VEGETATION AND LAND USE ON EXMOOR

BY OLIVE HALLAM

INTRODUCTION

This paper is concerned with the Somerset part of the Exmoor National Park and its semi-natural vegetation of grass moorland, heather moorland and broad-leaved woodland. These moors and woods, which many people look upon as wild, are in fact the result of centuries and even of millenia of use by man. The effects of man on the vegetation began to operate in Neolithic times and have continued with greater or less pressure ever since. For the use of Exmoor in prehistoric times reference may be made to the paper on *Soil and Land Use Change on Exmoor* by K. Crabtree and E. Maltby in Vol. 119 of *Proceedings*[1] and to the papers they cite. It is proposed here to deal only with the past 900 years or so.

DOMESDAY

Domesday[2] contains some information with a bearing on the subject of this paper. For most manors the numbers of grazing animals are given in the Exeter Domesday, but only for the demesne lands. Since the tenants of the manors must also have kept animals whose numbers are not known, it is not possible to give any estimate of grazing intensity. However the analysis given in Table I, of the animals listed for the demesne lands of the manors later to be incorporated in 19 parishes, may provide some indication of their relative abundance.

TABLE I

Animals Listed for Demesne Lands in 1086

Parish*	Sheep	She-goats	Swine	Beasts	Horses	Total
King's Brompton	30	7	9	4	—	50
Dulverton	73	53	12	13	—	151
Timberscombe	150	10	16	24	5	205
Cutcombe	370	67	11	15	41	504
Wootton Courtenay ..	150	18	7	13	1	189
Stoke Pero	60	50	7	5	—	122
Luxborough	175	34	15	18	—	242
Withycombe	40	30	10	3	1	84
Elworthy	172	—	15	4	2	193
Exton	102	20	6	15	2	145
Luccombe	100	50	6	6	1	163
Monksilver	30	—	12	1	1	44
Exford	97	37	3	10	1	148
Treborough	190	44	23	15	2	274
Selworthy	120	—	5	2	2	129
Winsford	52	—	—	—	—	52
Minehead	407	110	10	28	1	456
Oare	100	—	—	20	—	120
Dunster	200	—	—	6	1	207
TOTAL	2,618	530	167	202	61	3,578
%	73·2	14·8	4·7	5·6	1·7	100

*'Parish' comprises the manors subsequently included in a parish.

The high proportion of sheep is to be expected, but the percentage of goats compared with the other animals calls for comment. Ewes and she-goats must have been the principal sources of milk in the region in the 11th century; the latter would have browsed as well as grazed and helped to keep down the growth of scrub. By the 15th century the keeping of large herds of goats appears to have ceased[3] and by the

16th century it seems to have become customary for many families to keep at least one cow each.[4] Returning to consideration of Table I, beasts probably included the plough oxen. The small number of horses is surprising, as presumably they provided the only means of transport. In most manors they are described as riding horses, but in the manor of Cutcombe itself there were 39 unbroken mares, which suggests that the Lord of the Manor bred horses.

The manor of King's Brompton was the richest and probably the largest in the district, worth what was then the enormous sum of £27 12s. 1d. It had some 3000 acres of woodland and 15 swineherds who looked after the large numbers of pigs that were fattened on the acorns in the autumn. Since the number of swine in the demesne land was only nine, it is obvious that the huge herds did not belong to the King as Lord of the Manor; and in fact the 15 swineherds paid him 32 shillings a year. The manors later included in the parish of Cutcombe had about 542 acres of woodland and six swineherds. In Timberscombe there were 79 acres of woodland and 504 acres of underwood, which almost certainly meant coppice. Exford had six acres of woodland with 50 acres of underwood which was said to have been completely wasted in the time of Edward the Confessor.

In the above paragraph and in Table II the Domesday measures of area have been converted to modern acreages according to the formulae suggested by Oliver Rackham.[5]

THE ROYAL FOREST

In Saxon times a considerable part of Exmoor had not been attached to any settlement, and at the time of the Norman Conquest it became part of the demesne of the Crown.[6] Owing to the passion of the Norman kings for hunting, most parts of the country with no settlements were soon converted into forests in the legal sense, that is the deer were reserved to the king and protected by forest law.[7] This did not necessarily mean that they contained woodland. Additions to the Forest of Exmoor were made in the reigns of Henry II, Richard I and John. Early in King John's reign the Forest included, in addition to the original demesne area, the bordering parishes in Devon and the following in Somerset: Hawkridge, Withypool, Oare, Culbone, Porlock, Luccombe, Stoke Pero, Cutcombe, Winsford and Dulverton, and parts of Selworthy, Wootton Courtenay and Exton[8] (see map, Fig. 1). In 1204 King John disafforested all land in Devon in return for the payment of 1,000 marks.[9]

After the first quarter of the 13th century forest law was not strictly enforced in the parts of Somerset bordering on the original Forest, but the vert, meaning all trees and shrubs which might afford harbourage for deer, was still protected. A perambulation made in 1300 restricted the Forest almost entirely to the demesne area, but still included Oare, though it was not until 1316 that Edward II was compelled to confirm the disafforestation of the eastern purlieus.[10] Oare remained within the Forest at least until 1338.[11] Withypool and Hawkridge, although the perambulation of 1300 had excluded them from the Forest, still appear to have been regarded in some respects as part of it up to the early 17th century.[12] The occupiers of 52 tenements in these parishes enjoyed free grazing rights in the Forest in return for their services in rounding up stock,[13] and this regime continued until 1819.

