

METEOROLOGY

Fire Weather Forecasts

► DETAILED FIRE weather forecasts are helping to cut down on the nation's losses from forest fires.

Meteorologists of the U.S. Weather Bureau's fire weather service are now working in forest areas, warning of the approach of the kind of weather that makes fires hard to control.

Dry, warm weather with high winds make for the kind of weather in which fires start and in which they are hard to control. Wind directions are important too.

The detailed forecasts play a key role in determining the deployment of fire-fighting forces. On some days when visibility is expected to be good, and conditions of humidity, wind and temperature in the forest will be such that fires are not likely to start, only a few of the lookout towers need be manned.

On other days the forecasters warn of danger. Then lookout towers are fully

manned and airplane patrols supplement them. Fire crews are assembled at strategic places and certain forests may be closed.

Whether or not logging operations may continue is often determined on the basis of fire weather forecasts. Railroads are requested to take special precautions about sparks from locomotives, when the weather is dry and the winds high.

Forestry employees supplement the already existing network of weather observation stations to get a clear picture of meteorological conditions in the forests. On this basis the predictions are made. These are coordinated with knowledge of forest conditions.

During a fire, special predictions may often determine how the fire is to be fought. Predictions of changes in wind direction, especially, can drastically change the plans of the fire-fighters.

Science News Letter, July 26, 1952

TECHNOLOGY

More Electric Railroads

► SIX MONTHS of road tests in regular service, now completed, have proved the success of electric locomotives using the so-called Westinghouse ignitron.

This converts alternating current from the overhead trolley line into direct current to operate the motors that drive the locomotive.

Ignitron locomotives represent a completely new principle of electric-locomotive operation, Westinghouse scientists say. Single-phase alternating current from the trolley is rectified by means of sealed ignitron tubes.

The direct current output of the rectifier is supplied to series-wound direct current traction motors to drive the locomotive. The system combines the economies of the alternating current trolley power with the tractive advantages of direct current driving motors.

Low-voltage direct-current traction motors cost less than the alternating-current commutator type and require less maintenance, the *Westinghouse Engineer* (July) states. The commutator motor serves its purpose well but has high first cost and high maintenance expense.

On the other hand, a high-voltage alternating-current trolley system reduces transmission losses and lowers first cost of electrification in comparison with direct-current transmission.

A pumped-type of ignitron tube for a rectifier was developed in 1932. The present tube is a sealed type perfected in 1937. This was widely used during World War II for light-metal production, and later on diesel-electric locomotives. A multiple-unit car for commuter service was put into op-

eration in 1949, and the success of this led to the construction of the ignitron locomotives.

Increasing use of electric power for railroads is predicted as a result of the ignitron locomotives. All alternating-current railroad systems in America operate on 25-cycle power, primarily because the single-phase a.c. motor works better at low frequencies.

The ignitron locomotive operates equally well on either 25- or 60-cycle power, the latter being America's principal commercial power. Besides its availability, it has another advantage: locomotive apparatus for 60-cycle operation is smaller and less costly than for 25-cycle equipment.

Science News Letter, July 26, 1952

MEDICINE

Blue Lips Made Red In Trial Experiments

► A NEW treatment for "blue lip" disease has been found successful in trials reported by Dr. A. F. Mangelsdorff, assistant medical director of Calco Chemical Division, American Cyanamid Co., Bound Brook, N. J.

The disease is caused by absorption into the body of aromatic nitro or amino compounds. It affects workers in certain industries that use these chemicals, turning the workers' lips blue.

Treatment advised by Dr. Mangelsdorff consists of first, thorough cleansing of the body surfaces of a person who has been splashed by and as a result inhaled fumes of these chemicals. Oxygen inhalation, bed rest and large quantities of sweet drinks make up the rest of the treatment. The blood should be constantly checked for

methemoglobin and if this is above 35%, salt solution should be injected into the veins.

Responsibility for preventing this condition rests on industrial supervisors, Dr. Mangelsdorff declared.

Processes for the manufacture of the chemicals should be completely enclosed with control panels away from operating units. Those tools which must be open should be equipped with exhaust ventilation so no poisonous fumes can get to the operator. The work areas should be kept well ventilated.

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