

Tree rings: 'Kid stuff' compared to glaciers

Among the oldest living things on earth are the scrawny bristlecone pines in the White Mountains of Nevada and California.

At 4,000 years or more old, healthy specimens that often look sickly or even dead are placidly accumulating years and history. Their rings contain evidence of past droughts (during which the rings are narrower), volcanic eruptions which darkened the sky, cold years, wet years and otherwise a complete chronology of conditions on earth at the time.

If the growth rings of a living bristlecone pine can be overlapped with dead pines even older, a complete chronology extending as far back as 8,000 years can be obtained.

But, as scientists now maintain, dating by tree rings is kid stuff compared to what can be found in the dating of ice layers found in glaciers.

In Greenland and Antarctica, ice-coring projects are underway that many reveal yearly details of the

earth's history as far back as a half-million years ago.

The difficulties of penetrating thousands of feet of ice are considerable. The ponderous, creeping motion of the ice tends to close coring shafts even as they are being drilled.

In 1966, the first continuous continental ice core was obtained from a hole 4,540 feet deep which reached bedrock at a site 100 miles from Thule, Greenland. According to an article by J.P. Sterba in the Wall Street Journal, the drillers later hit bedrock at a depth of 6,683 feet near a Distant Early Warning site there.

Core samples exhibit layered records of annual snowfalls going back perhaps 125,000 years. Radiocarbon dating is relied upon for deeper layers.

Much of the cores' information is contained in the gases and dust trapped in air bubbles that have been compressed among the ice crystals. In the layers are chemical and physical in-

dicators of past temperatures, carbon dioxide levels, acid snows, airborne dust and atmospheric composition, which may point out volcanic eruptions or other transient events.

As the ice layers compact under increasing weight, the air contained is compressed. When the surrounding walls of the tiny bubbles melt, the compressed air is released with a crackling sound.

The ice is favored by cocktail drinkers, who pay a premium for using it. Bloomingdale's department store in New York sells ancient glacial ice as a prestige item.

Sterba quotes an ice plant owner saying: "... The stuff you get out of your fridge's ice trays is sewage. What's pure and nice is ancient ice. Put your ear close to the glass and listen to it whispering from the past."

These whiffs of ancient air that come from glacial ice reveal that the Ice Age atmosphere had a low content of carbon dioxide — a gas that enables

the atmosphere to retain the warmth of the sun.

An overabundance of carbon dioxide now generates concern because it may entrap too much heat, resulting in the "greenhouse effect" that may change our global climate entirely. The bristlecone pine probably wouldn't care.



Bristlecone pines are among the oldest living things on earth.