All the evidence points to there having been no woodland in the remaining 20,000 acres of the Forest of Exmoor as defined by the post-1400 boundary[14] (Fig. 1). Hence there was no harbourage for red deer except in the wooded combes of the surrounding parts of Devon and Somerset. The Forest was administered by a warden or forester who made what profit he could by charging for pasture, mainly of sheep. In 1289 his accounts show that, apart from a few fines, the only source of income was £10 for herbage[15], which at that date probably implied fairly heavy stocking. The deer in the parishes bordering on the Forest were still considered to be the property of the Crown up to 1508. In that year Henry VII let the Forest itself, after which time the deer were no longer the property of the Crown but of the lessees.[16] There were no enclosures nor settlements in the Forest until a farm of 108 acres was enclosed during

the Commonwealth and Simonsbath House was built.[17]

By the enclosure award of 1819 Exmoor was finally disafforested.[18] The reclamation of a great part of the former Forest by John Knight and his son Frederick has been fully described by Orwin.[19] The subsequent land use of the unreclaimed moorland is all that is relevant here.

MOORLAND GRAZING

The moorland vegetation of Exmoor has been very largely determined by the density of stocking. Where the soil is sufficiently well drained light grazing tends to encourage common heather or ling, *Calluna vulgaris*, while heavier grazing favours grasses such as *Agrostis* spp., *Festuca ovina* and *Deschampsia flexuosa*. On badly drained soils *Molinia caerulea* usually becomes dominant. If grazing were to be withdrawn altogether it would not be many years before much of the moorland would become covered with scrub.

In 1621-3, in evidence in a lawsuit, a husbandman gave this description of the Forest: 'There are no woods nor copses other than one oake called Kite Oake and a few thornes growing here and there within the saide Forest nor any other shelter for deere other than sedgbusshyes, rushbusshyes, fearnes, heath or such like.'[20] By sedgebushes, no doubt, he meant *Molinia*, a tussock-forming grass. Rushes, *Juncus* spp., still occupy many wet patches especially where the ground has been much trampled by animals. Fern is the local name for bracken, *Pteridium aquilinum*. The husbandman's description might have been written today about much of the unreclaimed moorland in the present parish of Exmoor (Plate I), which is almost coextensive with the old Forest as defined by the post-1400 boundary, but which did not come into existence until 1856.[21]

From the 14th to the early 19th centuries the 20,000 acres of the Forest of Exmoor continued to be used as pasture. mainly for sheep, some of which came from long distances. They were driven on to the Forest between March and May and stayed until October except for the time when they were driven back to their owners' farms for shearing.[22] A rise in the charges for agistment in 1637 was said to have resulted in a fall in the number of sheep from 43,000 to 16,000,[23] but these figures are probably unreliable. In 1652 a gentleman of South Molton gave the following evidence: 'Sheep used to thrive as well or better in former times when there was a far greater number than now, for the reason that, in the greater part of the Forest the pasture is sedgie or coarse grass, which if it be eaten and kept down low sheep prosper the better thereon, but if it be suffered to grow hard they do not prosper so well on it.'[24] A witness in another Exchequer deposition in 1657 affirmed that 'The land and soyle of Exmore is a very cold course and barren soyle, and doth produce a course, mossy and sower grass only serviceable to keep beasts alive, and nott to grow and improve them.'[25]

Charges for agistment remained unchanged from 1655 to 1819,[26] and reliable figures exist for 1736 and 1814. Assuming that the free suitors of Withypool and Hawkridge exercised their rights of free grazing for 7,400 sheep, the numbers of animals agisted during these years were as follows:

	Sheep	Bullocks	Horses
1736[27]	37,400	127	102
1814[28]	32,000	—	640

The large increase in the number of horses is significant in terms of grazing pressure, especially since the Exmoor pony mares were the only domestic animals able to survive the winter on the moor. During the Knights' reclamation of the former Forest, stock continued to be taken in for agistment on the unreclaimed moorland, and although the charges were increased, there still seems to have been plenty of demand for summer grazing. By the middle of the 19th century the proportion of cattle to sheep had increased considerably, though the moorland would only keep one full-sized beast to three acres.[29]

