

ZOOLOGY

Widows and Tarantulas

There are poisonous spiders in the United States, but deaths from the bite of a black widow, scorpion or tarantula are few and far between. Black widows are the most widespread.

BY BARBARA TUFTY

See Front Cover

► NEXT TIME you are bitten by a tarantula, do not be frightened. He most likely will not kill you.

Although stout curved fangs can bite deep into your skin and inject a dose of venom, the bite is not deadly. All species in the United States are harmless to man.

Tarantulas can even make nice pets, if you happen to fancy that kind of pet, states Dr. Willis J. Gertsch, curator of the American Museum of Natural History's department of insects and spiders, and author of "American Spiders."

Usually all brown in color, the tarantula's powerful body is covered with long hairs that transmit a delicate sense of touch.

Tarantulas are not belligerent, Dr. Gertsch points out. They attack only when frightened or severely goaded. They will allow themselves to be picked up, gently handled and petted, without biting.

Native tarantulas live such hide-and-go-seek lives they often do not have the chance to bite a man. Only in the fall of the year, Dr. Gertsch explains, are they seen in any numbers, and those are males wandering in search of females.

Venom Kills Insects

Venom from the thorn-like fangs of these large hairy spiders easily subdues cold-blooded victims such as insects, lizards and snakes. Warm-blooded animals, however, most often suffer only local pain and irritation from its bite, and are not killed, unless the victim is a mouse or bird small enough to be overcome by the spider.

Studies of the indigenous tarantula show that when he does bite man, little more takes place than a breaking of the skin. Considerable pain accompanies the bite, however, but disappears in about an hour.

A typical southwestern U. S. tarantula has a body about two inches long and a leg span of about six inches. Some South American relatives are three or four inches long, with a leg span of 10 inches.

Tarantulas of the U. S. Southwest also live unusually long lives for spiders. The females live as long as 20 or more years, but the males usually die after one mating season. Male and female are often indistinguishable until they become sexually mature, females at ten, males at nine.

In making a cradle for her young, this

tarantula first spins a round sheet of silk. She deposits several hundred eggs on it and covers it with a second sheet of silk, sewing the edges together to form a bag. She stands guard for six to seven weeks, as shown in the photograph on the cover of this week's SCIENCE NEWS LETTER.

The fear of death from black widow spiders is overrated, although these are the only spiders in North America considered dangerous to man, reports Dr. Gertsch, who has been associated with the New York museum for 23 years. He claims it is the only one in the United States that pays men to study spiders.

"In the whole history of this spider (black widow), the mortality of bites is the same as the mortality of rattlesnake bites in one year," Dr. Gertsch says. Or put it this way, you are as likely to die from a black widow bite as from a bolt of lightning on the 4th of July.

The neuro-toxic venom of the black widow acts upon the nervous system, producing violent pains and muscular spasms centered in the abdomen but extending to all parts of the body. If you are bitten by this jet-black fingernail-sized spider, see a

doctor immediately, Dr. Gertsch cautions. Calcium gluconate probably will be injected into the skin, and after a few hours the symptoms usually disappear.

Found in every state of the United States, in Canada and South America, these shy, sedentary creatures with poor eyesight seek dark places, debris and rock piles to build their homes. They sometimes are found in dry cellars although they are not a house spider.

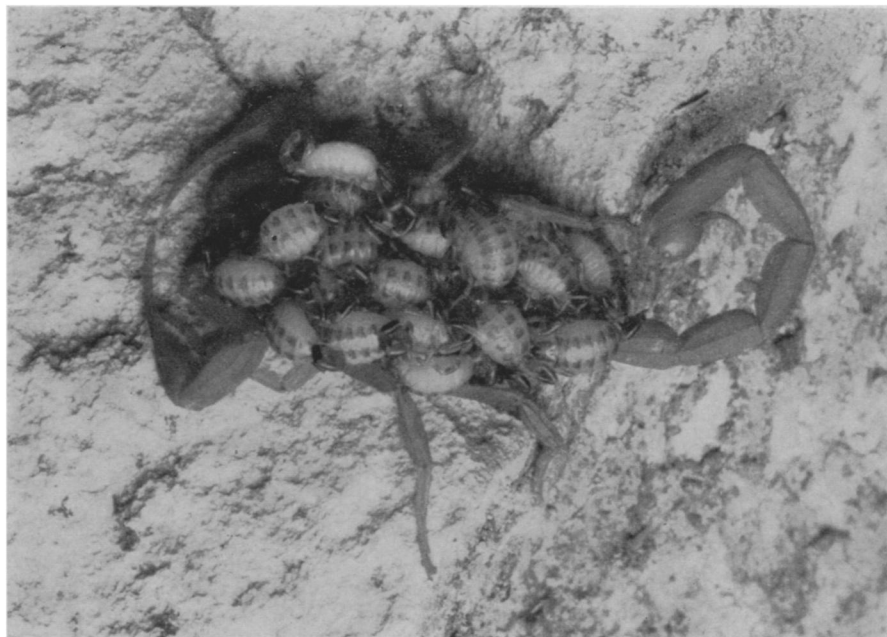
Naming of Black Widow

The black widow gets its name from the belief that females eat their males, although pairs really often live together very amicably. However, if the female happens to be hungry, she sometimes has her mate for supper, "though he is a spindly creature and hardly worth eating anyhow."

