typewriter, Sholes, Glidden and Soule, June 23, 1868; celluloid, John W. and Isaiah S. Hyatt, July 12, 1870; barbed-wire fencing, J. F. Glidden, November 24, 1874, and the telephone, Alexander G. Bell, March 7, 1876.

Other patents bear the names of T. A. Edison, phonograph or speaking machine, February 19, 1878; T. A. Edison, electric lamp, January 27, 1880; Otto Mergenthaler, machine for casting lines of type, September 16, 1890; Orville and Wilbur Wright, flying machine, May 22, 1906; Lee DeForest, vacuum tube, February 18, 1908.

THE ESTABLISHMENT OF A FOREST SHELTER BELT

IN an executive order, President Roosevelt has allocated $15,000,000 from the $525,000,000 drought relief fund for the beginning of work on a forest shelter belt a hundred miles wide and extending more than 1,000 miles through the heart of the drought area.

The estimated total cost is about $75,000,000, of which about 90 per cent. will go to farmers in the present drought areas for land and for plowing, fencing, planting and caring for the trees. The President's executive order follows:

> By virtue of, and pursuant to, the authority vested in me by the emergency appropriation act, fiscal year 1935, approved June 19, 1934 (Public, No. 412, 73d Cong.), appropriating $525,000,000 to meet the emergency and necessity for relief in stricken agricultural areas, there is hereby allocated from the said appropriation the sum of $15,000,000 to the Secretary of Agriculture for the planting of forest protective strips in the plains regions as a means of ameliorating drought conditions.
>
> In carrying out this order the Secretary of Agriculture shall have authority to make all necessary expenditures in the District of Columbia and elsewhere, including but not limited to the employment of such officers, experts and employees as he may find necessary, to prescribe their authorities, duties, responsibilities and tenure, and to fix their compensation, for the procurement or production of seed and planting stock, for planting operations, for the purchase or leasing of the lands to be planted, for technical investigations, for fencing and for rent.
>
> The moneys herein made available shall be expended through such agencies, including corporations, as the Secretary of Agriculture may designate; and, with the consent of the state, county or municipality concerned, the Secretary of Agriculture may utilize such state and local officers and employees as it may deem necessary in carrying out this order.

The project will start at the Canadian border, a little to the east of a line drawn north and south through the center of North Dakota. It will run in almost a straight line into the Texas Panhandle, cutting across the two Dakotas, Nebraska, Kansas and the western arm of Oklahoma. Altogether it will call for the planting of 1,820,000 acres in trees. The land between the belts of trees will continue to be used for farming purposes. The area to be affected immediately will be approximately 20,000,000 acres.

There will be a hundred windbreaks, each about seven rods wide, covering fourteen acres out of each square mile. Only the land planted in trees will be acquired by the government through purchase, lease or cooperative agreement. Some of the land is already in the hands of federal, state and local governments. It is estimated that the cost of acquiring privately owned land will not be high, and that to at least some extent farmers will be willing to lease the land indefinitely at no charge in return for the benefits they will receive.

The present plan is to begin planting this autumn on sections of the windbreaks which fall on publicly owned land and where climatic conditions seem suitable. The Forest Service is preparing to establish a special field force in a central location for the conduct of the work. One of the first tasks will be to establish nurseries throughout the region.

REPORT OF THE CHIEF OF THE OFFICE OF EXPERIMENT STATIONS

FINDING the use for which any type of land is best fitted and the most profitable way to get submarginal acres out of cultivation and into grass, forests, recreational or other uses, thus bringing production into line with consumption, is a national trend at the agricultural experiment stations of the various states, according to the annual report of Dr. James T. Jardine, chief of the Office of Experiment Stations.

In southern Illinois soil surveys are being used to speed reforestation. Two national forests of nearly 600,000 acres are planned. If they are included in the reforestation program, they will give work to hundreds of men and should return more money to the state than it has been receiving from taxes on this land.

Soil surveys at the New Jersey experiment station seek to promote the most profitable use of land under the highly specialized agriculture of that state. With reduction of cultivated lands in Massachusetts, the experiment station is urging a return of the poorer acres to forests and recreation uses. There are now 40,000 acres of public forests in the state. The Massachusetts station also has shown that stony upland pastures can be profitably improved with a small outlay for fertilizer.