It is clear that from the mid-17th century, and probably from the 13th century, to the early 19th century, the stocking of the Forest seldom fell below one and a half sheep to the acre and may sometimes have been more than two to the acre. In contrast the commons belonging to the surrounding manors appear to have been under-grazed. In Porlock, for example, in the reign of Henry VIII, the tenants had grazing rights for 2,187 sheep, 134 beasts and nine horses on Porlock Moor,[30] a common of 2,287 acres,[31] which is less than one animal to the acre; and the probability is that some of those who had grazing rights did not use them fully. Such a difference in grazing pressure over the centuries appears to be sufficient to count as a major factor for the predominance of grass moor in the Forest and of heather moor on the neighbouring commons. It should not be forgotten, however, that climatic and edaphic factors, beyond the scope of this paper, also have significant effects on the vegetation.

BURNING OF MOORLAND

There is no doubt that swaling (purposeful burning) has been practised for centuries on the heather moorland outside the Forest, but no evidence has come to light that it was practised in the Forest before the 19th century. References to burning occur in 1333 and 1338, but in both cases the inhabitants of neighbouring parishes were presented at the Forest Inquisitions for having burnt heath within the Forest. In the second case Richard Gane burnt part of Lucott Moor adjoining the Forest, 'from which burning the flame of fire leaping out into the heath of the Lord King in the same forest burnt a hundred acres of heath within the same'.[32]

Another reference to burning comes from an Exchequer deposition of 1640. 'John Harton the younger (of Porlock) says that two years ago "knowing some of his father's sheep to have been intangled in a little piece of heath of about one and a half acres, so that some of them had been eaten or spoiled by dogs or some vermin, he did burn the same one-and-a-half acres, which same heath was a great annoyance being in the usual way they drove their sheep into the forest on the very outermost bounds of the forest." There are at least 1000 acres of better heath in the forest. He denies "that His Majesty's game of deere are anyway hurted or prejudiced thereby. The place yielded no manner of profit to the complainant (the Forester), neither was it fit for deere or cattle to browse on, being so old and overgrown that no grass grew". He undertakes to prove that it would be more profitable to the farmer (the Forester) if two or three hundred acres of some of the old overgrown heath in the forest were burnt. The land would yield far more profit, as is found by daily experience of burning commons not far from the forest.'[33]

This deposition seems to indicate that swaling was not practised in the Forest. The overgrown heath probably included gorse and almost certainly brambles, the only vegetation likely to entangle sheep. A thousand acres of heath is mentioned; if this is an accurate estimate, it means that heath only formed one twentieth of the total acreage of the Forest, the rest being grass moor.

Since *Calluna* becomes leggy when old and loses its value as fodder, swaling is probably an essential form of management for heather moors. But it should be done in strict rotation at intervals of not less than ten years instead of haphazardly as has been the tendency on Exmoor. It has by law to be carried out between November and the end of March. One effect of swaling has been to encourage the spread of bracken at the expense of heather and whortleberry, *Vaccinium myrtillus*, wherever the soil is sufficiently well drained. The underground growing points of bracken are completely unharmed by burning, whereas the chamaephytes take a year or two to recover, so that bracken wins in the struggle for existence. Bracken also grows taller than the heath undershrubs and so eventually shades them out. The right of tenants to cut bracken in the Middle Ages and later may have helped to control it.[34] Other plants that colonize burnt ground are the two species of gorse, *Ulex europaeus* and *U. gallii*.

Within the former Forest swaling of some of the grass moors is now carried out annually, but it is only the old dead leaves that are burnt before the new growth starts.

