SCIENCE NEWS

FOREST FIRES IN THE WEST

Science Service

"THE most serious forest fire year on record" is the gist of a statement given out recently by Miller Hamilton of the U. S. Forest Service. An extreme drought of long continuation throughout the western United States, with an average relative humidity only about one fourth normal, has left the forest lands everywhere like tinder before the match, and any kind of a fire started, whether from careless campfire or cigarette, locomotive or sawmill spark, or lightning, sweeps out great tracts of valuable timber before fire fighters can reach the scene.

The most serious situation is in California, where over 45,000 acres of timber in the national forests have already been destroyed. The burned areas are scattered throughout the state, from near Los Angeles to north of San Francisco bay, and from the high Sierras to the coast. One of the most notable fires was one that broke out near the town of Badger, and sweeping a path over six miles long and two or three miles wide, four times threatened to invade General Grant National Park, where some of the most venerable sequoias in the world are situated, and also Redwood Mountain, the region of the University of California big-tree tract. On account of the extreme dryness this fire traveled three miles in one and one half hours.

The fires in California have been due largely to the carelessness of tourists, campers and sawmill engineers, and to sparks from railroad engines. Newspapers, ministers, teachers and all civic bodies have been called upon by the Forest Service to preach the gospel of safety first, and certain threatened areas have been temporarily closed to campers until the danger shall have abated.

Elsewhere in the West the fire situation is quite as serious. In the national forests surrounding Yellowstone Park there have been 282 fires so far this summer, most of these due to lightning. In the Arapahoe forest, near Denver, a fire swept over five square miles in three hours, in spite of the fact that a force of fire fighters were on the lines within ten minutes after it started.

The Forest Service has 1,450 extra men on its payroll this summer on account of the fire situation, and has had as many as 300 actually on the fire lines at a given time.

"BLACK LILIES"

Science Service

"BLACK LILIES" for American flower gardens are a possibility of the future.

The Bureau of Plant Industry of the Department of Agriculture will experiment with seeds of a small lily ten to twelve inches high which grows in the Alpine Meadows of the Sila Pass in China at an altitude of about 12,000 feet. It is described by the bureau as "well worthy of cultivation on account of its drooping, rich, purplish black, bell-shaped flowers tinged with carmine which are one or two inches long and broad." This species was collected by J. F. Rock, collaborator for the bureau, during his recent exploration of the Yunnan province of China.

The introduction of a number of other promising flowers and decorative shrubs for the American flower lover is announced by the bureau this month. All these, of course, merely are subjects for experimentation at present and may not succeed under the conditions they must contend with in the United States.

Seeds have been received of the *Corokia virgata*, a slender branched shrub, six to twelve feet high, native of the most northern part of New Zealand where mild weather prevails. The shining green leaves are downy white underneath and yellow blossoms, about half an inch across, are borne in three-flowered clusters. It is a lawn possibility for the Southern states.

Experiments also will be conducted with a slender-branched, shrubby honeysuckle from Yunnan, China. The yellowish white flowers are marked with red and are followed by bright red berries.

From the mountains of western China also come the seeds of a climbing shrub, *Schizandra rubiflora*, which often reaches a height of twenty feet, with solitary dark red flowers about an inch across.

The Honorable Vicary Gibbs, of England, who forwarded the seeds of these three last-named shrubs to the department, has also sent the seeds of two species of viburnum. The first is a hardy, ornamental shrub about seven feet high, from the mountainous country of Western China with narrow, toothed, metallic green leaves, white flowers in lax panicles, followed by small red berries. The second is from Japan, similar in appearance to its companion, but with a higher growth.

The bureau plans efforts to make more popular in the United States the famous Mexican tiger flower, *Tigridia pavonia*, and has secured a large quantity of seed which will be grown in the greenhouses at Bell, Md. It is a bulbous plant adapted for mass planting. Although the individual blooms last but a short time the mass planting produces a succession of yellow, orange, scarlet and red flowers which are very striking. It is similar to the gladiolus and as easily grown.

THE UTILIZATION OF WIND POWER

Science Service

FRENCH engineers are planning extensive plants of windmills to relieve the country of its heavy burden of payment for imported coal. The Eiffel tower, in Paris, has been employed for experiments on the best means for the utilization of wind power and from these results a form of windmill has been devised which is very different from those in use elsewhere, and, according to the calculations of Lapresle, much more efficient and economical than the American and Dutch types. Our windmills are from 8 to 16 feet across and have 18 or more

blades. The new French type has only two blades but these are made much longer. The plans contemplate windmills with two blades revolving in a circle 100 or 130 feet in diameter.

