deal of the Leveson-Gower wealth derived from "unearned income." The income of the Bridgewater Trust was partly consequent upon monopoly conditions.

⁴ See below, section III.

⁵ James Caird, *English Agriculture in 1850-1*, 1851, p. 231, quotes the case of the Hatherton estates where, as late as 1850, rents were still 40 per cent lower than those of 1813. Part of the explanation of the Leveson-Gower trends may be found in the relative slowness of the landlord in pushing up his rents during the war.

The figures for the Staffordshire estates are more anomalous and the trends are less explicit. In 1780 Trentham seems to have produced a rent of £5,061, and in 1800 £11,257 (with over 20 per cent coming from mining sources). Another series of rentals (derived from a different base) shows a rising trend through the war years—in 1806 £8,810, in 1814 £10,247, and in 1821 £13,387. The decadal averages are: 1820's £12,720, 1830's £13,520, 1840's £14,110, and 1850's £14,730. In the year 1855 the Trentham estate yielded £14,230, of which £3,051 came from industrial sources.

The Leveson-Gowers possessed two other, lesser, estates in Staffordshire. The Wolverhampton estate was thick with mining deposits and produced an income which was £2,123 in 1812 and £7,949 in 1840. Loch's first impression, in 1813, was that "its value in point of mines is not I believe to be calculated."¹ The smaller Newcastle-under-Lyme estate was on the fringe of the Potteries and gave rents mainly from housing. In the same area the family owned the Lane End Water Works which provided a water supply for Longton—it replaced the barrel-borne supply—and produced about £1,500 in the 1830's.² Finally the old family estate of Stittenham in Yorkshire yielded a rent of about £1,800—that is until 1833, when the income was made over to the Duchess of Sutherland—"in place of pin-money" as Loch put it.³

Any measure of the productivity of landlord capital depends upon the availability of expenditure figures.⁴ Those for the Leveson-Gower estates are very patchy and convey only an impression of the net financial returns. It is certain that expenditures on improvement were large from 1803 to 1823. James Loch claimed, not altogether implausibly, that the equivalent of all the rents for twenty years had been sunk into improvement.⁵ (Taken literally the claim would have entailed an expenditure in the region of £500,000.) Independent evidence indicates with certainty that between 1818 and 1823 aggregate expenditure was greater than income. At Lilleshall fragments of accounts suggest that in 1796 and in 1801 expenditure on improvements and repairs was negligible, while in 1818 over £10,000 was spent in this manner. After 1823 economies were instituted which reduced outlays to about £2,500 (i.e. on improvement, and not including the rebuilding of the family residence). Little net income was received before 1833, and even when a stringent retrenchment programme was instituted it proved extremely difficult to maintain income above total estate expenditure. The absence of "net income" was partly an accounting illusion because estate expenses included items which cannot be classed properly as "agricultural investments." Much estate income, for instance, was soaked up by the hugely expensive rebuilding of Lilleshall and Trentham Halls

¹ S.C., D593/K, Loch to Stafford, 11 April 1813.

² J. C. Loudon, *An Encyclopaedia of Agriculture*, 1831, p. 1150.

³ S.C., D593/K, Loch to Lewis, 7 Nov. 1833.

⁴ The verification of F. M. L. Thompson's argument that landlords overcapitalized agriculture in the middle decades of the century—and thereby subsidized food consumers—is also dependent on investment estimates, which are elusive.

⁵ James Loch, 'Memoir of George Granville, late Duke of Sutherland, K.G.', unpublished, 1834, copy in Stafford County Record Office.

during the 1820's and the early 1830's. Nevertheless, improvement expenditures rose in the 1830's—to levels close to £4,500 per annum at Lilleshall.

One point is clear. Despite the large and concentrated investments on the west midland estates during the lifetime of Lord Stafford, the estate income responded very sluggishly to the family's development policies. The high hopes of 1813, and even the scaled-down intentions of 1833, were unfulfilled in the outcome. It was more a reflection of general economic conditions than of the efficiency of the estate management. The landlord sought his return on capital in future rent increases and on the appreciated value of the estate. As two decades passed without sizeable rent increases, even the Leveson-Gowers, for all their long-run horizons, felt a rising frustration. Nevertheless, their levels of investment continued well above the expenditures of the late eighteenth century. The family settled for lower returns than had been expected, and lower than they might have gained in alternative enterprise. It was tacitly acknowledged that in land "the criteria of investment" were less stringent—it was a recognition that the returns were as much psychic as economic. Lord Stafford's outlays, wrote Loch in 1816, should be "laid out in a way to add to the permanent interest and consequence of his family."¹

III

Rents were the fulcrum of the agricultural economy and determined the relationship between the three elements of rural society—the landlord, tenants, and labourers. Rental policy in the post-war period was beset by problems—a landlord had to consider not only the yield on his investment but also the effects of the secular decline in prices, the "stickiness" of costs, the over-expansion of many sectors of the agricultural industry, the uncertainty over the government's tariff and fiscal policy, and the widespread problem of rural under-employment.

The appointment of James Loch in 1812 came at an inauspicious time: henceforth it would be very much more difficult to raise rents. It was also a time when the Leveson-Gower family wished to bring their finances into a more efficient order. Specifically it was considered that the English estates should be administered independently from Lord Stafford's other affairs, and that they should be self-supporting.² Land purchases in the west Midlands, election expenses, improvement outlays, as well as running expenses—all these were to be supported by the rental. Loch saw clearly that, as things stood, the burden was too great. Efforts were made to reduce expenses; leasehold tenants were called upon to perform their repairing covenants; for rent defaulters Loch thought that he might "be obliged to proceed against one of them before we convince them we are entirely serious";³ building outlays were curtailed. Very soon Loch came face to face with the perennial

¹ S.C., D593/K, Loch to Lady Stafford, 18 June 1816.

² At the time of Loch's appointment a family relative commented that "The Staffords seem to have turned their thoughts entirely to economy and the society of Scotch agents. They . . . are raising their rents all about here. They make Lord Gower their steward, and the advertisements are all published with 'apply to Earl Gower'."—F. Leveson-Gower (ed.), *Letters of Harriet, Countess Granville, 1810–1845*, I, 1895, p. 39.

³ S.C., D593/K, Loch to Fenton, 10 Feb. 1813.

dilemma of rural economy: that further expenditure was indispensable for the future growth of the estate income. The first Marquis of Stafford, said Loch, had left his estates "in a most delapidated state": his successor could not "get large rents and good tenants without sufficient building," and other improvement outlays.¹

The estate policy sought a widening net income by way of rising rents and diminishing expenditures. In reality, the trends were in the opposite direction—eventually the estate was forced to reduce rents, expressly "to relieve the deplorable condition of the agricultural interest."² Concomitantly, Lord Stafford reduced some of his commitments in the area—notably by withdrawing his direct political influence in Staffordshire. Improvement investment developed along very deliberate lines which Loch explained to the family heir in 1816. "All expenditure upon this property," he told Earl Gower, "should be directed to those objects which could not be effected except through the assistance which Lord Stafford is pleased and enabled to effect, and which could not be so easily undertaken by your Lordship if in possession of the Stafford and Sutherland Estates—and that it should not be expended on works which will hereafter give your Lordship little additional revenue. . . The present expenditure should be kept to the great series of improvements leaving the smaller parts to be filled up hereafter. . . Upon such an estate such things only can be attempted by one possessing such a fine income as Lord Stafford enjoys."³

As a wedding gift, and for a training in aristocratic responsibilities, Lord Gower was given the estate of Lilleshall in the year 1823. He was expected "to live out of his estate." All effort was made to reduce expenditure and to provide Gower with an income suitable to his position. Improvement expenditure was more than halved immediately. All went well until Gower decided that his social needs included a substantial country residence at Lilleshall. Loch put the position sympathetically: "His Lordship has the greatest property in Shropshire and yet not a single respectable House he can command."⁴ Consequently Lilleshall Hall, designed by Wyattville, was begun—although one agent confidentially (and correctly) predicted that "it will cost too much and will be too long in hand." These fears were fully justified by events. During its construction, Lilleshall Hall cost more than £10,000 each year and exceeded handsomely all the estimates—to the point that, by 1829, Loch was bitterly remarking that "Builder's estimates in a general way are not worth a straw."⁵ Inevitably, Gower's expenditure quickly began to exceed his income and further efforts to retrench were instituted. In 1829 the position had deteriorated—"no improvement on the farm must be thought of," demanded Loch, "or repairs but the most necessary can be attended to and all the new plantation must be abandoned. . . In short in plain English we are reduced to our shifts and we must not think what will be the best for the estate but with how little we can keep the thing

¹ *Ibid.*, Loch to Lady Stafford, 29 Sept. 1814.

² *Ibid.*, Loch to Suther, 26 Dec. 1816; Loch to Lord Stafford, 22 March 1818, 3 May 1821; Loch to Lewis, 16 Jan. 1818.

³ *Ibid.*, Loch to Gower, 17 June 1816. ⁴ *Ibid.*, Loch to Lewis, 20 May 1823; Loch to Gower, 16 July 1823.

⁵ *Ibid.*, Lewis to Loch, 22 Feb. 1824, 26 Nov. 1825; Loch to Lewis, 8 Jan. 1829.

going."¹ In 1830, Gower considered the question of a loan to tide him over his difficulties. Loch was deeply perturbed: "let me . . . entreat you not to consider lightly a debt of £50,000. It is a sum that the most considerable fortunes will feel, and which I would consider as to be hereafter to be liquidated from income, not to be paid by diminishing capital." As heir to the largest fortune in the land, Gower no doubt found the position somewhat artificial.²

In a real sense the improvement and expansion of all the Leveson-Gower properties hinged on the life of Lord Stafford. As soon as he died the Bridgewater profits—in 1825 worth a clear £95,000—would be cut off. Stafford was sixty-seven in 1825 and his health was deteriorating. Loch was aware of the implications: "Economy must be studied in every department . . . for when there is every chance of a very large portion of his Lordship's income being cut off, it becomes our duty to limit every possible expense." Despite earlier ukases, expenditure had actually increased since 1821—"It is too like our Sutherland proceedings," remarked Loch, referring to the great Highland commitments, "it must come down." Loch put the point repeatedly and as bluntly as he could: "You must see that as the expenditure is at present, if Lord Stafford had no other estate to live upon, it does not afford him the means of doing so." Expenditure, he said, must be brought down below £1,000 a month, even if it required dismissals. He added a rider: "In thus inculcating economy, I am not desiring the improvement of the estate to be abandoned. I still desire that it may be continued, but it must be done entirely by the tenants. Their encouragement has been ample." This indeed became increasingly the trend of estate policy—the landlord had initiated the large-scale developments; the land was now ready for the applications of tenant capital.³

Stafford died in 1833 and the west midland estates were reunited in the diminished financial affairs of the second Duke. Managerial economies were expected in the general reorganization. The estate agents were told that they were "no longer representatives of the richest Nobleman in England." From all the properties Loch was able to estimate a net balance of only £16,000. It was a very serious problem, he told the Duke in 1834: "The more so as your income will be diminished by the falling price of wheat [i.e. by way of corn-rents] . . . the outlay is so very large and complicated and is taking place in so many places at once." Expenditure remained intractably high, while income was static or falling. New work on Trentham Hall proved as embarrassing as that at Lilleshall. In consequence, during the 1830's the Duke was incurring overdrafts, and eating into his capital. "The late Duke," wrote

¹ S.C., D593/K, Loch to Lewis, 15 Dec. 1828, 3 Jan. 1831.

² *Ibid.*, Loch to Gower, 6 Jan. 1830; Loch to Lewis, 3 Jan. 1834. At this time Loch was advising Stafford to buy more land—"I cannot help advising against any further accumulation of money in the Funds. Land must always bear the first value in every country."—*Ibid.*, Loch to Stafford, 2 Jan. 1831. "As a mere investment I do not believe anything would give so good a return for money as a purchase of a good Estate in Ireland situated within the influence of the Liverpool Steam Packet."—*Ibid.*, Loch to Stafford, 15 April 1830.

³ *Ibid.*, Loch to Lewis, 15 Jan. 1825. The fact that great improvements continued on the Leveson-Gower estate in the post-war period is used by G. E. Fussell to demonstrate that Shropshire was relatively unaffected by the depression. Lord Stafford's investments were not typical, nor were they geared to the level of prices—but Fussell's conclusion is probably valid.—G. E. Fussell, 'Four Centuries of Farming in Shropshire', *Transactions of the Shropshire Antiquarian Society*, 1951-2.

Loch in 1849, "spent a much larger sum, very much—on the estates of the present Duke."¹

Loch's anxious directives were not a signal of Sutherland's impending bankruptcy. It merely indicated Loch's professional concern that the Duke's expenditure frequently exceeded his income, and hence prevented an expansion of his capital and his social prestige. The Duke cheerfully (but vainly) agreed to reduce his own expenses, and the agents were told "to greatly abstain from spending." In August 1835 Loch instructed: "Give every Tenant who is in arrear Notice to Quit without exception."² But the problem remained.

In 1845 Loch pointed out that the Duke "regularly spends more than his income every year."³ He also calculated that the effect of rent abatements had been equivalent to a reduction of rental income by 26 per cent. He told another landlord that "If your English rents have not come down in somewhat the same proportion no wonder your tenants hollow and bellow and scream."⁴ And, although Loch frequently claimed that Sutherland's estates were under-rented and observed improving conditions in the 1840's, he conceded that any attempt to raise rents would have to be limited by the preparations required to meet the repeal of the corn laws. By sacrificing rent increases the landlord consciously shouldered some of the anticipated costs of Repeal to be borne by the agricultural community. By the 1850's the west midland estates were much more prosperous, and in 1851 a net surplus income of £26,400 was confidently expected.⁵ Rents had increased, the Duke's personal expenditure had declined, and the benefits of earlier improvement investment were at last producing sizeable returns.

IV

Rural life on the west midland estates underwent a subtle transformation over the period 1800 to 1850.⁶ Partly it was consequent upon the professionalization of estate management which ran concomitantly with the general 'rationalization' of rural relationships.

The estates of the Leveson-Gowers were administered by a hierarchy of agents and sub-agents centrally directed by Commissioner Loch. Loch checked almost every account, was consulted on the most arcane details of agricultural methods, and solved all problems. In 1833 he told the Duchess of Sutherland that "in the affairs such as the Duke's or Lord Carlisle's the details are infinite. I have twenty-four letters today connected with them . . . if every little trying thing, most for the greater

¹ S.C., D593/K, Loch to Lewis, 2 Nov. 1833; Loch to Sutherland, 7 Feb. 1835; Loch to Duchess of Sutherland, Sept. 1849. See also Richards, *Leviathan*, ch. xviii.

² S.C., D593/K, Loch to Lewis, 10 Feb. 1835, 3 May 1835, 4 Aug. 1835, 12 Aug. 1835; Loch to Smith, 20 June 1836.

³ *Ibid.*, Loch to Duchess of Sutherland, 25 Dec. 1845.

⁴ *Ibid.*, Loch to Denison, 18 July 1846; W. Smith to Loch, 10 July 1845. The rent calculations was probably based on a valuation made in 1818.—*Ibid.*, Loch's Memo Book 1818.

⁵ *Ibid.*, Loch to Sutherland, 4 Feb. 1851; Loch to Walker, 17 Jan. 1851.

⁶ I have dealt with some aspects of this question in my paper 'Captain Swing in the West Midlands', *International Review of Social History*, 1974.

part lead to no conclusion, was to be communicated, you have no notion how they would vex."¹ His headquarters were in London but he travelled regularly to the far-flung estates. Beneath Loch were the main estate agents who supervised management of the local level—substantial men, well paid, and powerful in the local community. Beneath them were the estate surveyors, the office clerks, bailiffs, solicitors, and coal managers. Finally, there was a miscellaneous group of estate employees—labourers, gardeners, servants, stable-hands, etc.²

Loch set about the renovation of the managerial structure in 1812. Economies were begun and new blood replaced old. Estate management was to be a separate and professional function: tenants were no longer to act as agents and the home farm was independently managed.³ The English estates were placed under the direction of an asthmatic lowland Scot, Francis Suther, and the sub-agents were instructed to do nothing "without his authority after reference to me," as Loch put it. Suther had previously worked for Sir John Henderson. He was described as "mild and gentlemanlike . . . a good penman, and understands books"—important qualities in Loch's mind. Suther received a salary of £200 together with a house and a horse.⁴ He was a great success, Loch's first protégé, and in 1816 he was moved to the vast Highland estates in Sutherland where he took over the administration of the clearances.

Choosing Suther's replacement presented some difficulties. Lord Stafford, sensitive to local sentiment, suggested "for the sake of the feeling of the Staffordshire people that Suther's successor should be an Englishman, and if a Staffordshire man, *tant mieux*."⁵ Loch was rigorous in his requirements, and sought a man not only "well acquainted with the most improved husbandry, especially of wet and tenacious soils" but also with the light soil management as practised at Lilleshall, i.e. "strictly upon the principles of Norfolk Husbandry." In addition personal qualities of integrity, honesty, book-keeping skills, and a competent, practical, and theoretical knowledge were required.⁶ In the outcome another lowland Scot—William Lewis of Fife—was appointed. So far as Lord Stafford's doubts were concerned, Suther remarked that "so long as Scotch tenants are not brought in the tenants do not care."⁷ Lewis was especially desirable because "the wet land in Shropshire re-

¹ S.C., D593/K, Loch to Duchess of Sutherland, 16 Dec. 1833. ² *Ibid.*, Loch to Suther, 20 June 1816.

³ In reducing the establishment, Loch trod on many toes. By his new policy he remarked: "I did not mean to recommend to get rid of any of the men now employed in his Lordship's services, such a measure in a great family makes more noise than the saving is worth." Dead or resigning agents were not replaced, piece-rates were used wherever possible, the beer allowance was abolished. In fact, the new broom produced considerable ill-will. Some local recriminations were aired in Thomas Bakewell, *Remarks on a Publication by James Loch, entitled "An Account of the Improvements on the Estates of the Marquis of Stafford"*, 1820.

⁴ S.C., D593/K, Loch to Butt, 11 Nov. 1812, 27 July 1813; Loch to Stewart, 5 Sept. 1813; Loch to Lord Stafford, 1 June 1816; Loch to Fenton, Feb. 1813.

⁵ *Ibid.*, Lady Stafford to Loch, 16 Sept. 1816. ⁶ *Ibid.*, Loch to Lady Stafford, 29 Sept. 1816.

⁷ *Ibid.*, Loch to Lady Stafford, 11 Oct. 1816. Loch's improvement strategy required the introduction of new tenants to the estates, which he generally justified in terms of the skills they brought. Salop and Cheshire farmers were given farms at Trentham, and Loch undoubtedly favoured Scottish agricultural practice, particularly in ploughing matters. He was prepared to concede that, on the very stiff soils of Trentham "a Scotch farmer would not do, he knows nothing of Stock or the value of old grass land, ploughing is his only system of improvement." The prestige of Scottish farming, in the eyes of Loch, diminished over the years. In 1849 he

sembles some of the wet parts of Fife more than anything I know."¹ (Loch himself had spent many years learning the best agricultural practice in Kinross.) Loch told Lewis that the main part of his duties was to see the errors of the tenants' methods, and to provide remedies: the local agent, in the first instance, was a technician.

Professional, carefully calculating, rational management cut against the grain of the older, paternalistic, rural society. In 1818 a Salopian tenant-farmer wrote to the *Shrewsbury Chronicle* with the observation that, "Formerly the tenant had access to and communicate his griefs to his own landlord, and was heard patiently, but now forsooth, if we have anything to complain of, we are told the agent must hear and determine." Under Loch's direction the tenants of the Leveson-Gower estates were expressly told not to address Lord Stafford directly: they were instructed to use "the regular channel," as Loch termed it.² This marked the character of rural relationships in the new agriculture.

Not surprisingly a good agent was hard to find. The Bridgewater canal-master and employer of many men, R. H. Bradshaw, agreed with Loch that it was difficult to get a competent and trustworthy agent "whom a little authority does not immediately spoil. If taken from the working classes this is increasingly the case, and if the better sort, he generally becomes a fine gentleman and consequently useless."³ Loch sometimes contacted Bradshaw in the hope of a likely recruit for the Leveson-Gower estates. One occasion, in 1824, produced further caustic comment from Bradshaw on the problems of training and keeping agents. "If he is clever," he wrote, "and has learned his business, he is tempted away by high wages . . . and if induced to stay he immediately supposes that we cannot do without him and becomes an idle, impudent Rogue—*au contraire*, if he turns stupid, and incompetent for any situation, he is sure to remain upon our hands, and I can readily send you half a dozen of this sort." The management problem was severe, he reported, particularly around Worsley (in South Lancashire) where the collieries competed for agents—"and all look to our concern for Agents . . . and most unfairly tempt good men by enormous wages and other advantages and indulgences, to leave our Employ."⁴

Estate agents, therefore, were an *élite* in rural society. On the Leveson-Gower estates they were never mere cyphers. Lewis, for instance, was quick to take professional offence whenever the condition of the estates was subject to criticism.⁵ Another agent, William Smith, was prepared to trade arguments with Loch, and

told the Duke: "don't try a Scotch farmer—no good one will come unless he is bribed . . . Scotch agriculture and Scotch education were the best but I take it that the improved districts of England are ejecting them in that more varied course of agriculture which the climate aids them in. Pricey [?] states that Lincolnshire is before the best district in Scotland."—*Ibid.*, Loch to Morton, 7 Dec. 1817; Loch to Duke of Sutherland, 13 Jan. 1849.

¹ *Ibid.*, Loch to Lady Stafford, 11 Oct. 1816; Loch to Lewis, 11 Nov. 1818, 13 Nov. 1818.

² *Shrewsbury Chronicle*, 13 July 1815; S.C., D593/K, Loch to Fenton, 29 Nov. 1818.

³ *Ibid.*, Bradshaw to Loch, 1 July 1814.

⁴ *Ibid.*, Bradshaw to Loch, 20 Dec. 1824.

⁵ Loch was especially concerned about Lewis's health: "A due regard for your health . . . is I assure you quite compatible with the execution of your duty to his Lordship . . . go by gig . . . eat a little more animal food."—*Ibid.*, Loch to Lewis, 13 Nov. 1818.

they conducted a warm correspondence on the likely effects of Repeal. Loch was provoked into sharp criticism of the sceptical Smith, and directed him to read diligently, if not religiously, the weekly columns of *The Economist*.¹

V

In basic characteristics the Leveson-Gower estates carried many of the typical marks of west midland agriculture. Lilleshall, for instance, had a great diversity of soils, but was underlaid by a band of very compact, tenacious clay not far below the surface. This impeded drainage—a fundamental problem and a challenge to the improvers—but the inherent fertility of the soil “amply repays arduous ploughing”.² It was considered the most progressive part of Shropshire in the agricultural reports of the early nineteenth century. The “Agricultural Reporter,” Archdeacon Plymley,³ commented favourably on its general practice, and there is little reason to believe that conditions were particularly backward. But, by contrast, conditions were primitive on the westernmost extremity of the Lilleshall estate, the twenty square miles of swampy flats known as the Wealdmoors.

Heavy clay conditions were dominant at Trentham. In 1813 Loch gave his description (coloured by his own east Scotland experience) of the estate. Trentham consisted “principally of a stiff red clay upon a still more retentive bottom, of course very wet and full of rushes as no drainage has been done upon it to any effect until within the last five or ten years. . . The farms are about 160 to 210 acres English. The buildings [are] ill-placed and in a ruinous state. . . [there is] the difficulty of turning out and consolidating farms in England especially where the Family and Tenantry are both ancient.”⁴ Loch was not unaware of the conservatism and the social cohesion of the established order. The tenants were very good turnip and barley farmers but, said Loch, “they are very deficient indeed in the management of stiff soils.” On solution, he thought, was to bring in new tenants; but the real answer was drainage and superior methods in general. “The lighter soils in Shropshire are as well farmed as any in the Kingdom,” Loch told Lady Stafford, “the stiffer colder soil of which Trentham estate is composed and the bulk of Lilleshall estate . . . on the contrary, is farmed according to the same system which has prevailed for ages in England and nothing could be worse. They are quite unacquainted both how far their land can be improved, and how much it is capable of doing by way of active management, it is with difficulty I can get an adequate rent for it, while for the lighter soils anything might be obtained.”⁵

In 1820 James Loch published a substantial volume entitled *An Account of the Improvements on the Estates of the Marquis of Stafford*. Much of it was an elaborate ex-

¹ S.C., D593/K, Loch to Smith, 14 Nov. 1852. See also the advice of Loch to Smith on his appointment: “. . . keep your own counsel, . . . have little to do with convivial parties . . . the more you dine at home by yourself the better . . . practice your writing . . . have a little English Dictionary along with you. . .”—*Ibid.*, Loch to Smith, 23 May 1834.

² See E. J. Howell, *The Report of the Land Utilisation Survey of Britain: Shropshire*, 1941.

³ J. Plymley, *General View of the Agriculture of Shropshire*, 1803, p. 224.

⁴ S.C., D593/K, Loch to Dr Coventry (Professor of Agriculture, University of Edinburgh), 5 March 1813.

⁵ *Ibid.*, Loch to Lady Stafford, 29 Sept. 1816.

planation and justification of the controversial policies on the Highland properties. But it also dealt with the west midland estates. It painted a grim picture of conditions at the end of the eighteenth century. It may be that in an effort to do ample justice to the work that he had personally supervised Loch was led to exaggerate the deficiencies of the *status quo ante* the improvements. Quite explicitly he believed, that he had executed a long-overdue *coup de grâce* to an archaic feudal system entrenched on the Leveson-Gower lands. Drawing a parallel with the pre-clearance Highlands, he declared that it was remarkable that both the Scottish and the English estates of Lord Stafford "should have remained precisely in the same situation in which they had existed for at least two hundred years, and probably for a longer period."¹ The estates had retrogressed and had fallen "far behind the rest of the country in improvement, and produced a degree of delapidation in the condition of the buildings, and of exhaustion in the state of the land, beyond example."²

The peculiarly backward circumstances of the estates Loch attributed to tenurial impediments. The root cause, asserted Loch, was the leasing system instituted by the first Marquis of Stafford in 1755. In that year Lord Stafford had incurred very large expenses in the well-known electoral contest for Westminster.³ In his financial embarrassment Stafford had resorted to a quick short-term method of raising capital quickly. He granted every tenant on his estate a lease for three lives, in return for the payment of two years' rent in one. The long-term result was that the estates were tied up in leases into the nineteenth century. One-third of the Lilleshall estate was held on lease in 1813, and as late as 1833 a few farms were still on their original lease.⁴

James Loch was prepared to concede that, *prima facie*, long leases for lives held distinct advantages both for the tenant and for agrarian practice in general. But in reality that had not been the case.⁵ The land had been locked up in the hands of tardy tenants "during that period when the improvement of the country was going on with the greatest rapidity." Such, he claimed, had perpetuated a ruinous "rude state of society." Agricultural practice retained all the unfortunate features of continental Europe—scattered occupation, closes which were too small, crooked ditches, jarring and irreconcilable interests, poor communications, and a total want of

¹ Loch, *An Account of the Improvements on the Estates of the Marquis of Stafford*, 1820, pp. 173-5.

² Loch, 'Memoir'.

³ See Loch, 'Memoir'; S.C., D593, abstracts of Leases, dated 1755, and Sutherland Draft Settlements. References to the elections are found in L. Namier and J. Brooke, *History of Parliament, The House of Commons, 1754-1790*, 1964, I, p. 59; J. Grego, *A History of Parliamentary Elections and Electioneering in the Old Days*, 1886, ch. IV; J. Carswell and L. A. Drolle (eds.), *The Political Journal of George Bubb Dodington*, Oxford, 1965, p. 26 n. 1.

⁴ S.C., D593. Rentals indicate that the number of leaseholders declined from 138 in 1755, to 83 in 1796, to 60 in 1813, to 52 in 1817, and to 11 in 1829.

⁵ The Levenson-Gower experience may be taken to controvert the contemporary opinion (associated with Arthur Young and Nathaniel Kent) that "Leases are the first, the greatest and most rational encouragement that can be given to agriculture."—Quoted in R. A. C. Parker, 'Coke of Norfolk and the Agrarian Revolution', *Economic History Review*, 2nd ser., VIII, p. 158. Nor does this evidence give any support to O. R. MacGregor's interesting contention that the general switch to annual tenancies in the early nineteenth century was motivated by political considerations: R. E. Prothero, Baron Ernle, *English Farming, Past and Present*, Introduction to 1961 edn, p. cxxviii.

general drainage—"nothing could be worse than the course of culture pursued."¹ Compounding the landlord's dilemma, the land, at the turn of the century, was rented at one-third its true value. Yet, for all his indignation, Loch failed to explain the link between long leases and technical backwardness. The implication may have been that long leases offered too much security, and induced complacency, rather more than they encouraged tenant-initiated development. The agricultural reporter, Plymley, confirmed these notions—observing that leases increased indolence and were rarely beneficial.² His fellow reporter Bishton in 1794 noted of Salop that "Leases have of late years been much exploded by gentlemen of landed property, many of whom having granted (formerly) excessive long terms, have been induced by injury thereby to object to any lease."³

As leases fell in the estates reverted to annual tenancies. According to Loch the attitudes of the tenants were dramatically transformed: "the very same persons, immediately upon the expiration of their lease, have become . . . as active improvers as any upon the estates." More remarkably the tenants began to invest considerable capital in their land; and Loch drew the moral: "so distinct in general are [*sic*] mankind to active exertion and industry, unless they are forced to it by necessity."⁴

To the landlord of the late eighteenth century long leases for lives had two prime disadvantages—they obviously prevented him raising rents, and they hindered the introduction of the widening range of fashionable improvements which promised to enhance the future value of his estates. Rising agricultural prices and productivity doubled the frustration. Lord Stafford could undertake no general improvement of his west midland estates until a sufficient number of leases expired, which was not until the 1790's.