Plate 1. Wet grass moor. Prayway Meads (1963). *A. D. Hallam*

Plate 2. *Calluna vulgaris* and *Nardus stricta*. Dunkery Hill. *A. D. Hallam*

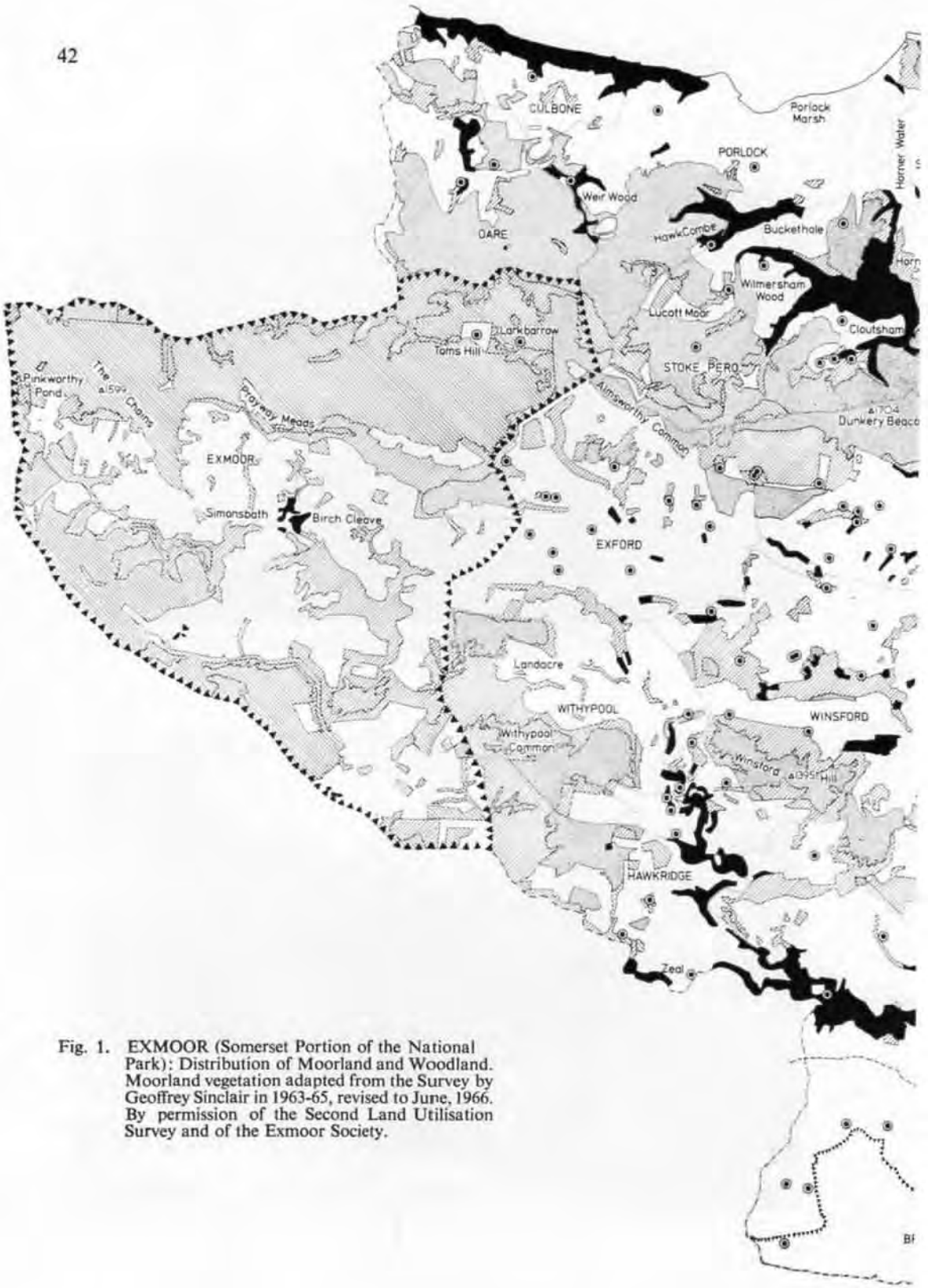

Fig. 1. EXMOOR (Somerset Portion of the National Park): Distribution of Moorland and Woodland. Moorland vegetation adapted from the Survey by Geoffrey Sinclair in 1963-65, revised to June, 1966. By permission of the Second Land Utilisation Survey and of the Exmoor Society.


North Hill
MINEHEAD
DUNSTER
North Hill
WOOTON COURTENAY
Ranscombe
CARHAMPTON
TIMBERSCOMBE
OLD CLEEVE
WITHYCOMBE
CUTCOMBE
LUXBOROUGH
NETTLECOMBE
MONKSILVER
TREBOROUGH
STOGUMBER
EXTON
WITHIEL FLOREY
ELWORTHY
BROMPTON REGIS
DULVERTON
M Aston 1978
County Boundary
National Park Boundary
Parish Boundaries 1840
Forest Boundary pre 1316
Forest Boundary 1400-1819
Deserted Settlements
Wet Grass Moorland 1966
Dry Grass Moorland and Bracken 1966
Heather Moorland 1966
Broad-leaved Woodland 1975
spot heights are in feet
N
0 1 2 3 MILES
0 1 2 3 4 KILOMETRES

Swaling is not practised on the Chains and Pinkworthy area where *Molinia* is dominant.

One of the most unfortunate effects of tourism is the occurrence of accidental fires in summer after the start of new growth, especially if there is a high wind. The heather may be destroyed and take several years to become re-established from seed, while the bare soil may be eroded or colonized by gorse or grasses. If the sheep are allowed to graze too soon after burning they eat down the better grasses before they have time to seed and also eat down the heather seedlings and prevent their further growth. This is leading, on Dunkery Hill, to the spread of the mat grass, *Nardus stricta* (Plate 2), which is unpalatable to sheep and therefore able to set seed. Such deterioration of the habitat could be prevented if the National Trust and the farmers who have common rights would agree to the erection of temporary fencing.

