

—a Design Study”; *Orville Wright Prize* to D. A. Spence, of the Royal Aircraft Establishment, Farnborough, for his papers, “The Lift on a Thin Aerofoil with a Jet-augmented Flap” and “Some Simple Results for Two-dimensional Jet-flap Aerofoils”; *Herbert Ackroyd Stuart Memorial Prize* to Mr. A. A. Lombard, director of engineering, Aero-Engine Division, Rolls-Royce, Ltd., for his paper on “Thinking about Aircraft Engines”; *J. E. Hodgson Prize* to Mr. J. E. Allen, head of Aerodynamics, Project and Assessment Department, Weapons Research Division, A. V. Roe and Co., Ltd., for his paper, “From Aviation to Astronautics”; *Branch Prize* to

Mr. B. D. Blackwell, engineering manager, Bristol Aero-Engines, Ltd., for his paper on “Some Investigations in the Field of Blade Engineering”; *Navigation Prize* to Mr. C. M. Cade, of the Research Department of Kelvin and Hughes, for his paper on “Radio-Astronomy and Navigation”; *Usborne Memorial Prize* to Dr. J. S. Przemieniecki, of Bristol Aircraft, Ltd., for his paper on “Matrix Analysis of Shell Structures with Flexible Frames”; *Pilcher Memorial Prize* to Mr. A. W. Kitchenside, of Vickers-Armstrongs (Aircraft), Ltd., for his paper on “The Effects of Kinetic Heating on Aircraft Structures”.

NEW NATURE RESERVES IN BRITAIN

THE Nature Conservancy has recently announced the establishment of four new nature reserves and one forest nature reserve.

The Rhinogs Nature Reserve. The Harlech dome and its borders display the thickest succession of Cambrian rocks to be seen in Britain. It forms a region of desolate and almost uninhabited moorland with high, rugged block-like mountains where the Rhinog Grits break the surface. The two principal peaks are Rhinog Fawr (2,362 ft.) and Rhinog Fach (2,330 ft.). The new reserve covers two blocks of these uplands, lying on either side of Bwlch Drws Ardudwy about five miles east of Harlech, which together total about 991 acres; it is hoped that it will ultimately be extended to include other areas of outstanding scientific interest in the area. The first of these blocks comprises the northern slopes of Rhinog Fawr from the peak down to about 1,066 ft., and the second includes the peak and north-eastern slopes of Rhinog Fach down to the 1,000-ft. contour. The terrain is rugged and wild in the extreme, with a considerable amount of exposed rock in the form of steep crags, broken slopes and block screes. A flock of wild goats, thought to be of domestic origin, frequents the Bwlch Drws Ardudwy area, and pine martens have been seen there in recent years.

Compared with other parts of Snowdonia, the Rhinogs are relatively lightly grazed by sheep, and this may be related to the abundance and luxuriance of heather which extends on these hills from about 600 ft. to the summits. The rocky, well-drained slopes up to the 1,500-ft. contour are covered with dense heather, mixed here and there with bilberry, both reaching 5 ft. in height in the more sheltered situations. The less rocky well-drained areas bear patches of acidic hill grassland, mainly of the *Agrostis-Festuca* type, with some bracken. Wherever hollows and stream flushes occur small bog patches are found, and the wettest ground is occupied by blanket bog with peat up to 4 ft. deep. The small summit plateaux and the steep craggy uppermost slopes of the two Rhinogs bear much block scree, and here the heath forms dense prostrate mats with unidirectional growth away from the prevailing south-west winds.

Access to the reserve is unrestricted, but those wishing to collect specimens or to carry out research should apply for permits to the Regional Officer for North Wales, The Nature Conservancy, Y. Fron, The Crescent, Upper Bangor, Bangor, Caernarvon.

Coed Dolgarrog Nature Reserve, which lies about seven miles south of Conway, is an excellent example of an oak wood on the drier north-eastern side of Snowdonia; many of the trees are intermediate in kind between the sessile and pedunculate oak. Viewed from the floor of the Conway Valley, these woods are probably the most impressive in North Wales; they clothe a precipitous slope which falls from 1,000 to 100 ft. It is unlikely, because of the topographical features of the area, that the woods have been subjected to any form of intensive land use. The reserve, most of which lies within the Snowdonia National Park, covers 170 acres and has been established under a lease from the Central Electricity Generating Board.

Coed Dolgarrog is of particular interest ecologically because of the variety of underlying rocks and the clarity with which their effects on the vegetation are displayed. The central part of the wood lies on lime-rich volcanic ash and has a luxuriant ground flora including much dog's mercury, slender false-brome and sanicle. At higher altitudes elsewhere in Snowdonia this particular kind of rock bears a rich arctic-alpine flora which makes Cwm Idwal and other parts of the district of great botanical interest. The southern and northern portions of the wood, on a hard acidic rhyolite, present a striking contrast, having a grassy ground flora often associated with bracken and sometimes with short bilberry and mosses.

Also included within the reserve are the Ardda alder woodlands, which extend along the northern bank of the Afon Ddu and represent an extension of Coed Dolgarrog into the upland country beyond the steep valley slopes of the Conway. This section is at a higher altitude, being between 750 and approximately 850 ft., with a correspondingly higher annual rainfall—about 60–70 in. as compared with 50 in. for the main body of Coed Dolgarrog. The woods occupy a gently sloping upland valley, which is thickly covered with glacial drift. Soils of impeded drainage are widespread, hence the abundance of the alder and plant communities of wet soils. These woods have escaped clearing from the sixteenth century onwards because the valley in which they grow is extremely inaccessible and the pressure of land use has been correspondingly smaller throughout the centuries. They are of particular interest in the study of the alder at a relatively high altitude.

