SNAPSHOTS OF EUROPEAN BOTANY.

Summary of Talk by Mr. A.L.Poole on 21.4.47.

Serving first with the New Zealand Forestry Company, Mr.Poole was later transferred to be Scientific Liaison Officer at New Zealand House, a post offering much interest to the botanist. A year spent as a Forestry Officer with the British Army of Occupation in Germany was followed by a short visit to Scandanavia.

WITH THE NEW ZEALAND FORESTRY COMPANY IN ENGLAND.

First quarters were on the Chalk Downs near Petersfield in Hampshire. Many plants were familiar and Tansley's big book on "The British Isles and the Vegetation" was a great help with the ecology. In derelict farmlands not then brought into war production it was possible to follow out some successions. The Downs had been cleared early and grazed by sheep. With the browntop, fescues and cocksfoot were herbs such as thistle, catmint, rock-roses; thorns (Crateagus), elderberry, yews and viburnums followed, then Populus tremula, beech, sessile oak, leading gradually to climax beech forest with its typical floor cover of bluebells, wood anemones, primroses, etc. Though some of the beech woods had developed naturally in this way the nearest one had been planted by soldiers stationed near the south coast in Napolean's time. It was New Zealand soldiers of this war that built a mill and felled this timber.

Part of the Company was moved to a forest of Pinus sylvestris, just south of Selbourne. Here in Gilbert White's time were no trees but large numbers of deer, this being then part of one of the royal "forests", which in Norman days occupied as much as one third of England. After removal of the deer P. sylvestris was introduced and became naturalized and now reproduces itself satisfactorily.

BOTANY IN SCIENTIFIC LIAISON WORK.

Grass-seed trials. In 1941, as part of the scheme to improve English farmlands, grasslands experiments were undertaken to compare New Zealand certified seed, English seed, and seed specially bred at Aberystwyth. A survey by Stapleton and Davies had shown that England had far too much poor and derelict grassland. By the end of the war some six million acres had been ploughed up for ley grasslands. Seed quality was important, and wide-spread trials on grazed land demonstrated the relative values of the Welsh strains bred for special purposes (e.g. hay and pasture rye-grasses) and the New Zealand more adaptable and rather cheaper seed.

Kew Gardens. The herbarium of some five million specimens was largely dispersed for safety, with special precautions for the thousands of types, co-types and possible type specimens. This indicates the value assigned to systematic botany, a value stressed by Sir Edward Salisbury at the Empire Science Conference in London last year, when he instanced the importance of the correct naming of Penicillium notatum, the source of penicillin.

Kew's work with economic plants, remembered best for the introduction of the South American rubber and cinchona plants to the East Indies still continues. Kew-trained gardeners are greatly in demand, especially in America. Display is important, and various houses adjusted to represent different climates allow for the propagation of even tropical economic plants. Museums displaying botanical products and the Jodrell Laboratory for morphological work are other aspects of Kew's activities.

South American Potato Collection. The potato reached Europe originally as only two species and by a very limited number of introductions. Before the war a large collection was obtained from South America by the Imperial Agricultural Bureau for the improvement of commercial crops. Some 160 varieties and new species were to be cared for, and Mr.Driver, of the New Zealand Agronomy Division was released from the Navy to help in rescuing this valuable material when it was threatened by two new virus diseases that developed at Cambridge. When the taxonomic problems are sorted out, many institutions help in defining the qualities of the different kinds, their biochemistry, their resistance to frost and disease, response to length of day and kind of light, etc. New Zealand has a direct interest in these experiments and their results.

Plant breeding work at John Innes Institution was also referred to, and work on linen flax.

FORESTRY AND TIMBER WORK IN GERMANY.

The British Military Government zone of occupation covers Schleswig-Holstein, Hanover, Westphalia, and part of the Rhineland. This north-west part of Germany is mostly sandy, flat, and rather poor country. From the air the trees are not landscaped as is usual in England, but form real forests, in blocks up to square miles in extent. The main work, with headquarters at Minden, was to build up, with the help of a team of German foresters, a central forest administration for the British zone. Berlin was visited to report on the firewood situation there, and the remains of the Berlin Botanical Gardens were seen. Many of the German botanists and their institutions had fared badly but at Gottingen Prof. Harder carried on even during the war his darkroom experiments on photoperiodism and flower-promoting substances! in one case three seconds of light per day for three months was the minimum necessary to induce flowering.

At Stolzenau on the Weser, in the vegetation-mapping office of Germany, plant sociologists worked under Prof. Tuxen. Using the methods of Braun-Blanquet, detailed studies of plant communities are made on quantitative lines. In this way it has been possible to reconstruct the original vegetation of the country and to correlate this with the boundaries of soil types, the results being of great value to foresters. Few species of timber trees are grown, and these are often taken outside their natural range. In the north where the original vegetation was scrub-oak, spruce grows very fast, but produces adverse soil conditions and after perhaps two rotations of 80-100 years it dies out. The topography is much more uniform than in New Zealand, and the methods could not be so easily applied here. Plant communities are named after the dominant species, e.g. Fagetum boreo-atlanticum elymetosum because of the dominant beech (Fagus) and the grass Elymus.

In Hanover Prof. Tuxen had a plant sociological garden. Eleven years before he had excavated several acres and built up artificial soil profiles reproducing natural ones. Using quarter to half acre plots, sods from original plant communities were introduced into their own appropriate profiles and in time these sods developed the correct plant associations.

SWEDEN.

At Svalof in South Sweden is a great plant breeding institution, while nearby at Ekebo is a special station for tree-breeding. This is a long-term project but it is worth while to get trees like the giant triploid aspen that grows abnormally fast. Sweden has been scoured for elete forms of trees to be experimented with here. As most trees are wind-pollinated, a technique was sought to induce trees to flower early and at conveniently low levels, and so to avoid having to climb trees to do pollinating, as is done in U.S.A. experimental work. Grafting old scions on young stocks gave flowering in spruce at five years, and putting young scions on old stocks sometimes works. Pinus montana was found to induce early flowering in spruce or P. sylvestris grafted on to it. As with agricultural plants like clover, so with trees polyploidy has been induced for experimental purposes by means of colchicine. The effect of transferring tree species from other parts of Sweden is also studied at Ekebo.

Answering questions, Mr. Poole stated that, in England, about two-thirds of the total commercial softwood forests had been milled, and about half the hardwoods. German forests were practically intact except for heavy cuttings for firewood. In Scandanavian countries Finland had exported timber to Russia, and Sweden had had to use wood for factory power and for charcoal for transport fuel because of lack of coal and petrol, so there was little accumulated surplus.