ting in the method of photographic engraving in 1858. He said that among the mass of material which Miss Talbot had now unearthed at Lacock Abbey were plates showing the use of fabrics of various textures which her grandfather had used in endeavoring to produce a grain for photo-engraving purposes. He ultimately obtained a very fine grain by folding a piece of black muslin on itself obliquely. Some of the specimen plates of this description were dated 1853, and a particularly interesting one recently unearthed at Lacock Abbey was a small and rather imperfect portrait of Huxley, which had the crossed-muslin grain.

VISIT OF AMERICAN FORESTERS TO GERMANY AND AUSTRIA

A GROUP of leading foresters and lumbermen from the United States will sail on July 26, under the auspices of The Oberlaender Trust of the Carl Schurz Memorial Foundation, Inc., to study the methods employed in Germany and Austria, by which private forests have become a profitable enterprise. The group includes Dr. Cedric H. Guise, professor of forest management at Cornell University, and Wilson Compton, secretary-manager of the National Lumber Manufacturers Association, Washington, D. C. Sustained forest production, as it has been practiced in these countries for many generations, as well as forest management, game preservation, selected cutting, reforestation, and markets for wood products will be studied.

Dr. Franz Heske, the director of the forestry school at Tharandt near Dresden, has been in the United States during the last three months, getting acquainted with conditions that face American foresters, and he will take charge of the group upon arriving in Germany. They will travel by bus from Berlin through eastern and southeastern Germany, into Czechoslovakia, Austria, and perhaps parts of Hungary. They will have an opportunity not only to see the forests, but to study costs, distribution of material and actual operations.

This tour is part of the program of the Carl Schurz Memorial Foundation, Inc., and The Oberlaender Trust, the purpose of which is to benefit the American people by studying those special achievements of the German and Austrian people which are outstanding, and introducing into the United States such as are adaptable to American conditions. Private forests for private profit is one of the fields in which the German people have excelled; and first-hand study of successful private forestry operations by influential American timberland owners will, in the opinion of the foundation, assist in developing the important program of permanent forest management now required by the Lumber Code.

The Trust's Advisory Committee in the field of forestry is composed of Dean Henry S. Graves, Yale University, School of Forestry; Dr. Cedric H. Guise, professor of forest management, Cornell University, and Earle H. Clapp, of the United States Forest Service. Mr. Ward Shepard, special adviser on land policies in the U. S. Office of Indian Affairs, has been of special help in making arrangements.

The trustees of The Oberlaender Trust are: Gustav Oberlaender, *president;* Carl W. Ackerman, dean of the School of Journalism, Columbia University; Dr. Haven Emerson, College of Physicians and Surgeons, Columbia University; Henry Allen Moe, executive director of the Guggenheim Foundation, and Mr. Wilbur K. Thomas, executive director of the Carl Schurz Memorial Foundation, Inc. Mr. Ferdinand Thun, of Reading, Pa., is president of the foundation.

EXHIBIT OF THE PATENT OFFICE AT THE CHICAGO WORLD'S FAIR

AT the World's Fair of 1934 at Chicago, the Patent Office, in its exhibit in the U. S. Government Building, surveys the American record of inventions.

Since the organization of our federal government 1,897,932 patents have been issued by the Patent Office up to January 1, 1934. Nearest to this record is France with 871,532. Great Britain has 797,153, Germany 583,728 and Italy 273,598. Canada rates high in inventiveness in proportion to population, with a total of 325,800 patents issued. Japan since its modernization has issued 83,361 patents and the U.S.S.R. has issued 63,992.

In the United States last year New York led with 8,017 patents. Illinois was next with 4,923. Ohio and Pennsylvania almost tied for third honors with 3,880 and 3,876, respectively. Mississippi is on the list with 49 patents for the year while Louisiana and Georgia have 141 each. A graphic chart shows the steady increase of the output of inventions in America. From 109 patents in 1836 to 56,856 in 1932 the rate of increase is almost unbroken, the chart lines forming nearly a perfect triangle.

Working models of inventions give a record of the past century of industrial advancement. In the exhibit is a compound steam engine model on which a patent was issued December 20, 1845, to John Ericsson, who later created the *Monitor* for the Federal Navy in the war between the states. Dated May 9, 1865, is a model of the four-barreled, water-cooled machine gun with which R. J. Gatling introduced a new method of wholesale destruction. A disappearing carriage for large cannon invented by James B. Eads, the bridge builder, is dated February 26, 1871. December 5 of the same year, is the date of a model by Thomas A. Edison of a machine for perforating tape to send telegraph messages.

The cases exhibiting patents issued include: the sewing machine, E. Howe, Jr., Sept. 10, 1846; the

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