al parks, are the largest of all living things in girth and weight, and nearly the oldest. Specimens of bristlecone pine have been discovered to be older.

Big trees have a maximum lifespan of 4,000 years, while the greatest recorded age of the coastal redwoods is about 2,200 years. Some of these trees were probably seedlings when the great king Hammurabi ruled Babylon in the 20th century B.C., middle-aged at the time of Christ and mature trees when North America was discovered.

These two species of redwood are actually quite different and should not be confused with each other. The coastal redwoods have flat, sharp-pointed needles that stand out stiffly on each side of the twig, while big tree needles are small, overlapping scales lying close against the twig. Coastal cones are small, less than one inch long, while big tree cones are fat and about two to three inches long. The coastal tree trunk is slender in proportion to its height, while the big tree trunk is massive and thick from the base to the top.

Well over a million and a half acres of redwoods once covered northern California's hills and valleys, Dr. Edward C. Stone of the University of California School of Forestry at Berkeley estimates.

Enlightened Forestry

Many lumber firms today have learned to avoid hasty and ruthless overcutting, Dr. Stone notes. They practice a plan of "enlightened forestry" in an effort to conserve the trees and the land while continuing to cut selected trees for lumber.

In another 25 years, the practice of enlightened forestry will be sufficiently advanced so that private industry could handle the forests. Already there is a basic plan for California industry to produce a continuous crop of redwoods while leaving the huge giants for scenic beauty and to avoid timbering too close to valuable areas, thus inducing erosion.

However these good practices are too few and not used enough, Dr. Stone said. Tracts of valuable redwoods have already been destroyed to enrich the lumber industry, to make way for highways or to create new pastureland for sheep and cattle.

Loggers still use such ruthless practices as clearing the land completely of trees, starting serious land slides, and "jumping"—the cutting of enough trees from one area to spoil it for park land, then jumping to another place to do the same thing again and again.

With the public eye peering closely over the private industry's shoulder, Dr. Stone believes commercial lumber firms are exerting more caution and judgment than before to keep the land and trees in prime condition.

However, Dr. Stone warned that pressure has to be constantly maintained by private, state and Federal institutions to save the grandeur of the redwoods for future generations.

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Philco Corporation

A BIT OF MOON—This volcano-made fissure near Barstow, Calif., is being checked by geologists for material believed to be similar to material on the moon. The fissure was caused when a lava flow cooled more rapidly on top than underneath, causing internal pressure to split it open. This may have caused some of the lunar surface features spotted by the Ranger spacecraft.

GEOPHYSICS

New Radio Wave Heard

➤ A NEW KIND of "whistler," a lightning-caused radio wave in the audible range, has been discovered far out in the earth's atmosphere from satellite observations.

The helium whistler is the third kind to be detected. Whistlers are so called because they sound like a whistle falling steadily in pitch.

These very low frequency electromagnetic waves travel from one hemisphere to another along invisible tubes of force in the earth's atmosphere, reaching at least 8,000 miles into space during their journeys.

The first known whistlers resulted from the interactions of electrons in the atmosphere. Observations from the Canadian satellite Alouette I showed that there were also whistlers resulting from proton interactions.

Now, observations from the second Alouette have shown there are, in addition, helium whistlers. Details of the discovery are reported in Nature, 210: 80, 1966, by Dr. R. E. Barrington, J. S. Belrose and W. E. Mather of Canada's Defence Research Telecommunications Establishment, Ottawa.

Simultaneous observation of proton and helium whistlers, the scientists emphasize, "provides a direct and accurate means of measuring the composition and electron density of the ionosphere at great heights above the earth's surface."

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TECHNOLOGY

Canal Water Loss Prevented by Spray

➤ BILLIONS OF GALLONS of precious fresh water can be prevented from seeping into the ground by spraying concrete irrigation canals with a quick spray-on sealer.

With this new technique, three men can treat 800 feet of cracks in an hour, according to researchers with the Agricultural Research Service, part of the U.S. Department of Agriculture.

This will bring welcome relief to farmers in the West, where much water and money are lost by seepage through cracks in concrete-lined canals.

The cracks are cleaned with a high-pressure water jet, then the sealer is sprayed directly on the clean, wet concrete. The new sealer is a mixture of asphalt, butyl latex and asbestos fiber.

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