Permits will be necessary for those who wish to undertake research, to collect specimens, or to visit areas away from the rights of way. Applications for permits should be sent to the Regional Officer for North Wales, in Caernarvon.

Coed Gorswen Nature Reserve, lying at the northern end of the Conway Valley on the western side of the river near Rowen, is a good example of a lowland oak wood. The reserve, which covers 33 acres of the woodland and lies within the Snowdonia National Park, has been established under leases with the owners of the land.

The subsoil of Coed Gorswen is a very bouldery glacial drift and probably as a consequence of this it has been woodland for a very long time, perhaps throughout the historical period. The oak consists of a heterogeneous population of intermediate forms between the sessile and pedunculate oak. As well as oak, other trees present in some quantity include elm, ash and alder. The ground flora is typical of rather base-rich soils, including such species as dog's mercury, sanicle, slender false-brome, common enchanter's night-shade, broad helliborine, skull cap and very locally yellow archangel. Fringing the wood is some interesting fenny ground—no doubt the "gors wen" (white marsh) which gave the wood its name—dominated by purple moor-grass with associates such as quaking grass.

Permits, which will be required to visit parts of the reserve away from the rights of way, to collect specimens of animals or plants, or to undertake research, can be obtained from the Regional Officer for North Wales.

Allt Rhyd-y-groes Nature Reserve is situated in the valley of the Afon Doethie, a tributary of the Towy, about nine miles north of Llandoverly in Carmarthenshire. The reserve consists of 46 acres of oak woodland and has been leased to the Nature Conservancy by the Earl of Cawdor. It is hoped that it will ultimately be extended to include other areas of outstanding scientific interest in the locality.

The reserve overlies shales of Silurian age, and extends between 500 and 1,000 ft. on the west side of the steep flanks of the Doethie Valley. The wood-

lands are dominated by the sessile oak, as is the Coed Rheidol Nature Reserve in Cardiganshire, but here at Allt Rhyd-y-groes a number of the trees are well grown and display a vigour which is not often seen in equivalent woods elsewhere in Wales. The drier, more eroded slopes are clothed in sweet vernal grass together with mosses at the lower levels, and sheep's fescue higher up the slope.

Permits to visit parts of the reserve away from the rights of way, to collect specimens of animals or plants or to undertake research, can be obtained from the Regional Officer for South Wales, The Nature Conservancy, c/o Department of Zoology, University College of Swansea, Singleton Park, Swansea.

Blackcliff and Wyndcliff Forest Nature Reserve. An agreement has recently been reached between the Nature Conservancy and the Forestry Commission on the management of approximately 200 acres of Blackcliff and Wyndcliff Woods, forming part of the Commission's Tintern Forest, Monmouthshire, as a Forest Nature Reserve in the interest of nature conservation and ecological research jointly with those of timber production. The high amenity value of the area, which is close to Tintern Abbey and within the Forest of Dean Forest Park, will be maintained. These woods, situated on the Carboniferous limestone of the Wye Valley, have long been regarded by botanists as being of outstanding scientific interest; they were visited by John Ray in 1662 and by Sir Joseph Banks and John Lightfoot in 1773. The steep slopes are finely wooded with ash, wych elm, beech, small-leaved lime, yew, oak, cherry and whitebeam and service tree, together with a number of shrubs including dogwood, guelder rose and spurge laurel. The ground flora is rich and includes some locally uncommon species: lily of the valley is found there, and white angular Solomon's seal occurs on the cliffs.

Access will be unrestricted, but permits will be required to collect specimens of animals or plants, or to undertake research. Applications for permits should be sent to the Regional Officer for South Wales at the University College of Swansea.

INVESTMENT IN THE COAL, ELECTRICITY AND GAS INDUSTRIES

IN replying for the Government in a debate on fuel and power policy in the House of Commons on February 6, the Parliamentary Secretary to the Ministry of Power, Sir Ian Horobin, said that the oil companies and the Central Electricity Generating Board were considering together whether, within the framework of existing contracts, it would be practicable to postpone the conversion of two more power stations to oil during 1959; even in the changed industrial climate of the past twelve months Sir Ian said it would be wrong and improper to break contract or use pressure to that end. In moving the second reading of the Electricity (Borrowing Powers) Bill on January 20, the Paymaster-General, Mr. R. Maudling, said that the purpose of the Bill was to increase the authorized capital of the industry under the Bill, and the Electricity Council's permitted borrowings would be increased to £2,300 million, those of the North of Scotland Hydroelectric Board to £300 million and of

the South of Scotland Electricity Board to £135 million. The total capital investment of the industry envisaged over the next seven years amounted to £2,130 million, of which £1,470 million would be in generation and £660 million in distribution: these figures were for the Electricity Council alone. This plan was based on estimated demand for electricity over the period, including a two-thirds increase in consumption, in which farm uses would be doubled and other commercial use would increase by about 50 per cent, or an annual increase of 6.6 per cent compared with 7.6 per cent in the past seven years. To meet this estimated increased demand of just under 9 million kilowatts, new plants for 12.25 kilowatts would be commissioned. The load factor had improved from 42.7 per cent in 1947 to 46.8 per cent in 1958 compared with a probable maximum of 60 per cent, and the problem of increasing the factor was being tackled with vigour. The cost per kilowatt