Leases fell in and were not renewed, but in many cases Lord Stafford hastened the departure of the old system by purchasing the leases before they expired. This was the moment for the consolidation of farms, rearranged into more regular and uniform shape.⁵ Rationalization had its casualties. Where an old tenant was removed he was given his house and garden, at a low rent according to Loch. There were some economies of scale: "two small farms will require a greater expense of building including houses and offices than one large one," as Loch explained in 1815. When at last a lease was acquired the rent was invariably raised, and sometimes doubled.⁶ The weather played its part in the demise of the old framework. "I am sure,"

¹ Loch, *Account*, pp. 173-7. ² Plymley, *op cit.*, pp. 127-37.

³ J. Bishton, *General View of the Agriculture of the County of Salop*, 1794. ⁴ Loch, *Account*, pp. 176-7.

⁵ In 1820 Loch rehearsed the classic arguments in favour of large farms: "... it is from large farms alone that a surplus produce can be obtained for the maintenance of our artisans and manufacturers . . . there is as little doubt that such an arrangement also rather increases than diminishes the agricultural population of the country. Nor can there be much hesitation in admitting that a sober, well-doing farm labourer feels less want and experiences fewer hardships than the poorest class of tenants, formerly the occupiers of the soil."—Loch, *Ibid.*, p. xii. It was "the constant, invariable and necessary progress of society."—*Ibid.*, p. 178.

⁶ It is possible to compile a case-history of one of the original leases on the Lilleshall estate from the rentals, namely that of John Rider of Crudgington. In 1755 he took a lease for three lives covering 104 acres at an annual rent of £39. He died in 1777, but his successor continued to pay £39 in 1796. Eventually the land came into the hands of Thomas Rider who was still paying £39 in 1816, but meanwhile he had acquired a further 84 acres at will, rented at £105. In 1816 the lease expired whereupon the rent on the original acres rose to £300.

Lewis wrote to Loch, "you are not displeased at so many leases dropping as the winter has begun pretty severe, I hope it will carry a few more off."¹

It was Loch's opinion that the tenants themselves were against leases and he believed that "the confidence which has subsisted for generations between his Lordship's ancestors and his tenants is a much finer thing to depend upon and much more effectual in securing extension from the tenants than I ever saw leases produce."² After twenty-five years, in 1842, a sub-agent reported that the tenants had no desire for leases; they were completely confident of their tenurial security, and the evidence was that leases would not induce any more tenant-improvement than would rack-rents. This verdict was strongly sustained by *The Times* reporter, James Caird, in 1850. Generally in Staffordshire he found that farmers had little thought for leases, even where they were offered.³

The reversion to annual tenancies was accompanied by the re-establishment of the old division of function between landlord and tenant. For twenty years Lord Stafford had been prepared to take over responsibility for most capital outlay on permanent improvements. The tenants were responsible for the upkeep and for current expenditure. "The attention and capital of the landlord," wrote Loch, "should be bestowed upon the permanent improvements which, in their execution, would withdraw too large a portion of a tenant's capital from the cultivation of the land . . . this is the Landlord's proper line of duty, and well suited to his station and position in society."⁴ More than that, it was an article of faith, a part of the intellectual and moral justification for the existence of the aristocratic landlord. Such a function, however, was difficult, if not impossible, to perform in a regime of leases. After 1803 Lord Stafford increasingly ploughed his own capital into land, particularly in the form of drainage improvement.

The estates' managers were convinced that improved drainage was "the most important of all improvements," the answer to most of the technical and economic problems of the wetlands. Landlord capital was employed to construct the great lines of drainage ditches across the estates. The local details, the lesser connections, and maintenance were deemed the responsibility of the tenants. The most ambitious and costly of Lord Stafford's undertakings was the Wealdmoor drainage scheme at Lilleshall. Wild, overgrown, marshy, mediævally backward, the Wealdmoors were the subject of an Act in 1801 for the revitalization of the area.⁵ Loch wrestled with rising expenditure on the project which was not completed until 1820. Technically, and in the long run economically, the Wealdmoor improvements were successful.

¹ S.C., D539/K, Lewis to Loch, 21 Dec. 1819. Pressure was also applied. In 1828 one leaseholder was told that "when his lease drops he must quit . . . I told him so before when I offered to purchase his lease for Lord Stafford, which I will not do now."—*Ibid.*, Loch to Lewis, 5 Nov. 1828.

² In December 1817 Loch noted that the tenants had been offered leases a few years previously but "the general feeling of the tenants was against them and the thing was dropped." He did not mention the terms of the leases so offered.—S.C., D593/K, Loch to Morton, 7 Dec. 1817.

³ S.C., D593/K, Smith to Loch, 29 Dec. 1842; Caird, *op cit.*, letter xxviii. ⁴ Loch, *Account*, App., p. 102.

⁵ See the vivid description of conditions in the seventeenth century by George Plaxton in *Philosophical Transactions*, xxv, 1673. Generally see M. Hill, "The Wealdmoors", *Trans. Shropshire Antiq. Soc.*, lrv.

Tenant capital was also committed to the attack on the wetlands. It was general in the west Midlands, certainly by 1850, for the landlord to provide the drainage tiles while the installation was left to the tenant. At certain times tenants were relieved of rent arrears if they executed a proportion of drainage work under the supervision of an agent. Lord Stafford's agents and tenants were positively encouraged to employ parish labour during poor years. In 1823 Loch wrote: "As the prices are rising and the rent payable by the tenants is very low, it is a good opportunity of imposing upon them some draining and ditching which must be done."¹ At times, employment on agricultural improvements operated in a quasi-contracyclical fashion. It was a deliberate policy that, when labour was cheap, drainage work should progress, while dear labour conditions reduced the speed of execution. Thus, in 1845 an agent reported: "I find we shall not be able to get on so fast with the underdraining this winter owing to trade being so much better and wages higher, many of the labourers are going into the mining districts of Staffordshire where . . . they are getting 3/6 to 4/6 a day."² The proximity of the industrial areas of the Midlands had complex repercussions on local agriculture.

Consolidation of small farms and drainage were complemented by other improvements. Lord Stafford had spent more than £60,000 on farm buildings and offices by 1820.³ Rigorous efforts were made to introduce better rotation practices, and the return to annual tenancies made the enforcement of approved rotations a good deal easier. Erring tenants were severely admonished and sometimes evicted. In Loch's view overcropping was the evil of the times; too much land had been put under the plough during the war; this had reduced yields but by 1820, he said, "the evil had begun to right itself." Stafford had helped by introducing a six-course rotation, deep ploughing, and new tenants to manage the difficult land. Sir John Sinclair gave his approval to the cross-fertilization of English and Scottish ideas in the agricultural practice of the estates. The use of red clay marl was prohibited, and parish labour was employed to level the old marl-pits. A plough maker was brought in to the estate, "not only to afford a good article for the farmers but to improve the artisans of the country." Bone dust and guano were introduced at an early stage to Shropshire. Inter-estate ploughing matches were promoted to encourage rivalry in efficiency and also in the use of the Scottish two-horse plough.⁴ Clearly the landlord was a most active agent for technical innovation in many directions: he was far from being a passive *rentier*.

When James Loch took over Lord Stafford's improvement schemes in 1812, a Scottish colleague told him that his plans were bound to be crowned with success: "you have both proprietor and tenants on your side with discernment and liberality, you have soil, climate and all materials requisite for bringing the land into the highest state of cultivation, the people have capital and seem only to have stood in

¹ S.C., D593/K, Loch to Lewis, 24 Dec. 1823. ² *Ibid.*, Smith to Loch, 7 Nov. 1845.

³ Loch, *Account*, p. 180.

⁴ S.C., D593/K, Loch to Jukes, 12 May 1813; Sinclair to Loch, 13 Aug. 1813; Loch to Heathcote, 6 Nov. 1819; Lewis to Loch, 4 Sept. 1834, 18 Nov. 1818, 29 May 1816, 10 May 1833.—Loch's questions in *First Report from the Committee appointed to inquire into the State of Agriculture*, B.P.P. III, pt 1, 1836.

need of such a person as yourself, to set them in motion."¹ Loch, as a matter of professional pride, intended to raise Lilleshall to the status of model estate: "the boundary of the estate will be distinctly marked by its superiority over all the neighbourhood."² Among the tenants he wishes to create "a community of feeling ... a sort of *Esprit du Corps* ... to give them a pride of being Lord Stafford's tenants."³ The improvements would show their full value, said Lewis to Loch, "when you and I are no longer"—they were establishing the "foundation for a future increase."⁴

Possibilities of both *esprit du corps* and rent increases receded in the 1820's and 1830's. The estate managers had to reconcile themselves to the fact that "the fall in the price of corn and the general distress of the agricultural interest" frustrated rent increases. As early as 1814 Loch acknowledged that the low price of grain and the current debate on the Corn Laws had produced a good deal of uncertainty concerning the future course of rents. Loch said that "upon the whole I do not dread the fall of rents as others do, but no set of men cry so loud or so soon as the farmers and none have so little reason if they have been at all economical for some years past. Their profits must have been very great."⁵ In 1815 he pointed out to a tenant that although corn prices had fallen, so also had the price of labour and the burden of the property tax. No rent reduction could be contemplated since "the high price of one year must go to make up for the low prices of another."⁶ But in the same year Lord Stafford promised his tenants that rents would be reduced when wheat prices fell below 9s. the Winchester Bushel. The *Staffordshire Mercury*⁷ thought this capricious and equivocal, "an ungracious way of doing an act of common justice," since the Corn Bill and the anticipated renewal of war rendered such a price-fall unlikely. A further decision was delayed: there were plenty of tenants willing to take over vacant farms, and in 1816 it was said that "there has been comparatively speaking no distress felt in Shropshire or Staffordshire except in Stock which has fallen absolutely to nothing."⁸

The situation of agriculture deteriorated more seriously in 1819. Lewis reported that there was no demand: "farmers are again beginning to hang their heads, and many of our Shropshire tenants have still their last year's crop by them."⁹ James Loch was rather less touched by their plight: he blamed them for their greediness, for speculating on the grain market: "the farmer is never satisfied with the existing prices, and holds on and on against all reason and probability of success, and always loses in the end. . . Any man who did not sell [i.e. earlier in the season when prices were higher] deserves to lose and I can in no way pity him."¹⁰

As late as 1820, despite mountainous rent arrears, Loch continued to procrastinate

¹ S.C., D593/K, Young to Loch, 7 Feb. 1813. (He drew a contrast with the Highland estates.)

² *Ibid.*, Loch to Lord Stafford, 30 May 1818.

³ *Ibid.*, Loch to Lord Gower, 4 May 1813; Loch to Ford, 10 Feb. 1813.

⁴ *Ibid.*, Lewis to Loch, 4 May 1813. ⁵ *Ibid.*, Loch to Firchild, 12 Oct. 1814; Loch to Gower, 26 May 1814.

⁶ *Ibid.*, Loch to Duncalfe, 9 Jan. 1815. ⁷ *Staffordshire Mercury*, 25 March 1815.

⁸ S.C., D593/K, Loch to Stafford, 7 Nov. 1815; Loch to Sellar, 3 May 1816; Loch to Dean of Lichfield, 2 May 1816; Loch to Firchild, 13 Dec. 1815, 29 Dec. 1815.

⁹ *Ibid.*, Lewis to Loch, 31 May 1819. ¹⁰ *Ibid.*, Loch to Lewis, 2 June 1819.

nate on the question of rent abatement, but he did sanction a delay of audit. He told one tenant: "though you have borne the pressure of some unfavourable seasons, yet you had the full benefit of all the best years . . . previous to the fall in the prices without the landlord participating in the benefit"¹—that is, before Stafford had been able to raise his rents and take his increment of rising agricultural incomes.

In 1821 Loch was forced to relent: he conceded that the tenants could not pay their rents without "encroaching upon their capital which if it goes on must soon bring them down and the condition of the land together." He was prompted by Lewis who believed that the farmer must be assisted "before his own funds and capital are entirely exhausted." Farmers in the west Midlands, even Stafford's tenants, were no longer exempt from the full rigours of the depression. Loch had investigated the policies of Coke, Lord Lauderdale, and the Dukes of Norfolk and Bedford. His conclusion was that landlords could not hold out any longer, and he recommended an immediate rent reduction of 10 per cent. He comforted Stafford with the thought that "as there is a proportional fall in the value of every other article of consumption, a fall in the rentals of land will in its effect be more nominal than real."² Within a few months a further crisis occurred as the corn market tumbled, and a permanent rent arrangement became imperative. Grain rents were instituted and, apparently, the tenants approved: Lewis observed, "Lord Stafford's arrangements are universally approved of and his health drunk in every company as the best landlord in England."³

Loch explained the system to the Scottish worthy Dr Thomas Chalmers. The rents were based entirely upon wheat, since oats, barley, and dairy prices had moved in unison. The rents would fluctuate with the price of wheat: 80s. a quarter was judged to be the break-even level of prices for the farmer. Loch gave Chalmers his own analysis of the national agricultural situation. "Parliament," he wrote, "can and ought to do nothing." The "mischief" proceeded from several causes: the alteration of the value of the currency, the effects of three abundant crops, a diminished consumption of wheat, an inflow of Irish grain, excessive taxation, high rents, and the failure of landlords to make abatements, the diminution of tenants' capital, and "from the cultivation of much bad land which can only pay from exorbitant prices." Agriculture, he asserted, had no more claim to government assistance than the mercantile or manufacturing communities. The general problem would solve itself—poor land would go out of cultivation, land would be sold at enormous losses, and those left would be compelled to accept lower profits. Government interference would be foolish: "if you try to bolster it [agriculture] up by raising the price of corn you destroy our manufactures."⁴

¹ S.C., D593/K, Loch to Picken, 23 Nov. 1820.

² *Ibid.*, Loch to Stafford, 3 May 1821; Loch to Lewis, 24 June 1821; Lewis to Loch, 18 Feb. 1821.

³ *Ibid.*, Loch to Lewis, 26 Sept. 1821, 5 Dec. 1821; Lewis to Loch, 13 Sept. 1822.

⁴ *Ibid.*, Loch to Chalmers, 24 Jan. 1822. Parliament ought not to provide relief: "If it does it may postpone the evil, it cannot cure it, it may put off the crisis, but only to make it the worse." Bad land would go out of cultivation, and many farmers would lose money. The government should concentrate on the "strictest and most rigid economy."—*Ibid.*, Loch to Sinclair, 2 Feb. 1822. Loch believed that the prices of 1812–13 were freakish and would never return.

Loch was well aware of the varied incidence of the depression of prices in Britain. It was "a crisis of no ordinary nature," but, he said (in agreement with modern historical writing), it mainly affected "the worse parts of England," especially where the landlords had overcommitted themselves or continued to overcharge their tenants. Acute crisis was unlikely to spread to Stafford's west midland estates: "The heavy lands alone can at any time be in this situation, it is a great object therefore to get good tenants for such land, and to bear less heavily upon them." In the early 1830's Loch believed that the time had come to stiffen the attitude towards rental policy: reductions would be carried no further, and all abatements were to depend upon the tenant performing improvements.¹

The Leveson-Gowers considered a substantial diminution of the corn law's protection virtually inevitable, and not at all an unwelcome prospect. As early as 1842 Loch warned his agents to prepare for a further "relaxation in a short time." By preparation he meant increased efficiency, better rotations, and, as always, better drainage, and the agents were instructed to study closely the agricultural publications of the day.² Foreign competition would be most formidable for the heavy lands and "to their improvement attention must be directed." It was the south of England that was vulnerable, where wetlands had "been badly cultivated and have fallen into the hands of an unskilled and impoverished tenantry."³ The second Duke of Sutherland supported Repeal and he believed that, in the fullness of time, it would actually aid English agriculture.⁴ Nevertheless some of his Salopian tenants were less sanguine, many of whom thought they could not escape ruin; although others thought that immediate Repeal (in 1846) would end the suspense which was their main complaint.⁵ In Staffordshire the tenants took comfort from the operation of the corn rents system which meant that they would be "less likely to lose if a fall of prices should take place."⁶

It was, of course, widely held that drainage and farming "high" were the answers to the anticipated effects of Repeal. Landlords received government assistance by way of the Public Monies Drainage Acts. Even before the Acts, the Duke of Sutherland had offered his tenants drainage improvements if they would agree to pay 5 per cent interest, but the response had been poor because they preferred a tile allowance.⁷ In 1847 Sutherland applied for £35,000 for drainage from the Inclosure Commissioners: this enabled him to reduce his own expenditure in the west

¹ *Ibid.*, Loch to Gower, 9 Nov. 1829; Lewis to Loch, 13 May 1830; Loch to Lewis, 17 July 1830. The general impact of the depression in the west Midlands was cushioned by the buoyancy of local urban demand, by capital improvements, and by productivity improvements. The evidence of an Oswestry farmer, Samuel Bickerton, to the Committee appointed to inquire into the State of Agriculture (B.P.P., 2nd Report, April 1836) gives a relatively optimistic account of local conditions. He particularly stressed the good credit-availability to farmers facilitated by the joint-stock banks. (p. 239). On wage levels, see R. W. Sturgess, 'A Study of Agricultural Change in the Staffordshire Moorlands, 1780-1850', *North Staffordshire Journal of Field Studies*, 1.

² S.C., D593/K, Loch to Smith, 7 March 1842.

³ *Ibid.*, Loch to Smith, 10 March 1842; Smith to Loch, 7 March 1842.

⁴ *Ibid.*, Morton to Loch, 18 Jan. 1846. J. Barron, *The Northern Highlands of Scotland in the Nineteenth Century*, 3 vols., Inverness, 1903-10, III, p. 94.

⁵ S.C., D593/K, Smith to Loch, 5 March 1846; *Records of Protection to Agriculture and Native Industry and Autograph Letters*, a volume in Borough Library, Shrewsbury.

⁶ S.C., D593/K, Steward to Loch, 5 March 1846. ⁷ *Ibid.*, Loch to Duke of Sutherland, 8 Jan. 1845.

Midlands in favour of more expenditure on his Scottish estates.¹ It was a time when the Duke found it difficult to reconcile Peel's idea of increasing expenditure on real improvements with Loch's demands for retrenchment.

Concurrently the tenantry was encouraged to plough its own capital into the permanent improvement of the land. Increasingly, and despite Caird's declarations,² Loch realized that a more formal acknowledgement was required for the compensation of departing tenants. In 1859 compensation clauses were written into the new farming agreements on the Sutherland estates.³ In a way it reflected the very gradual shift of emphasis from landlord to tenant capital in the progress of improvement in agriculture.

VI

James Caird visited Lilleshall and Trentham in 1851. He observed that the tenants, occupying somewhat small farms on cold, difficult soil, made rather less complaint than other Staffordshire farmers. He offered fulsome praise to the extent and quality of the improvements he saw, but he suggested that the Lilleshall estate had advanced further than Trentham.⁴ The Trentham estate agent was piqued and suggested that Caird's investigation had been superficial—"we know he saw very little here." Loch, however, sprang to Caird's defence. He was a "shrewd, clever, observing man . . . of reserved and unobtrusive manner," and his verdict had been perfectly correct.⁵ Loch was much gratified to have Caird's *imprimatur* on the schemes of improvement he had directed for almost forty years.

The improvements on the English estates, which Loch claimed had "absorbed the whole of the free rents,"⁶ between 1803 and 1833, reaped their returns mainly in the years after 1840. Certainly by the 1850's conditions had changed. For instance, Lilleshall was said to be "the lowest rented estate in England" and that therefore arrears were altogether inadmissible. Rental income rose more firmly. Rotation requirements were relaxed a little. Another sign of change was an increasing prevalence of leases which complemented the changing attitude towards compensation.

The west midland estates had weathered the depression of prices: the proximity of large urban markets no doubt helped, as did the relatively diversified character of agriculture. Among the influences should be counted the adjustments made by the farming community in terms of productivity and costs. Landlord initiatives by way of improvements and rent reductions were positive forces.⁷

It is sometimes suggested that by mid-century English agriculture was over-capitalized, and that the great landowners were in effect subsidizing agriculture. Undoubtedly profits turned out to be lower than alternative investments in some

¹ S.C., D593/K, Loch to Steward, 5 Feb. 1847. ² Caird, *op. cit.*, letter xxviii.

³ S.C., D593/K, George Loch to Smith, 10 July 1856; Smith to George Loch, 14 Dec. 1859.

⁴ Caird, *op. cit.*, pp. 229 f.

⁵ S.C., D593/K, Loch to Smith, 25 Jan. 1851; Smith to Hinkley, 14 March 1856; G. Loch to Smith, 14 July 1856.

⁶ See above, section III.

⁷ Not excluding the assistance given to farmers to reduce arable acreage on least suitable soils. See Loch, *Account*, p. 195.

branches of industry and commerce. The "Leviathan of Wealth" conformed to this pattern. But, in part, the argument is founded upon hindsight. The landed interest in the early nineteenth century, without perfect prescience, had little reason to fear for the long run. Any landowner confident of the permanence of the corn laws, and resting his future on Ricardian assumptions concerning rent, invested in his land with reasonable expectations.¹ Certainly in the case of the Leveson-Gowers the horizons of profit expectations were very long, and their agricultural investments were not irreconcilable with notions of profit maximization.

The criteria of aristocratic investment in agriculture were complex. The Leveson-Gowers—with the strongest prompting from James Loch—held a high propensity for investment in land for social reasons. They rationalized their outlays in terms of social prestige and economic security: land was safer even than consols. Loch put the matter clearly enough in December 1820 when he told Lord Stafford that "Land is best, for in this country whatever may happen that will be safe."² But "Leviathan of Wealth" was not typical. The family in fact invested in a great range of activities. In the half-century before 1830 the family had invested in canals, railways, consols, iron, and coal, roads, American stock, and in many disparate enterprises on its estates in Scotland and England. But after 1830 the commitments of the Leveson-Gowers turned inwards, towards the original landed foundations of the family's position. On their west midland estates their investment in agriculture *per se* was partly counterbalanced by undisciplined expenditure on the great houses at Lillishall and Trentham. The priorities of the family effectively channelled their funds into their landed estates and into aristocratic consumption.

But "improvement" raised many more questions than the mere return on aristocratic capital. The social consequences of such single-minded rationalization of rural life were the transformation of the foundations of rural life and a changing role of the noble family in west midland society.³ In broader terms, it is now widely recognized that the great landed proprietors contributed substantially to the process of economic growth in the industrial revolution.⁴ This recognition ought not to obscure the fact that such a distribution of wealth also diverted resources into investments (e.g. country seats, the overcapitalization of agriculture) which, on most definitions, were hardly optimal in any national sense. The "Leviathan of Wealth" contributed strongly to this distortion of the economic system.

¹ Conversely, in times of uncertainty, land might be regarded as the most stable of assets. Loch epitomized these attitudes in 1819. He told Lord Stafford "... In these times it appears to me that land is far the best security to possess. I am no alarmist but it is impossible as it appears to me for any person to look at the present temper and condition of the times without much anxiety and disquietude. ... I firmly believe that the great landed proprietors will suffer less whatever happens to the funds."—S.C., D 593/K, Loch to Stafford, 9 Nov. 1819.

² *Ibid.*, Loch to Stafford, 11 Dec. 1820.

³ See my forthcoming paper 'The Social and Electoral Role of the Trentham Interest, 1800–1860', *Midland History*, 1974.

⁴ See, for instance, the volume edited by J. T. Ward and R. G. Wilson, *Land and Industry*, Newton Abbot, 1971.

Metrological Analysis of Regular Village Plans in Yorkshire¹

By JUNE A. SHEPPARD

IN recent years, considerable light has been thrown on the origins and evolution of Scandinavian row villages of regular plan (*radby*) by the employment of the techniques of metrological analysis.² This involves identifying the dimensions of village tofts and field units shown on seventeenth- and eighteenth-century maps, and the interpretation of these dimensions in terms of multiples of ancient units of measurement. Since Yorkshire resembles Scandinavia in having many villages with regular layouts, about the origins of which little is yet known, it seems worth exploring the value of metrological analysis in an English context.

The basic premiss is that regularity is unlikely to have arisen by chance and that it therefore almost certainly represents an element of deliberate planning in the layout. The aim is to discover the date (or dates) of the planning and the principles on which it was based. The first part of the paper is concerned with the units of measurement used and any light these may throw on the problem; the second part deals with the relationships between dimensions and medieval fiscal assessments.

MEASUREMENTS

Statute land measures were definitely in existence by 1305,³ and it is likely that the process of standardization started in 1197 when standard weights and measures, including iron *ulnae* for measuring cloth, were distributed to royal officials in all boroughs.⁴ It was during this period that the statute foot replaced the traditional foot measures, of which four seem to have been used in England and Wales. The Greek common foot of 12.47 statute inches and the Roman foot of 11.65 statute inches are thought to have been used especially for building measurement, whilst the Pythic or natural foot of 9.9 statute inches and the northern foot of 13.2 statute inches were employed for measuring both buildings and land.⁵ The natural foot is said to have been associated especially with Celtic peoples, and it was certainly used in Wales; the parts of England where it is most likely to have been employed are the

¹ I am indebted to B. K. Roberts for discussions about this work at all stages in its preparation and to Mrs P. Tillett for drawing the figures. I am also grateful to the Department of the Environment for allowing me to examine R.A.F. vertical air photographs of the villages described, and to Queen Mary College (University of London) for a grant towards the cost of illustrations. The article was originally presented as a paper at a Conference in Durham on "The Regulated Village" in September 1972.

² E.g. D. Hannerberg, 'Solskifte and older methods of partitioning arable land in Central Sweden during the Middle Ages', *Annales de l'Est*, memoir no. 21, Nancy, 1959, pp. 245-59; S. Göransson, 'Field and village on the island of Oland', *Geografiska Annaler*, XI, Stockholm, 1958, pp. 101-58; S. Göransson, 'Village planning patterns and territorial organization', *Acta Universitatis Upsaliensis*, Uppsala, 1971; S. Helmfrid, 'Östergötland "Västansång"', *Geografiska Annaler*, XLIV, 1962; F. Hastrup, *Danske Landsbytyper*, Aarhus, 1964.

³ C. M. Watson, *British Weights and Measures*, 1910, pp. 36-9.

⁴ W. H. Prior, *Notes on the Weights and Measures of Medieval England*, Bulletin de Cange, Paris, 1924, pp. 22-3.

⁵ F. G. Skinner, *Weights and Measures*, 1967, p. 93.

north and west. The northern foot was used especially by Germanic peoples, and it is thought to have been the most common unit in southern and eastern England. The convenience of having royal standards to which to refer may have led to a rapid replacement of these traditional units by the statute foot of 12 inches during the thirteenth century.

The other principal medieval land measure was the rod, pole, or perch, which also varied in length, being longer in northern than in southern districts.¹ Although the statute perch of $16\frac{1}{2}$ statute feet (= 15 northern feet) was established by 1305, in the case of this unit the customary lengths of northern England were retained for many centuries, although redefined in units of statute feet.² Hence, whilst the actual length of the foot changed during medieval times, the actual length of local perches did not.

In respect of lengths of perches, Yorkshire falls clearly into the northern region. The lengths mentioned in medieval land records range from $17\frac{1}{2}$ to 24 feet,³ with most references being to perches of 18 feet and 20 feet. Although it was not specified that these were statute feet, it seems reasonable to assume that they were, in view of the consistency between these dimensions and those mentioned in later sources. These perches are likely to have been made up originally of whole unit multiples of either the natural foot or the northern foot, but it is not immediately clear which of these two units prevailed in the county, since one of the common lengths, 20 statute feet, is equivalent to 18 *northern* feet, whilst the other, 18 statute feet, does not have an integer equivalent in northern feet but does comprise exactly 22 *natural* feet. It seems feasible, therefore, that both natural and northern units were used in the county prior to the thirteenth century and that a different length of perch was associated with each.