TILLAGE OF MOORLAND

The ploughing of moorland and its use for growing crops is not a practice introduced in the 19th and 20th centuries as many people suppose. Enclosures were made at Long Acre (Landacre) in the 13th century and sown with winter corn and with oats.[35] In 1279 one of the grievances against the Charter of the Forest was that 'the men who work in their waste ground to sow corn, although the king has no demesne, the foresters attach these to come before them, and say that they have made waste and purpresture.'[36]

Tillage on the lower slopes of Dunkery and on Northhill, alias Wotton Hill, in the Manor of Wotton Courtenay, is well documented in the rolls of the Court Leet from 1538 to 1553. Between 19 and 22 tenants were in the habit of growing corn on these commons. The largest enclosure recorded was three and a half acres, but most were one-acre or half-acre plots and some even smaller, and the total area tilled in any one year would not have exceeded 20 acres, a very small proportion of the area of these commons. The fertility of the soil would have been exhausted after a few years and new enclosures made, bounded by low banks of soil and turf and topped with fences. Payment was made at the rate of sixpence an acre for licences to sow. The crop is not usually specified, but in one instance a tenant complains of another's swine depasturing his oats. Conflicting interests are also apparent in the following passage: 'That no Tenant who sows upon the Common ought to hound the sheep of a Tenant upon the Mountain unless (he keep) his Hedges upon the Common about his land well repaired under the penalty of 40d. And they who have vicious sheep ought to control them under penalty of 40d.'[37]

In 1638 copyholders of the Manor of Monkham claimed that they had common of pasture in the commons of Exford at all times 'when the said commons lye fresh and are not in tillage'.[38] A husbandman of Withypool deposed in 1678 that 'Part of the said common has recently been tilled and there are signs that several other parts now laid down have been anciently tilled.'[39] Air photographs of Withypool Common certainly bear this out, showing enclosures all around the borders but none in the middle.

Mr. M. A. Aston has recently investigated the occurrence of many abandoned settlements which consisted of houses and farm buildings, some of them medieval. Their sites are marked on the map (Fig. 1). These settlements were often nearer to the commons than are the farms of the present day. Their occupants therefore would not have been at a great distance from their small temporary enclosures. It will be observed that the only two deserted settlements within the Forest of Exmoor, as defined by the post-1400 boundary, are Tom's Hill and Larkbarrow, the two unsuccessful 19th century ones. There is no evidence of any tillage within the Forest, except at Simonsbath Farm, before the 19th-century reclamation.

A photograph recently taken from the air (Plate 3) shows former enclosures on Winsford Hill, and some of these are easily seen on the ground. The photograph also shows a large area of ridge and furrow which, according to local tradition, dates from the Napoleonic Wars. It is too regular and too extensive for 16th-century or earlier intakes, though it may of course have obliterated some of these.

Plate 3. Old enclosures and ridge and furrow. Winsford Hill. *M. A. Aston*

Plate 4. Coppice oak woodland. Hawk Wood. *Somerset County Council*

The writer is indebted to Mr. C. P. Thomas-Everard and Mr. John Pugsley for information about an area of some 40 acres on East Anstey Common, just over the Devon border from Zeal in Hawkridge. This was ploughed up during the Second World War and potatoes were grown for two years. It reverted to heather and gorse in ten years and is now indistinguishable from the adjacent moorland. It may be salutary for conservationists to realize that *Calluna* has not always occupied the land where it is now dominant.

PEAT DIGGING

Peat digging is another form of land use that has been carried out on Exmoor from the Middle Ages, and probably from much earlier, to the present century. The first reference found is that in 1270 seven men of Withypool and Exford were each fined a shilling for digging new turf pits in the King's demesne.[40] This seems to imply that there were already established turbaries. By the 17th century the lessees of the Forest were inviting people to cut turf. Before 1629 the rate was fourpence a day; this was raised to sixpence and in 1655 to 1s. 6d. In 1635 a man from Bray was able to cut 1,600 turves a day and they were worth sixpence a hundred when dry.[41]

In contrast to the raised bog of the Somerset Levels where peat formation ceased about 500 A.D., oligotrophic peat is still accumulating on Exmoor. Dr. L. F. Curtis gives the depth of the peat as 110 cm. near Pinkworthy Pond and 265 cm. near Chains Barrow.[42] There is also blanket peat outside the old Forest, but no palynological work has yet been done on it. Crabtree and Maltby estimated that about eight centimetres of peat formed during the 140 years from 1833 to 1973 on the sites they excavated on the south flank of the Chains and that it has been forming two or three times as quickly on the much wetter land at the top.[43] Today the chief peat-forming plant is *Molinia caerulea*.

