

BOTANY

Shrub Rivals Whale In Producing Prized Oil

OIL very much like the prized sperm-oil of the whale in certain chemical and physical properties is produced from the seeds of a shrub that grows in the Southwest and in Mexico, chemists of the U. S. Department of Agriculture have discovered. The plant's name is spelled jojoba by the Mexicans, and is pronounced hohoba. Botanists say it is distantly related to the boxwood, and give it the Latin title *Simmondsia Californica*.

Science News Letter, January 16, 1937

ENTOMOLOGY

Find That Mosquitoes Winter in Twilight Caves

BEARS are not the only beasts of prey that spend the winter in caves. Animals much smaller than bears, but much more likely to bite the average citizen, to wit: mosquitoes, also hibernate in natural caverns, Prof. J. D. Ives of Carson and Newman College, Jefferson City, Tenn., reported.

With the aid of personnel from F.E.R.A. and N.Y.A., Prof. Ives explored a number of Tennessee caves during fall and winter months, and found a total of more than 3,000 of the insects. Almost all of them were females, and the great majority belonged to the genus *Anopheles*, notorious as malaria carriers. Relatively few, however, belonged to the particular species that is the worst offender in this respect; most of them belonged to a species that prefers the blood of cattle to that of human beings, though even these are capable of transmitting malaria on occasion.

In Twilight

Practically without exception, Prof. Ives and his workers collected their mosquitoes in the twilight zone of the caves, where full daylight does not penetrate, yet where it does not become pitch-dark. This is the kind of light many species of mosquitoes prefer; and the twilight zone also gives them the degree of air humidity they like best. Altogether, then, caves offer good homes for mosquitoes.

Prof. Ives suggested methods of spraying that might be worth trying, where caves harboring mosquitoes are too near human habitations.

Science News Letter, January 16, 1937



RIVAL OF THE WHALE

From these native jojoba nut seeds can be extracted a non-fatty oil resembling that of the sperm whale very closely. The nuts are found in Arizona, Southern California and Western Mexico, where they grow on bushes from three to 15 feet high.

AERONAUTICS

Records Loads on Airplanes During Gusts in Bumpy Flight

A DEVICE that automatically records the ups and downs of a bumpy airplane flight has been developed by the National Advisory Committee for Aeronautics, it was revealed to the Society of Automotive Engineers meeting in Detroit.

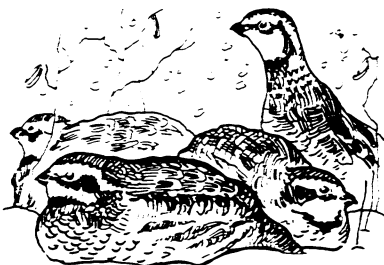
Research engineer Richard V. Rhode of the NACA laboratories at Langley Field, Va., disclosed the operation and recording of his so-called V-G recorder which shows the simultaneous effect of air speed and the acceleration of gravity during a gusty flight.

To airplane passengers such a bumpy flight often produces air sickness and nausea but to the airplane designer it means a more serious constructional problem. During a gusty "bump" the loads on the plane increase and decrease rapidly and powerfully. Some knowledge of how large these bump factors are must be obtained to permit a safe margin of strength to be built into the

plane. And at the same time too much strength, with its accompanying weight, is not wanted, for present-day planes have to be economically profitable to operate.

By an ingenious coupling of levers which activate a stylus rubbing on smoked glass, the NACA recorder gives a permanent record of how the effect of gravity combines with air speed. In both land transports and seaplanes the device has now taken records for over 20,364 hours in the air and traveled over 3,500,000 miles in doing it.

It is found that while the ups and downs of fairly smooth flight seldom exceed an additional half G (half the pull of gravity) either plus or minus, there may be times when a plane is riding through a squall storm that the additional acceleration may rise to 3 G or more. It appears that these larger values are obtained at speeds of about 180 miles an hour, (*Turn to page 45*)



Wildfowl of Your Own

NOBLEMEN and royalty of old times gloried in their great private game preserves, the forests and moors that made up considerable parts of their holdings, in which they alone had the right to hunt deer and boar and other game. And woe to the wight of low degree who was caught a-poaching!