In this context, a hint of a possible earlier history of measurements is provided by an analysis of the interior dimensions of the twenty-five Yorkshire churches of pre-1100 date listed by H. M. and Joan Taylor.⁴ In twenty out of the twenty-five at least one dimension can be interpreted as representing an integer multiple of natural feet. Of the five exceptions three are in the towns of York and Ripon; four appear to have been measured in common feet, and only in the late-Anglo-Saxon church of St Mary Bishophill Jr in York does the northern foot appear. A tentative interpretation of this pattern of distribution is that the natural foot and its associated perch (18 statute feet) were the indigenous measurement units of the Yorkshire countryside from at least dark-ages times; the common foot was used mainly in the towns, whilst the northern foot may have been a relatively late arrival, introduced first into the city of York. In view of the apparent association of the northern foot with the 20-foot perch, it seems feasible that the latter came into use in Yorkshire later than the 18-foot perch. This possibility, together with its convenient size, makes the perch the most suitable unit for use in metrological analysis.

¹ F. Pollock, 'A brief history of Domesday', *Eng. Hist. Rev.*, xi, 1896, p. 218.

² *Second Report of Commissioners for Weights and Measures*, B.P.P. 1820.

³ Lengths extracted principally from monastic chartularies and Yorkshire Archaeological Society Record Series volumes.

⁴ H. M. and Joan Taylor, *Anglo-Saxon Architecture*, Cambridge, 1965. Recent excavation under York Minster has shown that the interpretation of St Peter's requires revision.

The system of reckoning in medieval Yorkshire was predominantly octonal or duodecimal. Landholdings were measured in oxgangs (bovates) and ploughlands (carucates), with 8 oxgangs making 1 ploughland. The fiscal assessment recorded in Domesday Book used the same units, and J. H. Round was able to demonstrate how townships were frequently grouped to form "hundreds" of 12 carucates.¹ The long hundred of six score was extensively used. Alongside the standard currency units of 12 pence to 1 shilling and 20 shillings to 1 pound, in Yorkshire the mark and its eighth part, the ora, were widely used in accounting.² The several composite manors valued in 1066 at £12, £24, £32, £40, and £56 also suggest reckoning in multiples of £8 and £12.³ The origins of octonal and duodecimal reckoning are not clear; oxgangs and ploughlands, marks and orae were probably introduced by the Scandinavians,⁴ but other European peoples had systems that were at least partially octodal or duodecimal.⁵ It is therefore likely that the Scandinavian influence merely re-enforced an existing tradition of reckoning. In view of the existence of this pattern, however, it seems reasonable to anticipate that other measurements, such as linear ones in perches, with which we are here concerned, will also tend to occur in multiples or factors of 8 or 12.

The maps from which the measurements were taken were the sheets of the Ordnance Survey, 1st edition, 1:2,500, surveyed and published in the 1880's and 1890's. These offered three main advantages over other possible sources such as tithe maps of the 1840's, enclosure maps of the late eighteenth and early nineteenth centuries, and estate maps of the seventeenth and eighteenth centuries: there was a complete cover of the county; the standard of accuracy was high; and the scale was large and consistent. The late date of the maps has certain disadvantages, for internal changes, such as the enclosure of greens, the division of some plots and the amalgamation of others, and the expansion of the built-up area, were not uncommon during the eighteenth and nineteenth centuries. In a few villages where detailed seventeenth- or eighteenth-century maps are available, however, comparisons suggest that the changes were rarely fundamental.⁶ It therefore seems likely that the main elements of pre-enclosure village plans can be identified on these late-nineteenth-century maps.

The regular villages of Yorkshire have the form of rows of tofts and crofts (hereafter together called tofts), facing a fairly straight street or narrow green, or in a few cases a green that is more nearly square. In addition there are some more complex plans comprising rows of tofts lying at angles to one another, and sometimes having more than one green. The church and the manor-house (or its former

¹ J. H. Round, *Feudal England*, 1895, pp. 79-80.

² J. Hunter Blair, *An Introduction to Anglo-Saxon England*, Cambridge, 1962, p. 295; R. Weldon Finn, *An Introduction to Domesday Book*, 1963, p. 226. It is not clear, however, how distinctive Yorkshire was in this respect.

³ F. Brooks, *Domesday Book and the East Riding*, East Yorkshire Local History Series, no. 21, 1966, pp. 38-9.

⁴ H. R. Loyn, *Anglo-Saxon England and the Norman Conquest*, 1962, p. 132; R. Lennard, 'The origin of the fiscal carucate', *Econ. Hist. Rev.*, 1st ser., xiv, 1944, pp. 51-63.

⁵ E.g. the Romans, O. A. W. Dilke, *The Roman Land Surveyors*, Newton Abbot, 1971, p. 52.

⁶ Especially clearly demonstrated by a plan of Kilham village (East Riding), c. 1725, on a scale of 4 chains to an inch, in the East Riding Record Office, DDD V/12/53.

site) are frequently located at the ends of the rows or detached from them. On initial consideration three dimensions seemed to be suitable for measurement: the width of the village street or green; the depth of toft rows; and the length of toft rows. In practice the last of these gave rise to problems, for in a number of cases rows appear to have been subsequently extended, and the decision as to where measurement should begin or end becomes extremely difficult. Only where both ends of a row abut upon a lane, a stream, or some other permanent feature, or where a sudden change of depth occurs, can a reliable measurement of length be taken. In view of this it was decided to omit row lengths from the initial stage of analysis.

Although the measurement of the widths of streets or greens and of the depths of rows gave rise to fewer problems, certain decisions had to be taken that require justification. In the first place, few streets or greens are of exactly the same width throughout, and the same applies to the depth of toft rows, yet for purposes of analysis a single dimension only was required for each. Where the change of dimension was consistently in one direction, as in the case of a wedge-shaped green, or where the same dimension occurred only twice, as in a spindle-shaped green, no figure was recorded for analysis. Where the variation was around some norm, however, and the width or depth fluctuated from just below to just above this figure, with a range of less than 0.25 inch on the 1:2,500 map (about 52 feet), then the norm was taken as the measured dimension. A second decision was that, in those villages where a green had been enclosed to form front gardens, the building frontage lines were taken to represent the former boundaries between green and toft rows.

The measurements of green or street breadths and of toft-row depths were taken from a sample of 100 villages of regular layout. Since any classification of plans by visual inspection is bound to be to some extent subjective, only three broad plan groups were identified in Yorkshire: those where the plan is dominated by regular elements; those where both regular and irregular elements are significant; and those with predominantly irregular elements. The sample formed 48 per cent of the villages classed as regular and 14 per cent of all villages in which regular elements are present. It was not a scientifically selected sample owing to practical problems of access to maps; nevertheless, the large proportion it forms of the total number of regular villages suggests that confidence can be placed in the validity of the results.

For the two selected dimensions, diagrams were constructed to show the frequency with which particular lengths were recorded, to the nearest 0.05 inch (10.4 feet). Peaks of frequencies may be presumed to represent commonly used multiples of the basic unit or units of measurement; since the latter are most likely to have been the 18-foot or 20-foot perches, scales of these are added to the frequency diagrams. Of the seventy recorded breadths of streets and greens, sixty-four are under 160 feet. Fig. 1 shows four peak frequencies, of which the first two could represent two and four multiples respectively of either of the perches, although the 18-foot perch appears to offer the close fit. The third and fourth peaks coincide with six and eight perches of 18 feet, rather than with any likely multiple

of 20 feet. The implication is that the 18-foot perch in multiples of 2, 4, 6, and 8 was the principal unit used in laying out regular streets and greens, although the 20-foot perch may have been used in a minority of cases.

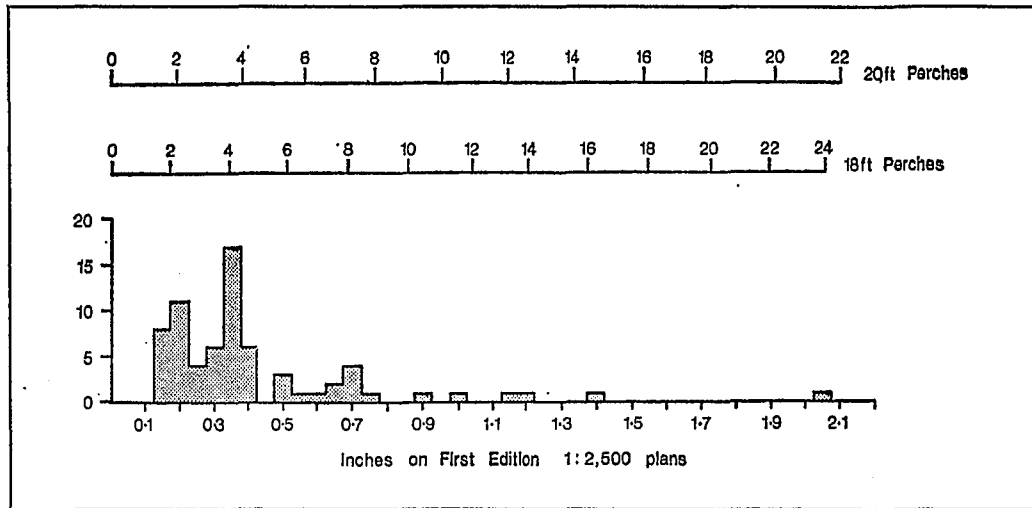
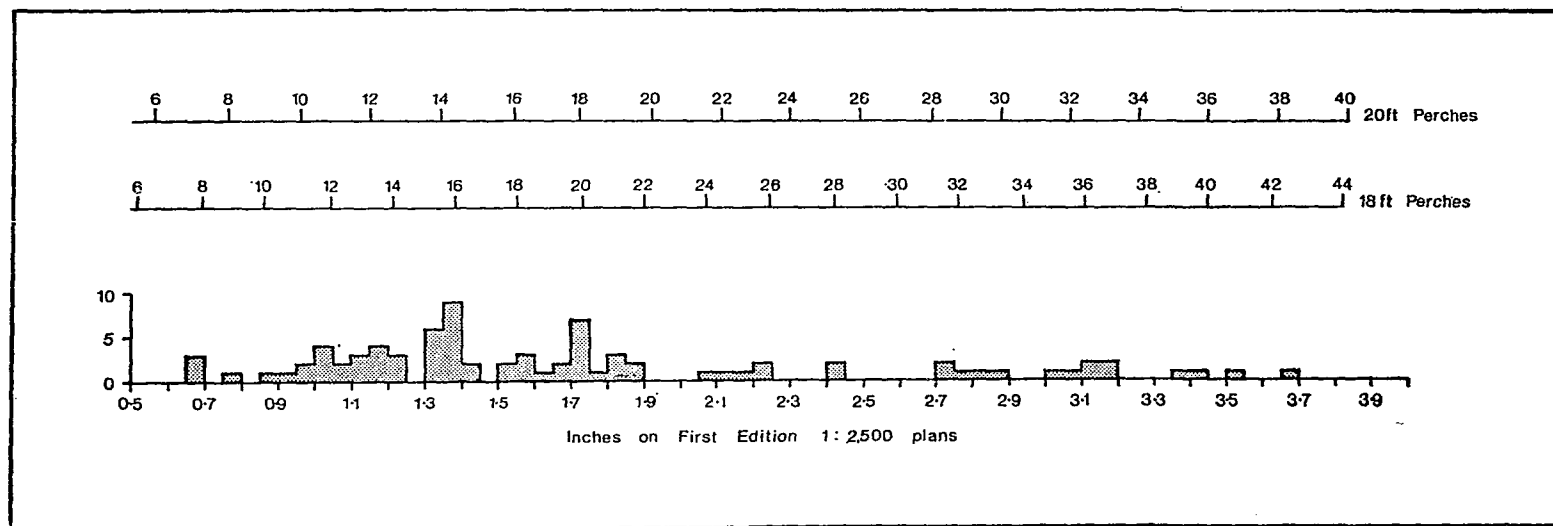


FIG. I

The number of sample streets or greens of different breadths as measured on the Ordnance Survey, 1st edition, 1:2,500 plans, together with scales of 18-foot and 20-foot perches.

The range of row depths is greater, and fig II shows the depths of the eighty-four rows in the sample that are less than 4 inches (about 833 feet) in depth. Fifty-four, or 65 per cent, are between 200 and 400 feet deep. Some frequency peaks coincide closely with significant multiples of 18 feet, i.e. 8, 12, 16, and 20. Other peaks could represent multiples of either perch, e.g. 12 times 20 feet or 14 times 18 feet; 16 times 20 feet or 18 times 18 feet; 32 times 20 feet or 36 times 18 feet; and one minor peak appears to equate with 8 times 20 feet, rather than with any significant multiple of 18 feet. The evidence from row depths thus appears to corroborate that from green breadths and points to the general conclusion that the 18-foot perch was the most widely used when laying out regular plans, although the 20-foot unit was employed in some instances.

When those rows that appeared to have depths most closely approximating to significant multiples of 20 feet were re-examined, they were seen to fall into three groups. First, there were a few where a straight-line measurement taken from the front to the rear of the row may not coincide with the line of the original measurement, so that accordance with the 20-foot unit may be fortuitous. For instance, the straight-line depth in Pickering Eastgate could represent 16 times 20 feet or 18 times 18 feet, of which the former seems the more likely because of its octonal character. If, however, the measurement is taken along the curve of the toft boundaries, it becomes 20 times 18 feet, or 18 times 20 feet, of which the former is the more likely. This, therefore, can no longer be classed as a row providing evidence



YORKSHIRE VILLAGE PLANS

FIG. II

The number of sample toft rows of different depths as measured on the Ordnance Survey, 1st edition, 1:2,500 plans, together with scales of 18-foot and 20-foot perches.

for the 20-foot unit. Secondly, in the two settlements of New Thirsk and Terrington, both baronial market centres,¹ all the measured dimensions conform to significant multiples of the 20-foot unit, and the evidence points to both having been laid out in their entirety using this perch. Thirdly, several villages each have a row that appears to accord with multiples of the 20-foot perch, alongside a green and at least one other row where the measurements point to the use of the 18-foot perch. The row using the 20-foot perch must be interpreted as having some different origin from the rest of the plan, and the most likely explanation is that it was later, and that during the interval between the laying out of the two rows the 18-foot perch was replaced by that of 20 feet. Closer examination of the rows with a possible 20-foot module thus supports the view that the majority of the original regular plans used the 18-foot perch.

This conclusion does not contribute greatly to the dating of the regular plans, in view of both the long period of time during which the 18-foot perch had probably been in use, and our present limited knowledge of the period of introduction and rate of diffusion of the 20-foot perch.² Two rather general conclusions, however, can be hinted at. First, the existence of a few settlements where the 20-foot unit was used throughout, together with others where it seems that rows using the 20-foot perch were added to plans otherwise measured in 18-foot units, indicates that at least some of the regular planning post-dates the introduction of the longer perch. Secondly, where irregular rows and clusters of tofts, or regular rows measured by the 20-foot perch, were apparently added to an existing regular plan measured in 18-foot units, the population presumably grew after the initial layout was established. The great period of population growth was the twelfth and thirteenth centuries, and the implication is therefore that the original plans date from the early thirteenth century *at the latest*, in order to leave time for a need for subsequent additions to develop. The analysis of the measurements themselves can at present take us no nearer than this to the dating of the plans.

ROW LENGTH AND THE FISCAL ASSESSMENT

Although uncertainty about the exact location of the ends of some rows made the length measurement unsuitable for use when establishing the basic measurement units, it is this dimension that is especially relevant in the second stage of analysis. The 18-foot unit can be recognized in many rows in the spacing of the parallel boundaries between tofts, particularly in the Vale of York where many small farms still had their buildings located in the villages in the late nineteenth century, and where the toft layout therefore remained relatively unaltered. In those villages where row ends can be identified because they abut on to a cross lane or there

¹ M. W. Beresford, *New Towns of the Middle Ages*, 1967, pp. 518-19; T. Whellan *et. al.*, *History and Topography of the City of York and North Riding*, Beverley, 1857, pp. 146-58; Mary E. Dymond, *Terrington, a history of the parish*, privately printed, n.d. c. 1968.

² J. Radley found that messuages already in existence in Danish times in Ousegate, York, had frontages approximating to 18 feet, which makes a post-Viking date for the introduction of the 20-foot unit eminently feasible—*Medieval Archaeology*, xv, 1971, pp. 43-5.

is a sudden change of row depth, the total length frequently conforms to an octonary multiple such as 48, 56, 64, 72, 88, and 104 times 18 feet.

Work on the *radby* of south Sweden and Denmark has shown that the length of toft rows was related to the medieval fiscal assessment of the township.¹ Within any one village, each unit of assessment was allocated a standard length of frontage, so that holding A, assessed at twice the figure of holding B, would also have a toft twice as wide as that of holding B. One frontage: assessment ratio might prevail throughout a region, as in Östergötland, with the result that many villages had identical dimensions.² The ratio varied, however, from region to region and from one period of time to another.³ Is it possible to identify such a ratio in the planning of the regular villages of Yorkshire?

The most comprehensive information concerning the medieval geld assessment in Yorkshire is provided by Domesday Book. Assessment figures for individual townships in fiscal carucates and bovates are given both in the main body of the Yorkshire Inquest (the Text), and in the so-called Summary, the latter recently shown to be a copy of a slightly earlier geld list.⁴ The figures for many vills are identical in the two lists, but the Summary often gives separate details for the component parts of estates where the Text provides only a composite total. No earlier geld list is extant, whilst the only reasonably complete coverage for a later period is provided by the 1284-5 survey of knights' fees known as Kirkby's Inquest, supplemented by the few surviving portions of other early fourteenth-century inquisitions into knights' fees.⁵ This later information has several limitations. No survey of fees has survived for certain whole wapentakes, whilst elsewhere there are some composite entries and a number of vills were omitted or listed without assessment figures. The coverage of assessment data is thus much less complete for the period around 1300 than it is for 1066-86.

One hundred and two Yorkshire villages with regular plans have extant assessment figures for both 1066-86 and c. 1300, and a comparison of these two sets of figures provides some insight into the extent to which assessments changed during the interval. In twenty-five instances the figure was unchanged; in another thirty-four the difference amounted to 1 carucate or less, and it is likely that many such small differences can be attributed to clerical or transcription errors. Thirty-two vills showed a decline of more than 1 carucate; again transcription errors may be partly to blame, but another explanation for decline can be found in the different bases of the two sets of figures. Domesday Book figures are believed to represent the full assessment,⁶ whilst the later lists probably exclude land exempted from the payment of geld,⁷ and since considerable areas may have been exempted during the

¹ Göransson, 'Field and village', pp. 101-58; Göransson, 'Morphogenetic aspects of the agrarian landscape of Öland', *Oikos Supplementum*, 12, Copenhagen, 1969, pp. 68-78; Göransson, 'Village planning'; Helmfrid, *loc. cit.*, pp. 139-89; Hastrup, *op. cit.*, English summary, pp. 258-69.

² Helmfrid, *loc. cit.*, pp. 184-6. ³ Göransson, 'Field and village', p. 135; Hastrup, *op. cit.*, p. 260.

⁴ Sally Harvey, 'The Domesday Book and its predecessors', *Eng. Hist. Rev.* LXXXVI, 1971, pp. 761-3.

⁵ All printed in *Surtees Society Publications*, LIX, pt 1, 1866.

⁶ J. H. Round, 'Danegeld and the finance of Domesday', in P. E. Dove (ed), *Domesday Studies*, 1, 1888, pp. 92-116.

⁷ A. L. Poole, *From Domesday Book to Magna Carta*, Oxford, 1951, p. 418.

twelfth century, a smaller figure for *c.* 1300 than for 1086 is no cause for surprise. It thus seems quite probable that in these ninety-one villis so far considered (89 per cent of the total sample), the assessment did not change during the twelfth and thirteenth centuries. Only in the eleven villis where there was an increase of more than 1 carucate is there a serious likelihood of reassessment. Close examination of the circumstances in two villis of this group, West Tanfield and Carthorpe, indicates that in fact the increases were probably the result of local adjustments between neighbours,¹ and this could well be the explanation in the other nine cases, too. The evidence thus points to an absence of major changes in the basic assessment figures during the twelfth and thirteenth centuries, although there was some local readjustment, together with varying degrees of exemption from the associated liabilities.

Relating assessment figures to row lengths gives rise to certain technical problems. First, where 1086 and *c.* 1300 assessment figures differ, which figure is likely to be the significant one? The answer depends partly on whether row lengths were related to the total assessment or to the geldable portion only, and partly on the date when the rows were established; since both are at present unknown it seems wisest to take both eleventh- and thirteenth-century figures into consideration where they differ. A second question is whether the churchyard and Hall Garth should be included when measuring frontages if (as is rarely the case) they appear to form part of a row. Inclusion implies that church and manor contributed to the geld, but unfortunately it is not known if this was the case. Once again, therefore, it seems wisest to take both possibilities into account, and to consider both inclusive and exclusive measurements. As a result, in the case of some villis there is uncertainty about both of the figures between which a relationship is being sought, and the scope for erroneous conclusions is considerable. This must be borne in mind throughout the analysis.

The technique adopted was to measure all rows in multiples of 18 feet, estimating the location of the ends where this was in doubt. Villages were then grouped by their eleventh-century assessment figures, and the approximate measured frontage in 18-foot perches listed for each village. A few villages in each group were found to have roughly the same length of frontage, which approximated to a ratio of 2 perches per bovat of assessment. On the assumption that some of the frontage measured in the original rough calculations may have represented unidentified additions to the original rows, the plans of all the regular villages in the county were then re-examined to test for the possible existence of this ratio. A temptation at this stage was to see rows of the appropriate length wherever there was doubt about the

¹	1086	1284-5		1086	1284-5
	<i>Carucates</i>	<i>Carucates</i>		<i>Carucates</i>	<i>Carucates</i>
West Tanfield	8	11	Carthorpe	4	11
Burton on Yore	4	—	Normanby	6	—
Well and Nosterfield	8	6		—	—
East Tanfield	5	8	Total	10	11
	—	—		—	—
Total	25	25			
	—	—			

position of row ends; it is to be hoped that awareness of this possible source of bias provided adequate protection against it.

The testing of the ratio brought to light a number of villages where the fit was close, and four of these are now described in order to demonstrate both the validity of the approach and the problems involved.

A. *Copt Hewick* (fig III). This village is one of a relatively small group that in the late nineteenth century consisted of a single row of tofts only. It was assessed at 3 carucates in the eleventh century but, as part of the Liberty of Ripon, was not included

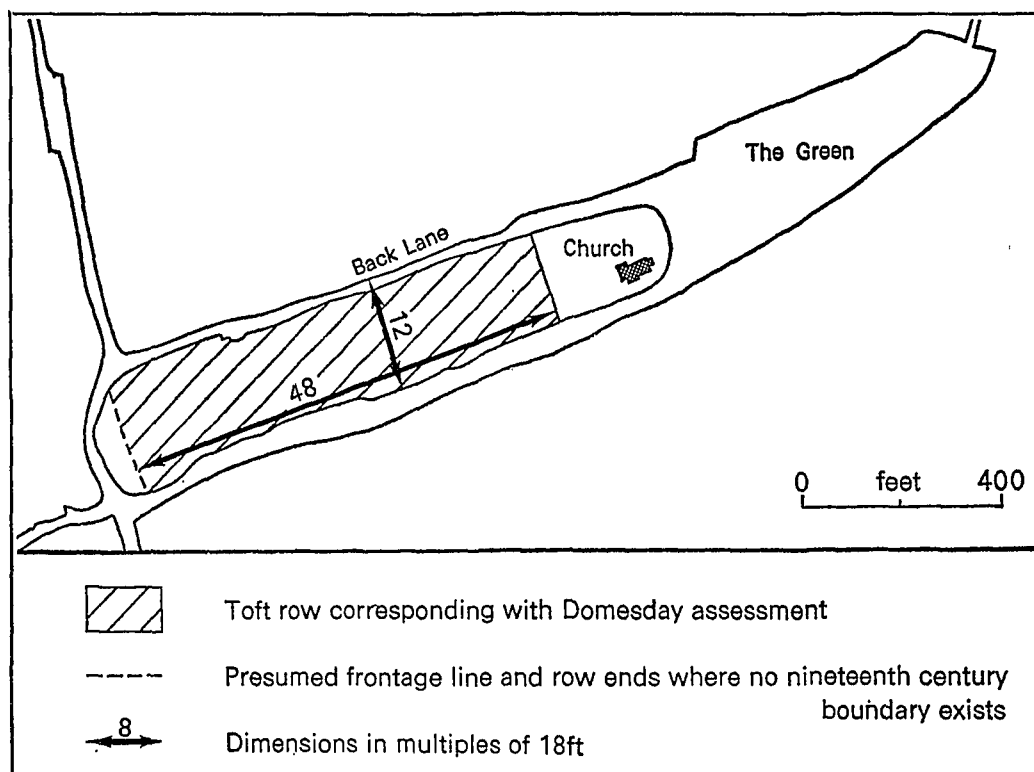


FIG. III

Copt Hewick: suggested original layout.

in any thirteenth- or fourteenth-century list of knights' fees. The toft row fronts on to a road trending approximately east-north-east; whilst the western end and rear of the row are delimited by a lane, the eastern end is occupied by the churchyard beyond which lies the green. Toft row and back lane combined are 12 perches deep, except at the western end where the curvature of the lane results in diminished depth. Total frontage, excluding the churchyard, is 50 perches, but if only that part with the full 12-perch depth is considered the frontage then becomes 48 perches, which by the ratio being tested corresponds to 3 carucates. It is postulated that this section was the original row, with the remaining 2 perches frontage at the western end representing a later addition.

B. *Hemingbrough* (fig IV). A much more common nineteenth-century plan had a row of tofts on each side of a street or narrow green, one side (or part of one side) having a more regular layout than the other. In a number of cases the assess-

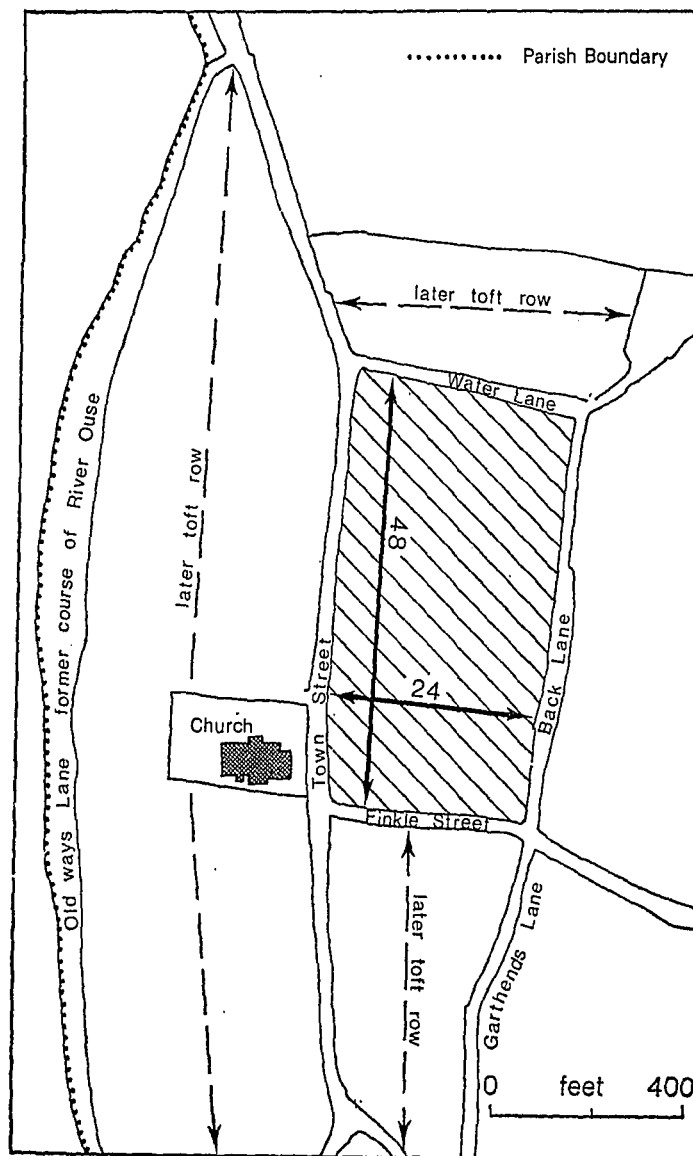


FIG. IV

Hemingbrough: suggested original layout. Key as fig. III.

ment figure fits the length of the more regular row, and the other row or rows are therefore presumed to be later additions. Hemingbrough, assessed at 3 carucates in both 1066 and 1284-5, illustrates this type of plan. Regularity of depth identifies the original row as that lying on the east side of Town Street, between Water Lane on

the north and Finkle Street on the south. This row is 24 perches deep and 48 perches long, the length representing exactly 3 carucates by the ratio. The frontage of the later rows was longer than that of the original row, a frequent feature of this type of plan that makes identification of the original nucleus somewhat more difficult than in one-row villages.