Old peat diggings add considerable variety to the plant life of Exmoor. A recently dug pit will be full of water. The pond silts up and cottongrass, *Eriophorum angustifolium*, which can withstand continual waterlogging, colonizes the pit with *Sphagnum* spp. and sundew, *Drosera rotundifolia*. Other plants to be found in and around the old diggings are cranberry, *Vaccinium oxycoccos*, and crowberry, *Empetrum nigrum*, the latter an arctic-alpine species near the southern limit of its range in Britain. Other widespread species in the blanket bog are *Eriophorum vaginatum*, which grows in less wet situations than *E. angustifolium*, and cross-leaved heath, *Erica tetralix*, which tolerates a wetter soil than *Calluna*.

RECREATIONAL PRESSURE

An early mention of recreation is to be found in the Enclosure Award for Almsworthy Common in 1848, in which six acres were awarded to the churchwardens and overseers of the poor of the parish of Exford 'as an open space sufficient for purposes of exercise and recreation of the neighbouring population'.[44] There was no thought then of making provision for tourists. Nine more commons had been enclosed by 1872. A bill of enclosure for Withypool Common was turned down by the House of Commons Special Committee in 1869 because, of 1,800 acres, only one was to be set aside for public recreation. So Withypool Common retains its status, since a second attempt to enclose it failed in 1876, by which time the climate of public opinion had changed against enclosures.[45]

It was not until the present century that the region began to be much frequented by visitors. The influx of tourists has vastly increased since the Second World War owing to the mobility of the urban population and to the designation of Exmoor as a National Park. One of the worst results—the starting of fires in summer and autumn —has already been mentioned. The other most adverse effect is due to sheer pressure of human feet, leading to soil erosion. This is especially noticeable on Dunkery Hill where the old tracks are now upwards of 30 feet wide. The undershrubs, *Calluna vulgaris*, *Erica cinerea* and whortleberry, *Vaccinium myrtillus*, are most vulnerable to

these pressures; the grasses survive longer, but trampling eventually destroys them also. The driving of vehicles on to the moorland does even greater damage, but this is to some extent preventable, whereas it does not seem possible or desirable to prevent visitors from going up to the Beacon, and the discomfort of walking on stony paths inevitably leads them to walk on the verges so that more of the vegetation is destroyed every year. Once the covering of vegetation has been removed the soil is rapidly washed away in this region of high rainfall.

TABLE II

Woodland Acreages in the Somerset Part of the Exmoor National Park

Parish*	Domesday			1838–44		
	Wood-land	Under-wood	Total 1086	Date of Tithe Map	Acres c. 1840	Change Acres
King's Brompton	3,024		3,024	1841	803	—2,221
Dulverton	586	17	603	1839	1040	+ 437
Timberscombe	79	504	583	1844	98	— 485
Cutcombe	542		542	1840	473	— 69
Wootton Courtenay	504		504	1842	30	— 474
Porlock	360		360	1840	510	+ 150
Stoke Pero	326		326	1839	219	— 107
Culbone	120		120	1838	319	+ 199
Luxborough	118		118	1841	784	+ 666
Withycombe	115		115	1839	43	— 72
Elworthy	108		108	1840	115	+ 7
Exton	84		84	1838	103	+ 19
Luccombe	74		74	1840	312	+ 238
Monksilver	42	19	61	1841	34	— 27
Exford	6	50	56	1839	36	— 20
Treborough	50		50	1840	133	+ 83
Selworthy	49		49	1840	307	+ 258
Winsford	48		48	1838	716	+ 668
Minehead	34		34	1842	86	+ 52
Oare	18		18	1840	90	+ 72
Dunster	2		2	1840	277	+ 275
Withypool	—		—	1839	62	+ 62
Hawkridge	—		—	1840	195	+ 195
Exmoor	—		—	—	26	+ 26
	6,289	590	6,879		6,811	— 68

*'Parish' comprises the manors subsequently included in a parish.
N.B. Hawkridge and part of Withypool were in the Manor of Exton in 1086.[46]
The beechwood known as Birch Cleave was the only wood planted in the former Forest of Exmoor before 1840.[47]

WOODLAND MANAGEMENT

Table II shows that the acreage of woodland about the year 1840 was apparently only 68 acres less than that in 1086. Although the converted Domesday figures can only be considered as approximations, it is an extraordinary coincidence that the acreages should be so nearly equal. There was a reduction of woodland in eight parishes and an increase in sixteen, showing that the distribution of woods had changed considerably. It seems probable that, after the disafforestation of the eastern purlieus of the Forest in the 14th century, the vert was no longer so well protected. For one reason or another many of the woods must have been much reduced in extent by the middle of the 18th century. During the next hundred years some of the woodland was replanted and new plantations were made on land that had previously been moorland or poor arable land. Up to 1840 most of the planting was with hardwoods; planting with softwoods came later.

