



### Annual Rings

► TREES ARE undoubtedly the classic example for having annual growth rings, but they are by no means the only example.

Fish, clams, scallops, land turtles, big-horn sheep and old-world goats all possess annual growth rings, which enable man to determine their age.

Fortunately, unlike trees, it is not necessary to cut the animals in two to find the growth rings. The rings are all external and evident.

Fish biologists have counted the growth rings on a single fish scale as an age determinant for many years. Red salmon, for instance, gives its traveling habits away with its growth rings. Biologists are able to tell from the rings on a salmon scale how long the salmon has been in fresh water, how long it has been roaming the sea, and how long it has been back in fresh water on its voyage home.

Using the fish scale as an actual age scale has helped the fish experts to check the number of fish returning each year to their fresh water spawning beds as opposed to the number of young salmon released four or five years earlier. It is nature's tagging system.

Growth rings on a scale appear in shad, mackerel, herring, sardines and trout. One

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can even determine the age of his pet goldfish.

The shell of a Pacific razor-clam gives its age and activity away. Light circles indicate the period of the year when the clam was inactive, mostly during the winter months, whereas heavy markings indicate the very active summer feeding months.

Since the age of the clam determines its size, conservationists have been able to check clam populations and regulate the catches by taking the annual average age of the clams.

Growth rings on off-shore scallops appear as fine concentric bands on the shell and possibly the fascination for sea-shell collectors is caused by nothing more than a scallop's old age.

Several land turtles, particularly the box-turtle, have tell-tale growth rings on each scale, both underneath and topside. Often, these markings are worn away on the underside as the turtle moves slowly overland. Very old turtles will also be minus visible rings.

The horns of the big-horn mountain sheep and the old-world goats are simply circles of growth rings. With the mountain sheep these are often obliterated when they bang heads with each other during the mating season.

The popular belief that rattles of a rattlesnake are an age indicator is not accurate, nor can rattles be considered growth rings. A rattlesnake is born with a little button at its tail. Soon after birth, the snake sheds its skin and adds a rattle. With each skin shedding, a rattle is added. But a young snake may shed its skin ten or more times in the first three years.

Then, too, when a snake has ten or more rattles, additional rattles tend to break off. So, it is quite impossible to tell the age of a rattlesnake from the number of its rattles.

Man, fortunately or unfortunately as the case may be, has no similar annual growth rings, only wrinkles and birthdays.

Science News Letter, November 6, 1954

## RADIO

### Radios May Fail in Jets Because of Engine Scream

► RADIO AND radar equipment may fail in jet planes because of the loud scream of the engine.

Engineers F. Mintz and M. B. Levine of the Armour Research Foundation told the American Institute of Electrical Engineers in Chicago that jet noise is growing more important as a cause of electronic and some mechanical failures.

Tests in a special sound chamber revealed that small electronic tubes and relays failed or did not work properly when subjected to noise blasts simulating those of jet and rocket engines and guided missiles.

The sound level may approach 150 decibels 10 feet from the tail pipe of a jet plane when the engine is operating at full thrust, the engineers reported. Noise level in the equipment bay approaches 140 decibels.

Science News Letter, November 6, 1954

# Questions

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## PHYSICS

### Study Polyethylene by Electron Micrograph

See Front Cover

► SHOWN ON the cover of this week's SCIENCE NEWS LETTER is an electron microscope photograph of the aggregated crystal structure in a thin cast film of polyethylene, enlarged approximately 30,000 times.

It was taken by Drs. F. P. Reding and Alexander Brown of Carbide and Carbon Chemical Company's research and development department, South Charleston, W. Va.

Science News Letter, November 6, 1954

*Fireblight*, a bacterial disease that has killed millions of fruit trees over the past 100 years, has been stopped for the first time with minute amounts of antibiotic drugs in a water spray.

# MATH IS FUN

By Joseph Degrazia, Ph.D.

Here is a treasury of brain-teasers. You need not be a mathematical genius to solve these problems and puzzles. What you need is to know how to THINK LOGICALLY—how to REASON. This is practically a "course" in applied logic and reasoning—besides being an immense amount of fun that will keep you absorbed for many hours. You will find not only that MATH IS FUN, but also that learning math can be fun!

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