C. *Thornton-le-Beans* (fig. v). The original measured frontage was in some villages divided between two facing rows, either or both of which may have subsequently been extended. This characteristic increases the complexity of the task of identifying the original rows. Thornton-le-Beans, assessed at 6 carucates in both 1066 and

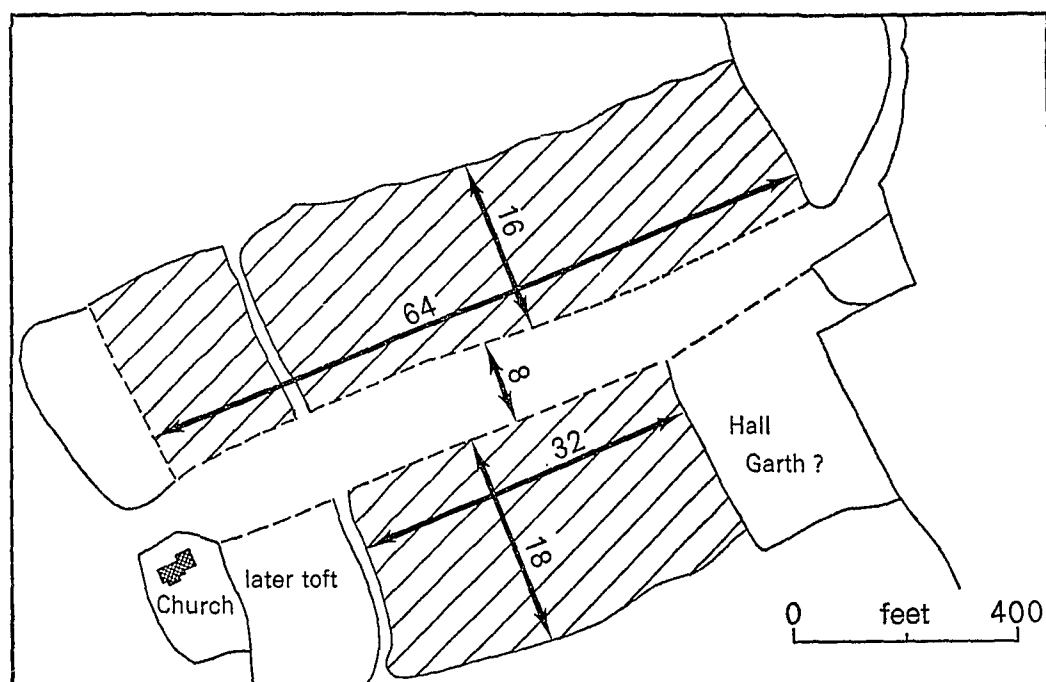


FIG. V

Thornton-le-Beans: suggested original layout. Key as fig. III.

1284-5, provides one of the more easily interpreted examples. Two rows, 16 and 18 perches deep from the building frontages, face a regular 8-perch green, but in the nineteenth century there were no true back lanes, only a broad green track extending behind part of the northern row. The original southern row seems likely to have ended at the cross lane on the west, for the toft to the west of the lane is deeper, whilst two deeper tofts at the eastern end of the row may represent the former Hall Garth. Measured between the cross lane and the presumed Hall Garth boundary, this row is 32 perches long, equivalent to 2 carucates. If the original northern row is taken to extend from a western boundary opposite the eastern limit of the churchyard to an eastern boundary at the point where the orientation of the street changes sharply, it measures 64 perches, representing 4 carucates. On the nineteenth-century

map, no boundary survived at the postulated western end of this row, but air photographs reveal traces of a former trackway at this point, thereby supporting the interpretation. The two rows together correspond to the total assessment figure.

D. *Upper Poppleton* (fig vi). This village may be taken as representative of a relatively small class in which there were three or more original rows arranged around a green or a grid of streets. With each additional row the problems of interpretation increase, but fortunately in the example selected the later additions were small and the approximate original layout can be reconstructed without difficulty.

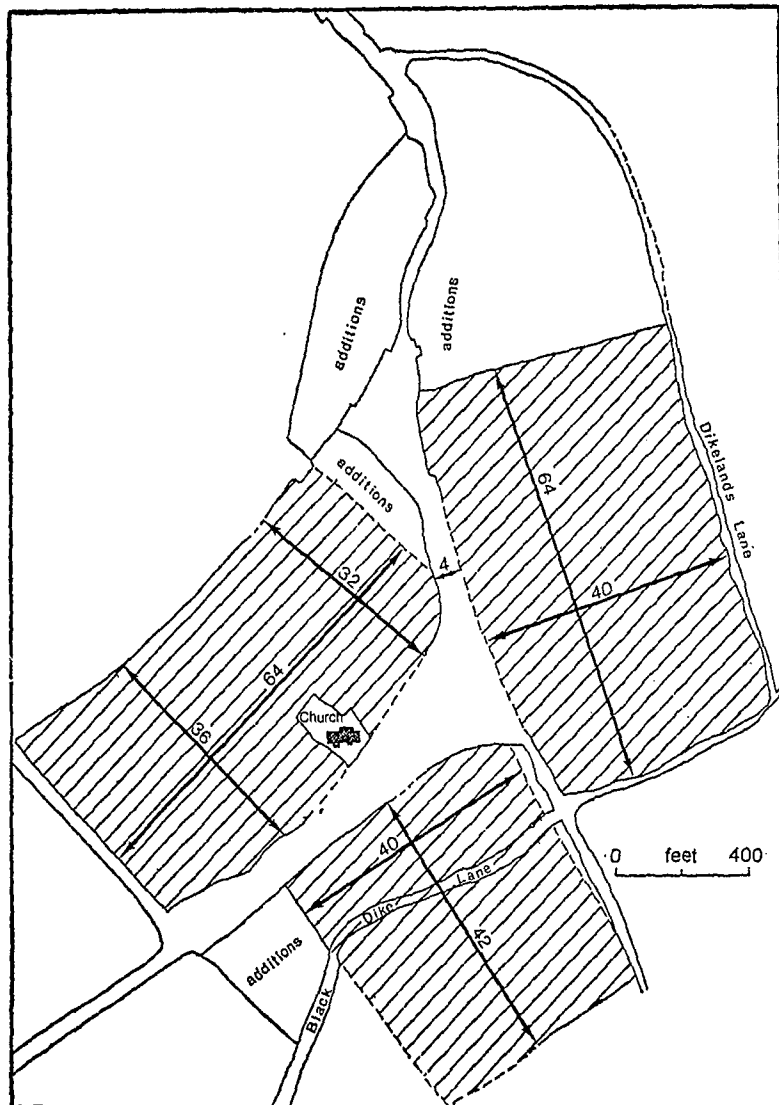


FIG. VI

Upper Poppleton: suggested original layout. Key as fig. III.

Upper Poppleton has a triangular-shaped green with irregular extensions to the north and to the south-west. The vill was assessed at $10\frac{1}{2}$ carucates in 1066, 8 carucates belonging to the Archbishop of York, and $2\frac{1}{2}$ carucates to the estate of Osbern de Arches: by 1284-5, the whole vill was held by the Benedictine abbey of St Mary in York, and no assessment figures are given. There are three toft rows, of which the most regular lies on the east side of the green with a standard depth of 40 perches. The southern end of this row is fixed by a lane, but the northern limit could have been any one of several toft boundaries near the northern extremity of the green. A second row lies between the northern and south-western arms of the green, with a more variable depth around 32 to 36 perches. Again, one end is fixed by a lane, but on the north-east the limit could have been either of two boundaries, beyond which there is an irregular shaped toft that is clearly an addition carved out of the green. This row has the complication of a centrally placed churchyard. The third row, south of the south-western arm of the green, seems likely to have extended across Black Dike Lane, with a total depth around 42 perches. A change in the width and orientation of the lane probably indicates the western end of this row. At the east end, the gentle curve of the frontage is broken by a sharp angle between green and lane, hinting at a small later encroachment; if this is excluded, the row is 40 perches long. Forty perches represents $2\frac{1}{2}$ carucates, which suggests the possibility that this row comprised the tofts belonging to Osbern de Arches's estate. The combined frontages of the two other rows, which perhaps represent the share of the Archbishop, should total 128 perches. This length of frontage, or some close approximation to it, is clearly present, but the precise share of each row is difficult to determine. Fig. VI shows one possible arrangement, with each row 64 perches long; another possible layout would give 68 perches of frontage to the eastern row and 60 to the north-western row, the latter total being attained either by the omission of a toft at the east end of the row shaded on fig. VI, or by the exclusion of the churchyard.

As these examples demonstrate, in no instance is the cartographic evidence completely unequivocal. The case for a standard ratio between frontage and fiscal assessment rests rather on the frequent recurrence in villages of varying size, layout, and location of dimensions that make such a relationship feasible or even probable. The fact that B. K. Roberts, by means of much more detailed study of a few villages, has found evidence for a connection between frontage and assessment in the neighbouring county of Durham increases confidence in the interpretation.¹

Frontage measurements in the 182 regular villages for which an assessment figure is available produced the following results:

good examples of the ratio	27 villages
probable examples of the ratio	41 villages
frontage longer than appropriate	38 villages
frontage shorter than appropriate	76 villages
Total	182 villages

¹ B. K. Roberts, 'Village plans in county Durham: a preliminary statement', *Medieval Archaeology*, xvi, 1972, pp. 33-56.

Where the measured frontage is too long, a possibility is that correct-length rows are embedded in and indistinguishable from later extensions, so that this category, whilst not confirming the ratio, does not disprove it. Some of the seventy-six villages where rows are too short, especially where the deficiency is small, may represent cases where tofts or whole rows have been lost by shrinkage, perhaps in late medieval times. But it seems unlikely that all seventy-six can be explained in this way, and the alternative must be considered of a group of villages in which a different ratio was used, resulting in shorter rows. Since it was noticed when testing the 2-perches-per-bovate ratio that in several cases the measured frontage was exactly half the expected length, the ratio of 1 perch per bovate was selected for testing in the seventy-six villages where the first ratio apparently did not operate. In twenty-one cases, the agreement between the new expected row length and the measured length was close. A good example is provided by Bulmer, assessed at 6 carucates in Domesday Book, and in a 1300 inquest into knights' fees. This village has a row 16 perches deep west of the churchyard and north of the green (fig. vii); in length this measures exactly 48 perches, equivalent to 6 carucates using the shorter ratio. Although there are fewer examples of this ratio than of the more generous 2 perches per bovate ratio, the evidence for its use is just as convincing.

These are the only two ratios of frontage to assessment that can be identified

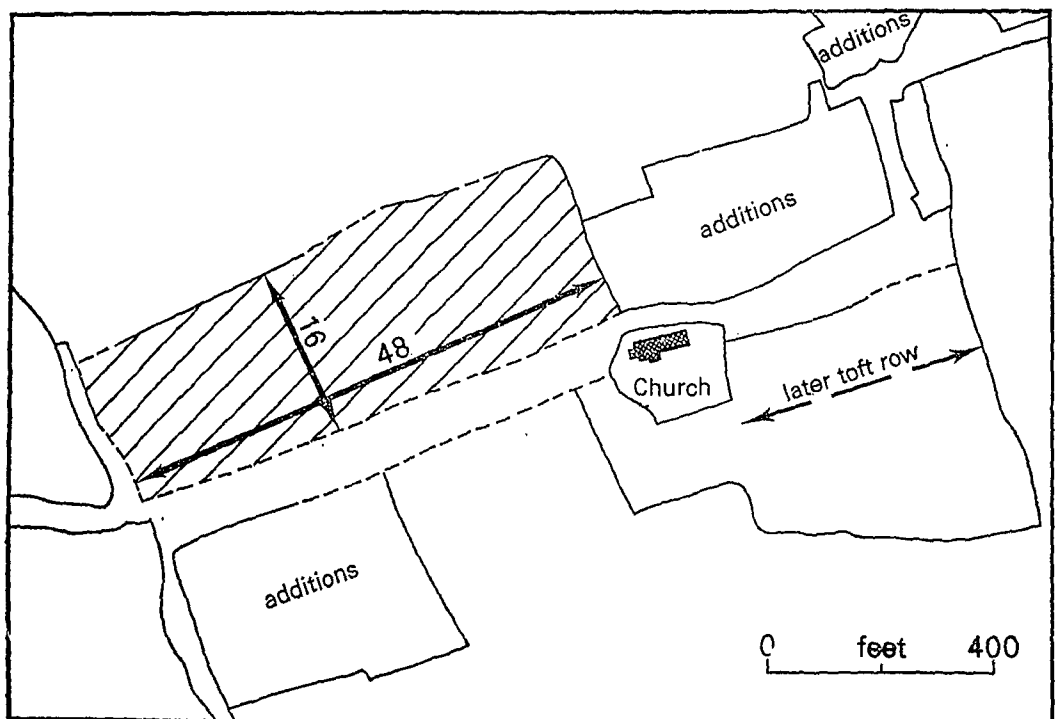


FIG. VII

Bulmer: suggested original layout. Key as fig. iii.

with certainty, but others may have been used in a small number of cases. Stillingfleet, for instance, has a single row that is twice the length expected when using the 2 perches to 1 bovat ratio, and one cannot help wondering whether this row was laid out using the more generous ratio of 4 perches of frontage per bovat. The possible existence of such unidentified ratios in a minority of villages adds to the problems of demonstrating a link between frontage and assessment. In view of the many difficulties, the recognition of a likely relationship between the two measures in eighty-nine out of the 182 regular villages considered (48 per cent) must surely be regarded as fairly conclusive evidence that, in Yorkshire villages of regular plan, the assessment normally determined the length of frontage.

It is now possible to return to the question of the date of origin of the plans. The close association between frontage length and assessment figures suggests that the regular rows were laid out at a time when the geld assessment was a significant factor in rural life. The principle that taxation and other responsibilities such as bridge maintenance were distributed in proportion to landholdings was already of considerable antiquity by the eleventh century, but the particular assessment that is listed in the Yorkshire folios of Domesday Book is likely to have been fairly recently drawn up, perhaps during the early years of the eleventh century.¹ Plans that reflect this assessment are therefore unlikely to have originated prior to the eleventh century. From the Norman conquest until 1162, the main form of direct taxation was based on the assessment, i.e. geld was paid, perhaps annually, at a fixed rate per hide or carucate.² The granting of exemptions, however, steadily reduced the value of this tax, and after 1162 it was no longer used, apart from special "carucages" in 1194 and 1220. The assessment may thus already have been of only antiquarian interest when it was recorded in the late-thirteenth- and early-fourteenth-century lists of knights' fees. It seems reasonable to suggest, therefore, that the assessment figure is more likely to have been taken into account when planning village layouts before c. 1220 than after.

This line of argument thus points to the eleventh and twelfth centuries as the most likely period of origin of the regular plans. A limited prospect of greater precision of dating within this broad period appears to be offered by the eleven regular villages that experienced significant increases of assessment between 1086 and c. 1300 associated with local readjustments.³ In five cases, it is impossible to

¹ F. M. Stenton, *Anglo-Saxon England*, Oxford, 1943, p. 639; F. M. Stenton, *Types of Manorial Structure in the Northern Danelaw*, Oxford, 1910, p. 90; P. Sawyer, *The Age of the Vikings*, 2nd edn, 1971, p. 172.

² Poole, *op. cit.*, p. 418; W. Farrer, 'Introduction to the Yorkshire Domesday', *The Victoria History of the County of York*, II, 1912, pp. 138-41. Farrer points out that Yorkshire carucates paid at a lower rate than carucates in other counties.

	1086 Carucates	1284-5 Carucates		1086 Carucates	1284-5 Carucates
Burrill and Cowling	7½	10	Spaldington	9½	10½
Carthorpe	4	11	West Tanfield	8	11
Cottam	9	12	Tockwith	5	7
Laxton	1	3	Wheldrake	6½	10
Levisham	2¾	4	Wilton (nr Pickering)	5	10
Old Byland	6	3			

suggest any certain matching of frontages with either assessment figure, and in Wilton and Spaldington a case could be made for a match with both figures. The evidence from Wheldrake, however, points clearly to a relationship with the earlier figure, whilst in Burrill and Cowling, Carthorpe, and West Tanfield (all lying north of Ripon and within a few miles of one another) there is a possible match with the later figure. For instance, the two rows of Carthorpe can be interpreted as having a combined frontage of 176 perches, which represents 11 carucates at the 2 perches per bovat ratio. The limited conclusion that can be drawn from these few cases is that different villages may have been planned at different times during the period under consideration.

CONCLUSION

The aim of this reconnaissance survey has been to demonstrate the validity of a technique not previously used in England except for County Durham,¹ hence each stage of analysis has been considered in rather tedious detail. Once the range of possible variables is known, however, it should be feasible to streamline the procedure, and to use metrological analysis alongside more traditional approaches in unravelling the many unsolved problems associated with medieval and dark-age settlement. At this stage it is acknowledged that the work described raises more questions than it answers.

Although the emphasis is thus on the potential value of the technique, one point has emerged from the analysis that warrants further comment; this is the somewhat earlier period of origin suggested for the planned layouts than is currently fashionable. Pamela Allerson appears to favour a twelfth- or thirteenth-century date for the regular plans of the Pickering district;² M. Beresford hints at a later thirteenth- or early fourteenth-century date for East Witton in Wensleydale;³ and medieval archaeologists have drawn attention to several cases of regular plans replacing or extending earlier less regular layouts during the thirteenth and fourteenth centuries.⁴ Can these differences be reconciled?

The notion of a link between toft frontage and assessment may have been of considerable antiquity, and it would surely have had considerable appeal, both to administrators seeking to pin responsibilities on to landholders, and to peasant farmers anxious to avoid unreasonably heavy exactions. On the other hand, it must have been difficult to put into practice where former privileges and boundary patterns were jealously preserved. J. G. Hurst believes that this was rarely the case in late Saxon and early medieval villages, in which plans were in a continual state of flux,⁵ but I wonder whether this may not be too broad a generalization? Instead, three sets of circumstances can be postulated that would have favoured changes of

¹ B. K. Roberts, 'The regulated village', *Durham County Local History Society Bulletin*, 12, April 1970, pp. 1-4; 'Regulerede landsbyer i grevskabet Durham', *Kulturgeografi*, Aarhus, Denmark, 117, 1972, pp. 170-83.

² Pamela Allerson, 'English village development: findings from the Pickering district of North Yorkshire', *Trans. Inst. Br. Geog.*, 51, Nov. 1970, pp. 95-109.

³ M. W. Beresford and J. K. S. St Joseph, *Medieval England: an aerial survey*, Cambridge, 1958, pp. 103-6.

⁴ M. W. Beresford and J. G. Hurst (eds.), *Deserted Medieval Villages*, 1971, esp. pp. 124-7.

⁵ *Ibid.*, p. 129.

layout, including the opportunity to establish regular rows: where settlements were devastated and recolonized after an interval; where there was a powerful lord whose officials could override the wishes of the peasant community; and where there was an alteration in physical or economic circumstances that made the existing settlement site inconvenient.

In Yorkshire, an opportunity for the replanning of settlements on a grand scale was provided by William I's "harrying of the north" in the winter of 1069-70, when a scorched-earth policy led to a vast area being devastated. Administrators at various levels must have been in their element during the late eleventh and twelfth centuries organizing the recolonization of the area, and this could well have been the occasion for the creation of the nuclei of many of the regular village plans of the county. In villages that escaped the devastation, whether in the more remote parts of Yorkshire or elsewhere, older layouts probably survived, whilst some of the wasted villages were no doubt recolonized without regular planning. Subsequently both planned and unplanned settlements might have been affected by such factors as the amalgamation of neighbouring townships or the asymmetrical expansion of the arable area, which made rebuilding on a new site necessary, thus giving scope for further use of the model layout in rows. Carthorpe and its neighbours may fall into this category, as well as some of Pamela Allerston's examples. A powerful feudal lord might redesign his settlements at any time, but perhaps he would have been most tempted to act in this way during the period of active demesne farming during the thirteenth and early fourteenth centuries.¹ Settlements with powerful lords were also particularly vulnerable to later desertion, so that it may not be entirely fortuitous that those excavating deserted medieval village sites should find evidence for relatively late regular plans. In short, villages formed of regular toft rows may have originated at any date between c. 1070 and c. 1400, and I am inclined to believe that those already in existence by 1200 were in the majority.

Much further work is needed before the hypothesis can be fully substantiated, and in this metrological analysis clearly has a rôle to play. In England, as in Scandinavia, this technique could provide a significant link between the documentary and the archaeological approaches to the investigation of medieval and earlier settlement patterns and forms.

¹ M. M. Postan (ed.), *Cambridge Economic History of Europe I: The Agrarian Life of the Middle Ages*, Cambridge, 2nd edn, 1966, pp. 585-91.

The English Bark Trade, 1660–1830¹

By L. A. CLARKSON

IN 1575 the Recorder of London informed the Lord Treasurer of England that “the ouse of Asshen barke dronke is an extreme percagon. . . [but] the ouse of oken barke dronke is the extremest binder that can be found in Physicke.”² The occasion of this advice was not, as far as is known, a deep distress in the bowels of Lord Burghley, but a discussion of the leather industry which used oak bark for tanning raw hides into leather, and continued to do so until the late nineteenth century. The manufacture of leather and leather goods was, by value, the most important English industry, after textiles, between 1680 and 1830, and one of the largest employers of labour outside agriculture. Roughly 90 per cent of all leather was tanned with oak bark, and the trade in this material, therefore, deserves more attention than it has customarily received from historians. This study is based upon estate records and tanners’ account books dating from the late seventeenth century, containing details of the stripping and marketing of bark; and on the accounts of the excise duties charged on leather tanned in England and Wales between 1711 and 1830.³

I

The first task is to calculate how much bark was used by tanners.⁴ This can be done from the excise accounts.⁵ For the years 1712–21 the surviving accounts record only the money raised by the duties, but the yield can be converted into quantities of tanned and dressed leather by assuming that £1 of revenue came from 15.7 lb. of leather.⁶ To obtain the quantities of tanned leather the result should be reduced by 15 per cent.⁷ From 1722 until 1798 the accounts give both the yield of the duties and the quantities charged, distinguishing between tanned leather and leather dressed with alum or oil. For the period 1799–1829 this distinction was not made in the accounts; however, during the 1790’s tanned leather comprised 94 per cent of all leather paying duty, so the quantities recorded after 1798 have been reduced by 6 per cent. The estimates of tanned leather production between 1712 and

¹ I am grateful to Dr E. H. Hunt and Dr C. J. Wrigley for commenting on an earlier draft, and to Mr W. J. Vennard for drawing the graphs.

² B. M., Lans. MS. 20, fo. 10.

³ The duties were imposed by two Acts—9 Anne, c. 11, and 10 Anne, c. 26—and not abolished until 1830. The accounts in the Customs and Excise Library, London, do not include the returns for Scotland, and this article is, therefore, confined to England and Wales.

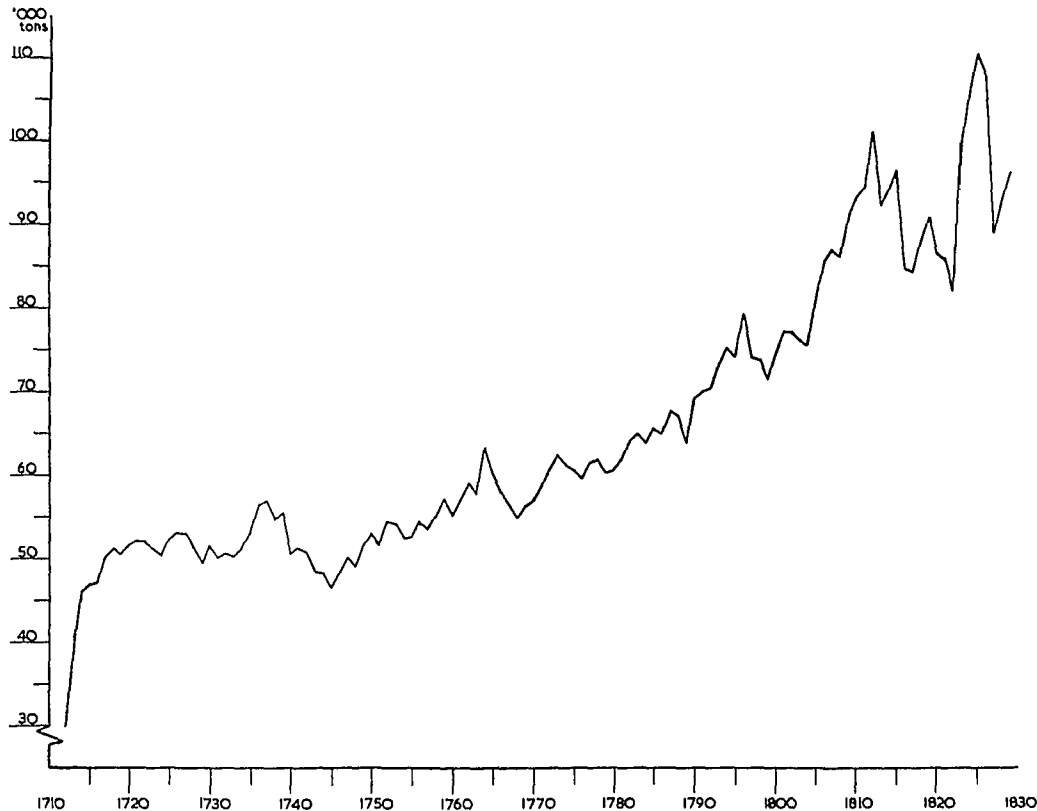
⁴ Unless otherwise indicated, bark means oak bark. Until the 1790’s it was the only bark used by tanners; thereafter a little use was made of elm and larch bark.

⁵ The accounts are in the Customs and Excise Library, London. Accn. 1189 (Dup.), pp. 93–7, 229, contains the yield of the duties from 1712 to 1827 and the quantities of leather charged with duties from 1722 to 1829. Accn. 11863, pp. 116–47, distinguishes between tanned and other types of leather charged with duties between 1722 and 1798.

⁶ This was the approximate relationship between the yield and quantities between 1722 and 1742.

⁷ During the 1720’s, tanned leather accounted for 85 per cent of all leather charged with duty.

1829 have been multiplied by 4.5 on the assumption that between 4 and 5 lb. of bark were needed to produce 1 lb. of leather.¹ The result of this arithmetic is presented in figure 1.



For sources see text.

FIG. I

Bark consumption: England and Wales, 1710-1830

Since the estimates of bark consumption are based on the excise accounts they almost certainly understate the true level of demand for bark in England and Wales as tanners sometimes attempted to evade the duties.² However, the excise was well-administered by the standards of the eighteenth century, and under-recording was probably not serious except in the first few years. Furthermore, the duties imposed in 1712 remained unaltered for a century. In real terms their burden fell as prices rose very gradually from the 1750's and sharply after 1790.³ Thus the financial

¹ The actual amount of bark required depended on the quality of the bark and the thickness of the leather being processed. The basis for choosing a multiple of 4.5 is the evidence given by tanners to two parliamentary committees in 1812-13 and 1816.—S.C. on *Petitions relating to the Duty on Leather*, B.P.P. 1812-13, IV, p. 611; S.C. on the *State of the Laws relating to the Manufacture of and Duties upon Leather*, B.P.P. 1816, VI, p. 115.

² See C. & E. Library, Excise Trials, Customs 103/113, pp. 297-407, 413-558; 103/89, pp. 53-82; 103/38, pp. 483-500.

³ See Sir W. Beveridge, *Prices and Wages in England*, 1939, pp. 679-80, 739-41. At 1½d. per lb. the duty was normally the equivalent of 12-15 per cent of the selling price of leather, falling in burden after 1790.

incentive to evade the excise duties declined until duties were doubled in 1812. A tanner in 1798 "imagined the annual consumption of bark to be around 70,000 tons a year,"¹ a figure that was fairly close to the estimate derived from the excise accounts. The level of bark consumption was determined partly by the number of hides available for tanning—which affected the price of the finished leather—but mainly by the size of the population, since more than half the output of tanned leather was used for footwear, the demand for which was inelastic. Before 1750, the output of tanned leather grew very sluggishly compared with total industrial output: population growth was stagnant and the rise in real incomes, with its consequent demand for better quality footwear noted by Professor John, did not increase the *per capita* demand for leather. After 1750, the combined effects of population growth and an increasing demand for leather from agricultural and industrial expansion brought the rate of growth of leather production closer to the growth of total output. The consumption of bark increased at an accelerating rate and by the 1790's a serious shortage had emerged which may even have acted as a brake on the expansion of leather output.²

To the demand from tanners in England and Wales must be added the sales of English bark to Ireland, as recorded in the customs ledgers.³ The trade to Ireland developed in the late seventeenth and early eighteenth centuries, following restrictions on the import of Irish cattle into England, which encouraged beef production within Ireland and increased the supply of hides available in that country for tanning. Some raw hides were exported to England, but many were tanned in Ireland and English bark was imported to supplement local supplies. Shipments of bark to Ireland increased after the excise duties were imposed in England, for there was then an advantage in tanning hides in Ireland where no duty was charged.⁴ English tanners petitioned Parliament several times between 1711 and 1717 asking for a ban on bark exports. Although the pressure was well organized it was frustrated by what one M.P. called darkly "the Irish interest," working in combination with owners of woodlands who favoured an unrestricted outlet for their products.⁵

¹ *H. of C. Journals*, LIII, 1797–8, p. 544.

