for which he has been elected treasurer); *Members of Council*, Prof. I. I. Rabi, professor of physics, Columbia University, New York, and Dr. F. E. Terman, dean of the School of Engineering, Stanford University, Stanford, Calif. The other officers of the Academy, who were elected in previous years and will continue until expiry of their terms of office, are as follows: *President*, Dr. Detlev W. Bronk; *Vice-President*, Dr. George W. Corner; *Home Secretary*, Dr. Hugh L. Dryden; *Foreign Secretary*, Prof. John Gamble Kirkwood; *Members of Council*, Prof. Farrington Daniels, Dr. E. A. Doisy, Dr. James Gilluly, Dr. Theophilus S. Painter, Dr. Merle A. Tuve and Prof. Edwin B. Wilson.

The following have been elected members of the Academy: G. von Békésy, senior research Fellow in psychophysics, Harvard University; M. Benedict, professor of nuclear engineering, Massachusetts Institute of Technology; K. E. Bloch, professor of chemistry, Harvard University; K. S. Cole, director of the Laboratory of Biophysics, National Institute of Neurology, Diseases, and Blindness, National Institutes of Health, Bethesda; B. L. Crawford, jun., professor of physical chemistry, University of Minnesota; W. A. Fowler, professor of physics, California Institute of Technology; C. P. Haskins, president of the Carnegie Institution of Washington; E. W. Haury, professor of anthropology, University of Arizona; P. Kusch, professor of physics, Columbia University; A. L. Lehninger, professor of physiological chemistry, School of Medicine, Johns Hopkins University; M. G. Mayer, senior physicist, Argonne National Laboratory, Lemont; C. P. Miller, professor of medicine, University of Chicago; W. W. Morgan, professor of astronomy, Yerkes Observatory, University of Chicago; W. H. Munk, professor of geophysics, Scripps Institution of Oceanography, La Jolla; M. S. Newman, professor of chemistry, Ohio State University; R. F. Pitts, professor of physiology, Cornell University College of Medicine; J. D. Roberts, professor of organic chemistry, California Institute of Technology; K. P. Schmidt, emeritus curator, Department of Zoology, Chicago Natural History Museum; M. Schwarzschild, professor of astronomy, Princeton University; C. E. Shannon, research mathematician, Bell Telephone Laboratories, Inc.; F. K. Skoog, professor of botany, University of Wisconsin; N. E. Steenrod, professor of mathematics, Princeton University; W. H. Stockmayer, professor of physical chemistry, Massachusetts Institute of Technology; A. Szent-Györgyi, director of research, Institute for Muscle Research, Inc., Marine Biological Laboratory, Woods Hole, Mass.; C. H. Townes, professor of physics, Columbia University; F. J. Turner, professor of geology, University of California, Berkeley; J. Verhoogen, professor of geology, University of California, Berkeley; M. B. Visscher, professor of physiology, University of Minnesota; J. C. Warner, president of the Carnegie Institute of Technology, Pittsburgh; W. H. Zinn, director of the Argonne National Laboratory, Lemont.

The following have been elected foreign associates of the Academy: Prof. F. G. Gregory, director of the Research Institute of Plant Physiology and professor of plant physiology, Imperial College of Science and Technology, London; Sir K. S. Krishnan, director of the National Physical Laboratory, New Delhi; Prof. A. E. Michotte, professor of psychology, University of Louvain; and Prof. J. J. C. Pérès, dean of the Faculty of Sciences and professor of rational mechanics, University of Paris.

FORESTRY COMMISSION

REPORT FOR 1954

THE annual report of the Forestry Commission for 1954* opens with a statement on the unveiling of a memorial on the site in Keilder Forest where the ashes were scattered of the late Lord Robinson, chairman of the Forestry Commission during 1932–52 and a member of the Commission from its inception.

The year 1954 marks the peak of the Commission's planting so far, a total of 70,400 acres having been achieved, or 2,800 acres more than the previous year. Since the end of the Second World War the rate of annual planting has been increased each year up to this major total. The regular increase, it is noted, has only been maintained by materially reducing the reserves of land awaiting planting. So the point has been reached when the annual planting programme will not only not increase but will in fact fall. The report states that the planting to be carried out in 1955 will bring the planted forest area under the Commission up to and beyond the million acres mark: a truly remarkable and meritorious performance, with all the difficulties and setbacks the Commission has had to face since its inception in 1920, when five million acres of forests were aimed at. More land is required; but the problem is not merely one of acquiring land, for it must be suitably distributed plantable land. There are still large tracts of country running into many hundreds of thousands of acres the best use of which is undoubtedly forestry. It is this type of land which the Commission wishes to acquire if the owners are unable to plant it themselves. Private planting continues to rise steadily though surely: including areas planted without grants, a total of 19,100 acres were planted—nearly a thousand acres more than the previous year.

The production and consumption of home timber were the same as during 1953. The cut in hardwood species was probably less, due to the poorer quality of the timber now being felled and to the abolition of softwood consumer licences in November 1953. It is interesting to note that the expensive home-grown programme inaugurated in 1919 is now beginning to show a financial return, in the pulp and pitwood markets, though difficulties with reference to mining timber and its testing for quality are still under debate. The big Scottish windblow of January 1953 has continued to provide large amounts of timber, of which the National Coal Board has taken advantage. The large intake of home pit-props by the English collieries has been due to an increase in normal production—a most satisfactory position in view of the fact that at the beginning of the century, and before and after, the mines were dependent on Scandinavian and other imports at great cost. Nevertheless, only about one-quarter of the estimated consumption of Britain as a whole is being supplied from home sources.

