of considerable size were seen on the solar surface not far from the center of the disk.

C. O. LAMPLAND

LOWELL OBSERVATORY,
FLAGSTAFF, ARIZONA

SCIENTIFIC EVENTS

THE PRODUCTION OF FIXED NITROGEN

THE final report of the Nitrogen Products Committee of the British Ministry of Munitions, issued early in 1920, has been supplemented by a series of statistical tables relating to nitrogen fixation, now publlished by the Stationery Office, covering the latter part of the war and the period that has elapsed since its termination. This additional information has been compiled by Dr. J. A. Harker, formerly director of the Nitrogen Research Laboratory, for the Department of Scientific and Industrial Research.

Among other things, the statistics deal with the world's resources in nitrogen products, the Chile nitrate industry, the production of nitric acid and sulphate of ammonia, the synthetic ammonia process during the war, and the cyanamide industry. It is estimated that the world's capacity for the production of fixed nitrogen amounted last year to 1,561,000 tons, of which about 57 per cent. was attributable to natural sources, such as Chile nitrate and the by-product industry, and the remainder to artificial fixation processes.

The London *Times,* from which we take this information, says:

> The most striking, and in some ways the most disquieting, feature of the statistical supplement to the Nitrogen Products Committee's report (mentioned in *The Times* of yesterday) is the great increase in the world production of fixed nitrogen, and of the fact that of the 50 plants in operation throughout the world, not one is established in this country and only two are to be found within the Empire. Canada has one arc process plant with a maximum capacity of 800 metric tons a year and a cyanamide process plant estimated to be capable of 12,000 tons. Thus, of the world's total estimated capacity for 1920 of 671,300 tons, the British Empire commands only 12,800 tons.
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> A fuller examination of the position reveals the conclusive predominance of Germany in this field. While Norway outdistances all rivals in the arc process, producing 30,000 tons out of a total of 38,300, Germany, taking the three processes together, produces nearly twice as much fixed nitrogen as the rest of the world. Of the 325,000 tons credited to the cyanamide process, Germany commands 120,000, while under the synthetic ammonia process she has a capacity of 300,000 tons, and the only rival is the United States, with the almost negligible figure of 8,000. Put in a sentence, Germany can produce by fixation processes 424,000 metric tons of nitrogen a year, and the rest of the world can produce only 237,000 tons, of which this country produces none.
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> Our one internal source of fixed nitrogen is therefore by-product works, and even there we produce only 100,000 tons against Germany's 150,000. As a net result our internal resources —that is, the resources on which we should have to rely if all colonial and foreign supplies were cut off—represent 2,240 tons of fixed nitrogen per million of population, while Germany's resources amount to 8,830 per million of her population. It is sometimes suggested that our inaction in this field may yet prove of advantage, since by waiting until experiment had demonstrated the best process, we might adopt it and then pick up our competitors. The history, however, of our loss of the synthetic dyestuff industry, which began in 1856 with Perkin's discovery of mauvine and still flourished for 20 years after, gives little support to this complacent theory.
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> The plain truth is that while other countries, especially Germany, have carried their experimental work well into the productive and commercial stage, we are still engaged in constructing plants and debating the merits of the processes of German, French, and other chemists. The synthetic ammonia factory at Billingham, designed to manufacture about 60,000 tons of ammonia nitrate annually for war purposes, was begun by the Ministry of Munitions early in 1918, but at the time of the Armistice was only very little advanced. This is now being redesigned by Brunner, Mond and Co., to manufacture fertilizers, and a subsidiary company is at present concentrating upon designs for an initial plant to produce 25 tons of nitrogen per day or about 6,000 to 7,000 tons annually. Cumberland Coal Power and Chemicals, Limited, have purchased the British rights in the French process by Georges Claude, and the British Cyanides Company are continuing at Birmingham their large-scale experiments on fixa-

tion of nitrogen by the barium process. The fact remains, however, that we are still in the constructional or experimental stage, while Germany far outdistances all competitors in actual production.

FORESTRY LEGISLATION

The Forest Service, United States Department of Agriculture, reports that no less than thirty-three states have now provided for some sort of forestry activities and twenty-five of these share in the federal cooperative forest protection fund, allotted to states maintaining an effective fire detection and suppression system.

Two others have applied recently for such assistance. Public backing of the movement to preserve the remaining forests from destruction by fire, and to put idle forest lands to work growing trees, is becoming widespread, and the effects of the popular demand for action is shown clearly in the state laws passed this year.

Pennsylvania, under the direction of Gifford Pinchot, the new commissioner of forestry, leads all states in forest activities. The biennial appropriation passed by the legislature and approved by the governor carried $1,870,000, an increase of $863,300 over the appropriation of 1919; $1,000,000 of the total is for fire protection. The legislature also passed an act empowering the federal government to acquire lands on the watersheds of navigable streams within the state, by purchase or condemnation, and to control and regulate such reserves.

The Minnesota legislature was more generous with the state forestry board than ever before. A total of $275,500 for general forestry work was appropriated for the next two years, of which $125,000 a year is for fire protection. The last named sum was augmented by an additional allotment of $44,000 from the state board of relief. For the equipment of a flying field $45,000 was voted. This provision was to meet the offer of the federal government to furnish the service of twelve planes if the necessary hangars and flying fields were provided. While the primary purpose of this agreement is to supply aerial mail communication, the planes will be able also to render effective service in discovering forest fires.

In California, where there has been much favorable sentiment toward forestry for many years, the legislature voted a substantial increase in appropriation for the state board of forestry, for the biennial period beginning July 1. For the prevention and suppression of fire $75,000 was appropriated; for general administration, $27,000; for a study of watershed areas, $10,000, and to establish and maintain state forest nurseries, $35,000. The legislature also voted $300,000 for the purchase of redwood timber land for park purposes along the state highway in Mendocino and Humboldt counties, the area to be administered by the state board of forestry.

THE HARVARD SCHOOL OF PUBLIC HEALTH

Plans for the organization of a School of Public Health in Harvard University, with the aid of an initial gift of $1,785,000 by the Rockefeller Foundation, are announced by the university and the officers of the Foundation. The announcement says:

An excellent general course for the training of public health officers as well as special courses in preventive medicine, in tropical medicine and industrial hygiene have already been developed at Harvard. The work has been hampered, however, by lack of adequate funds and by uneven growth.

The new school will provide opportunities for research, will unify existing courses and will offer new or extended teaching facilities in public health administration, vital statistics, immunology, bacteriology, medical zoology, physiological hygiene and communicable diseases.

For the housing of the school the university hopes to secure an existing building of very suitable character immediately adjacent to the Medical School. Funds for the purchase and equipment of the building will be drawn from the gift of the Rockefeller Foundation.

The cost of maintenance and development of the school will be met from endowment funds in part set aside by the university and in part contributed by the Foundation. The Foundation's immediate appropriations to the project will aggregate $1,785,000. The arrangement also provides for further gifts, if the growth of the school seems to demand it, to any amount which shall not exceed $500,000.