² The production of tanned leather, and total industrial production, grew as follows:

Annual percentage rates of growth (1800 base)		
	Tanned leather	Total real output
1725/45–1745/65	0.2	0.8
1745/65–1765/85	0.6	0.6
1765/85–1785/1805	0.9	1.5
1785/1805–1805/25	1.0 (all leather)	—

Sources: Excise statistics, as in p. 136, n. 5; P. Deane and W. A. Cole, *British Economic Growth, 1688–1959*, Cambridge, 1962, p. 80. For a generalized account of trends in leather production in the eighteenth century see T. S. Ashton, *Economic Fluctuations in England, 1700–1800*, Oxford, 1959, p. 35, n. 15, pp. 39, 133, 148, 153; and A. H. John, 'Agricultural Productivity and Economic Growth in England 1700–1760', *Jnl. Econ. Hist.*, xxv, 1965; reprinted in E. L. Jones, *Agriculture and Economic Growth in England 1650–1815*, 1967, pp. 172–89, esp. pp. 178–9. A more detailed analysis of the growth of leather production is contained in my forthcoming book on the English leather industry between 1500 and 1830.

³ If there was any traffic of English bark into Scotland, it went by unrecorded routes overland.

⁴ See R. C. Gwilliam, 'The Chester Tanners and Parliament 1711–1717', *Chester Archaeological Society Journal*, 44, 1957, pp. 41–9; E. McCracken, *The Irish Woods since Tudor Times*, Newton Abbot, 1971, pp. 80–1.

⁵ Gwilliam, *loc. cit.*, p. 42; *H. of C. Journals*, xvi, 1708–11, p. 602; xvii, 1711–14, pp. 249, 256, 556–7, 567–8,

Initially only a few hundred tons a year, exports reached 3,100 tons by the 1720's; 5,600 tons by the 1760's; 6,400 tons by the 1780's; and 8,100 tons a year by the early 1790's.¹ Thereafter exports declined, and by the end of the century Irish and English tanners were together lamenting the scarcity and high price of bark.

Taking English, Welsh, and Irish consumption together, the total demand for bark during the 1720's and '30's fluctuated between 55,000 and 60,000 tons a year, falling during the late 1730's and early 1740's, but rising again during the next twenty years to about 70,000 tons by 1764. A brief fall in demand in the second half of the 1760's was followed by generally increasing demand during the 1770's and '80's until, in the early 1790's, it stood in the region of 80,000 tons a year. As demand increased there was a search for substitutes,² and a growing import of bark. For most of the eighteenth century, imports had been restricted to an occasional consignment intended for re-export to Ireland. However, in 1792, 9,600 tons of bark came into England from Europe, but war with France stunted the trade.³ In 1816, a depressed year, 4,500 tons of bark were imported; within ten years imports had jumped to 43,000 tons and by 1830 to nearly 49,000 tons.⁴ Allowing for substitutes and imports, English woodlands probably supplied a maximum of about 90,000 tons of bark a year in 1810-15. By the 1820's, home production had probably fallen to between 60,000 and 70,000 tons a year.

In order to assess the importance of bark as an agricultural product, quantities must be converted into values. This is not easy since the evidence of bark prices demonstrates in an extreme form the weaknesses of eighteenth-century price statistics. There are plenty of price quotations waiting to be disinterred from the vaults of landed estates, but they obstinately refuse to be disciplined into averages representative of bark prices throughout England. The first difficulty arises because oak bark varied in quality. The best bark came from the young trees of twenty years' growth cultivated in coppices. At the other extreme, gnarled, dried-up bark, stripped from octogenarians destined for the shipyards or removed from collapsing centenarians, was less valuable. To complicate matters further, recorded prices were sometimes for bark still on the trees and sometimes for peeled bark delivered to an urban centre. Another problem was that bark was bulky and friable, frequently grown in inaccessible places, and expensive to transport. Local scarcities sometimes raised prices high above those elsewhere, particularly in London which pro-

671. The *H. of C. Journals* record the agitation of tanners who opposed the export of bark. For an example of the views of landowners see "The Humble Petition to [Parliament] of . . . the Principle Inhabitants of . . . Troutbecke and Applethwaite in . . . Westmorland . . . and many others, owners and workers in Wood and Barke" (no date).—Kendal Record Office (hereafter K.R.O.), WD/Bro. vol. xiv (125).

¹ McCracken, *op. cit.*, pp. 80-1; *H. of C. Journals*, xviii, 1714-18, p. 568; xxxiii, 1770-2, p. 617, *House of Commons, Accounts and Papers*, B.P.P. 1785, vi, no. 81; *Irish H. of C. Journals*, xxix, 1790, p. cclxxxviii; xvi, 1795, p. clxiv.

² Elm and larch bark were the most important. See *Patents for Inventions: Abridgements of Specifications relating to Skins Hides, and Leather*, A.D. 1627-1860, 1872, nos. 1977, 2054, 2618; *H. of C. Journals*, lmi, 1797-8, pp. 543-5; *S.C. on Acts relating to Tanners, Curriers, Shoemakers and other Artificers Occupying the Cutting of Leather*, B.P.P. 1807, ii, p. 299; B.P.P. 1816, vi, pp. 7, 13, 21, 24, 39.

³ P.R.O., Customs 5/1a. ⁴ P.R.O., Customs 5/5, 5/14, 5/19.

duced more than 10 per cent of the nation's leather.¹ Tanners and dealers were therefore compelled to extend their supply lines into more distant territories, causing prices there to rise in the process. Thus, although there were marked regional variations, prices tended to move together in a very general way, particularly in the late eighteenth and early nineteenth centuries.

The greatest problem is caused by the welter of measures by which bark was sold, themselves a reflection of the fragmented nature of the market. During the eighteenth century, bark was frequently sold by volume; in the late eighteenth century, however, sales by weight became common. There are two main problems to solve: the relationship of the various measures of volume to one another, and the relationship between units of volume and units of weight. The most important volume measures were loads, yards, and quarters. A load was a variable quantity, determined by the size of the cart in use. On the Filmer estates in Kent in the early eighteenth century it contained only 40 yards of bark. On the other hand, bark was sold in Sherwood Forest in 1788-9 by the load of 70 yards. But these seem to be limiting cases. According to J. E. T. Rogers, a load contained 42 yards of bark at Oxford, and 55 yards at Eton College in the seventeenth and eighteenth centuries. Sir William Beveridge, who also used the Eton College material, found that the load there more often contained 50 than 55 yards, and this figure has been used throughout this study.² The link between volume and weight is established by the load. By the late eighteenth century the load of 50 yards had become standardized at 45 cwt., and this figure has been applied to the whole period, 1660-1830. Assuming that the hundredweight contained 112 lb. and that there were 20 cwt. in a ton, it is a fairly simple matter to turn yards and quarters into weight, and to calculate factors for converting bark prices, however expressed, into pounds per ton.³

Some evidence of bark prices during the eighteenth and early nineteenth centuries is summarized in figure 11. The continuous line represents prices of bark sold by Eton College.⁴ Compared with bark prices from almost all other sources, the Eton prices were very low, probably because the college authorities sold bark while it was still on the trees, leaving the purchasers to pay the expenses of peeling and

¹ L. A. Clarkson, 'The Leather Crafts in Tudor and Stuart England', *Ag. Hist. Rev.*, xiv, 1966, p. 27.

² Kent Archives Offices [hereafter K.A.O.], U 412 E10; *H. of C. Journals*, xlviii, 1792-3, p. 481; J. E. T. Rogers, *History of Agriculture and Prices in England*, vi, Oxford, 1887, pp. 358-60; Beveridge, *op. cit.*, p. 137. A yard is interpreted to mean a cubic yard (although it is never described as such in contemporary records) and was therefore 46,656 cubic inches. A quarter has been assumed to contain eight imperial bushels, each bushel containing eight gallons. Since a standard gallon of dry measure contains 277.25 cubic inches, a yard contained 2.63 quarters.

³ *H. of C. Journals*, xxxiii, 1770-2, p. 613; F. W. Steer, 'The Account Book of an Eighteenth Century Maldon Tradesman', *Essex Review*, lvii, 1948, p. 47; J. Haviland, *The Improved Practical Measurer*, 1817, p. 496; R. E. Zupko, *A Dictionary of English Weights and Measures from Anglo-Saxon Times to the Nineteenth Century*, 1968, p. 100. In the 1790's bark was occasionally sold in the royal forests by the "coppice load," containing between seven and eleven "hundreds."—*H. of C. Journals*, xlvii, 1792, p. 268. Some sales of bark were made at the rate of 21 cwt. per ton (e.g. Gloucestershire Record Office [hereafter G.R.O.] D451 E529). The most important conversion factors are as follows:

to convert shillings per quarter into pounds per ton, multiply by 2.92;

to convert shillings per yard into pounds per ton, multiply by 1.11;

to convert shillings per load into pounds per ton, multiply by 0.022.

⁴ Beveridge, *op. cit.*, pp. 145-7.

transport.¹ Prices were stable over many years, perhaps reflecting the nature of long-term contracts made with the purchasers of bark. If anything, prices were higher between 1660 and 1690 than they were in the next hundred years, possibly because the demand for bark was stimulated by an abundant supply of hides available to tanners.² There was a slight upward trend in Eton College series from the mid-1740's to the mid-1760's, corresponding with a growth of leather production throughout England, and a more pronounced increase in the 1790's and early 1800's. The Eton prices perversely increased in 1816-17 at a time when the leather industry as a whole was depressed; thereafter, bark prices at Eton declined, as did prices elsewhere.

Figure II also records several hundred price quotations (many of the symbols represent a dozen or more quotations) gathered from various sources. The entries cover four broad regions. The best represented is the north-west, comprising Cumberland, Westmorland, and north Lancashire. London and the Home Counties include, in addition to the metropolitan area, Essex, Kent, Surrey, Sussex, and Hampshire. The west of England prices come from Gloucestershire, Wiltshire, and Somerset, while the north-east is represented by prices from one estate only, in County Durham. Finally there are a few quotations taken from royal forests in various parts of the country.³ No attempt has been made to average these prices. Their most striking feature is their diversity. In 1785, for example, prices ranged from 9s. to £13 per ton, reflecting differences in quality, markets, and the nature of the price quotations, some including and some excluding peeling and transport costs. Differences in estate management probably also caused prices to vary; the crown forests, for example, were notoriously badly administered in the eighteenth century, and the price of bark sold from them was invariably low. But with the exception of the royal forests and one or two quotations from Kent, all the individual prices shown in figure II were substantially higher than the Eton series. Perhaps, therefore, the Eton prices should be doubled, on the ground that the cost of stripping doubled the purchase price to the tanners,⁴ in order to get a very approximate guide to the price of bark in England and Wales at the point of production. If so, tanners paid at least between £165,000 and £198,000 a year for bark during the 1720's and 1730's. The amount fell in the late 1730's when both demand and prices were depressed. Thereafter prices and demand strengthened and by the 1760's tanners were probably spending over £200,000 a year on bark. By the early

¹ See below, pp. 144-5.

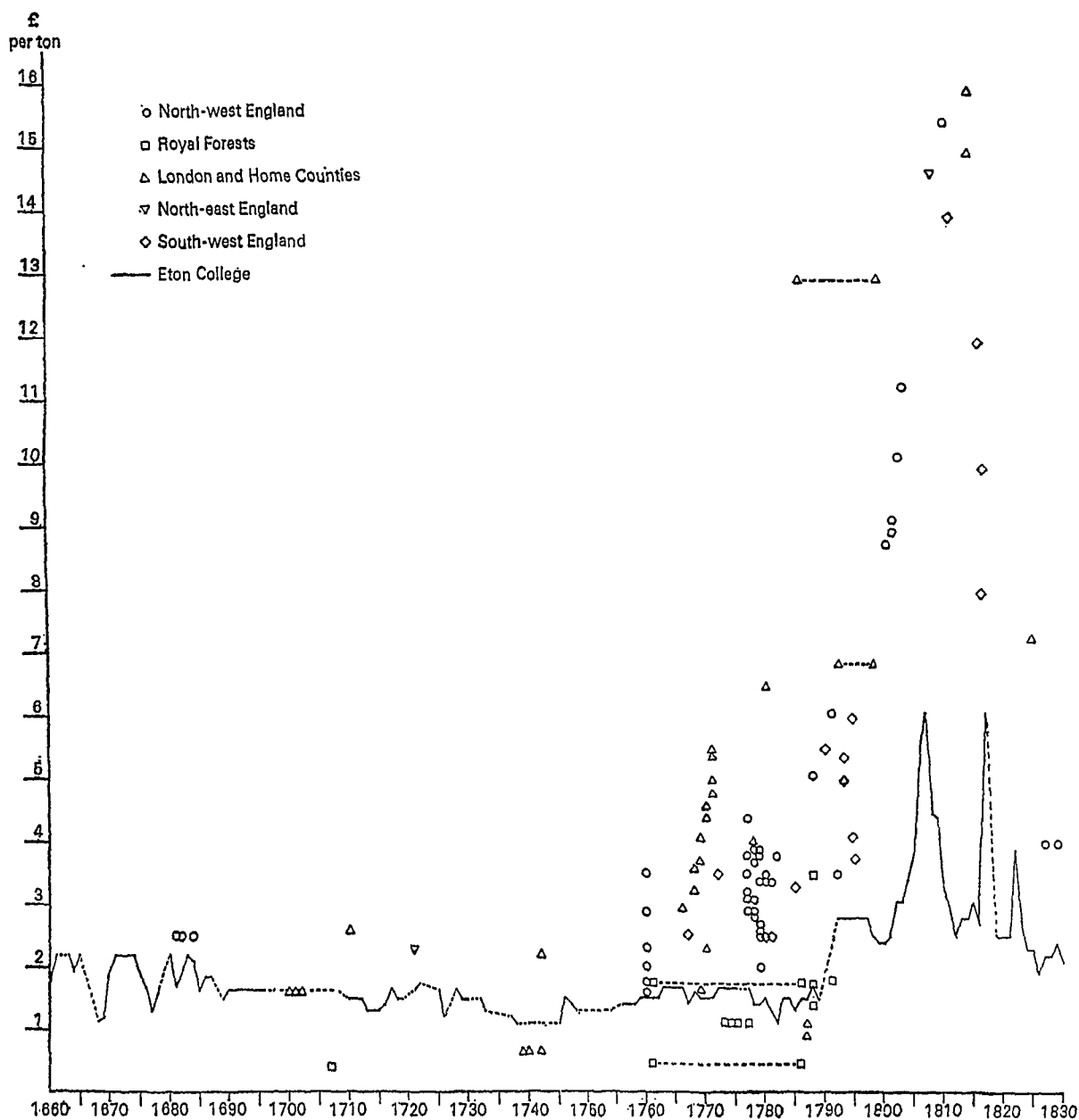
² Complaints of an excessive supply of hides were often made during the 1660's and 1670's. See P.R.O., P.C. 2/88, p. 71; *Cal. S.P.D.* 1675, pp. 369-70.

³ The sources are as follows: *North West*: Carlisle Record Office [hereafter C.R.O.], Lonsdale Estates, D/Lons/; Egremont Estates, D/Lec/; solicitors' records from Cockermouth, D/Ben/4150; K.R.O., Fleming estates, WD/Ry. *London and Home Counties*: *H. of C. Journals*, xxx, 1765-6, pp. 613, 614; lxx, 1797-8, p. 544; B.P.P. 1812, iv, pp. 602, 619; P.R.O., C.107/160; Steer, *loc. cit.*, p. 81; K.A.O., U 120 E10, U 49 E5/1, U 145 E15. *West of England*: *H. of C. Journals*, xxx, 1765-6, pp. 613-15; xliii, 1787-8, p. 572; B.P.P. 1816, vi, pp. 39, 41, 127; G.R.O., D36 E7, D421 E52 E55. *North East*: County Durham Record Office [hereafter D.R.O.], Salvin Estates, D/Sa/E. 731. *Royal Forests*: *H. of C. Journals*, xliii, 1787-8, pp. 572, 619; xlv, 1790, p. 178; xlvii, 1792, p. 106; xlviii, 1792-3, pp. 481, 504.

⁴ For evidence supporting this assumption, see below p. 150.

1790's expenditure probably reached more than £300,000 a year, and exceeded £1 million a year in the early nineteenth century. After the Napoleonic Wars the amount spent declined sharply.

Tantalizingly vague as these figures are, they enable us to put the value of the bark trade into perspective. The most important agricultural by-product in England



For sources see text.

FIG. II
Bark prices: England, 1660-1830

and Wales was wool, the output of which was worth, according to contemporary estimates, about £2 million a year at the end of the seventeenth century, over £2.1 million in 1741, £3 million in the 1770's, and between £5.5 million and £6 million by the end of the century.¹ In the 1720's and '30's, therefore, the total amount of money spent by tanners on bark was possibly the equivalent of 8 or 9 per cent of the proceeds of wool sales. This figure fell to 5 per cent or less in the early 1740's, and then rose again to around 7 per cent in the 1760's or 1770's. By the beginning of the nineteenth century the value for bark demanded by tanners may have been the equivalent of 10 to 15 per cent of the value of wool production.

II

Before attempting a closer assessment of the economic importance of the bark trade it is necessary to investigate its structure. The fundamental fact about bark was that it was not grown because tanners needed it, but as a by-product of timber and wood fuel. Bark could not be removed from growing trees without killing them, so tanners and bark dealers had to buy bark as it became available in response to forces over which they had little control. The supply was highly inelastic in the short-run and prices fluctuated sharply. During the Napoleonic Wars, for example, when the demand for leather rose in response to military requirements, bark prices rose more than threefold.² When the war ended in 1815 the demand for leather declined and the price of bark fell to a point where, in some parts of the country, it was below the cost of peeling it from the trees.³ In the long-run, supplies of bark kept more or less in line with the requirements of tanners since, in a very general way, leather and timber were in joint demand by domestic and industrial consumers. As the demand for timber grew during the late seventeenth and eighteenth centuries there was an increasing cultivation of coppices and a more systematic exploitation of natural woodlands, and as the output of timber and wood fuel increased the supply of bark increased as well. However, woodlands competed with other forms of land-use and the systematic production of timber required a long-term view of land-use that many landowners did not possess when faced with alternative crops offering quicker returns. Even in the long-run, therefore, tanners could not hope that their needs would be adequately met from domestic sources.⁴

The uncertainties surrounding the supply of bark shaped the arrangements tanners made to satisfy their needs. The fatalistic might hope that every year enough trees would fall down in their neighbourhoods, but this was not a recipe for successful business, and most tanners needed more bark than could be left to chance. With the aid of some crude arithmetic it is possible to estimate the amount of bark the "average" tanner used in the early nineteenth century. There were nearly 6,000

¹ P. Deane, 'The Output of the British Woollen Industry in the Eighteenth Century', *Jnl. Econ. Hist.*, xvii, 1957, pp. 209, 211, 216, 218.

² B.P.P. 1812-13, iv, p. 602. See also figure II. ³ B.P.P. 1816, vi, p. 86.

⁴ For a discussion of these points see R. G. Albion, *Forests and Sea Power: The Timber Problem in the Royal Navy*, Cambridge, Mass., 1928, ch. III, *passim*. See also *H. of C. Journals*, LIII, 1797-8, pp. 544-5, where it is stated that the increased demand for naval timber had temporarily eased the serious shortage of oak bark.

tanners in England and Wales in 1841.¹ Ten years earlier tanners had used roughly 95,000 tons of bark (one-third of it imported), or about 16 tons per tanner. It is very difficult to judge how many oaks were needed to yield this amount of bark since trees come in all shapes and sizes. A tree of forty years' growth contains roughly 100 cubic feet of timber and can be expected to yield 9–12 lb. of bark per cubic foot, equivalent to 8–10 cwt. per tree. In 1739 twenty oaks felled near Chart-ham in Kent yielded 3.1 loads of bark, or nearly 7 cwt. per tree. In the early nineteenth century, oaks eighty years old gave about a ton and a quarter of ship-building timber and therefore approximately 7½ cwt. of bark, as well as bark coming from those parts of the tree unfit for shipbuilding. An average tanner, therefore, used at the very least the bark of three or four dozen mature trees a year, or even more coppice oaks, which provided the finest bark.²

A glimpse of the way in which tanners organized their supplies is provided by the account book of John Nicholson a tanner of Cockermouth, Cumberland, in the 1770's.³ In 1778 he bought "about 600 quarters of Bark this year" in twenty-one separate lots, and from at least twelve different locations. The majority of his suppliers lived at Wasdale and Eskdale, fifteen to twenty miles south of Cockermouth, but he also bought bark at Bootle-in-Furness more than thirty miles away. Nicholson's account book covered the period 1778–82 and shows that he had his regular suppliers. This was common, and the connection between growers and tanners sometimes lasted for many years. In 1659, for example, Sir Daniel Fleming of Rydal Hall in Westmorland sold "the bark off three blowne trees" to James Dickson of Coniston; nearly a quarter of a century later the Dicksons were still buying bark from the Fleming estates.⁴ Both tanners and landowners benefited from established contacts. Since bark was not produced in direct response to price, prospective purchasers had much to gain by maintaining links with potential suppliers, who, in their turn, found an income by selling the by-products of timber and wood-fuel.

Bark was often bought while it was still on the trees. In August 1721, for example, Bryan Salvin of Croxdale, County Durham, agreed with Francis Hamson, a tanner from Durham City, to sell to him all the bark of any oaks that he, Salvin, might fell, at a fixed price of 8s. a quarter.⁵ A similar arrangement operated on the Filmer estates near Chart-ham, Kent, where the account book for 1719 noted "that Mr. Daniel Endesbury Tanner in Long Lane Southwark gives 40s. per load for Tan delivered at Mr. Hall's Key Maidstone. . ."⁶ A more formal agreement was made in 1723 between Sir Baldwin Conyers, Bt, the owner of coppices in the Forest of Dean, and William Harrison, a tanner of Newnham in Gloucestershire, whereby Harrison was given a lease for twenty-one years of Conyers, coppice bark for £60

¹ 1841 Census, *Great Britain: Occupation Abstract*, B.P.P. 1844, xxvii, p. 281.

² The calculation of bark yields are based on the following: K.A.O., U 120 E9; Haviland, *op. cit.*, pp. 2–5; Albion, *op. cit.*, p. 9; F. N. Howes, *Vegetable Tanning Materials*, 1953, p. 85; H. L. Edlin, *Trees, Woods and Man*, 1956, p. 8; McCracken, *op. cit.*, p. 80.

³ C.R.O., D/Ben/4150.

⁴ K.R.O., WD/Ry no. 33b. Account book entries dated 29 Sept. 1659, 18 July 1677, 1 Jan. 1681/2.

⁵ D.R.O., D/Sa/E731, p. 11. ⁶ K.A.O., U 120/E10.

per year. Conyers agreed to fell an average of 2,000 cords of wood a year and permit Harrison reasonable access into the woods. Harrison for his part agreed to pay the rent in half-yearly instalments and to avoid damaging the coppices.¹ A slightly different agreement between John Bathurst, a proprietor of coppices in Lydney, and John Probyn, a tanner from Wallstone in Gloucestershire, illustrates another aspect of bark sales. In April 1790 Probyn bought for £40 the rights to an estimated 55–65 tons of bark still attached to growing trees. Until the end of July Probyn's employees were allowed to enter the woods to "strip, Rank, Dry, Harvest and Weigh, take and carry away" the bark and, in addition to the initial £40, Probyn paid £5 7s 6d. for every ton of bark cut.² As was common in the Forest of Dean, costs of peeling were borne by the buyer. According to a timber surveyor writing in 1817 this was the universal practice. Possibly he was thinking of the south of England, for on estates in Westmorland, Cumberland, and County Durham the expenses of removing the bark were met by the sellers.³

Whoever paid the stripping costs, the procedure for harvesting was the same. The trees for peeling were marked, and carpenters and peelers were hired to fell them and remove the bark. The easiest way of peeling was to take the bark from trees that were still standing, but more often trees were stripped after being felled. The peelers used an iron 'spud,' consisting of a rod about two feet long, with a handle at one end and a point shaped like the ace of spades at the other. The bark was removed in pieces about two feet long and as wide as the circumference of the tree permitted. Dead outer bark and lichen was scraped away and the strips were propped up to dry in the sun and wind. The lease drawn up in 1723 between Conyers and Harrison provided that Conyers should "cutt proper and sufficient Lights in the Coppices for drying the bark and also to allow the said William Harrison. . . the use of a Storehouse. . . to house the saide Barke untill he can conveniently remove or carry away the Same." Drying was usually complete in about a fortnight and the bark was taken under cover for "hatching" into pieces two or three inches long, ready for packing into sacks.⁴

By about the third quarter of the eighteenth century, if not earlier, the labour-intensive operation of hatching bark by hand was sometimes replaced by bark-grinding mills. In their simplest form they consisted of an upright grindstone with a toothed rim, propelled by horse power around a circular trough. More sophisticated versions were driven by water and practically any kind of mill could be adapted to bark-grinding.⁵ From the 1760's tanners in Cumberland leased corn,

¹ G.R.O., D421 E56. ² G.R.O., D421 E52.

³ Haviland, *op. cit.*, p. 495; C.R.O. D/Lec/Box 107; D/Lec/ATK; D/Lons/L, *passim*; D.R.O. D/Sa/E722.

⁴ This account is based on estate references as in n. 3, p. 141 and also: Haviland, *op. cit.*, pp. 495–6; Howes, *op. cit.*, pp. 82–4; C. N. Hart, *The Industrial History of Dean*, Newton Abbot, 1971, pp. 332–3, and illustrations facing p. 276.

⁵ In the early stages of industrialization—and indeed in pre-industrial economies generally where capital was scarce—fixed capital was frequently adapted from one use to another. See D. S. Landes, 'Technical Change and Industrial Development in Western Europe 1750–1914', in H. J. Habakkuk and M. M. Postan, eds., *Cambridge Economic History of Europe*, vi, pt 1, *The Industrial Revolution and After*, Cambridge, 1965, pp. 297–8; S. D. Chapman 'Fixed Capital Formation in the British Cotton Industry, 1770–1815', *Econ. Hist. Rev.*, 2nd ser., xxiii, 1970, pp. 236–7.

fulling, and hemp-beating mills for conversion to bark-grinding mills. One such lease in 1784 provided that "the other tanners in Cockermouth may have their bark ground at the said mill, they paying a fair and full proportion of the servants' wages, mill rent, repairs and all the other charges according to the quantity of bark they grind." Tanners possessing mills, in fact, seem to have been setting up as dealers by processing more bark than their own tanning businesses required.¹

After harvesting, bark was taken by cart and barge to the tanneries. As with stripping, costs were met sometimes by the growers, sometimes by purchasers, and sometimes shared between buyers and sellers. Bark taken from trees in the Weald of Kent in the early eighteenth century was carted at the landowners' expense to Maidstone or Canterbury, where it was bought by tanners from London. When John Nicholson of Cockermouth bought bark in the 1770's and 1780's on the western fringes of the Lake District, the purchase price usually included delivery to Egremont, about sixteen miles southwest of Cockermouth. Prices paid in London in the early nineteenth century generally included the costs of transport.²

Individual tanners spent large sums on bark. Accepting that in the early 1790's the annual expenditure on bark was over £300,000, and assuming that there were then between 5,000 and 6,000 tanners in England and Wales,³ tanners on average spent £50 or £60 a year on bark. John Nicholson of Cockermouth laid out roughly £300 for bark in 1778. In 1799 a firm of tanners in Northampton paid £354 in a single year for bark taken from Whittlewood forest, and another tanner £212 for bark from Salcey forest; in 1793 two partners in Gloucestershire bought bark worth £533; and between 1792 and 1796 a tanner from Maldon in Essex paid £1,860 for bark.⁴ Extended payments were common. Nicholson, for example, bought most of his bark between May and August, but payments are entered in his account book throughout the autumn and winter. To take another example, when bark was sold by auction in Lydney, Gloucestershire, in June 1785, the purchaser was required to pay cash for 10 per cent, and to offer sureties for the balance which was payable by 25 December.⁵

The purchase of bark was, clearly, not a straightforward matter and it is not surprising that middlemen moved into the business, notwithstanding a clause in the still extant statute of 1604 (1 Jac. I, c. 22) prohibiting their activities. The case for dealers was put somewhat ponderously in 1807 by a parliamentary committee considering the operation of this clause. The committee concluded that tanners needed dealers because of "the bulky nature of Bark, and the consequent difficulty of

¹ Descriptions of bark mills can be found in: Dublin Society, *The Art of Tanning and Currying Leather*, 1780, p. 24; P. C. Welch, *Tanning in the United States to 1830*, Washington, 1964, p. 2, reproducing an illustration from *A New and Complete Dictionary of the Arts and Sciences*, 4 vols., 1764; leases in C.R.O., D/Lec/Box 106, D/Lec/10/41. A bark mill dating from before 1810 still stands at Ambleside, Westmorland. Bark mills were established in Godalming, Surrey, in 1808 and 1810.—*Victoria County History, Surrey*, vol. II, 1905, p. 340.

