

KARRI AND THE OAK FORESTS OF DEAN

A TALE OF TWO FORESTS

by R.J. Underwood

The dismay and disquiet in sections of the public mind over the "destruction" or "irreversible changes" being wrought upon the karri forest by the current surge of harvesting for sawlogs and chipwood is naturally of concern to all foresters. The continuing outcry over the "woodchip project", as the combined operation seems indelibly to have been branded, is partly an expression of the rapid growth of popular conservation issues which have emerged in the Western World in the last 10 to 15 years. It is also an understandable lay reaction to the aesthetics of large-scale clearfelling. Very few people actually enjoy the notion of splendid and beautiful forests being cut down; none find the sight of a recently burnt coupe attractive or inspiring. Indeed, most foresters themselves, cannot escape a sense of loss, when they reflect upon what they knew was there, and is now gone, despite their knowledge of the markets which must be supplied, the jobs and families sustained and the virgin forest reserves which are set aside.

However, by virtue of their training, experience and conditioning, foresters are (perhaps fortunately) endowed with unusual patience and foresight when it comes to forest operations. The future is easily visualised, so that rather than the immediate scene of devastation, they see instead the burgeoning hillsides of regrowth, the dense stands of saplings and poles turning their leaves to the wind, and then ultimately, the new towering and gleaming forests, alive with lorrikeets at the blossom, steaming boles filtering the misty sunshine of a Pemberton winter's afternoon.

Some of us have also been fortunate enough to extend our vision backwards in time, in places where the life cycles of forests have revolved many times, leaving their imprint upon the pages of history. Few other experiences put our local problems so clearly into perspective.

My personal experiences in this vein occurred (like so many other Australian foresters before me) when I was in Europe last year. For example, in the Hartz Mountains in Germany, we saw clearfellings being made in a 120-year-old spruce forest - the third such deliberate rotation on that area. But the really enduring experience for me, was the "discovery" of the Forest of Dean in the southwest of England near the Welsh border.

The Forest of Dean is perhaps the best loved forest in Britain. Like the New Forest, it is one of the rare survivors of the ancient Royal Forests of England. Its magnificent stands of oak, beech and chestnut are today revered as a National Heritage.

However, this beautiful forest is more than a special gem in one of the most fascinating landscapes in Britain. It also stands as a living reminder of what can be the endpoint of centuries of exploitation, depredation and successive regenerations, and of the various complex interactions between a forest and human society.

For Dean has had an astoundingly checkered history. Even more astounding is the degree to which this history is documented. For a period extending back nearly 2000 years, records and accounts have been meticulously maintained. These can be reconstructed into a vivid story, which recreates the forest's struggle for survival in the face of all the familiar depredations which so preoccupy us to this day: mining, wide-scale clearfelling, disease, storm, overgrazing, and clearing for agriculture.

The story of the Forest of Dean has been told many times (for the best account, see "Royal Forest" A History of Dean's woods as producers of Timber by C.E. Hart, 1966. - It is the main source for this paper). But, it is worth setting down again as a perspective to the current situation in the karri forests of W.A.

The tale begins in prehistoric times when early Bronze Age tribes occupied sites in the forest and began the first clearances for tillage, browsing of flocks and charcoal burning. With the coming of the Iron Age, excavations for iron ore began. To this point, the evidence is archeological, but written records and the first map of the forest appeared after the Roman invasion in 55 B.C. Major inroads then began in earnest and over the next 200 years, the area of forest was reduced by nearly one-third. Roads were constructed (part of one of which remains and can be walked upon today), stone quarries opened up, iron mines extended and extensive fellings made for constructional timbers for the Roman forts, settlements and bridges. At this time, the first exotic tree was introduced - the sweet chestnut - which the Romans brought from Spain and planted widely in southern England (where it is today universally regarded and admired as a native species).

Through Anglo-Saxon times, forest clearances for agriculture steadily cut into the original stands, and it was not until after the Norman invasion in 1066 that the first forest laws were introduced. These were aimed at preservation of hunting reserves for the King and his Barons.

The "Woods of Dene" were carefully documented in the Domesday Book (1086) in terms of their value for fattening swine (on acorns and beech nuts), construction timber, arrows, iron ore and charcoal. The Domesday Book also drew attention to the deleterious effects of commoning (grazing) and deer browsing on the regeneration of seedlings and growth of coppice shoots - an early note of silvicultural concern.

The forest was formally vested in the Crown in 1155, and placed in the custody of a Sheriff appointed by the King. Over the next century, considerable "afforestation" (meaning in those times enclosures to keep out the peasantry and their stock) was carried out. This was greatly resented, and the records of the King's Courts in this period are full of harsh punishments for illegal grazing, poaching of venison and illegal cutting of timber.

But, throughout this period (the 13th century) by far the most destructive element was the production of charcoal which was used in the smelting and forging of iron. A report to the King in 1270 instanced "the great destruction of the forest" being wrought by the charcoal burners. Apparently, little could be done to stop it - or perhaps no serious

effort was made - and by the end of the 13th century, the forest area was reduced to only 45 000 acres (from over 100 000 acres in 55 B.C.). Cut-over areas were not regenerated, mainly due to an exceedingly thorough harvest of acorns and beech nuts by the peasants for swine fodder.

According to a contemporary observer, "A great despoiling" of the forest had been done.

