



The Lesser Pines

➤ FORESTERS, lumbermen, botanists, even poets, celebrate the "lordly pine"—meaning, usually, a tree imposing to the eye, with a trunk big enough to make a fine log and saw up into handsome boards, or even to serve whole as a mast "for some high ammirail." There are pines enough to fit such specifications: *par excellence* the white pines, but also such tall brothers of the yellow-pine series as the long-leaf pine of the South and the ponderosa, black and big-cone pines of the West. Magnificent trees, all of them.

However, there are many pines of lesser stature than these, trees that would stand no more than waist-high or even knee-high to the pines that get all the press notices. They also have their place in the world, even if (like most of us common folks) they never get their names in the papers.

These lesser pines are to be found in all the major tree-growing regions, in all latitudes and altitudes, even in the tropics. But always they grow on the marginal lands, where pickings are meager and where it takes a decidedly thrifty, patient and tenacious plant to succeed at all—such places as the sandy coastal plains and clay hills of the South, the ill-balanced soils of the Middle Atlantic coast's serpentine barrens, the rocky shores of New England,

the dune sands of the Lake States and central Nebraska, the thin soils of Southwestern deserts and Rocky Mountain plateaus, the adobe hills and crumbling granites of the Pacific slopes.

In all these places you will find the lesser pines. Often they are spaced far apart because there isn't enough moisture to permit them to grow close together. There they will develop full-branched tops. Seldom though, are these symmetrically pyramidal like those of their more seemly kin-

trees. More likely they will be buffeted into gnome-like shapes by the fierce winds of mountainside winters or the soft insistent tyranny of salt-laden sea breezes.

Elsewhere, however, they will form close-ranked forests—too close-ranked, often, to permit the development of stout trunks. So characteristic is this weediness of some of the lesser pines that it has even given one species its characteristic name: lodge-pole pine.

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AERONAUTICS

Fast Flight Problems

In designing planes to travel at speed of sound, pilot's safety and comfort must be considered if he is to be kept alive and functioning efficiently.

➤ THERE are human element problems to solve if planes are to travel at speed-of-sound velocities that are as important as those involved in aircraft design and power plant development. Technical advances are of little avail unless the pilot can keep alive and able to operate.

Technical progress in designing planes which exceed the speed of sound has been so rapid in the past two years that the problem also now becomes one of concentrating on the human factors, the Institute of Aeronautical Sciences was told by Dr. John T. Rettaliata of the Illinois Institute of Technology.

He outlined four areas in what he called biotechnology in which engineering and medical scientists are working together to push aircraft flight further beyond the speed of sound. The problems have to do with excessive heat in the cockpit, "black-ing-out" of pilots, means of escape if necessary, and crash trouble.

Without cooling, the temperature in the cockpit would be approximately 200 degrees Fahrenheit at a speed of 670 miles an hour, he stated. To offset this, refrigeration is necessary. Scientists have developed a 16-pound unit to blow cold air on the pilot. It contains a small turbine with a rotor one and one-half inches in diameter and weighing one-half ounce.

Rapidly increasing speed, or slowing down, may cause a pilot to black-out, or lose consciousness. No difficulty is encountered in the functioning of the mental process when the speed remains constant, even though it may be very high. The problem is to protect the pilot, as by inflated clothing, in such a way that he will not black-out from blood leaving the brain in a pull-out from a dive, or from excessive blood being forced into the brain on an outside loop.

Speeds are now so great that pilots can not climb out and slowly descend in a parachute. At speeds of 500 miles an hour,

the corners of their eyes and mouths were torn and their ears were literally ripped off the sides of their heads. Dr. Rettaliata declared. To solve the problem, designers have built ejector seats in planes, and pilots have been equipped with canopies to protect their heads.

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Hickory, oak and beech are *firewoods* that give much heat for their weight.

Photographs have been recently successfully sent by *radio* waves from a flying airplane to a publishing office some 85 miles away.

American agricultural scientists are attempting to develop a *sugar beet* of a different shape, one that can be more easily dug from the ground.

The Cape York peninsula in the northeast tip of Australia has strong geological and biological evidence for the supposition that it once was a *land bridge* to New Guinea.

Science Service Radio

➤ LISTEN in to a discussion on "The Conquest of Rinderpest" on "Adventures in Science" over the Columbia Broadcasting System at 3:15 p.m. EST, Saturday, February 12. Dr. K. V. L. Kesteven, veterinary adviser to Food and Agriculture Organization and specialist on animal disease control, will report the discovery of a new and improved vaccine for one of the great cattle diseases which it was feared might be used by Germany for bacteriological warfare in World War II. This new discovery makes it possible to grow food in areas which lack protein food, particularly the Far East.

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