In Connecticut the station at Storrs has developed a system of pasture improvement by fertilizing, seeding, management and removal of brush which is being adopted throughout the state. Ranchmen of Hawaii have been able to improve their ranges with information on grasses and forage crops furnished by the Hawaii station. Experiments at the Arkansas station

show that much of the land is better suited to timber than to farming; at least timber raising would be just as profitable. Land use studies at the Georgia station will enable the state to set up new agricultural programs where much of the land has been abandoned. In Kentucky the suggestion has been made that enlargement of private forests into good sized tracts would make protection against fires easier, would promote greater skill in the care of growing trees and would make harvesting of timber more economical.

The Minnesota station is participating in soil erosion control in the rolling lands in the southeastern part of the state and much unproductive peat and bog land is being converted into good pasture and hay land through the planting of reed canary grass. In Nevada farm land is being classified in the Walker River Irrigation District, the information to be used in keeping some districts from financial ruin. The Ohio station found that in Vinton County more than a fourth of the land once in farms now lies idle and that the public funds going into the county from state and federal governments in a ten-year period equal the value of the farm land. Soil surveys in Rhode Island will provide information for reforestation and back-to-the-land movements, and determine areas suitable for subsistence farming. The Wisconsin station and others have entered on systematic programs for utilizing lands so as to adjust production to consumption.

These are examples and not a summary of the work being done. They illustrate the national effort to solve the problem of land utilization.

SUMMER MEETING OF THE BOTANICAL SOCIETY OF AMERICA AT TORONTO

THE summer meeting of the Botanical Society of America at Toronto on June 18 to 20 was attended by about a hundred and twenty-five botanists. The program in Toronto included inspection of the botanical laboratories at the university and the displays in the Royal Ontario Museum, a dinner at Hart House, and an address by Professor M. L. Fernald, of Harvard University, on the persistence of pre-glacial species of plants in the northeastern states and southeastern Canada.

An excursion to the Scarborough Bluffs east of Toronto afforded a view of the various glacial deposits of the region, which were explained in detail by Dr. A. P. Coleman, veteran glacial geologist, by a field lecture in a pouring rain. The fossil remains of plants, which occur abundantly at various levels in these deposits, have proved that interglacial climates were at times warmer than those of the present and brought such austral plants as the papaw and the osage orange as far north as Toronto.

Nearly a hundred persons left Toronto by automobile on the morning of June 19 for the excursion to the Bruce Peninsula, situated between Lake Huron and Georgian Bay. A brief stop was made at Hi-Pot-Lo Park to observe the rich natural vegetation and the numerous pot-holes. Luncheon was served in the dining hall of Ontario Agricultural College, where the extensive range of greenhouses was inspected. The party reached Owen Sound in the evening and visited a colony of the rare hart's-tongue fern, *Scolopendrium vulgare*. The following day the excursion was continued among the bogs, dunes and limestone ridges near the Lake Huron shore of the Bruce Peninsula. Among the plants collected here were several species, such as *Pinguicula villosa, Carex scirpoidea* and *Anemone multifida*, whose presence supports the belief that the peninsula was not covered by the Wisconsin ice sheet.

SCIENTIFIC NOTES AND NEWS

IT is announced in *Nature* that on July 2 the following were elected honorary fellows of the Royal Society of Edinburgh to commemorate the completion of its one hundred and fiftieth year: *Foreign,* Björn Helland-Hansen, Geophysical Institute, Bergen; Professor Bernardo Houssay, professor of physiology, National University of Buenos Aires; Professor Frank R. Lillie, professor of zoology and embryology, University of Chicago; Professor T. H. Morgan, professor of biology, California Institute of Technology; Professor Paul Sabatier, professor of chemistry, University of Toulouse; Dr. Theobald Smith, formerly director of the department of animal pathology of the Rockefeller Institute for Medical Research, Princeton. *British,* Professor H. E. Armstrong, emeritus professor of chemistry, Imperial College of Science and Technology, City and Guilds (Enginering) College, London; Professor J. S. Haldane, director of the Mining Research Laboratory, and honorary professor, University of Birmingham; Professor Karl Pearson, emeritus Galton professor of eugenics, University of London; Professor E. B. Poulton, lately Hope professor of zoology, University of Oxford; Sir G. Elliot Smith, professor of anatomy, University College, London; Professor W. W. Watts, emeritus professor of geology, Imperial College of Science and Technology, London.

THE Board of Trustees of the University of Illinois has made an appropriation to the Graduate School for the publication of the first volume of the works