In the last number of the French scientific journal, *La Nature,* Constantin, leader of the syndicate of engineers who have been studying the question of wind power since 1907, calculates that the hundred-foot windmill in a 13-mile wind will give 50 horse-power, and the 130-foot windmill will give 90 horse-power. With a wind of 22 miles an hour the smaller wheel will give 240 and the larger 400 horse-power. Constantin proposes to install a series of 130-foot windmills on Mont Ventoux, five thousand feet above the sea, and figures out that a single machine would deliver an average of over 700 horse-power throughout the year. The velocity at the extremity of the blades in the fastest wind would still not be more than half that of the blades of an airplane propeller, so there would be no danger of their flying off. The wheel is to be connected directly with a dynamo to convert the rotary motion into electrical current and do away with gearing, cranks or cables. The dynamo is encased in a light shell constructed on stream lines like a fish, so as to offer the least resistance to the wind. The wheel and dynamo turn on a common axis as the wind shifts.

A row of a dozen or more such windmills are to be connected with an "aeolian central" where the varying currents are brought together and transformed into a single current of constant intensity that goes out to the consumers. The surplus electricity at hours when the demand is slight is to be used in electric boilers in making steam, which may be stored in accumulators to be used as needed for heating or power.

It is anticipated that the power thus derived from the wasted energy of the air may serve to warm houses, run shops, drive shop machinery, heat metallurgical furnaces and run trains. It is also planned to use windpower to propel vessels against the wind. Constantin and Joessel equipped a five-ton boat, the *Bois-Rose,* with a thirty-foot air screw, connected with a forty-two-inch marine propeller, and navigated this vessel on the Seine, at Paris, in all directions without disturbing the ordinary traffic. The vessel made about four and a half miles an hour in the face of a fifteen-mile wind.

"NEBULIUM"

Science Service

THE mystery of nebulium, the strange gas supposed to exist in comets, neublae and certain stars is being dissipated. Professor Harvey B. Lemon, of the University of Chicago, has made discoveries which indicate that there is probably no such element in the universe and what has been taken for it is merely helium in disguise.

Spectroscopists, who detect the make-up of stars and other things by analyzing the light which comes from them, have long been worried by lines in the nebular spectra, which did not agree with those of any substance known on earth. A bright green line was especially characteristic. These strange lines have been attributed to an unknown element of light atomic weight which was called "nebulium" after the nebulae in which they were found. Ideas about nebulium have, however, become even more nebulous, for modern work in physics and chemistry seems to indicate that there could be no light weight element not already known.

In addition to the so-called nebulium lines, most of the nebulae show the well known lines characteristic of hydrogen and helium. Thinking that one or both of these elements might possibly cause the lines of nebulium, Professor Lemon applied to them the algebraic formulae which had been found to fit the lines of many other spectra. According to his mathematics, the unknown nebular lines attributed to nebulium lie on the same parabolic curves as the spectral lines of a helium atom which has had one electron knocked out of it. The reproduction of the nebulium lines has never yet been accomplished in the laboratory, but Professor Lemon thinks his figures give a clue for experiments which may prove fruitful.

ITEMS

Science Service

ANNOUNCEMENT of a practicable generator for fluorine, the most active of all chemical elements, has been made by Dr. J. H. Hildebrand, of the University of California. The method involves the electrolysis of fused potassium bifluoride, one electrode being of graphite, the other consisting of the copper container. The gas is purified by passing through copper tubes filled with sodium fluoride, which removes the hydrogen fluoride. Fluorine is a gas at ordinary temperatures, and has such a power of grabbing up electrons that it can displace even the energetic oxygen and chlorine atoms from their compounds. Hitherto it has been difficult to prepare in quantity, and a larger supply will help in the solution of important chemical problems relating to the architecture of atoms.

FOR the preservation of the only two herds of wood bison known to exist in a wild state, the Canadian government has set aside an area of 5,000 square miles in the wilderness south of Great Slave Lake. Little had been known of these herds of wild wood bison until a party was sent out by the Canadian government in 1922 to get all available information. It was then learned that the number of bison in the northern herd is at least 500 with twice as many in the southern herd. The animals are considered by some experts to be superior in size, pelage and stamina to the plains bison to which they are closely related.

THE United States Forest Service is making an intensive study of lightning storms throughout the entire West to secure data valuable in fighting forest fires caused by lightning.

THE French societies of chemical industry have formed a syndicate called "Ammonia" for the production of fertilizer from atmospheric nitrogen to relieve France of her present dependence on Chilean nitrates.