The black widow in the United States is also called the "hour glass," or the "shoe-button spider," names describing the bright red marking on the abdomen of the jet-black spider.

Three species of the black widow are found in the United States proper. The true jet-black widow, a close cousin from southern Florida called the "red-legged widow," and a third species, less gaudily marked, usually grayish or light brown.

Another member of the arachnid family, a family distinguished from insects by their



SCORPION MOTHER WITH YOUNG—The scorpion is probably the only arachnid to give birth to live young, who clamber onto their mother's back immediately after birth and remain there until the first molting takes place, usually when they are about a week old.

four pairs of legs, and the lack of antennae or wings, is the scorpion, which is thought to be the only arachnid that gives birth to live young.

This clan is the most venomous of the arachnids, although victims of scorpion sting are far more likely to die of fright than poisoning.

The earliest of all land animals, fossil scorpions have been found in Silurian rocks, 400,000,000 years old. Today's scorpion looks very much like its ancestor.

One species of scorpion has been found in fossil beds at Waterville, N. Y. The scorpion is considered by some students to be the first animal to adjust itself to land life in North America.

Right after young scorpions are born, they climb onto their mother's back and stay there until the first molting takes place, about a week or ten days after birth. The story that the infants then proceed to devour the body of their parent is the work of a rich imagination, Dr. Gertsch states. At this early age, he explains, their digestive system is not developed enough for them to devour anything.

Do Not Suicide

Another story Dr. Gertsch calls a fable is the belief that scorpions commit suicide by stinging themselves when they are helplessly cornered or surrounded by a ring of fire.

Scorpions differ from spiders in that their abdomen is elongated to form a tail terminating in a poisonous sting.

Whip scorpions are different from true scorpions because they have no tail sting and no poison glands. Some have a slender, whiplike tail and an enlarged set of head appendages, fitted with sharp spines for grasping and crushing their prey.

When the "vinegaroon," a giant whip scorpion, is disturbed, a small gland at the base of the tail produces a liquid with a strong vinegar-like odor that volatilizes and causes a smarting of the eyes when sprayed

at the small animals preying on the vinegaroon.

"The great majority of spiders," Dr. Gertsch reports, "and almost all those from the United States and other temperate areas, have a venom so feeble that its transitory effects are insignificant.

"In most instances, the bite is followed by local symptoms at the site of the punctures—burning, throbbing, and similar painful sensations, numbness, stiffness, and sometimes a very slight swelling. These symptoms usually persist for only a matter of minutes, or a few hours at the most, then disappear entirely — which indicates that the action is largely a local, mechanical one, and that the venom itself lacks harmful toxins.

"The severity of this type of injury usually does not exceed the sting of a wasp; only those individuals inordinately susceptible to the venoms of arthropods are affected in any important way."

Some spider poisons, however, do contain a toxin that causes a much more severe local and sometimes general reaction.

Science News Letter, May 5, 1956

NATURAL RESOURCES

Man-Made Lakes Provide Extra Game Fish Supply

➤ **ROD AND REEL ENTHUSIASTS** have access to an additional 1,000,000 pounds of game fish a year from man-made lakes, the U. S. Department of Interior announced.

Each of the 81 lakes created under the Federal Aid program is expected to yield at least 150 pounds of game fish per acre annually.

The 7,908 acres of lakes were created jointly by Federal and state governments at an average cost of \$1,000 to \$3,000 per acre of water. Twenty-seven states have participated in the lake-making program.

Science News Letter, May 5, 1956

GEOPHYSICS

Sun Controls Range of Cosmic Rays Detected

➤ **THE NUMBER** and kind of cosmic rays detected smashing into the earth's atmosphere are controlled by the sun.

Only when sunspots are at their lowest point in the 11-year solar cycle do scientists find the range that would be discovered in space, Dr. John A. Simpson of the University of Chicago said.

Variations in the sun's radiation, he told the National Academy of Sciences meeting, affect interplanetary space, which in turn controls the cosmic rays reaching earth.

Since sunspots are now increasing, the true range of cosmic rays will soon be unavailable for study for several years, Dr. Simpson said. The sun itself is responsible for some of the cosmic rays.

Sunspots moving across the solar surface reflect the migration of the sun's internal magnetic field, Dr. Eugene Parker, also of the University of Chicago, reported.

Churning gases in the sun's outside layer of about 60,000 miles create internal magnetic fields that float outward, producing the dark areas known as sunspots when they hit the sun's surface.

The earth's core is also churning over, and this motion creates its magnetic field, Dr. Walter M. Elsasser of the University of Utah said. He likened the movements to the swirling eddies found in the atmosphere, seen on weather maps as high and low pressure areas, on a very slow time scale.

That good conductors of electricity create their own magnetic fields was pointed out by Dr. S. Chandrasekhar of Yerkes Observatory, Williams Bay, Wis. The material in interstellar space, he said, has such a high conductivity that electric currents may be generated.

Science News Letter, May 5, 1956

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