² K.A.O., U 120 B9, E10; C.R.O., D/Ben/4150; D/Lons/L, *passim*; B.P.P. 1812-3, IV, p. 621.

³ Above, p. 144. The figure of 5,000-6,000 is a guess based on the number of tanners in 1841.

⁴ C.R.O., D/Ben/4150; P. A. J. Pettit, *The Royal Forests of Northamptonshire: A Study of their Economy, 1558-1714*, Northants. Records Society, XXXI, 1968, p. 161; G.R.O., D 421 E55; Steer, *loc. cit.*, p. 51.

⁵ G.R.O., D 421 E55.

removing it, from its own durability, and perishable nature of the commodity for the manufacture of which it is necessary, from the general inadequacy of the supply. . . .” On the same topic a Board of Trade official, displaying a mild touch of *laissez-faire*, observed that “the apparent injustice of depriving the owner of the Bark of the assistance of a Middleman which is allowed in every other kind of Traffic, will probably induce the Legislature to deny” any attempt to enforce the old restriction.¹

That middlemen were not newcomers to the bark trade at the time of the parliamentary committee is demonstrated by the survival of papers relating to Richard Jones, a bark dealer of Bermondsey in the early eighteenth century. From this evidence an insight can be gained into several aspects of the dealers’ business and into the wider significance of small traders in the eighteenth-century economy.² The papers describe Jones both as a tanner and as a barkman but his probate inventory suggests that he was exclusively a dealer in bark. Probably the majority of bark dealers emerged from the ranks of tanners but some had other origins. An unnamed Essex dealer supplying London tanners in the 1780’s and 1790’s, was a carpenter turned timber merchant, while William Clarkson, a dealer based at Lydney, also in the 1780’s and 1790’s, was described as a gentleman.³ Richard Jones owned a two-roomed house in Bermondsey and also rented a room and stable at Guildford, spending much time away from home collecting bark throughout the well-wooded counties of Surrey, Hampshire, Berkshire, and Sussex. Bark from this region was highly prized by tanners because of its high tannin content and much of it was grown in traditional iron-making districts in the Weald as a by-product of charcoal manufacture.⁴ Such a large catchment area was necessary to satisfy the omniverous demands of London tanners for bark, and made direct dealings between tanners and woodland proprietors difficult. Jones stored bark in barns in various places until it could be packed in sacks, which belonged neither to Jones nor his customers, but to a Mr Moore. When empty, tanners were expected to return the sacks to Moore. In June 1710, Moore wrote angrily to a tanner in Southwark: “Take notice that iff you do not forthwith Bring my sacks home and pay for the use of them for the time you have had them I will give you troubell for the whole value of them for the time you have had them ever since before Alayday (sic, Lady Day?). . . .” Jones and his employee spent much labour in recovering and repairing Moore’s empty sacks, thereby conserving scarce stocks of capital.⁵ After

¹ B.P.P. 1807, II, p. 298; P.R.O. BT6/178; ‘Observations on 1 Jac. I, c. 22’ (no pagination).

² P.R.O., Chancery Master’s Exhibits, C107/160. Most of the papers are letters and accounts passing between Benjamin Wild, Jones’s executor, and Joseph Hooper who had been employed by Jones as a bark shearer. They were among those of Wild’s, deposited in Chancery in 1725 in connection with litigation concerning Wild’s own estate. The documents are unnumbered.

³ Steer, *loc. cit.*, pp. 45–52; G.R.O., D421 E56.

⁴ Howes, *op. cit.*, pp. 85–6. Direct evidence of the association between ironworks and bark supplies in the Weald is lacking for the eighteenth century, although it exists for earlier periods (see *Hist. Mss. Comm., Hatfield MSS.*, XIII, p. 24). The production of coppice wood for iron furnaces and bark for tanners went hand in hand in the mid-eighteenth century in the West Riding, Gloucestershire, and elsewhere (see *H. of C. Journals*, xxv, 1745–50, pp. 1018–19, 1042, 1048–9, 1051, 1053).

⁵ Abraham Dent, a hosier of Kirkby Stephen, Westmorland, also went to considerable pains to recover his

bagging, the bark was sent to London. Carters were hired at "a Great Price" to take bark to Guildford where it was put on to barges for London. It was not always easy to keep trace of consignments as they lumbered their way from the Sussex woodlands and, after Jones's death, his executor was convinced that the bargemen were "a parcel of Knaves because I cannot find they owne neare the quantity he gave me acct of."

Some aspects of Jones's business are hazy. His relationship with the owners of woodlands is unknown. There is a hint that Jones did not always buy bark, but sometimes acted as an agent for the growers. Nor is the scale of his business clear. There were apparently 142 full sacks of bark at his house after his death, and at least another 94 in barns in various parts of the country. One consignment of bark is mentioned twice, once as containing just over five loads, and once as consisting of 81 sacks. Assuming a standard load of 45 cwt. every sack must have contained about 336 lb. of bark.¹ At the very least, therefore, Jones possessed roughly 35 tons of bark when he died. Despite such uncertainties, Jones can be clearly seen fulfilling the vital functions of the middleman: buying bark in four counties and bulking it into large consignments required by the London market; moving bark from where it was valued least in the sylvan glades of Surrey and Sussex to where it was valued most in the stinking tanneries of Bermondsey and Southwark; economizing the capital requirements of tanners by storing bark, and attending to its transport. Tanners living in country districts without the benefit of a well-organized trade had to meet these costs themselves, and more than a hundred years after Jones's death a tanner in Somerset told a parliamentary committee that "we find it necessary to lay in a great stock of bark in the country because we cannot always command it."²

III

We can now consider more fully the value of bark to the various interests involved in its trade. Many landowners were unconcerned with bark as a commercial product. It is possible to examine account books even of well-timbered estates that never show the sale of a single shred of bark.³ So little valued was bark in crown woods in the Forest of Dean during the eighteenth century that revenue from its sale was allowed to the keepers as a perk.⁴ The navy commissioners paid

packing materials from his customers in London. See T. S. Willan, *An Eighteenth Century Shopkeeper: Abraham Dent of Kirkby Stephen*, Manchester, 1970, pp. 86-8; cf. P. T. Bauer and B. S. Yamey, 'Economic Progress and Occupational Distribution', *Economic Journal*, LXXI, 1951, p. 745: "In West Africa to-day there is an extensive trade in empty containers such as kerosene, cigarette, and soup tins, flour, salt, sugar and cement bags and beer bottles . . . Usually the containers are used again the storage and movement of goods. Those who seek out, purchase, carry and distribute second-hand containers maintain the stock of capital . . . The activities of the traders represent a substitution of labour for capital."

¹ For examples of large sacks used in other trades see Zupko, *op. cit.*, pp. 149-51.

² B.P.P. 1816, VI, p. 63.

³ E.g. the four large volumes of timber accounts belonging to the Miller estates between 1821 and 1824, in the care of the Kent Archives Office (K.A.O., U791).

⁴ *H. of C. Journals*, XLIII, 1787-8, pp. 571-2, 575, 609. In 1788 money from the sale of oak bark was the most important emolument for five out of the six keepers.

an extra 7½ per cent for winter-felled oaks taken from the royal forests—there was a belief that winter felling yielded the best timber for shipbuilding—to compensate for the loss of revenue from the sale of bark which was useless when stripped out of season. Various accounts of timber and bark sales from the royal forests in the late eighteenth century suggest that bark usually sold for between 7 and 10 per cent of the value of timber and cord wood, but sometimes it fetched considerably less.¹ On the other hand bark could be a valuable product for woodland proprietors. In the early eighteenth century it was claimed that the “Chief profits of severall Hundreds of Landowners Estates in Westmorland Consists in selling yearly some Barke and some Cordwood, and . . . if deprived of selling their Barke they will lose half the profits of their Estates. . . .”² Bark in Sherwood Forest was worth half the value of the trees in 1791, “one with another, great numbers of them being hollow and decayed. . . .”³ and in 1807 the Board of Trade was told that “the Bark of an Oak Tree is now of more than half of the value of the Timber it has covered . . .” because of the wartime increase in prices.⁴ But it was not only in years of high prices that bark was an important woodland commodity for some landowners, as can be seen from the valuations given to bark, timber, and cordwood on the Egremont estates in west Cumberland at the time of the conversion of copyholds to leasehold tenures from 1760. For example, the timber, bark, and cordwood of 495 trees in Cockermouth Parks in 1760 were valued at £202, 36 per cent of which was the value of the bark. On ten copyholds on the manors of Braithwaite and Coledale in 1777 the bark, at £158, was worth 52 per cent of the value of all woodland products. In the same year bark of trees growing on eight tenements on the manor of Derwentfells was valued at 46 per cent of the combined value of the timber, bark, and cordwood. Eleven years later, 1,349 trees on the same manor were valued at £286, of which 51 per cent came from the bark. The manors of Braithwaite and Coledale were surveyed again in 1791, when six copyholds together with hedgerows were found to contain £661 worth of timber, bark, and cordwood, 46 per cent of which was the value of the bark.⁵

The income from bark sales sometimes went to tenants, but more often to their landlords. The surveys of the Egremont estates suggest that the ownership of timber and related products growing on copyholds was reserved to the lord of the manor; but after conversion to leaseholds the income from wood and bark sales went to tenants, and this was taken into account in setting the rent. Similarly the Earls of Lonsdale controlled the timber rights on their estates in east Cumberland and Westmorland, and a survey of other estates suggests that this was the usual practice elsewhere. However, a different arrangement occasionally operated. In 1685, for example, tenants of the Queen in Westmorland, who had customarily

¹ *Ibid.*, XLIII, 1788, pp. 619, 620; XLIV, 1788–9, p. 625; XLV, 1790, p. 178; XLVI, 1790–1, p. 123; XLVII, 1792, pp. 183, 226, 276, 1061.

² K.R.O., WD/Bro. vol. XIV (125) (no date, about 1717). ³ *H. of C. Journals*, XLVIII, 1792–3, p. 481.

⁴ P.R.O., BT6/178.

⁵ P.R.O., D/Lec/106, 120, 85. For similar valuations of trees on the manors of Eskdale, Netherwasdale, Mitredale, and Westwood see D/Lec/94, 119.

kept income from the sale of bark for themselves, became involved in litigation with their landlady who claimed the revenue for herself.¹

Part of the gross revenue from the sale of bark went into the pockets of the peelers. It is difficult to generalize about stripping costs since they varied according to the age of the trees, the quality of the bark,² and whether the bark was removed before or after felling.³ Peeling costs in woods around Chartham in Kent were roughly half of the price of the bark at Canterbury and Maidstone in the 1720's. In 1742 just over five loads of bark were stripped in Hayworth Wood near Chartham at a cost of £4 12s. Transport to Canterbury cost another £2 6s. where the bark was sold for £8 12s. 6d.⁴ At the end of the eighteenth century the cost of peeling bark from trees on the Lonsdale estates in Westmorland and Cumberland was just under half the selling price; and in 1808 a quantity of bark peeled in Cockermouth Parks for £15 17s. 6d. was sold locally for £22 10s. 6d.⁵

The importance of bark peeling as a casual employment can be seen from the felling and peeling accounts for Southern Close Wood on the outskirts of Durham.⁶ For eighteen days between 30 May and 21 June 1817, four carpenters, eight labourers, thirty-seven peelers, and two draught horses were employed at a total cost of £38 9s. 4d. That the work was a family affair is suggested by the fact that the forty-nine people possessed thirty-two surnames between them, and that among the peelers there were twenty-eight women and girls and eight boys. Adult carpenters were paid between 2s. and 2s. 8d. a day, and labourers from 1s. 8d. to 2s. 6d.; the daily rate for peelers was 6d. or 8d. for children, and 1s. for adults. Individual wages for peelers ranged from 3s. 6d. to 15s. 10d. Small though these earnings were, they provided a useful supplement to family incomes in the lean months before the high demand for agricultural labour generated by the grain harvest.

Transport costs probably varied even more than peeling costs, contributing to regional differences in the price of bark. In the early 1740's, for example, when bark was selling in Canterbury for £1 14s. 6d. a load, the price in London fifty-six miles away was three times higher, although part of the difference was caused by the greater pressure of demand in the capital.⁷ Costs of transport, however, rarely forced tanners to seek sites close to the sources of bark, in marked contrast to ironmasters whose locations were determined by the accessibility of charcoal. The most important influence on the location of tanning was the supply of hides, and these were produced close to the urban meat-consuming markets and in livestock-rearing districts. Hides normally accounted for a substantially greater part of production costs than bark,⁸ they were perishable and, furthermore, they lost up to half their weight in tanning. It was therefore normally more economic to shift bark

¹ K.R.O., WD/Bro. vol. xiv, (156).

² The bark of 500 trees in Cockermouth Parks was said to be "tedious and Bad to peel" in March 1760.—C.R.O., D/Lec/106.

³ In 1792 it was said to cost one-third more to take the bark from felled timber than from standing trees.—*H. of C. Journals*, xlvii, 1792, pp. 227–8.

⁴ K.A.O., U 120 E9, E10. ⁵ C.R.O., D/Lons/L. *passim*; D/Lec/Box 107. ⁶ D.R.O., D/Sa/E 722.

⁷ K.A.O., U 120 E9, E10; *H. of C. Journals*, xxxiii, 1770–2, p. 613. ⁸ B.P.P. 1816, vi, pp. 52, 60, 75, 127.

to the hides rather than the other way round.¹ Bark was taken by road in carts, each containing at least two tons, to some convenient point for loading on to barges; in Kent, Canterbury, and Maidstone were the main collecting centres; in Surrey, Guildford on the river Wey was the immediate destination for bark produced in Surrey, Sussex, and Hampshire. From the ports bark was taken by barge to the urban wharves, and so to the tanneries.

The importance of bark to the transport industry is best gauged by comparing the quantities and volumes of bark carried with other commodities entering inland commerce. The greatest pressures on the transport system in the eighteenth century were created by the coal trade. Coal production in Britain was probably about 3 million tons at the end of the seventeenth century, 5 million tons a year in the 1760's and 1770's, and 11 million tons in 1800; bark production was barely 1 per cent of this. But other comparisons show bark to greater advantage. For example, the volume of corn production in England and Wales exceeded 15 million quarters a year in the 1720's and '30's. By 1760 it was almost 17 million quarters; by 1790 over 20 million quarters, and by 1810 more than 24 million quarters. The corresponding volumes of bark produced in England and Wales (calculated from the tonnage figures on p. 139 above) were 3.2 to 3.5 million quarters, 4.1 million quarters, 4.7 to 5.0 million quarters, and 5.3 million quarters. The volumes of bark entering trade, that is, were between a fifth and a quarter of the volumes of grain. To be more specific, the brewing industry, itself a major industry in the predominantly agrarian economy of eighteenth-century England, used roughly 3 million quarters of barley a year, which was smaller than the volume of bark used by tanners. Turning to non-food stuffs, the weight of the English wool clip at the beginning of the eighteenth century was roughly 18,000 tons; in 1741 it was over 25,000 tons, and in 1805 nearly 42,000 tons. These quantities were less than half the weight of bark carried from the woodlands to the tanneries.² Admittedly much bark was moved over only short distances, but some, as was the case with bark taken from Kent, Sussex, or Hampshire to London, travelled fifty or seventy miles or more.

We can only conjecture on the stimulus given to improvements in transport by the carriage of bark. One of the arguments advanced in favour of improving the river Don in 1722 was that town down-stream would be supplied more cheaply with "hewn stone, lyme, wood and bark, which abound in the country lying up this River." Bark was one of the commodities moved along the improved Beverley Beck in Yorkshire in 1730-1, and it may be significant that a timber merchant was an investor in the Deal-Sandwich Turnpike Trust in 1798.³ Nor is it clear how much

¹ London as the greatest meat producing centre in the country, produced more hides than could be tanned locally, and some raw hides, therefore, were shipped elsewhere in the sixteenth, seventeenth, and eighteenth centuries. See Clarkson, *loc. cit.*, pp. 32, 36-7.

² These calculations are based on J. U. Nef, *The Rise of the British Coal Industry*, 1932, I, pp. 19-20; Deane and Cole, *op. cit.*, pp. 65, 68; P. Mathias, *The Brewing Industry in England, 1700-1800*, Cambridge, 1959, pp. 389-90.

³ T. S. Willan, *The Early History of the Don Navigation*, Manchester, 1965, pp. 6-7; *idem*, *River Navigation in England, 1600-1750*, Oxford, 1936, p. 126; W. Albert, *The Turnpike Road System in England, 1663-1840*, Cambridge, 1972, p. 107.

tanners benefited from better transport. The more efficient road and river network being created between 1660 and 1830 may have prevented the rise in bark prices from becoming severe before 1790. Probably improved transport played a part in the gradual development of regional specialization in tanning in the eighteenth and early nineteenth centuries.¹ Certainly, the roads and rivers of England enabled tanners in pre-industrial England to obtain their bulky raw materials without too much difficulty. In the last analysis, of all the groups involved in the bark trade—producers, transporters, and tanners—it was the tanners who were most dependent upon it. And it was the demands of tanners that gave employment to bargemen, carters, peelers, and carpenters, and created a market for an otherwise useless agricultural by-product.

¹ On this point see, briefly, Clarkson, *loc. cit.*, p. 39; a fuller discussion will be found in my forthcoming book.

Notes and Comments

TRANSFER OF THE ROYAL AGRICULTURAL SOCIETY'S ARCHIVE TO READING UNIVERSITY
In August 1973 the Royal Agricultural Society of England deposited its historical records with the Institute of Agricultural History and Museum of English Rural Life, Reading University. The material is to be held by the University on permanent loan.

The records consist essentially of the archive of the Old Board of Agriculture 1793–1822, and the archive of the Royal Agricultural Society from 1838–196–. The Old Board of Agriculture material is not extensive, but is important as a record of an early quasi-official attempt to discover the agricultural state of the Kingdom, and to promote new and scientific habits in husbandry.

The Royal Agricultural Society's records, on the other hand, are both detailed and fairly complete. They include, for example, minute books, reports on the proceedings of Council and Committees, lists of members and correspondence, accounts, legal papers, and social

and personal ephemera. The archive is of interest to the historian, both in documenting the past achievements of the Society and in providing additional information on the progress of agricultural research and technical innovation in the nineteenth century.

A listing of the records has been published and is available, price 50p, from the Institute of Agricultural History, The University, Whiteknights, Reading RG6 2AG,

GENERAL HISTORICAL GEOGRAPHY

Readers of the REVIEW will be interested to hear that a new journal of historical geography is to commence publication in January 1975. The journal is to be edited in English by John Patten of the Oxford School of Geography, and in America by Andrew Clark of the University of Wisconsin. Enquiries regarding subscriptions should be addressed to the Academic Press Inc. (London) Ltd, 24–28 Oval Road, London NW1 7DX.

(continued on page 177)

The English Dairy Industry, 1860-1930: the Need for a Reassessment

By DAVID TAYLOR

"The cow is a walking beatitude . . . we could not run history well without her."—T. SWANN, *Agricultural Gazette*, xxii, 1885, p. 471

WRITING in 1938, Viscount Astor and Seeborn Rowntree considered milk to be "the most important product of British Agriculture . . . far more truly the cornerstone of our agriculture than wheat,"¹ while some thirty years earlier John Prince Sheldon, an authoritative and exhaustive writer on dairying matters, had proudly drawn attention to the "exalted position which dairy farming fills today as compared with forty years ago."² These claims can be substantiated with relative ease. In an appendix to a well-known article, T. W. Fletcher gave his revised version of Ojala's estimates of the structure of gross agricultural output in England in the latter years of the nineteenth century.³ These figures show that in the period 1867-71 to 1894-8 the contribution of wheat to gross output fell from 21.9 per cent to 6.8 per cent, whereas that of milk rose from 11.9 per cent

to 18.1 per cent. By the end of the nineteenth century milk had emerged as the most important single item sold off English farms. During the first three decades of the twentieth century this position was more than consolidated. According to official estimates dairy produce accounted for 20.0 per cent of gross agricultural product in 1908, 25.6 per cent in 1925, and 27.1 per cent in 1930-1.⁴ The relative importance of the dairy industry is further illustrated in table 1.

For the consumer, as well as the producer, milk became of increasing importance during the period. Roughly speaking, the total consumption of milk increased from some 170 million gallons in 1861 to just under 600 million gallons by the turn of the century, and reached over 830 million gallons by 1931. *Per capita* consumption also rose from 9 gallons a year to 15, and finally to 22 gallons in the same years.⁵

TABLE I

THE STRUCTURE OF GROSS AGRICULTURAL PRODUCT IN ENGLAND AND WALES, 1930-1

Commodity:	Liquid milk	Other dairy produce	Beef and veal	Mutton and lamb	Total crops
Value (£M)	47.5	7.7	29.9	15.6	33.2
% of total (including horticultural produce)	23.4	3.8	14.6	7.7	16.4

Source: B.P.P. 1933-4, xxvi, pp. 57-8.

¹ Viscount Astor and B. S. Rowntree, *British Agriculture*, 1938, p. 251.

² J. P. Sheldon, *British Dairying*, 1908, p. 68.

³ T. W. Fletcher, 'The Great Depression of English Agriculture, 1873-96', *Econ. Hist. Rev.*, 2nd. ser., xiii, 1961, p. 432.

⁴ B.P.P. 1927, xxv, pp. 76-7; B.P.P. 1933/4, xxvi, p. 39.

⁵ In the absence of reliable statistics the question of changing demand for milk is a complex one. The figures given here are "guesimates" based on several contemporary sources and on calculations of total yields of the national herd. I hope to discuss the question more fully in a further article.

From these few figures there can be little doubt about the importance of the dairy industry. Yet when one turns to the various works on English agriculture one is struck by the lack of balance that characterizes the treatment of the subject. Livestock farming generally is underwritten, while dairy farming scarcely receives more than passing reference.

I

Nowhere is this neglect of dairying more apparent than in the general economic histories of the period. In the one book attempting to deal statistically with long-term economic growth, P. Deane and W. A. Cole have only two references to dairy produce, both relating to the increase in imports of butter and cheese.¹ Beyond that there is no mention of dairying in relation to the changing structure of English agriculture in the later stages of industrialization. W. Ashworth runs to five references, three of which talk of the import of cheese and butter.² The other two refer to the increased demand for milk and meat, and their limited consumption by the poor. However, he does suggest that "in real terms people engaged in producing meat or milk for nearby urban markets probably suffered no worsening of their economic position."³ This point had been made earlier by G. P. Jones and A. G. Pool, who having outlined the movement in milk prices (but not of production costs), refer to the increasing demand for milk in general.⁴ However, less than ten lines in a twenty-page chapter is hardly an accurate reflection of the position of the dairy industry. Similarly, J. D. Chambers has very little to say about dairy farming after Repeal, except that it "was beginning to respond to the growth of knowledge of scientific feeding for milk production."⁵ R. S. Sayers, looking at the years 1880-1939, has a little more to say, but, beyond the mention of Scots in Essex, increased imports of dairy produce, and the growth of

the rail-borne milk trade, there is only the view (unsupported by any figures) that "only milk remained generally profitable."⁶ In the most recent general economic history of Britain, P. Mathias, relying upon certain well-known articles to buttress his own work on retailing, goes some way in acknowledging the importance of dairying, but such is the state of knowledge that only a brief coverage is given. Nor does the position improve significantly as one moves on to the 1920's.⁷ S. Pollard has only one reference to dairy farming.⁸ Concerned primarily with the establishment and work of the Milk Marketing Board, he gives an outline survey of trends in the 'twenties without ever getting to grips with the subject. By implication he suggests that conditions were satisfactory until the slump in world prices of cheese and butter—an argument that ignores two of the basic problems facing the dairy industry during that decade, namely stagnating demand and an oversupply situation intensified by new sources of supply on the chalklands. D. H. Aldcroft, in a book devoted to the inter-war years, can manage nothing more than one reference to a "significant" but unquantified increase in the consumption of dairy produce in the period 1909-14 to 1934-8, and another referring in general terms to protection offered to the economy in the 1930's—measures that included milk.⁹

It would, however, be grossly unfair to suggest that this neglect is in any way deliberate. To a large extent it is no more than a reflection of the limited coverage given in agricultural histories. It is a serious criticism of agricultural historians in Britain that, in their published works at least, very few have accorded dairy farming the recognition it deserves. Lord Ernle's *English Farming: Past and Present*, for long the standard text of students of English agricultural history, contains less than a dozen references to dairy farming in the period under review. In the well-known chapter xvii, *High*

¹ P. Deane and W. A. Cole, *British Economic Growth*, Cambridge, 1962, pp. 32, 74.

² W. Ashworth, *An Economic History of England*, 1960. ³ *Ibid.*, p. 67.

⁴ G. P. Jones and A. G. Pool, *A Hundred Years of Economic Development*, 1966, p. 208.

⁵ J. D. Chambers, *The Workshop of the World*, 1968, p. 58.

⁶ R. S. Sayers, *A History of Economic Change in England 1880-1939*, 1967, p. 110.

⁷ P. Mathias, *The First Industrial Nation*, 1969, pp. 345-7.

⁸ S. Pollard, *The Development of the British Economy, 1914-1967*, 1969, p. 140.

⁹ D. H. Aldcroft, *The Inter War Economy: Britain, 1919-1939*, 1970, pp. 349, 368.

Farming: 1837-1874, the only reference declares that "during the period . . . little attention was in England paid to improvements in dairying."¹ However, we are told that, for the years 1890 to 1910, "the chief development . . . was concerned with milk, the demand for which was continuously increasing with the growing population and industrial prosperity."² A brief consideration, however, of the relevant pages of *Agricultural Statistics* suggests in numerical terms growth in the English dairy industry was more striking before 1890 than after. Even taking into account the higher yields obtained by the end of the nineteenth century the years 1890 to 1910 are not characterized by any marked increase in production. The only obvious improvement was in relation to the quality of milk (though even here it was more a case of greater awareness rather than greater effective action), a point which Ernle makes at a later stage. He also mentions such technical advances as the barrel churn, coolers, and separators but there is little attempt to assess their impact. It can be argued that improved butter churns and sophisticated cream separators were largely irrelevant to the English dairy farmers of the late nineteenth century, simply because the majority had abandoned cheese- and butter-making for the easier and more profitable liquid-milk trade. Equally, though one cannot deny Ernle's statement that dairy breeds were improved, it remains true that the crucial breakthrough came much later in the twentieth century when increased knowledge of genetics made it possible for farmers to abandon essentially hit-and-miss methods and move to the greater certainty of purpose-bred animals. Certainly in the late nineteenth century much of the increased yield of the national dairy herd came from more cattle being milked for more days a year, rather than from increases in daily yields per cow.

Ernle's comments on the profitability of dairying are also unsatisfactory. He makes a general statement to the effect that "the English dairy farmer could get a better return by selling milk and abandoning the butter market to their foreign and colonial competitors."³

The statement, though open to some qualification, is basically sound, but there is no indication of the relative prosperity of the various branches of the dairy industry, nor of the reasons for the changes in prosperity, nor yet of the type of person involved in the changes.

The treatment of the 1920's is scarcely more satisfactory. Hosier's bail system was important, but we are not told how widespread this system was, nor how successful it proved to be. The advent of the milking machine, similarly, is not treated in a sufficiently rigorous manner. There were crucial technical and economic constraints on its widespread adoption. It should be remembered that well under 10 per cent of all herds, and of all cows, were machine-milked before 1939. The overall judgement on the period—instability resulting from increased supply and stagnating demand—appears correct as far as it goes. But compared with the detailed study bestowed on arable farming it does not go far enough.

The same criticisms can be applied to a lesser extent, to the other standard text by C. S. Orwin and E. H. Whetham.⁴ The coverage of dairy farming is more comprehensive, though the treatment is predominantly descriptive. The shift from cheese-making to milk-selling receives more attention than in most accounts (though it can be argued that in view of this change the amount of space devoted to cheese-making is disproportionate to its importance), but the supporting evidence is somewhat weak. Morton's estimate of the disposal of milk in the 1870's is quoted without qualification, even though Morton himself had doubts about the validity of his figures, based as they were on a very limited, and hardly representative, sample.⁵ This initial estimate is not easy to check in view of the limited amount of data available. However, two points deserve to be made. First, the overall estimate of the size of the dairy industry is probably too high. Morton's evidence came from above-average farms and it is significant that, writing some ten years later in collaboration with James Long, after more detailed work Morton lowered his estimate of net average yields

¹ Lord Ernle, *English Farming: Past and Present*, 6th edn., 1961, p. 375. ² *Ibid.*, p. 389. ³ *Ibid.*

⁴ C. S. Orwin and E. H. Whetham, *History of British Agriculture, 1846-1914*, 1964. ⁵ *Ibid.*, p. 148.

from 370 gallons per annum per cow and heifer in milk or in calf to 320 gallons without suggesting that there had been any deterioration in the interim. Second, the nature of the evidence tends to impart a bias against the small dairy farmer making and selling butter and cheese in the local market.