But, worse was to follow and virtual anarchy reigned in the forest during the 14th and 15th centuries. Not until the time of Henry VIII was a policy of conservation of trees and woods proclaimed. Albeit for hunting purposes rather than forestry, the new enclosures were effectively put in and ruthlessly maintained, thus permitting a prolonged period in which natural regeneration became established in the devastated woodlands. The acorns which fell at that time (the latter part of the 16th century) were to grow the oaks which made England a mighty naval power in the centuries ahead. This was perceived by at least one foreign power, for it is recorded that the commanders of the Spanish Armada (in 1588) carried express instructions that "if when landed they should not be able to subdue the English nation, they should yet be sure not to leave a tree standing in the Forest of Dean".

By 1615, despite continuing depredation by the charcoal burners, who supplied rapidly expanding iron-works in southern England, Dean was acknowledged "a storehouse of naval timber".

In the late 17th century, amidst the turmoil of the Civil War, deliberate planned reforestation with timber trees commenced. Workmen were employed for fencing and ditching the enclosures and for the collection and sowing of acorns and beech nuts. Natural seedlings (wildlings) were transplanted to restock waste land. One contractor in 1660 was paid 9 pence a thousand for lifting and transplanting 23 400 oak and beech seedlings. No longer was natural replenishment of the forest to be left to nature.

During the time of Cromwell, some 3000 acres were replanted and programmes of thinning, pruning and cleaning introduced.

But, despite all these advances, a period of decline in the forest again set in towards the end of the 18th century. Two factors were involved: (i) the vast quantities of timber required for England's great naval and merchant fleets and (ii) the development of the coal mining industry. Rich and accessible seams of coal underlay much of the prime woodlands of Dean. Rural populations were growing quickly and to the ever-present problem of grazing was added the depredatory effects of surface and deep coal mining and requirements for mining timbers. The authorities fought a losing battle and "trees were even stolen in the night". According to another report, "in a few years the whole forest must be destroyed". The oaks which had germinated in the time of Henry VIII were virtually clean cut for naval timber.

An alarmed Navy petitioned the Government. A Commission of Enquiry was appointed in 1798 and Nelson himself visited Dean in 1802. He reported scathingly on the deficiencies of oak for shipbuilding purposes, the "shameful wastage" of timber, the problems of mining and grazing and the need for "preserving and encouraging the growth of timber in the King's forest". All this came at the height of the Napoleonic Wars, when

England's Navy was its "wooden walls". The Dean Forest (Timber) Act of 1808 resulted. This specified, amongst many silvicultural and conservation measures, a massive replanting programme. Contracts for the regeneration of thousands of acres were let.

Between 1808 and 1818:

100 miles of new fencing were erected;

25 miles of stone walls were built;

70 miles of earthen banks and gorse hedges were thrown up; and

11 00 acres of plantations were established.

(Remember that all this was still 10 years before the *Parmelia* set out for the Swan River Colony and a century before the first mill was built at Pemberton).

The planting contract specified 2722 trees to the acre. Holes were dug at 4 feet spacing. Each hole was sown with an acorn, except that in every 10th hole a 5 year old oak seedling was planted and in every 100th hole a 5 year old chestnut. On soils considered unsuitable to oak, planting of ash, elm, sycamore, Norway spruce, European larch, Scots pine and even *Pinus pinaster* were made.

The acorn sowings proved disappointing and many areas were later replanted with one or two - year old oak seedlings, transplanted from nurseries.

Meanwhile, the cutting for ship building and mining timbers continued unabated through this period. By 1850, Dean was predominantly a forest of young, even-aged plantations.

But, at about this time the era of the wooden ship came to an abrupt end. The last order for Naval Timber was 550 loads in 1855. All of a sudden the forests planted in 1808-1818 had lost their major market! Although planting and tending continued into the 1870s, by now the Government was viewing Dean as something to be disposed of as quickly and cheaply as possible. Fortunately for posterity, a new class of defenders emerged: the professional forester, many of whom were now coming back to England after European training and experience in the colonial forest services in India and S.E. Asia. Amongst these was the famous Sir William Schlich, who visited Dean many times and was one of the foresters instrumental in maintaining its integrity at that time.

Into the 20th century, and the strategic value of Dean vindicated the efforts of those who had fought to save it a few decades earlier. During both World War I and World War II, when Britain was blockaded, huge quantities of sawtimber, pitwood, charcoal and pulp were produced from the Forest of Dean. Wherever possible, this timber was obtained as thinnings from the great plantations established in the time of Nelson. But, clearfellings were also necessary and in many of these areas, the old hardwoods were converted to coniferous plantations (because of concern at the slow growth rate of the native hardwoods) and these now cover about 40% of the forest.

There have been a number of policy changes in recent years. The Forestry Commission now espouses a policy of multiple-use and most of the old

hardwood stands at Dean, are set aside for amenity, recreation and "preservation of the national heritage". It is these magnificent stands of oak, beech and chestnut (most of them originally planted at 4 x 4 spacing between 1808 and 1818) which are the focus of attention for most visitors to the forest today. The future of these stands, which have suffered some severe storm, insect and squirrel damage over the years, is currently a matter of great popular debate, any proposed felling and regeneration being regarded by conservation groups with disquiet and dismay.

But, wasn't this where we came in? Indeed it was, our story has come a full circle. Who knows but that the thousands of karri trees we are planting today will become the National Heritage which must be "saved" and "defended" by the generations of the future. Or, perhaps, they will be used again, rotation following rotation, supplying forest products for the nation as the need arises.

Whatever happens, a study of the vicissitudes of the Forest of Dean over the last 2000 years is reassuring. It would be nice to think that centuries ahead a similar history of the karri forest could be written, and that our regeneration work today will be regarded by posterity as a farsighted and determined operation aimed at preserving the life-stream of a magnificent forest.

Personally, I could not think of a better ideal at which to aim.