An interesting investigation is in the possible utilization of inferior and poorly grown hardwoods for wood pulp. The main bulk of these hardwoods are to be found in the south of England, and two British paper-making groups are considering the question of ground wood-pulp for newsprint and

* Forestry Commission. Thirty-fifth Annual Report of the Forestry Commission for the Year ended September 30th, 1954. Pp. 88. (London: H.M.S.O., 1955.) 3*s*. 6*d*. net.

"Kraft" pulp for wrapping and packaging. It is said that the requirements of the raw materials for such processes are less exacting in quality and quantity than in the case of dissolving pulp, which is largely used in the manufacture of artificial fibre.

Progress continued in the dedication of woodlands, and during the year the area dedicated increased from 225,000 acres to 343,000 acres.

E. P. STEBBING

AUSTRALIAN ATOMIC ENERGY COMMISSION

A REPORT of the work of the Australian Atomic Energy Commission since its establishment in 1953 is outlined in an article by Prof. J. F. Baxter, vice-chancellor of the New South Wales University of Technology, in the *Australian Journal of Science* (17, No. 5, 151; 1955). Details are given of the initial stages which led up to the establishment of the Commission, its composition and its two main fields of activity, namely, that related to the discovery and production of uranium and that related to the development of the use of atomic energy for industrial and other purposes. In surveying what the Commission has accomplished since its establishment, Prof. Baxter mentions the completion of the plant for the mining of uranium ore at Rum Jungle, which was set in motion by the Prime Minister on September 17, 1954, and of the opening of the Radium Hill mine and concentrator during 1954. A modern treatment plant at Port Pirie was expected to be completed in the near future.

In regard to its responsibilities for the development of uses for atomic energy, the Commission decided to try to obtain access to the large amount of secret information accumulated by Great Britain, the United States and Canada, and to work in partnership with these powers. After various discussions and visits by prominent scientific workers both from Great Britain to Australia and vice versa, Britain offered to give to Australia its accumulated knowledge arising from its industrial atomic-energy programme and, in addition, agreed to enter into a co-operative research programme with Australia whereby the Australian Atomic Energy Commission would set up a research and development organization in Australia while Britain would provide facilities for the training of Australian scientists and engineers in the various British atomic-energy establishments. Accordingly, a Scientific Advisory Committee, consisting of Prof. M. Oliphant, Prof. L. H. Martin, Dr. F. W. G. White, Prof. R. Myers, Prof. T. G. Hunter, Prof. J. S. Anderson, Mr. V. Brain and Prof. J. P. Baxter (chairman), was appointed by the Commission, and a comprehensive group of laboratories has been constructed and equipped on a site some twenty miles south of Sydney.

A large research reactor of a modern type, designed to give a high neutron flux, is to be installed; and a scientific staff of fifty senior scientists and about three hundred other personnel are to be recruited. The chief of research and development is Prof. C. N. Watson-Munro; the chief engineer and deputy chief of research, Prof. G. C. J. Dalton; and Dr. G. L. Miles and Mr. K. F. Alder, leaders of the chemistry and metallurgy departments, respectively. In addition, the initiation and support, on a very large scale, of research and development work in the Australian universities is planned by the Commission, and special facilities for research and advanced training for engineers and scientists from universities and industry in its laboratories at Sydney are to be provided. Finally, a Business Advisory Group has been formed by the Minister for Supply in order that the Commission and leaders of industry may confer closely and regularly on atomic energy matters.

THE TUBER-BEARING SPECIES OF *SOLANUM*

MUCH has been written of the potato, its South American origin, its introduction into Europe, its many varietal forms and its taxonomy. J. G. Hawkes (*Proc. Linn. Soc.*, **166**, 1 and 2, 97; 1956) has now contributed a comprehensive and critical taxonomic study of the tuber-bearing species of *Solanum*, special attention being paid to *S. tuberosum* and the tetraploid species complex. In the designation of a nomenclatural type for *S. tuberosum* the early descriptions of C. Bauhin, Clusius and others are mentioned in relation to those of Linnaeus. Evidence is brought forward to show that one of the three specimens in the Linnean Herbarium labelled as *S. tuberosum* may be considered as the lectotype. It is then pointed out that Linnaeus's description, made when one species of tuberiferous *Solanum* alone was known, could equally well be taken as referring to some 80 per cent of the wild species described later. A new description has therefore been drawn up with attempts to include the complete range of variability of *S. tuberosum* under modern concepts, and this is followed by reference to the main features that distinguish it from other potato species.

The views of the Russian taxonomists on the subdivision of the cultivated tetraploid potato into two distinct species are outlined. The criticisms levelled at these views show that it is impossible to separate the cultivated tetraploids into more than one species and that the weed tetraploids previously described as distinct should also be included within *S. tuberosum*. Experimental data support these views.

An analysis of the difference between the Andean and Chilean South American potatoes makes it possible to recognize two subspecies, namely, (*a*) subspecies *andigena* from the mountains of Venezuela, Colombia, Ecuador, Peru, Bolivia and north Argentina; (*b*) subspecies *tuberosum* from Europe and South Chile. That the European and Chilean potatoes are included under the same subspecific name does not imply that the former were derived from the latter; but that each evolved under similar environmental conditions from original Andean stocks.

As to the origin of the tetraploid potato, it can be considered as an autotetraploid, but may have been formed as an amphidiploid hybrid between two species the genomes of which were not quite identical.

The conclusion is that *S. tuberosum* was derived from an already cultivated diploid species and not directly from a wild one. Indeed, it seems probable that the cultivated potato *S. stenotomum* or a precursor of this species was the original diploid ancestor of our tetraploid potato. There is also evidence that the weed diploid *S. sparsipilum* may also have played some part in the formation of *S. tuberosum*, though cytological opinion is more strongly in favour of *S. stenotomum*.