The one attempt to evaluate the contribution from dairying relies entirely upon twentieth-century figures. Without denying the immensity of the data problem it is possible, none the less, to piece together scattered evidence to give an approximate view of events. Thus, though the 1908 census of output is the first attempt at a national survey, one can put the information on dairy farming into some perspective by the careful use of such material as that collected by Henry Rew and published in the *Journal of the Royal Statistical Society* for 1892, as well as the many writings, dating from the 1880's, of Morton and Long.

When looking at the profitability of the various branches of the dairy industry, Orwin and Whetham give only a slight indication of the position. Gibbons's estimate of the returns to cheese, butter, and liquid milk in Derbyshire in the late 1870's is a useful piece of evidence, but it is necessary to know how relevant the information is for Derbyshire, as well as for England as a whole.¹ Further, one piece of evidence cannot indicate changes over time. Without underestimating the problems involved in calculating the cost structure of the industry one can suggest general outlines, though these have to be modified in the light of particular local variations. The most readily available price data relates to London. This is obviously not typical but, if it is remembered that the fall in milk prices is probably exaggerated, the data can be used with caution. Production costs cannot be measured with accuracy but changes in the price of feed and labour give a good approximation. Briefly my research suggests that milk-selling retained its profitability after the heady days of the 1860's and 1870's because production costs fell more than prices. This is not to

say that there were particular years in which oversupply proved disastrous, nor is it to say that profit margins were uniform throughout the period, but it does seem that even in the bleak years of the early 1890's milk-selling, as a long-term prospect, remained profitable.

TABLE II
COST OF PRODUCTION AND LIQUID-MILK
PRICES IN LONDON (1861-70=100)

	London milk price index	Feed/wage index
1871-80	123.7	107.9
1881-90	92.8	78.9
1891-1900	81.6	80.3

Source: Calculated from figures in D. Taylor, *The Development of English Dairy Farming c. 1860-1930*, unpublished Oxford D.Phil. thesis, 1971, pp. 208-9.

However, in other respects the sections on dairying provide a valuable service. In particular the emphasis upon regional variations, and upon the numerous combinations of produce found under the heading of dairying, provides a useful corrective against talk of the English dairy industry as if it were a uniform structure throughout the country. None the less, there remains a sense of disappointment, particularly as Miss Whetham wrote a useful article on some aspects of the London milk trade at the same time.² In a dozen pages packed with information she emphasizes the importance of the railways, particularly after 1865-6, and of cooling depots, in enabling farmers to respond to the favourable trend in milk prices. However, there are certain criticisms that can be made. First, the role of the railways before 1865 is probably understated. Second, insufficient attention is paid to fluctuations in the trade in the late nineteenth century. Third, the question of demand is not examined in detail. More generally, though this cannot be considered a criticism of the article, it is only the London milk trade that is under discussion.³ In

¹ Orwin and Whetham, *op. cit.*, p. 149.

² E. H. Whetham, 'The London Milk Trade, 1860-1900', *Econ. Hist. Rev.*, 2nd. ser., xvii, 1964, pp. 369-80.

³ D. Taylor, 'London's Milk Supply, 1850-1900: A Reinterpretation', *Ag. Hist.*, xlv, 1971, pp. 33-8.

a paper published in 1970, Miss Whetham takes the story up to 1930.¹ Even more strongly than in the first paper she stresses the role of legislation in improving the quality of the milk supply, and thereby stimulating demand (though it should be noted that for other reasons demand for milk was stagnating during the 1920's). Unfortunately, the coverage of the 1920's is confined to little more than one page, resulting in a limited, descriptive treatment. In many respects the period is better covered by Ruth Cohen, writing almost a quarter of a century earlier.² Although her *History of Milk Prices* cannot be considered as a comprehensive history of the dairy industry, it does provide a valuable starting-point with its detailed study of price levels in the various branches of the industry.

Dairying away from the London market has not been given much attention. J. T. Coppock's article on the Chilterns³ gives some indication of the changes that took place in the last quarter of the nineteenth century, but the only attempt at evaluating the profitability of livestock farming in general, and dairying in particular, is T. W. Fletcher's article on Lancashire.⁴ Complementing his more general article it spelt out in detail the advantages that the dairy farmer could exploit. Between the late 1860's and the end of the century the population of Lancashire increased by roughly 50 per cent. *Per capita* milk consumption increased by 25 per cent, while overall demand, he calculated, rose by almost 90 per cent. All in all, milk prices stayed remarkably stable except during the depression of 1883-6 and the hard years of the early 1890's. Moreover, the profitability of milk production became even more apparent during the 1890's when the price of local butter and cheese fell markedly for all but the highest-quality make. The shift to liquid-milk production was strengthened by two further factors. First, a marked fall in rail transport costs took place. Second, the cost

of feed—oats, maize, oilcake—fell by some 40 per cent, while savings were made on labour costs by reducing the numbers of paid workers and increasing the amount of family labour. Not surprisingly the amount of liquid milk produced and sold in Lancashire increased by over 50 per cent, while the quantity of milk imported into the country rose by well over 100 per cent. In these two articles Fletcher went a long way towards redressing the balance that had not existed in earlier writings.

Lastly, one must consider three books devoted specifically to the dairy industry. Of these the most disappointing is the popular history written by A. Jenkins to celebrate fifty years of the National Milk Publicity Council.⁵ Claiming to be "the first history of milk and the dairy industry to be made available to the general public," it tends to be a series of chatty reminiscences rather than an analytical history. Far more useful in terms of information is V. Cheke's account of cheese-making in Britain.⁶ While giving a detailed account of one aspect of the dairy industry it is open to the criticism of failing to set its subject in a more general setting of change affecting both dairying and the agricultural sector at large. Finally, one has G. E. Fussell's work on the dairy farmer in the years 1500 to 1900.⁷ For wealth of detail the book is unrivalled and it has proved of immense value to later attempts at analysing aspects of the industry. In view of the wide time-span covered, however, Fussell has been unable to realize the full potential of his work. By concentrating on a shorter period it is possible to provide a more rigorous analytical framework. In particular, one can distinguish between the types of dairy farming, and differentiate between the varying conditions over the country at large. The importance of local conditions should be stressed. There were, for example, several instances of strong local demand for particular cheeses. Lancashire cheese sold well in the industrial towns of the county (a point

¹ E. H. Whetham, *The London Milk Trade, 1900-1930*, University of Reading, 1970.

² R. Cohen, *History of Milk Prices*, 1936.

³ J. T. Coppock, 'Agricultural Change in the Chilterns, 1875-1900', *Ag. Hist. Rev.*, ix, 1961, pp. 1-16.

⁴ T. W. Fletcher, 'Lancashire Livestock Farming during the Great Depression', *Ag. Hist. Rev.*, ix, 1961, pp. 17-42.

⁵ A. Jenkins, *Drinka Pinta: The Story of Milk and the Industry that serves it*, 1970.

⁶ V. Cheke, *The Story of Cheesemaking in Britain*, 1959.

⁷ G. E. Fussell, *The English Dairy Farmer, 1500-1900*, 1966.

not stressed by Fletcher). Caerphilly was made in Somerset for the miners of South Wales, while Wensleydale found a steady market in the north-east of England. In each case the general downward trend in the quantity of cheese made on the farm was offset, to varying degrees, by local conditions. Similarly, important local variations in the price of milk were not uncommon before 1914. It would be an exaggeration to suggest that there was no such thing as a national market for milk by the late nineteenth century but interregional differences could be considerable. For example, in 1900 the average retail price of milk was 3d. a quart. However, prices could vary from 2½d. in such areas as Keighly, Colne, and Nelson, to 4d. a quart in Liverpool, Manchester, London, and the surrounding counties of Surrey and Middlesex. Overall Fussell's book, while providing much information, disappoints because of its sweeping approach. A review of the work reflects the overall state of knowledge on the subject. "It would be useful," it observed, "to command a convincing analysis of the economic and social constraints, and rigidities, which are likely to have determined progress" in dairying.¹

II

As a result of this neglect of the dairy industry there is a range of questions to be asked, often of an elementary nature. One would like to know more precisely the dimensions of the industry, and the size of its output. The task is not an easy one as before 1865 there are no official figures, and some of the estimates from contemporary sources are highly suspect. Even after 1865 problems persist, for there is no accurate definition of the national dairy herd. "Cows and heifers in milk or in calf" is only an approximation. Further, the popularity of the dual-purpose Shorthorn renders impossible any clear-cut distinction between dairy and beef cattle. Secondly, a more detailed study is needed of the structural changes that took place within dairy farming. The transfer of resources from cheese- and butter-making to liquid-milk production is well known, but the chronology of change has been left somewhat vague, while the precise size of the

various branches of the industry at any given time during the period is not known. The geography of change is easier to ascertain but even here regional differences have been blurred in the generalizations of historians.

Equally important questions need to be applied to the demand side of the industry. Very little is known of *per capita* consumption of dairy produce, particularly in the nineteenth century. In general terms there was a gradual change in the dietary pattern of the nation during the years after 1850; in particular, there was an increase in the consumption of liquid milk. However, having defined the change, there remains the larger problem of explaining the interaction of factors bringing about the change.

Looking more specifically at the dairy farmer, other questions present themselves for consideration. It is commonly asserted that dairying, or more precisely milk-selling, remained profitable throughout the period. However, the truth of this statement must be thrown into doubt when subjected to closer scrutiny. The 1870's and 1880's were years of large-scale expansion in the liquid-milk trade but the outcome in certain areas was a state of overproduction which, coupled with the disastrous seasons of the 1890's, left some dairy farmers, especially those supplying milk on contract to London, in dire straits; a point not fully appreciated by later observers. Overall, the reduction in the cost of feed, and lower rents, must have benefited the dairying community at large, particularly the new arrivals, but it is important to consider the problems of changing conditions of labour supply, wholesalers' monopolies, and general price fluctuations before arriving at any conclusions on the varying prosperity of dairy farmers.

Although profitability is of prime importance, one must also look at the question of productivity. It is often stated that dairying was the laggard sector of English agriculture. In comparison with other branches of rural life where machinery was ever-encroaching, the dairy appeared backward in its use of traditional implements and utensils. Yet advances were made. Better feeding, better care,

¹ E. J. T. Collins, *Ag. Hist. Rev.*, xvi, 1968, p. 68.

and better breeding raised the quantity and quality of milk produced.

Consideration of technical change leads to the last major set of questions to be posed. How responsive was the English dairy industry? and what type of person was involved in the process of adaptation? With the benefit of hindsight one might conclude that the striking feature of the years 1860 to 1930 was not the speed of development but the lack thereof. Favourable demand conditions at a time of heavy competition in certain branches of agriculture could have led to an earlier and more decisive adoption of dairying by the English farming community. In practice, events did

not develop in such a straightforward manner. The problem of identifying and responding to permanent change is always easier in retrospect: however, the barriers to change have to be defined before tackling the question of who was actually responsible for the changes that took place.

Some of these questions cannot easily be answered, but there is sufficient material in the pages of the agricultural press, between the covers of official reports, and within the mass of farm records to provide a more than adequate basis from which a more balanced account of agricultural developments in England may be given.

NOTES ON CONTRIBUTORS

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Dr June A. Sheppard is Reader in Geography at Queen Mary College, University of London. She is interested especially in rural settlement and field systems, and is currently working on medieval Yorkshire.

Dr David Taylor is Lecturer in the Department of History and Politics at the Polytechnic, Huddersfield. He has been engaged on research

into the development of English dairy farming between 1860 and 1930.

A. R. Michell is Lecturer in Economic and Social History at Hull. He is currently researching into the history of Great Yarmouth and the surrounding region between 1550 and 1714, and is working on a book about Surrey during the Civil Wars and Interregnum.

Dr L. A. Clarkson is Senior Lecturer in Economic History at The Queen's University, Belfast. He has published a number of articles on the leather industry in the sixteenth and seventeenth centuries and a book on the English economy before 1750. He is shortly to publish a book on the English Leather Industry 1500-1800.

Sir Richard Weston and the Spread of Clover Cultivation

By A. R. MICHELL

THE first edition of Sir Richard Weston's *Discours of Husbandrie used in Brabant and Flanders* was published in 1650 by Samuel Hartlib. It had probably been written five years before, and reached Hartlib in an anonymous imperfect copy.¹ By May 1651 it was out of print, and in such demand that the printer urged Hartlib to prepare a new edition. Hartlib had by this time discovered the identity of the author and wrote two letters to him asking him to provide a corrected copy, letters which were never answered.² However, Hartlib noted in the introduction to the second edition that "the use of the Clover-seed is found by experience not to have been sufficiently explained in the discours," and added that Blyth would supplement what was said in his third edition of the *English Improver* for the benefit of "every unexperienced Husbandman."

A recently discovered letter written by Weston, probably the only surviving document in the knight's hand, throws light both on his practice regarding clover, and on the process of diffusion of innovation. Weston himself believed that an innovator would "not onely bee imitated but also honoured by" his neighbours, and that "When your Neighbours see your Labors thrive and prosper . . . when they once see your Crops, and somewhat understand that you do reap som benefit by them, they will com to you as to an Oracle to ask your Counsel."³ The letter was written to a neighbour, John Lloyd of Woking, in response to Lloyd's inquiry on behalf of a friend. Lloyd himself appears to have taken no active interest in clover, although his lands lay

on very similar ground to those of Weston. He was a newcomer with only a temporary interest in the estate through his wife, the widow of James Zouche (one of the leading West Surrey landowners), that would pass to her son on his majority. After the Restoration Lloyd retired to his estates in the Forest, Carmarthen, whence he had come, and it is quite possible that the friend on whose behalf he was enquiring lived in Carmarthenshire.⁴

The letter dated February 1650/1 commences with some polite remarks about the health of Lloyd's wife and then deals directly with clover.

. . . I have made my men try what they can to gett some clover grasse seed out of the huske but they cannot doe it till March, I thinke that it must first be laid abroad a drying in the sun some 3 or 4 hours before it is thresht, then it will come out and there is noe other way to get it out of the huske that I find unlesse the weather be so faire at harvest that it may be threshed out in the feild which is was not this year [1650] heere with us. There is one Mr Sadler in Bucklersbury⁵ that useth to sell of this seed and I have bought my selfe of him this three or four years. If any friend of yours will send to him for it in my name, I presume he will helpe him to the best he hath. The best directions I can give sowe it is uppon barly. After that is sowed and harrowed then sowe about 10 ponds of Clover grasse seed uppon an acre and harrowe it once or twice in place agane after that it sowed. This is after you intend to lay it up wholly for grasse, but if one would sowe a smalle quantity of grond

¹ *A Discours of Husbandrie used in Brabant and Flanders*, 1650, B.M. E613:12; 1652 B.M. 234. e. 32. The general details of Weston's life are well known and have often been repeated, e.g. *D.N.B.*; F. Harrison, *Annals of an Old Manor House*, 1899, pp. 120-33.

² B.M. 234. e. 32, introduction and appendix.

³ *Discours*, 2nd edn, p. 26.

⁴ If he had lived in west Surrey he would almost certainly have approached Weston directly.

⁵ A London street which survives to this day.

for trial it must be digged up or rather trenched ready about mid march and then sowed according to the same proportion of seed for a lesser quantity of ground.¹

The letter suggests that Weston was still experimenting with clover. His *Discours*, which of course reports only his observations abroad and not his actual experiments, had dealt in some detail with the problem of a surplus of clover seed.² It is clear that by 1650 Weston was far from solving the problem of seed supply. It is perhaps indicative of the total separation of Hartlib's circle from Weston that in the second edition Hartlib recommends to his readers an entirely different supplier of seed, "Mr James Long's Shop at the Barge on Billingsgate."³

It may be that the fact that Weston's land was now rented from the sequestration com-

mittee for £200 p.a. hindered his experiments.⁴ Certainly the financial records of that committee which show a steadily increasing proportion of the rent left unpaid in successive years do not suggest that Weston, for all his improvements, had stepped into the promised land as suddenly as he promised his readers an improver would.⁵ This however may be an unfair view, since he was simultaneously expending vast sums in making the river Wey navigable from the Thames to Guildford.⁶ It was the success of this project which ultimately made dairy farming along the Wey valley, supplying the London market, a very prosperous undertaking and assisted the spread of improved grasses. Thus an early eighteenth-century writer was able to say of Weston, "the whole shire is indebted to him" for introducing clover and sainfoin.⁷

¹ P.R.O. C108/255. This material relates solely to Lloyd and the Zouche estates.

² *Discours*, pp. 23-6.

³ *Ibid.*, 2nd edn, final note. Hartlib says *passim* that he sent his two letters "by a friend of yours and mine." Weston's failure to reply is somewhat puzzling. The letter printed above shows he was willing to correspond on the subject with neighbours in February, yet not with Hartlib in May.

⁴ P.R.O. E112/338/70. Weston's case was extremely complicated since he was a Catholic who had some of his lands seized on account of his religion before the Civil War. *Calendar of the proceedings of the Committee for Compounding III*, 2291-4. There appears to have been some confusion over whether Weston should have paid £160 or £200 rent.

⁵ *Discours*, *passim*, esp. pp. 18-19. In addition to using clover, turnips, and other grasses, Weston said he had already by 1640 "improved my land as much as any man in the kingdom by fire and by water."—*Ibid.*, p. 5. Fire refers to devonshiring or denshiring which was a common practice in Surrey, and water apparently to the floating of water meadows. Weston held lands in Herefordshire and had similarly experimented with crops there before the war, and may have been familiar with Vaughan's original Golden Valley project on the ground.—*Ibid.*, p. 20.

⁶ G.M.R. Wey Navigation Deeds. For a brief summary see P. Vine, *London's Lost Route to the Sea*, Newton Abbot, 1965, pp. 8-13.

⁷ B.M. Add. 6171, 17.

Work in Progress

Compiled by DAVID HEY

This list has been largely compiled from the particulars given in response to a letter circulated in October 1973. It does not lay claim to completeness.

- ACTON, R., *Department of Economic History, The University of Sheffield, S10 2TN.*
The Anholme basin (Lincolnshire), 1820-1900: aspects of rural change.
- ADAMS, I. H., *Department of Geography, The University of Edinburgh.*
Terminology of the agrarian landscape.
The land surveyor and the Agricultural Revolution in Scotland.
- AGAR, N., *34 Oakfield Avenue, Hitchin, Herts.*
The farm labourer and other rural workers in Bedfordshire and Hertfordshire and adjacent districts during the nineteenth century.
- ALEXANDER, D. A., *Department of Geography, Bretton Hall College of Education, Wakefield.*
Settlement, field systems and landownership in Teesdale, 1600-1850.
- ALLERSTON, P., *Department of Geography, City of London Polytechnic.*
Medieval rural settlement and agriculture in Essex.
- ALLISON, K. J., *32 Newgate Street, Cottingham, East Yorks.*
The East Riding landscape.
V.C.H. East Riding (editor): topographical history of parts of the Vale of York.
- ALLISON, R., *Department of Geography, College of St Mark and St John.*
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Agrarian history of south-east England (Kent, Sussex, Surrey), 1640-1750.
Agricultural production, prices, and marketing in north-east Kent, 1660-1760.
The farm accounts of Richard Tilden of Milstead, 1708-62.
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Agricultural methods and production in Anglesey and Arfon in the eighteenth century.
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Landownership in fifteenth-century Lincolnshire.
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Land use and settlement patterns in Staffordshire, with particular reference to the problem of deserted medieval villages.

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Agricultural history of the West Riding of Lindsey in the sixteenth and seventeenth centuries.
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Inclesmoor, the landscape of the oldest map in the P.R.O.
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The Lancashire gentry during the seventeenth century.
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The emergence of a specialist agricultural engineering industry and patterns of adoption of farm implements in Britain in the nineteenth century.
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The development of farm buildings, 1870-1960.
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The geographical causes and incidence of village depopulation in Warwickshire.
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The development of artificial insemination in cattle in Great Britain.
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Agriculture and rural society in nineteenth-century Sussex.
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The lands and tenants of the Priory and Bishopric of Rochester, 600-1540.
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Open-field farming in Derbyshire between the thirteenth and eighteenth centuries.
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The evolution of rural settlement in Ireland.
Eighteenth-century farming in County Down.
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The estates of the Dormers of Rousham, Oxon., 1500-1800.
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Field systems of north-east England.
Historical geography of Ireland, c. 1550-1750.
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Agricultural change in the lowlands of the south-east of the West Riding of Yorkshire in the seventeenth and eighteenth centuries.

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Lincolnshire field names.
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Field systems in north-east Norfolk between the late-thirteenth and the mid-sixteenth centuries.
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Spread of notifiable diseases among farm animals in Hertfordshire in the late-nineteenth century.
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The history of the vegetation of southern Perthshire with special reference to the identification of early agriculture by means of pollen analysis.
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Farming with horses in the East Riding of Yorkshire: some aspects of recent agricultural history.
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Enclosure and reclamation in England and Wales in the eighteenth and nineteenth centuries.
Agricultural change in the North Riding of Yorkshire in the eighteenth and nineteenth centuries.
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The marketing of agricultural produce, 1640-1750.
Inns and inland trade in England in the seventeenth and eighteenth centuries.
(with TURNBULL, G. L.) A pilot study of source materials for an economic history of British inland transport and communications.
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The rural community in the Meneage and the St Keverne area in the nineteenth century.
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The economic and social development of Abbots Langley (Hertfordshire), 1760-1960.
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The English leather industry, 1500-1830.
Occupational distribution in seventeenth-century England.
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English landowning and the land market, 1660-1815.
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Changing land-use in parts of north-west Wiltshire since 1866.
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Cereal output and consumption in Great Britain since 1800.
(with GRACE, D. G.) Agricultural servicing and processing industries, 1750-1850.
(with ARMSTRONG A. and JOHN, Professor A. H.) Agriculture and economic development, 1750-1850.
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Agriculture in Derbyshire in the seventeenth century.
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The agricultural history of north-western Berkshire, 1640-1750.
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(with FIELD, J.) Leicestershire and Rutland field names.
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Pre-parliamentary enclosure in the Trent Valley (Lincolnshire and Nottinghamshire).

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Domesday England.
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English peasant protest movements in the fifteenth and sixteenth centuries.
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Late medieval social and agrarian history of Wales.
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Farm labour in Britain in the Great War.
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West Riding woollen and worsted industries, 1689-1770.
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Applications of content analysis to agricultural history.
Uses of common lands in England and Canada.
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Population: the state of the harvest-epidemic mortality and famine, 1500-1812.
- DODGSHON, R. A., *Department of Geography, University College of Wales, Aberystwyth.*
Landholding and settlement in Scotland, 1400-1750.
Landholding, infield-outfield cultivation, and the growth of field systems in England.
- DODGSHON, J. McN., *University College, London.*
Kent field names.
- DOE, Mrs V., *Department of Extramural Studies, The University, 85 Wilkinson Street, Sheffield, S10 2GJ.*
Agrarian history of upland Derbyshire in the seventeenth and eighteenth centuries.
- DUNN, M. C., *Centre for Urban and Regional Studies, The University, Birmingham.*
Locational change in the British brewing industry since the early nineteenth century.
Deserted medieval villages in the west Midlands, with particular reference to the influence of land ownership.
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Agricultural improvement of the south-east Lanarkshire and Peeblesshire estates in the eighteenth century.
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West Midlands agrarian history.
Estates of the Bishopric of Worcester.
- DYMOND, D. P., *Grundle House, Stanton, Suffolk.*
The structure and topography of the medieval manor of Stanton.
Field systems and enclosure in Suffolk.
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Land surveyors, principally in Great Britain and Ireland, 1550-1850.
Commissioners and surveyors of parliamentary enclosure in the north Midlands, especially in Leicestershire, Derbyshire, Nottinghamshire, and Staffordshire.
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Agricultural change in north Shropshire in the seventeenth century.
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Royston (West Riding), 1500-1900.
- ELLIOTT, G., *11 Crescent Green, Aughton, Ormskirk, Lancs.*
Field systems and agricultural development in north-west England.

- EVANS, E. J., *Department of History, The University, Lancaster.*
 History of the tithe system, 1750-1850.
 Agrarian history of Cumberland and Westmorland (for *The Agrarian History of England and Wales, V, 1640-1750*).
- EVERITT, Professor A. M., *Department of English Local History, The University, Leicester.*
 Northampton: market and county town, 1500-1760.
 The history of the Kentish landscape.
 Kentish farming families.
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 The distribution of open-fields and common grazings in the Peak District of Derbyshire.
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 Land use and settlement on the Bagshot Sands, 1800-1940.
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 English field names.
 The field names of Manshead hundred, Bedfordshire.
 (with COX, B.) The field names of Leicestershire.
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 The pattern of settlement between the Thames and the Warwickshire Avon.
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 The landlord-tenant form of land tenure.
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 County government in Stuart Yorkshire.
 The making of the landscape of the North Riding.
 Yorkshire market towns in the seventeenth century.
- FOWLER, P. J., *Department of Extramural Studies, The University, 32 Tyndalls Park Road, Bristol, BS8 1HR.*
 The last two millennia BC (for *The Agrarian History of England and Wales, I, pt 1*).
 Iron Age-Saxon 'continuity' in Wessex and south-west England.
 Landscape history of the Vale of Wrington, Somerset.
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 Medieval English agriculture, with particular reference to productivity, field systems, and the marketing of farm produce.
 Communication of information about agricultural techniques in the nineteenth century.
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 Land and society in Dewsland, c. 1840-1860.
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 History of the milling industry in England and Wales, 1750-1914.
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 Patterns of landownership, estate management and their effects on landscape change in Lindsey in the nineteenth century.
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 Agricultural education in Western Europe before 1914.
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 The large estate and agricultural development in Ulster, 1850-1914.
- GELLING, M., *31 Pereira Road, Birmingham, 17.*
 Shropshire field names.

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Church tithes, c. 1750-1836.
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Aspects of agricultural change in nineteenth-century England, with particular reference to the Weald of Kent and Sussex, and to the role of agricultural societies in promoting improvement.
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Lutterworth and its hinterland in the sixteenth and seventeenth centuries.
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Population, land and society in part of south Shropshire in the seventeenth and eighteenth centuries.
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Changes in land use, especially of woodland and downlands, in south-west Wiltshire.
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The development of the agricultural engineering industry to 1914.
- GRAY, M., *Department of Economic History, Study Block, King's College, Old Aberdeen, AB9 2UB*.
Agrarian history of the Scottish lowlands, 1780-1870.
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The tin industry in Devon in the Middle Ages and later.
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The pig industry in England and Wales, 1850-1940.
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The land tax in Kent.
- GURDEN, Miss H., *41 Campion Terrace, Leamington Spa*.
The relationship between Primitive Methodism and the agricultural trade unions in Warwickshire in the early 1870's.
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The evaluation of early maps as sources for agrarian history.
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Mining and agricultural change in the Lake Counties.
- HARRIS, P. A., *The Grammar School, Harrogate*.
Changes in agriculture, settlement and rural society in Wharfedale and Nidderdale, 1735-1871 with particular reference to the role of the large estate.
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The estates of St Swithin's Priory, Winchester, 1066-1340.
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Social and economic history of Cannock and Rugeley (Staffordshire), 1544-97.
The workings of the manor court in the sixteenth century.
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Agricultural development of south-west England (Cornwall, Devon, Somerset, and Dorset), 1640-1750.
Agricultural weights and measures, 1640-1750.
(with BOWDEN, P. J.) Agricultural prices and wages, 1640-1750.
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The English linen industry.
Flax-growing in England.

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The heaping of medieval corn measures.
Peasant corn production in medieval England.
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- HARVEY, Miss S. P. J., *School of History, The University, Leeds, LS2 9JT*.
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Agricultural evidence as a source for the demographic history of medieval England.
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General history of British agriculture from its origins to the present day.
(with KAIN, R.) Agricultural change and development in England in the mid-nineteenth century.
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Wheelhouses in north-east England.
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Agricultural history of the Ripon area.
The agricultural activities of Fountains Abbey, with particular reference to the granges and other holdings in the Ripon area.
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Agrarian history of Cheshire, Derbyshire, Lancashire, Shropshire, Staffordshire, and Yorkshire (for *The Agrarian History of England and Wales, V, 1640-1750*).
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The craftsman-farmer.
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Joint editor of *The Agrarian History of England and Wales, VI*.
- HIGHAM, M. C., *Ivy Bank School, Burnley, Lancs*.
Historical geography of Bowland (Yorkshire), with particular reference to early settlement patterns and agriculture.
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Inclosure and villeinage in the manor of High Ercall in the thirteenth and fourteenth centuries.
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Medieval village social structure.
Town-country relationship in the Middle Ages.
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Agricultural change in Scotland, 1750-1914.
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Inter-relationships between population, agriculture, and industry in County Durham, 1550-1850.
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Rural credit in England and north-west Europe, 1550-1800.
The northern labourer, 1700-1900.

