

## ZOOLOGY

## Eye Lens Tells Age

"LOOK into my eyes and I will tell you how old you are."

Rexford D. Lord Jr., biologist with the Illinois Department of Conservation, Urbana, has not reached this point. But he can tell a mammal's age by analyzing its eye lens.

The lens of a mammal's eye grows throughout the animal's life, he told scientists at the American Society of Mammalogists meeting in Washington. For example, embryo-type cells are found on the edge of the lens in aged persons. Apparently the lens begins drying from its center outward beginning at birth. New "wet" cells are being laid down on the outside of the lens.

Using this information, Mr. Lord said he was able to plot four growth curves

for any lens of any species of mammal. He has already computed the growth curve for the cottontail rabbit. Work has also been done with the Alaskan fur seal and deer.

Once the growth curves for an animal are known, Mr. Lord said, an animal's age can be determined readily by comparing its lens with the standard for the species. The technique for obtaining the growth curves is based on removing the lens from the eye (which has been preserved in 10% formalin) and drying it in an oven and weighing it. Plotting the growth curve required a computer, Mr. Lord said.

Details of the technique will appear in an early issue of the *Journal of Wildlife Management*, the researcher said.

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## BIOLOGY

## Walrus Being Overhunted

STATISTICS are against the Pacific walrus. If steps are not taken to protect this animal immediately, it will be extinct in less than ten years.

The conservationists know this. But chances are slim for passage of the needed laws, national and international, to protect the walrus from his one enemy, man.

Each year some 10,000 walrus are hunted and slaughtered. And each year only 5,000 are born. With a total population of 45,000 there is little hope that the walrus can maintain itself against the hunter.

Not only is there over-hunting of the walrus, there is also a huge loss in dead animals never recovered. At the most, Dr. John L. Buckley of the U. S. Fish and Wildlife Service told *SCIENCE SERVICE*, less than half of the walruses killed or wounded are recovered.

Several factors contribute to the disappearance of the walrus, Dr. Buckley said. Perhaps most important is lack of control over hunters in international waters. He pointed out that since some of the walrus population is in the territorial waters of the Soviet Union, international cooperation is needed to regulate the harvest. Some

first steps are being taken, Dr. Buckley said, to get agreement between U. S. and U. S. S. R. researchers in the field. An attempt is also being made to write a bill regulating walrus hunting by American citizens outside the U. S.'s three-mile territorial limit.

Alaskan natives have the exclusive privilege of taking walrus—ostensibly for food. While the animal is undoubtedly indispensable to the natives, recent developments have led to excess hunting and waste. The use of guns has resulted in some "trigger-happy" hunts, for example. The demand for carved ivory, brought about largely by the stationing of large numbers of men at military bases, is the greatest incentive to hunt walrus, Dr. Buckley said.

It is important to know just how many walrus are needed for food, ivory and hides, what proportion of food is spoiled or wasted and how much ivory is sold carved and how much "raw."

If we do not learn how to manage the Pacific walrus, Dr. Buckley said, we may find in the not very distant future that we can add it to the growing list of extinct animals.

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## OCEANOGRAPHY

## Ocean Bottom Changes

THE DEEP OCEAN FLOOR is not a peaceful, serene place of eternal silence but an actively changing one with the underwater equivalent of snow avalanches in the Alps.

The mystery of what happens in the vast dark regions lying beneath deep oceans is yielding to understanding, Dr. Bruce C. Heezen of Columbia University's Lamont Geological Observatory, New York, reports.

"The picture of an unremitting snowfall

of sediment which softly casts a thin veil over the rugged, grand and imposing" features of the deep sea floor is not an accurate one, he said. To this picture must be added turbidity flows that, like snow avalanches in the Alps, sweep down and smother the features of the lower slopes.

Dr. Heezen said recent surveys have shown that ocean currents clean the sediment from the higher and bolder submarine mountains in much the same way

winds striking mountains drive snow from the peaks.

Moreover, he reports, just as wind and water shape the land, so do submarine currents of water and mud shape the ocean floor. They do this by erosion, by solution and by friction.

Dr. Heezen says one of the "most perplexing" problems concerning ocean floors is the thinness of the deep-sea sediments as determined by measurements of earthquake waves.

Over most of the Pacific, the sediment deposits are less than three-tenths of a mile thick; they are about the same in the Atlantic.

If the rates at which these sediment deposits were laid down are at all comparable to those measured for the last several thousand years by radioactive dating, Dr. Heezen reaches the "startling but dubious conclusion that the oceans were formed" over a hundred million years ago.

Answer to this and other problems may be provided by core samples obtained during the drilling in the deep-sea floor of the exploratory holes to the "Moho," where the earth's crust ends. Dr. Heezen's report on the deep ocean appears in the *Geophysical Journal*, published by the Royal Astronomical Society in London.

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## GEOLOGY

## Chilean Glaciers Indicate Weather Change

EVIDENCE has been found that the Southern Hemisphere has been warming up for more than a half-century.

An American expedition made this report after spending last January and part of February measuring the valley glaciers pushing out of the North Patagonian Ice Field into the waters at Laguna San Rafael, about 900 miles south of Santiago, Chile. The source of the ice is the snow on 13,314-foot Mt. San Valentin.

Cornell University geologist Ernest Muller told *SCIENCE SERVICE* that the four or five major glaciers have shrunk up to six kilometers (about 3.7 miles) during the past 80 years. Prof. Muller was one of six members of the American Geographical Society (New York) expedition headed by Dr. Calvin J. Heusser of the Society. The expedition was supported by the Office of Naval Research with Chilean cooperation.

Although this kind of warming-trend evidence has been found in the northern latitudes, it has hitherto been scanty in the Southern Hemisphere.

Actually, during the last year, the glaciers grew a few feet and pushed down some forest trees. This, Prof. Muller proposed, indicates a slight possibility that the warming has ended. He cautioned, however, that one year does not make a geological trend.

The Government of Chile hopes the glacial growth continues, because, along with terrier-sized deer and good fishing, glaciers are prime attractions in this Andean area.

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