

Natural Sciences Notes

BOTANY

10,000-year-old seeds sprout

Seeds of the arctic tundra lupine that were frozen in Alaskan soil for 10,000 years have germinated and produced normal healthy plants.

The previous record for seed longevity may have been that of the 2,000-year-old sacred lotus, *Nelumbium nuciferum*, that sprouted after it was found dormant in a far-Eastern peat bog.

Several dozen shiny, hard-coated lupine seeds were found in lemming burrows some three to six yards deep in frozen silt near Miller Creek in the Yukon Territory, report A. E. Porsild and C. R. Harington of the National Museum of Canada, and G. A. Mulligan of the Plant Research Institute, Canada. Remains of nesting material, skulls, skeletons and other evidences of the lemmings were found, they report in *SCIENCE*, Oct. 6.

The scientists believe some catastrophic event such as a landslide or falling volcanic ash buried the burrows in spring or early summer thousands of years ago, smothering the rodents and preventing the soil around from thawing so the seeds remained dry and continually frozen.

RIVER POLLUTION

Payment for fish kill

The largest payment ever made for fish destroyed by pollution—\$200,000—is being delivered by the Mobil Chemical Company to the State of Florida, thus setting a stiff warning to other potential water polluters in that state.

Last spring, fish in more than 70 miles of the Peace River were suffocated when a dike broke in the Mobile Chemical Company's settling basin, and phosphate mine tailings were dumped into the river, clogging the stream and suffocating aquatic life.

Heavy summer rains helped wash the lethal chemicals swiftly down the river and into the sea—so the original estimated cost of \$1 million for cleaning and restoring the river and restocking it with fish was reduced, reports Sept. 15 *OUTDOOR NEWS BULLETIN* of the Wildlife Management Institute, Washington, D. C.

ANIMAL BEHAVIOR

Care of the young

Male mice of a certain species will sometimes wash and huddle over infants of their own group and rebuild the nest if it is destroyed.

Such paternal behavior might be most highly developed in species whose reproductive pattern includes formation of lasting pairs and partnership associations after the litters are born, believes Frank A. Beach, department of psychology, University of California.

Another factor that may induce males, virgin females and individuals other than the mother to take care of the young may be the existence of a well-structured social group, he points out in *SCIENCE*, Sept. 29. Dogs, whales and several species of primates exhibit this behavior. Young chimpanzees and baboons have been defended by unrelated males of their group; some rhesus monkeys have become aunts to young babies; and unmated female porpoises have helped minister to another's

baby. Orphaned litters of wild dogs have sometimes been fed by adult males until they were old enough to run with the pack.

BIOLOGY

Moth mating stimulant isolated

A volatile chemical in red oak leaves, without which the female polyphemus moth will not mate, has been isolated and identified, reports Lynn M. Riddiford of Harvard University.

This compound, called trans-2-hexenal, emanates from oak leaves to the antennae of the female moth and triggers her to release a male-attracting sex substance.

Trans-2-hexenal has been found in green leaves of other trees such as maple, birch, beech and elm—but these leaves provoke no mating in this moth, Dr. Riddiford points out in *SCIENCE*, Oct. 6. Either the oak leaves release more trans-2-hexenal than other leaves, or these other plants may release masking odors.

The chemical has been identified before in insect communication systems. For instance, it has been found in mulberry leaves which attract certain silkworm larvae. It has also been identified in the defensive secretions of some cockroaches, true bugs, and an ant.

ORNITHOLOGY

Survey of mourning dove kill

More than 21 million mourning doves have been shot in the states east of the Mississippi during the 1966-67 hunting season, according to the Wildlife Management Institute.

These birds—the most important migratory game bird of North America—were hunted by more than one million sportsmen. The survey, first of four, is designed to investigate the biology and management of the birds.

OCEANOGRAPHY

Hot blue holes

Navy scientists have found hot pools of water in the coral rocks around Andros Island in the Bahamas.

The heat is apparently caused by the life processes of bacteria that live in a layer of reddish water in the bottom of the pools, says Dr. James Rucker of the Navy Oceanographic Office.

Though the pools are actually covered by the ocean at high tide, there is apparently not enough water circulation in them to maintain the oxygen and nutrient levels need to sustain life, he says.

The bacteria apparently use up oxygen in the stagnant water and produce hydrogen sulphide gas, thus making it impossible for any other form of life to exist. "If you stir up the mud, you get bubbles of this gas," Dr. Rucker notes.

The bacteria are the only form of life in the pools, which run about 20 feet deep. Navy divers could find no other signs of life.

The temperature was first found to be 120 degrees F. Later measurements pegged the water at 93 degrees, compared with about 87 degrees for the surrounding ocean. The scientists now think some facet of the life cycle of the bacteria may explain the drop in temperature.