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The replanning and rebuilding of estate villages during the eighteenth and nineteenth centuries with special reference to northern and eastern England.
The history of the south Yorkshire landscape.
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Historical ecology, especially hedges and underdraining.
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Victorian country children.
Agricultural workers' trade unionism.
Victorian and Edwardian domestic service.
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Agriculture and rural settlement in the north Yorkshire Moors and the Vale of Pickering, 1750-1870.
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English harvests, 1086-1800.
Economic and social history of England in the sixteenth century.
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The social and economic position of the peasantry in south-east Leicestershire, 1300-1700.
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Landownership and estate management in Wales, 1640-1750.
Welsh agriculture, 1815-1914.
- HOWELLS, B., *Department of Welsh History, University College of Wales, Aberystwyth.*
The agrarian history of south-west Wales in the early-modern period.
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Structural changes in Scottish agriculture, 1800-1870.
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The role of landownership as a factor in landscape change, with particular reference to central County Durham, 1570-1850.
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Changes in attitudes of English people to the industrialization of the countryside, 1830-80.
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Worcestershire field names.
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The geographical origins, introduction, and spread of hardy woody alien plants in England, 1538-1813.
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Changes in the structure of agrarian society in south-west Wales during the nineteenth century.
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History of the Upper Calder Valley.
(with FIELDHOUSE, R.) History of Richmond and Swaledale.
(with Yorkshire Agrarian History Research Group) Aspects of Yorkshire agrarian history, 1500-1900.
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Farm technology and cultivation systems in south-west England in the eighteenth and early nineteenth centuries.

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The peasant land market in fifteenth-century England.
Development of English land measurement, 1150-1350.
Harvest customs in England, 1150-1350.
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The agricultural labourer in Wales, 1750-1870.
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Biological problems, especially pest control.
Rural industry.
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- KAIN, R. J. P., *Department of Geography, The University, Exeter*.
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- KEENE, C. H., *21 Islip Gardens, Northolt, Middlesex*.
Middlesex (area of the present London Borough of Ealing) field names.
- KENNEDY, Miss M. J. O., *5 Golden Yard, London, NW3 6UH*.
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- KING, W., 'Fairlawn', *Coxley, Nr Wells, Somerset*.
Economic change in the Rossendale area, 1660-1760.
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Economic development and social structure in the Vale of Severn, 1600-1800.
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- LAXTON, P., *Department of Geography, The University, P.O. Box 147, Liverpool, L69 3BX*.
The county maps of John Rocque as sources for agricultural history.
Field systems and enclosure in seventeenth and eighteenth century Berkshire.
- LEOPOLD, J. W., *Department of Economic History, The University, Edinburgh*.
Scottish lowland peasant society, c. 1650-1750, especially the Levellers' Revolt in Galloway, 1724.
- LINDSAY, J. M., *Department of Geography, The University, Sheffield, S10 2TN*.
The use of woodland in Perthshire and Argyllshire, 1650-1850.

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Land and communities in Billingham, Norton, Seaton Carew, and the surrounding countryside in the later Middle Ages.
The development of the manorial extent to 1400.
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Agricultural change in the lower Stour Valley, Kent, 1840-1966.
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The English fishing industry in the sixteenth and seventeenth centuries.
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Agricultural improvement and the diffusion of agricultural innovations in Northumberland, 1750-1860.
The early threshing machine.
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Social and economic history of Earls Colne (Essex) and Kirkby Lonsdale (Westmorland), 1500-1750.
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Social, economic, and demographic change in south Oxfordshire in the seventeenth century.
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The domestic economy and social organization of the Lakeland yeoman, 1661-1750.
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Land radicalism in nineteenth-century England.
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Cheesemaking in northern England.
Agrarian history and enclosure in Craven.
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Ridge and furrow.
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Agrarian history of northern England, 1100-1350.
- MILLS, D., *Queen Mary College, London.*
Dorset field names.
- MINCHINTON, Professor W. E., *Department of Economic History, The University, Exeter, EX4 4PU.*
History of cider-making.
- MINGAY, Professor G. E., *Rutherford College, The University of Kent at Canterbury.*
Arthur Young.
Comparative study of western rural society.
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Cropping innovation in the Agricultural Revolution, 1650-1870.
- MORGAN, V., *Department of Geography, The New University of Ulster, Coleraine.*
Settlement, agriculture, and land tenure on estates in north Derry, 1750-1850.
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Local history of Wheathampstead and Harpenden (Hertfordshire).
The history of the Hertfordshire landscape.
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The gentry of Bedfordshire in the thirteenth and fourteenth centuries.

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Topography of the Mendip Hills.
The Isle of Wedmore, Somerset; field systems and farming from the thirteenth to the nineteenth century.
- NUNN, P. J., *84 Louth Road, Sheffield, S11 7AW.*
The management of the Rockingham-Fitzwilliam, Norfolk, Wharnccliffe, and other large estates in south Yorkshire, 1700-1850.
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NOTES AND COMMENTS *continued from page 152*

THE ANNUAL GENERAL MEETING

The British Agricultural History Society's twenty-second AGM was held at Weymouth College of Education, Dorset, on 9 April 1974, with Mr George Ordish in the Chair. Mr John Higgs, the first Secretary of the Society, was elected President in succession to Professor W. G. Hoskins; and Mr C. A. Jewell and Mr M. A. Havinden were re-elected Treasurer and Secretary respectively. The three vacancies on the Executive Committee were filled by the re-election of Dr E. J. T. Collins, Professor W. E. Minchinton, and Dr Joan Thirsk.

In his report Mr Ordish noted that the membership now stood at 774, the distribution being 422 Ordinary members, 62 Institutional members, and 290 Library members (63 of the Ordinary and 136 of the Library members being foreign). A one-day joint conference with the Veterinary History Society would be held in London, probably on Saturday, 30 November 1974. The Executive Committee proposed to hold the 1975 Spring conference at Cardiff, but after discussion of a suggestion from the floor that a venue in the north-west of England would be more convenient, it was agreed to seek a suitable site in Shropshire or nearby. The dates would be from Monday, 7 April, to Wednesday, 9 April 1975. It was also agreed to seek to hold the 1976 conference near Cambridge, where the Economic History Society would be holding their Fiftieth Jubilee conference. The Chairman regretted that David and Charles

of Newton Abbot had withdrawn from their agreement to publish the translation of Professor Wilhelm Abel's *Agrarkrisen und Agrarkonjunktur*, which the Society had financed, and that the Executive Committee was now approaching the Oxford University Press.

The Treasurer presented the accounts and reported that income had exceeded expenditure by £2,148. This reflected the benefit arising from the recent rise in the subscription, but unfortunately the rapid rise in printing costs, if continued, would soon erode the Society's finances again, unless it could be offset by a steady annual increase in the membership. The accounts were adopted.

The Secretary read the Editor's report in his absence. Articles were coming in at the rate of about thirty-six a year, and since only ten could be published, this involved a regrettably high rejection rate. A large proportion of the articles dealt with nineteenth-century topics, which involved a long delay in the publication of articles on that period. He proposed to reduce this by devoting a whole issue to problems of nineteenth-century farming. He was, however, still short of good articles on earlier periods, and of brief articles in general. He would welcome comments and suggestions from the members. In response it was suggested that the Journal did not always need to keep to an even chronological spread and that it might be desirable from time to time to devote issues to particular topics or problems.

List of Books and Pamphlets on Agrarian History issued since June 1972

Compiled by SARAH CARTER

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Book Reviews

W. ABEL and HELMUT DREITZEL (eds.), *Konrad Heresbach. Vier Bücher über Landwirtschaft. Band I. Vom Landbau*. Verlag Anton Hain KG, Meisenheim, 1970. 305 pp. DM. 39.50.

It is remarkable that Konrad Heresbach's *Four Books of Husbandry* published in Latin for a mainly German readership in 1570, should have been translated into English by Barnaby Googe in 1577, but should have had to wait until 1970 to be translated into German. The first volume in this new translation concerns arable husbandry for the most part, and describes the cultivation and harvesting of grain, legumes, flax, hemp, and woad, finishing with a few pages on pastures and meadows, and the purchase and leasing of land. Three more volumes will complete the work, on gardens, orchards and woods, cattle, fish, and bees. A facsimile of the original Latin is printed on the left-hand page, while the right-hand page contains the German translation. Two brief introductions are included, one by Professor W. Abel who sets Heresbach in the context of his time, and one by the translator, who identifies Heresbach's classical sources.

This translation which celebrates the 400th anniversary of the original work affords an opportunity to look afresh at the strength of foreign influences on European, and more particularly English, agriculture. Heresbach, born in 1496, was the son of a landed gentleman, and received an education at French and Italian universities. He became a lawyer and government official at Cloves, and finally settled on an estate in the Rhine valley where he wrote his books of husbandry. As a lawyer, he found Latin a comfortable language in which to write his book, and in this international language it found readers all over Europe. Published in Cologne, it quickly passed through six editions.

Heresbach portrayed an intensive agricultural system, operating in a comparatively advanced commercial region in the lower Rhine valley. Populous cities afforded a market and producers had the advantage of good river transport upstream, and downstream into the Netherlands. Heresbach's work was a

mixture of scholarly references to classical wisdom and practical sixteenth-century experience. This combination of intellectual learning and practical good sense exactly suited the interests of English farmer-landowners who had had a not dissimilar education, both scholarly and practical. Thus Barnaby Googe, the Lincolnshire country gentleman who was Heresbach's translator, was a member of William Cecil's intimate circle of friends and had served in his household; he received an English university education and entered state service, spending some time in Ireland in the 1570's and 1580's. It was there that he found time to translate Heresbach. Earlier he had translated the poems of a Christian writer, Marcellus Palingenius, and later translated the proverbs of a Spanish author.

It is a sad reflection upon the narrow specialisms of our own age that we should look dubiously upon intellectuals and civil servants who wrote manuals of husbandry, and suspect them of being inadequate farmers, whose influence was negligible. All the evidence suggests the contrary: that Googe and other writers taught agriculturists an enormous amount of wisdom, as well as opening their minds to new ideas. The English bought up four editions of Googe's book and were willing to read it again in substance under the new title of *The Whole Art of Husbandry* by Gervase Markham. In the 1650's when agricultural improvement enjoyed a new vogue, Googe was re-read with enthusiasm, while Gervase Markham's writings were shipped off to America to help the pioneer settlers in Virginia. We should not underrate our forebears and imagine that they cheerfully read nonsense and swallowed it whole. When Barnaby Googe decided to include the section on vines from Heresbach's work, he optimistically hoped that they might be acclimatized in England. He was expressing a reasonable expectation: men had recently been successful with the fig, the apricot, and the walnut. Fact and fiction were inevitably mingled in a work that paid respect to classical writing and contemporary observation, but then it is certain

that our descendants will similarly judge twentieth-century textbooks of agriculture, though we may not like to think so. Sixteenth-century readers took from such books ideas which struck them as relevant to their needs and neglected the rest. They did not believe everything they read in print. In this way books of husbandry exerted great influence among the gentry class as seventeenth-century correspondence and journals of country gentlemen bear witness, and much interest was aroused thereby in experimentation and improvement. "Googe's noble Heresbachius" were the words used to describe this volume by a member of the Royal Society in 1675. He wrote with admiration and respect. But what influences guided Heresbach? Was it his Italian experience that set him to work? He was the first in Germany to take up the pen to write of agriculture, preceding both Martin Grosser and Abraham von Thumbshirn. Perhaps the editors of this new German translation will venture a little more deeply into this question when they reach the end of their "noble" work.

JOAN THIRSK

D. E. GREENWAY (ed.), *Charters of the Honour of Mowbray 1107-1191*. Published for the British Academy by the Oxford University Press, 1972. lxxxiv+308 pp. 16 illus. £7.

One of the earliest publishing ventures of the British Academy was the series called 'Records of the Social and Economic History of England and Wales' begun in 1914. It ran to nine volumes, which included Sir Frank Stenton's *Documents illustrative of the Social and Economic History of the Danelaw*, and ended in 1935 with Beatrice Lee's edition of the twelfth-century records of the Templars. Now the series has been restarted under the less restrictive general title 'Records of Social and Economic History', for the sensible reason that local record societies are much stronger than they were 60 years ago. Thus the Academy's effort in this field is now best directed to the publication of material which falls outside the scope of any local society. Dr Greenway's volume is the first in this new series and fits its declared intention for in the twelfth century the lands

of the honour of Mowbray were widely spread over the north and midlands of England as well as in Normandy itself.

Dr Greenway has collected and printed details of 400 Mowbray charters belonging to the years covered by the tenure of the first three holders of the honour. It was in 1107, during the redistribution of forfeited lands which followed the battle of Tinchebray, that Henry I granted to Nigel d'Aubigny, then one of his household knights and the younger son of a petty Norman baron, that great complex of estates henceforth known as the honour of Mowbray. Nigel thus became one of the greatest of the Anglo-Norman feudal lords and the founder of a powerful aristocratic family which lasted until 1481, when the child Ann de Mowbray died. Roger, Nigel's son and successor, now called de Mowbray, held from 1129 to 1188. Under him the Mowbray lordship, although mauled and battered, survived the troubles of Stephen's time and the heavy hand of Henry II. Roger's son, another Nigel, somewhat misguidedly joined the third crusade, and died at Acre in 1191.

It can be said at once that Dr Greenway has done a good and thorough technical job on some very difficult material. Only seventy-four original charters survive, and of these a number are probably forgeries. Thus she has been compelled to draw heavily on medieval copies of the lost originals in cartularies, chancery enrolments, and the like, while post-medieval transcripts, particularly those of Dodsworth and Dugdale, have also contributed their share. Charters of which satisfactory texts are in print and easily available are simply calendared and their witness lists noted. Where charters only survive in later copies, Dr Greenway has not hesitated to reconstruct what seemed to her the best text from the variant versions. This she has done skilfully and well. The first nineteen items in the collection are charters recording grants made to Nigel d'Aubigny and Roger de Mowbray. The remaining 381 documents listed are grants made by various members of the Mowbray family. Of these no less than 309 are grants to religious houses and other ecclesiastical bodies. Only seventy-two record transactions with lay folk. This is disappointing but not surprising for lay

records are notoriously scarce in this period. More tiresome is the fact that most of the charters can only be approximately dated, and this is where the editor's careful and scholarly annotation of the texts is particularly helpful.

Great Anglo-Norman fiefs like the honour of Mowbray were the pillars of the feudal kingdom. To discover how they were individually organized and managed is as important for a proper understanding of the social and economic arrangements of twelfth-century England as it is for tracing the course of politics in that period. Each honour was the kingdom in miniature, at least as far as structure and organization were concerned. The honorial household was modelled on the royal household, while the hierarchical range of lordship and dependence was the same at every level, involving the basic distinction between demesne and tenanted land. But this general uniformity allowed considerable individual variations, arising chiefly from local circumstances. Thus each honour needs to be studied for itself, and this volume contains the essential surviving material for such an examination of the honour of Mowbray. That alone justified the effort needed to compile, arrange, and edit it.

The Introduction discloses something of what can be learned from this material about the organization, the administration, and the economic management of the honour. The Mowbray estates in England were grouped in seven reasonably compact lordships: round the Isle of Axholme, Hovingham, Melton Mowbray, Brinklow, Thirsk, Kirkby Malzeard, and Burton-in-Lonsdale. In each there was a residual demesne and the remainder was granted out to provide the hundred knight's fees for which the honour was assessed in 1166. The household was peripatetic, moving *de manerio in manerium per varias provincias*, but the effective economic management of the English lands was conducted separately in each of the seven lordships. From these, for instance, was directed that vigorous colonization of the waste by drainage, reclamation, and clearance which the charters reveal. The pattern is far less complete than could be wished, but the outline is clear enough. It is the indispensable framework into which the

results of more detailed local work can now be slotted.

GEOFFREY TEMPLEMAN

JOAN THIRSK and J. P. COOPER (eds.), *Seventeenth-Century Economic Documents*. Clarendon Press, 1972. xxi + 849 pp. £8.

This volume sets out to provide for the seventeenth century the service that R. H. Tawney and Eileen Power's *Tudor Economic Documents* has for so long provided for the sixteenth. The intention is admirable and it is almost wholly realized in execution. Tawney and Power's somewhat idiosyncratic sixteen sections are here reduced to eight: economic crises, agriculture, industries, inland and coastal trade and communications, overseas trade, finance and the coinage, aliens, and statistical comment relating to wealth, population, and land. No major areas of economic activity are neglected, though the early history of banking gets scant mention. The overall provision is generous; the number of selections in this single volume is greater than in the three volumes of *T.E.D.* Most of the themes illustrated by Tawney and Power carry over into the present volume and this alone makes it an indispensable companion to its famous predecessor. Inevitably there is much here to interest the agrarian historian, though, as in *T.E.D.*, the reader has to be prepared to search around. The process is aided, however, by a thirty-three-page index.

Given the pre-eminence of Mrs Thirsk in the field of seventeenth-century agrarian history it is hardly surprising that the 'Agriculture' section admirably illustrates recent work in that field. Here are to be found the advocates and practitioners of improvement, of new crops and cropping routines, of enclosure, and also the opponents of open-field farming, commons, and wastes. Occasional glimpses are obtained also of their morality: Robert Loder's "Memorandum ever hereafter that I sell away my sheep afore winter if I know them to be rotten" is no less interesting than his call to God to protect him as a buyer on such occasions. There are constant reminders also of the great variety of contemporary agricultural practices, farm systems, and the social structures enveloping them. The socio-geographical determinists of the origins of social conflict

will find food for thought in the frequent complaints about those loosely manorialized wood-pasture areas which were the focus of immigration as "nurseries of beggars," and those manors with abundant commons and wastes which "draw many poor people from other places, burden the township with beggarly cottages, inmates, and alehouses, and idle people; where the great part spend most of their days in a lazy idleness and petite thieveries and few or none in profitable labour," and Pseudonismus's objections against common fields in 1656 as "the seat of disorder, the seed plot of contention, the nursery of beggary."

It is useful to have here also the important Restoration statutes encouraging the export of native produce and legislating against Irish imports, particularly as they are accompanied in another section by documents debating the issues involved. But there are some disappointments. There is perhaps in the 'Agriculture' section an over-reliance on the familiar names: no less than five of the extracts are from John Norden; three are from Robert Loder's farm accounts; four are from Walter Blith; and three are from John Worlidge. Some of these extracts of course are splendid, like those from Robert Plot's *The Natural History of Oxfordshire*, but some readers will feel disappointment that comparatively few of them are from little-known manuscript sources. Secondly, the emphasis is placed perhaps a little too firmly on progress, on calls for improvement and innovation. There is too little illustration of the obstacles to improvement, and not sufficient heed is given to the champions of the *status quo* and the Arcadians. The case against enclosure here rests essentially on John Moore's *A Scripture word against Enclosure*. Yet the radical movements of the mid-century threw up a host of such opponents and they deserve a voice in any sequel to *T.E.D.*

Contemporaries reserved their most interesting speculations about economic phenomena for moments of crisis, and the literate propertied classes, who are naturally heavily represented here, for those moments when their accustomed material standards were in danger. For this reason the section 'Economic Crises' is in some ways the most valuable in the whole volume and it naturally contains much

to interest agrarian historians, concerned as it is with breakdowns in relationships between industry, trade, and agriculture, and focusing obsessively, as it often does, on shrinking agricultural markets, falling prices, and falling rents. Subsistence crises of a more familiar kind are illustrated, as also are some of the means of partial relief: the J.P.s of Nottingham reported in 1631 that "the reason that the prices at this time do somewhat abate in our markets is for that a good quantity of corn hath been brought into our country by the river of Trent from remote places where corn was not at so great a price as with us, and we hope that in summer time, when coal carriages do come into our country for coals, that they will bring corn with them as formerly divers countries have done." In 1649 it was reported from the north, however, that "The necessities of these parts are very great especially Cumberland and Westmorland; the poorer sort are almost famished and some really so, the number whereof are too many and more than I shall now mention that have died in the highways for want of bread."

Demographic historians will also note scattered throughout the volume the frequent references to over-population in the early part of the century and the growing complaint about "want of people" thereafter. Even the ecologists get their due: a describer of lead works in Somerset in 1667 relates, "And children sometimes in these houses have died suddenly. If any sort of cattle eat often of that grass, on which the steam, which rises from the smelting of lead, falls, they all die in a while after..."

Certainly the editors have succeeded in illustrating a great variety of economic activities and have fulfilled their general aims: the volume will become an indispensable teaching aid and it will encourage more research on seventeenth century economic history. Two general quibbles remain. It is a pity that the editors have modernized the spelling. It is also a pity that nowhere is any illustration given of what historians have come to acknowledge as the most potent factors determining family progress in this society—marriage and inheritance.

R. B. OUTHWAITE

ALAN CROSSLEY (ed.), *The Victoria History of Oxford*, Vol. x, *Banbury Hundred*. Oxford University Press for the Institute of Historical Research, 1972. xxiii + 287 pp. £14. This volume contains the history of Banbury, Charlbury, Cropredy, and Swalcliffe, the scattered north Oxfordshire estates of the Anglo-Saxon see of Dorchester which comprised the hundred of Banbury. For any period after the eleventh century this hundred is an unsatisfactory unit of study. Eleven of the thirty-three settlements within these four parishes are excluded from the present work because they lay within another hundred, whereas the parish of Charlbury, fourteen miles to the south-west, is included even though it was distinct in character and lay detached from the rest.

Nevertheless, there is much in this volume that the agricultural historian will applaud. Of particular interest is Dr P. D. A. Harvey's scholarly and detailed study of the medieval topography of Banbury and the changing pattern of its markets. Here he is given space to elaborate the account he has already published in the *Historic Towns Atlas of England and Wales*, 1. The general Market Place was laid out at the centre of the "new town" that was successfully grafted on to the old settlement in the twelfth century; then during the course of the next four hundred years several specialized markets were established beyond. References to street names include Ox Market (1319), Sheep Market (1441), Horse Market (1525), Flax Chipping (1549), Swine Market (1552), and Cornmarket Street (1606). Furthermore, certain market days came to be associated with particular products and became known as fairs; thus, in 1555, Thursday, 28 February was known as "the fish fair day," and, in 1558, Thursday, 3 January was known as "the leather fair." Banbury's markets flourished because they served a prosperous farming region with some of the best corn-and-sheep land in the country, and because the town's position at the junction of ancient routes made it ideally suited as a collecting centre for the south Midlands. The stock market is reputed to be still the largest in Europe.

In 1610 Banbury was noted for its cheese, cakes, and zeal. Its cakes are still famous, the

zeal (both religious and political) was as pronounced in the nineteenth century as it had been in the seventeenth, but by 1841 the great trade in cheese had almost passed from memory. The local ale also had a wide reputation during the Middle Ages, and the number of inns rose markedly after 1660, when Banbury became an important thoroughfare town. It was about this time that the manufacture of webbing and horse-cloths was established. In essence Banbury remained a country market town until the arrival of heavy industry during the 1930's.

The red loam soils of north Oxfordshire were most suitable for corn-growing, and the clays of the lower and upper lias provided good grazing for sheep and cattle. The pastures were stinted, and although flocks of sheep were kept on most farms they were not usually large. Most parishes had adopted a four-field system by the early seventeenth century, with many permanent leys. Thus, a pattern of mixed farming was normal until after the period of parliamentary enclosure, when there was much conversion to grass.

Charlbury parish lay on the thin soils of the oolitic limestone at the edge of Wychwood Forest. It contained numerous smallholders, for it had once been a market centre and there were opportunities to assart the woodland. Finstock township, which lay partly within the forest, had sixteen copyholders in 1538, rising to fifty-four in 1630. The farming was pastoral in its bias at a much earlier period than elsewhere within the hundred. Some of the hamlets were deserted during the fifteenth and sixteenth centuries, and the common fields of each of the three townships were enclosed privately. There were glovers and tanners in Charlbury, especially during the eighteenth century.

This volume maintains the high standard one has come to expect from the *V.C.H.* The illustrations are excellent and add greatly to our understanding of the buildings and the topography. The contributions are scholarly, and at times use new approaches. B. S. Trinder, for instance, uses religious tracts and statistical material with admirable effect in his article on Protestant nonconformity. The result is a valuable work of reference.

But it must be said that the volume suffers from the usual faults of the series. The division of the work into Topography, Manorial History, Economic History, etc. is maddening to anyone who wishes to form an overall impression of Banbury at any one time. And in the rural areas it is not easy to discern any patterns. The reader is overwhelmed by a mass of information; he is rarely enlightened, and does not get a feeling of time and place, such as can be obtained from Margaret Stacey's sympathetic study, *Tradition and Change in Modern Banbury*.

The fault lies with editorial policy, which allows few general statements or comparisons. J. M. Laithwaite's article on the older buildings is the only part of the book that attempts to place Banbury in a national or even a regional setting. The choice of source material is also indicative of the approach of the editorial team. The early Chancery rolls have been searched systematically, but the wealth of material about local people (rather than about formal institutions) that is to be found in the Six Clerks division of Chancery has been neglected entirely. The most original work in this volume has come from external contributors.

The general editor defends such a restricted approach in the volumes devoted to parochial history on the grounds that each county has a general volume that discusses the regional setting. This sounds perfectly reasonable until one turns, for instance, to the general remarks on agriculture in *V.C.H. Oxfordshire*, Vol. II, and finds that they were written in 1907. The *V.C.H.* ought seriously to consider issuing new general volumes when each of the county series is complete. The contributors to the current volumes are obviously the local experts best able to draw general conclusions from their recent work.

DAVID HEY

E. S. HIGGS (ed.), *Papers in Economic Prehistory: Studies by Members and Associates of the British Academy Major Research Project in the Early History of Agriculture*. C.U.P., 1972. x+219 pp. £4.40.

The project with this resounding title was begun in the Department of Archaeology and Anthropology, Cambridge, in 1966, and this

volume is a collection of sixteen resulting papers by twelve of the members or associates. There is no particular theme and, despite a foreword by a professor of archaeology and a conclusion by a professor of agriculture, it resembles a volume of an academic journal, and is therefore not easily reviewed—a task made more difficult by the use of obscure language throughout. This will tend to restrict the readership to specialists and discourage the prehistorian who would gain from the scientific ideas discussed.

The book is divided into three sections: theory, methods and techniques, and field and case studies. In the first paper on the origins of animal and plant husbandry E. S. Higgs and M. R. Jarman unfortunately lend credence to the baseless suggestion of S. Payne that sheep and goats interbred as late as the Pleistocene. Why this is virtually impossible has been shown by Curtain (*Antiquity* 45, 303, 1971) and Ryder (*Antiquity* 45, 220, 1971). On the other hand many scientists would be surprised to note the ecological approach and genetic considerations being put forward as novel—some genetic ideas were indeed discussed by the present author in this journal in 1964.

After a paper on wheat and barley by H. N. Jarman, Higgs and Vita-Finzi follow with a territorial approach to prehistoric economies, starting with a belated acceptance on the part of archaeologists of ecology and even ethology. The term "economy" is so fundamental to the whole volume that one would have expected it to be precisely defined: different kinds of economy are defined, but not economy itself.

There are five papers on methods and techniques, some perhaps out of place in a volume of this nature, but it is good to see emphasis laid upon retrieval, sampling techniques, and interpretation. Even the most casual biological observer of normal excavation realizes that much is missed, and proper sampling is the long-accepted basis for all biological investigations.

In discussing the criteria of animal domestication M. R. Jarman and P. F. Wilkinson toy again with economic reasons and are reluctant to embrace ecology as the only possible explanation. There is a danger that in a full discussion

of size changes their statement that some might have been associated with initial domestication might be taken out of context to imply conscious selection by man, which is very unlikely until recent times. In my *Antiquity* article of 1971, I have already demolished their criticism of my (and others') assumption that all modern wild sheep are not feral domesticates. The apparently wide-ranging references are in reality highly selective, and not necessarily the first or only ones to the subject e.g. Ryder (*Advance Sci.* 23, 9, 1966), and Chaplin in Ucko and Dimbleby, *The Domestication and Exploitation of Plants and Animals* (1969) are omitted. The summary and conclusions to this chapter are, however, excellent, and give a well-balanced view with a plea for closer inter-disciplinary co-operation.

The section on case histories begins with a review by Wilkinson of the relevance of current experimental domestication to pre-history, starting with a musk ox and antelopes. In listing a whole range of relationships between man and animals from fishes to kangaroos the author gets carried away. Some of these can hardly be seen as precursors of con-

ventional domestication. Similar relationships exist throughout the animal kingdom, and one must not exaggerate their importance to domestication, which must be here considered in its narrow sense.

This is followed by a paper on the pre-historic exploitation of the gazelle in Palestine, another on a modern reindeer economy in Greenland, and a third by M. R. Jarman who seeks to demonstrate the existence of red deer economies at the close of the European Mesolithic, in which some form of game management or incipient domestication existed. The ease with which red deer have been "domesticated" very recently in Scotland supports such an interpretation of the finds. What interests me is why, given a similar potential in deer, goats, and sheep, only the last two were effectively domesticated, and why only the sheep produced a wide variety of breeds and fleece types.

The volume ends with a papers on plants in Bulgaria, soils in Palestine, and excavations in Anatolia.

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