Weir Wood had been reduced by 1840 to two copses of about two acres and half an acre respectively.[48] The greater part of it has been planted with oak, *Quercus*

petraea, since that time and subsequently managed as coppice. The oakwoods bordering the right bank of East Water and the right bank of Horner Water below its confluence with East Water did not exist in 1840 when this area was described as 'heath and pasture'.[49]

There seems no reason to doubt that oak has been the dominant tree in the Exmoor combes since the Norman Conquest and probably long before that time. The two native species, *Quercus robur* and *Q. petraea*, are both present, the latter predominating, and there are numerous hybrids between them. The uses of the woods have been many and various. They have been managed partly as coppice with standards, partly as pure coppice with the stools cut to the base in a 20-year rotation, partly as wood pasture and also as harbourage for red deer. In the 13th century, when the eastern purlieus were still within the Forest, the woods were forbidden to man and all his domestic animals during the period around midsummer when red deer were calving. Any pigs found were forfeited, all rights of common were suspended and poachers more heavily punished at this time which was called the fence month.[50]

In the autumn pigs were fattened on the acorns; in the 14th century there was, for example, pannage for ten pigs in Wilmersham Wood and for 30 hogs in Buckethole Wood in the Manor of West Luccombe.[51] The pigs seem to have been impounded during pannage; the Bailiff's Roll of the Manor of Porlock for 1419-20 gives fourpence as the expense of driving and impounding swine during the pannage time.[52] Stock was regularly pastured in some of the woods. A Porlock Rental of the Marchioness of Dorset in the reign of Henry VIII records of Walter Popeham, 'He holds also of the demesne of the Lady one close called the High Park containing in itself 200 acres and it is full of underwood, furze and heath, yet there is sufficient pasture for 200 sheep and 10 beasts and 2 horses. And he renders yearly 26s. 8d. And the said underwood is reserved to the Lady.' At the same time he also rented a meadow on Porlock Marsh of 70 acres for £6 a year.[53] This emphasises the very great difference in value between good agricultural land and rough grazing. At the same period certain tenants had rights of pasture for 160 sheep and 15 cows in Porlock Wood. Each tenant paid 2d. a year, known as the 'woode werght', for the right to collect dead wood and lop and top.[54]

A lease of woods in Porlock granted in 1580 gives a list of ten woods by name with their acreages. The total was 213 acres 'whereof the underwood growinge in xx^{tie} acres will but suffice for the hedgeinge and securinge of the said woodes, for the preservation of the springe when the underwood shalbe fallen and therefore not here valued. And the underwood growinge in ciiij^{xx}xiij (193) acres residewe, beinge nowe of diverse ages under xx^{tie} yeares growth and very thinne and badd of growth by reason that the same hath not ben heretofore used to be enclosed at the fall of the underwood, whereby as well the catle of the Tenants of the groundes adjoyninge as also the catle that do common in the forest of Exmore w^{ch} doth also adjoyne unto the said woodes have had their usuall course unto the said woodes for their shelter in winter and shadowe in sommer, is wourth to be letten for xxj yeares after the rate of vj d every acre yearly.' The lessee agreed to enclose each coppiced area for seven years after cutting. Timber trees and all good oak saplings and a sufficient number of 'staddelles' or stools in every acre were to be reserved to the Queen into whose hands the Manor of Porlock had at this date reverted.[55]

It is clear that, where woods were not managed properly, they deteriorated through the depredations of animals unless pollarding was practised. There are still a few anciently pollarded oaks left in the woods around Cloutsham. When a tree is pollarded the new growth from the cut trunk begins too high for browsing animals to reach it, so it is likely that wood pasture was regularly pollarded instead of coppiced. The great advantage of managing woods as coppice or pollard was that it prolonged the life of the trees and gave a regular source of income. The wood made useful poles for many other purposes besides fencing, while the bark was used for tanning leather. In 1905 there were 16,421 acres still being managed as coppice out of 46,788 acres of woodland in Somerset, that is well over a third of the total woodland.[56] The returns

of the Board of Agriculture give no indication of whereabouts in Somerset the coppiced woods were; but, in 1906, among seven tanners in the county listed in Kelly's Directory, one was at Porlock, another at Minehead and a third at Bridgwater.[57] The tanners at Porlock and Minehead can be traced back to 1830, and in that year there was one at Dulverton as well.[58] There were also small local tanneries at Holnicote and at Ranscombe in Wootton Courtenay (J. K. Ridler *in lit.*). A tannery was still in existence at Porlock in 1939,[59] so it is probable that coppiced oak bark was still being used there up to the Second World War.

