



The White Pine

► IT IS unfortunately true that we have wiped out the major portion of our eastern white pine forests. The original estimated stand of this species in the U. S. was about 600 billion board feet. The present estimated stand is about 15 billion feet.

We should not, however, be too hasty in blaming the lumberman for the decline of

this species. The original white pine was for the most part cut-over by 1870, when white pine, after more than 200 years as the lumber market leader, began to decline. Our eastern hardwoods were also cut heavily, yet they have come back. Why then didn't the pine?

It is quite untrue to say that we did not take the trouble to replant them. Until fairly recently, white pine was the leading species used for reforestation in the East and Lake states, and millions of seedlings were planted. What then are the reasons?

First, on the heavier soils, white pine is a temporary species which was originally established on burns, windthrown areas or cleared areas. Experiments at Harvard Forest proved it was uneconomical to attempt to grow a second crop of pine on heavy soils, since the pine could not compete with the hardwoods that were the normal species. Even on medium soils, expensive weeding is necessary to maintain the type.

Only on lighter soils is white pine a permanent type, and there it has to compete

with blueberries, rhododendron, laurel and other heavy ground cover that often make the establishment of seedlings most difficult.

Insects and disease take their toll. The pales weevil kills young white pine seedlings on newly cut areas. The white pine weevil deforms white pine saplings so as to make them cabbage-shaped and of such low value that most such trees are now used for pulpwood. And there is always the scourge of blister rust threatening the stand.

Eastern white pine is here to stay, although it will never return to its former importance because too many factors are working against it. Scientists in Wisconsin have developed varieties that appear to be resistant to blister rust. Lumbermen are learning how to grow white pine in mixed stands with other species.

The great, pure white pine stands are for the most part gone, and they will not return unless we find an effective means of combating the tree's enemies. Even then, we shall be successful only on the lighter and medium soils.

Science News Letter, September 19, 1953

METEOROLOGY

Ice Cause of Lightning

► THE POWERFUL flashes of lightning are associated with the growth of ice pellets or soft hail of thunderstorms.

This new theory on the generation of electricity in thunderclouds was put forward to the British Association for the Advancement of Science meeting in Liverpool by Dr. B. J. Mason of Imperial College, London.

No existing theory has heretofore explained satisfactorily the mechanism by which electric charge in thunderclouds is generated and separated into positive and negative regions in the upper and lower parts of cloud. Between 500 and 1,000 coulombs of charge has to be built up before the first flash and it has to be manufactured in less than 20 minutes. No theory explains the building up of the required quantity of charge in the time available.

Dr. Mason has observed that when ice pellets are manufactured artificially they acquire a negative charge. The compensating positive charge is communicated to the air when ice pellets grow. In a thundercloud, they fall relative to the air and carry negative charge downwards, while the positive charge is carried to the top of the cloud, either on ions (charged atoms), small cloud droplets or small ice crystals, to give correct charge distribution. Dr. Mason has calculated the growth of these particles in thunderstorms in terms of temperature, water content, speed of up-current, and he has used the results of his experiments to calculate their charge.

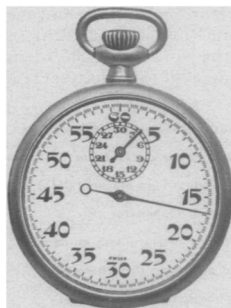
This mechanism can provide between 500 and 1,000 coulombs of charge in a

radius of two kilometers (little over a mile) within one and a half minutes of initiation of ice crystals.

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