The right to the game that lives on the land inheres with the ownership of the land. Exception is made of migratory game, principally waterfowl such as ducks, geese, and swans. For these there are elaborate protective codes, even international treaties.

But upland game, such as bobwhite quail, grouse, and the imported pheasants, stay within comparatively limited range under normal conditions, often not leaving the farm or timberlot that is their "home." They are not as domestic as hens, to be sure, but they are not much wilder than many flocks of turkeys which farmers call their own.

They do require a little care, in consideration of their willingness to live on your land. But it is really very little. Give them some brushy patches for shelter, let some berry- and seed-bearing shrubs grow, in extreme winters scatter a little charitable grain—that is all they

ask. And in reason and in season, they are yours for the shooting. No man may hunt them on your land without your permission. Many landowners, having thus encouraged upland game birds to live on their property, become so fond of them that they have not the heart to shoot them or permit them to be shot.

This kind of game farming has recently become a pleasant and profitable side issue of the great national task of soil conservation. Farmers who have conquered gullies that were eating away their sloping lands hold the soil against further washing by planting it with shrubs and low trees. These offer congenial shelter for the wild birds, and if the planted species are properly selected yield winter food as well.

Science News Letter, January 16, 1937

From Page 39

or the cruising speed of modern transport planes.

Comparison of records over land and over the ocean on the trans-Pacific flights shows that the previously noted smoothness of the latter flight is a scientific reality.

Partly this is due, declared Mr. Rhode, to the lesser turbulence of air over large bodies of water but it is also due to the wider latitude of flight, both in direction and altitude, which the seaplanes enjoy. They intentionally dodge rough weather and often come down near the sea to get under the bumps.

Science News Letter, January 16, 1937

GEOLOGY

Seaweeds Form Great Rocks In North America

SEAWEEDES are responsible for the formation of many massive rocks in the older strata of North America, the Paleontological Society was told at its meeting, by Dr. Carroll Lane Fenton and Mrs. Mildred Adams Fenton.

Many seaweeds even today are great gatherers of limestone, which they extract from sea water and deposit as shell-like crusts about their bodies. Some seaweeds of this type are often superficially so like corals that many persons mistake them for these animals.

It is difficult to identify some of these seaweed-deposited limestones, Dr. Fenton said, because they form a maximum of lime and leave a minimum of plant traces. Nevertheless, he and Mrs. Fenton have been able to make out certain form-species that appear to be alike in

widely separated regions, such as the Grand Canyon, Minnesota, Montana, and Pennsylvania.

Worms, also, can slowly build mighty rocks. Drs. B. F. Howell and John F. Mason of Princeton University described reefs in certain California strata, formed entirely of the limy tubes in which, ages ago, lived crowds of the marine worms known to science as *Serpula*.

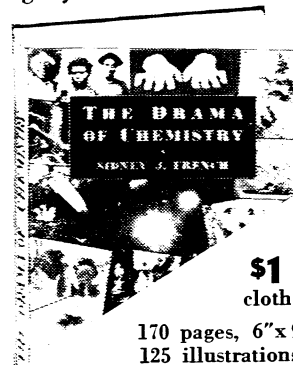
Clays Tell Sea Canyon Story

Investigations of the great submarine valleys of Georges Bank, northeast of New England, were reported by Prof. Henry C. Stetson of Harvard University. Dredgings yielded specimens of hard sandstone from two hitherto unknown formations in the canyon walls. Many samples of stiff clay were brought up, containing skeletons of microscopic animals of present-existing types.

The expedition also used the core-taking device recently perfected by Dr. C. S. Piggott of the Carnegie Institution of Washington, which shoots a steel tube into the bottom from a kind of small cannon. Samples of the same kind of clay were taken from the bottom at depths of nearly 6,000 feet. Prof. Stetson regards these clays as fill material.

Science News Letter, January 16, 1937

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PHYSICS AT WORK—Prof. George B. Pegram of Columbia University.

In the Science Service series of radio discussions led by Watson Davis, Director, over the Columbia Broadcasting System.