Leather for most purposes is now tanned by synthetic chemical means, so there is no longer a great demand for oak bark. However it is needed for some special leather goods such as saddlery, and there are still a few tanneries where oak bark is used. In one of these, at Colyton in East Devon, the tanner uses trunk oak bark as he cannot obtain coppice oak bark, which he would prefer because the younger growth contains a higher proportion of tannin. Some of the formerly coppiced oak on Exmoor could still be coppiced again, and the owners (who include the Somerset County Council and the National Trust) might well consider the possibility of reviving this practice which would give a new lease of life to some of the degraded oakwood, provided it were temporarily fenced against red deer and other browsing animals. Coppicing ensures the continuity of a wood without reliance on regeneration from seed; the growth from cut stools is very much more rapid than that of a sapling; also it is possible to grow useful coppice on the higher slopes where poverty of soil makes it impossible to grow timber trees (Plate 4).

Lack of oak regeneration from seed under oak is a widespread phenomenon today, not only on Exmoor. It may be attributed partly to seedlings being eaten by rabbits and rodents. In this connection it may be noted that some predators have become extinct; there are no longer any polecats or martens in the area. Between 1660 and 1760 the Churchwardens' Accounts for Luccombe list payments for killing both these predators and also foxes, kites, otters and hedgehogs.[60] It seems likely that abandonment of the practice of management as coppice with standards may also account in part for the paucity of natural regeneration. The shade of an oakwood appears to be too great for oak seedlings to flourish. Where coppicing took place there would have been some years when sufficient light was let in to encourage the growth of saplings, and a few standard trees would have supplied the acorns. What regeneration there is today is on the margins of woodland, where it is much browsed upon by sheep as well as deer, and in thickets of gorse, *Ulex europaeus*, where the young trees have some protection from animals. In places where oak trees have died through old age or disease the clearings have been colonized by birch, *Betula pubescens;* this is well illustrated on the north-east flank of Cloutsham Ball. There is a possibility that oak may regenerate in future in the much lighter shade of the birch trees. Oakwood on North Hill, Minehead, mostly felled during the Second World War, is regenerating among sycamore, *Acer pseudoplatanus*.

PLANTING FOR AMENITY

In the late 18th and early 19th centuries a great deal of planting was done as much for amenity as for utility. Worn-out woodlands were replanted with oak as in Horner Combe and former arable fields on the slopes around Selworthy were planted successfully with holm oak, *Quercus ilex*. Cloutsham farmhouse was modified to resemble a Swiss chalet, rides for carriages were made through the woods and Cloutsham Ball was left open except for scattered conifers. An isolated clump contains specimens of exotic conifers including Monterey pine, *Pinus radiata*, Douglas fir, *Pseudotsuga* sp., silver fir, *Abies alba*, and cedar, *Cedrus atlantica*. All this was part of the landscaping of the Holnicote estate on a grand scale by the Acland family. Scots pine, *Pinus sylvestris*, planted much later on Horner Hill, is regenerating freely in sheltered places.

The following description of Culbone Woods in 1800 by the Reverend Richard Warner expresses the romantic attitude to woodland: 'Here the oak's solemn shade

is relieved by the bright berry of the mountain ash; and *there* the light satin of the airy birch is chastised by the gloom of the melancholy yew; whilst the feathering fir and luxuriant beech lend their contrasting foliage to give a wider variety to the enchanting scene.'[61] (The yews no doubt were confined to the churchyard.) Much mixed planting of this kind was also done in the Exe Valley where the landscaping is still very successful. Birch Cleave is a beechwood planted about 1835 in a sheltered situation at Simonsbath.[62] It is the highest beechwood in the south of England, its altitude rising from 1,050 to almost 1,200 feet O.D. The name suggests that the site was formerly occupied by birch or birch scrub.

The Exmoor woods of today have been so well described by Roger Miles in 'Forestry in the English Landscape'[63] and in 'The Trees and Woods of Exmoor'[64] that it seems unnecessary to say more about them here. The Exmoor National Park Authority has indeed been fortunate in having the advice of Mr. Miles in its efforts to combine forestry with amenity.

CONCLUSION

Suggestions for management to conserve heather moor and oak woodland have been made above. Some of these would, if implemented, necessitate the erection of temporary fencing which would probably cause an outcry but might prevent further degradation of the habitats. It is not proposed here to go into the controversial subject of the ploughing up of moorland and its conversion to more profitable agricultural use, except to say that diminution of the moorland is bound to lead to greater recreational pressure on the remainder. Lord Porchester in his recent report[65] has put forward practicable recommendations which, if given the force of law, should go far to resolve the conflict of interests between agriculture and amenity.

In conclusion, if a husbandman of the 13th century were to be set down near Chains Barrow it is probable that the vegetation he would see would be familiar to him, but he might be puzzled by the fact that the grass is longer than he remembered when it was close cropped by sheep, and now there is a herd of bullocks grazing. If he were to be transported to Dunkery Beacon the heather moor would be much the same as he might expect, but the wide tracks would mystify him. In an oakwood, although he might be surprised at the length of time since any of it was coppiced, the general appearance would be sufficiently similar to make him feel he had come home.

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