

# The Devastating Power of Scorpions

In her attempts to establish equilibrium among the species which make up the wild fauna, Mother Nature gave each species a function which tends to fit in with that of its neighbor, all within a logic which justifies the extinction of weaker species by stronger ones. But in the case of scorpions - a common arachnid in rural Mexico - it seems that the proportions of the damage they cause go beyond the usual concert of nature's coexistence, as their only reason for existing seems to be that of inflicting its poisonous bite. This has various consequences, such as loss of live-stock, and costly investment in scientific search for antidotes. Although the theme appears to be a tragic one, Luz Elena Pereyra, journalist on scientific matters, deals with it in these pages with good humor and simplicity, just as scorpions are seen by the inhabitants of Durango and Nayarit - states of Mexico where scorpions abound.

Among the most interesting stories about scorpions in Mexico are those that come from the northern states of Durango and Nayarit where these small invertebrates are said to cause many deaths.

In these states the classic legends refer to the sad tale of the bride who falls dying from a scorpion bite in the arms of the groom before the couple reach the altar. Or there is the story of cattle from some ranch that were attacked by a group of these nocturnal outlaws who took advantage of the darkness to kill an unsuspecting being by injecting their fatal poison.

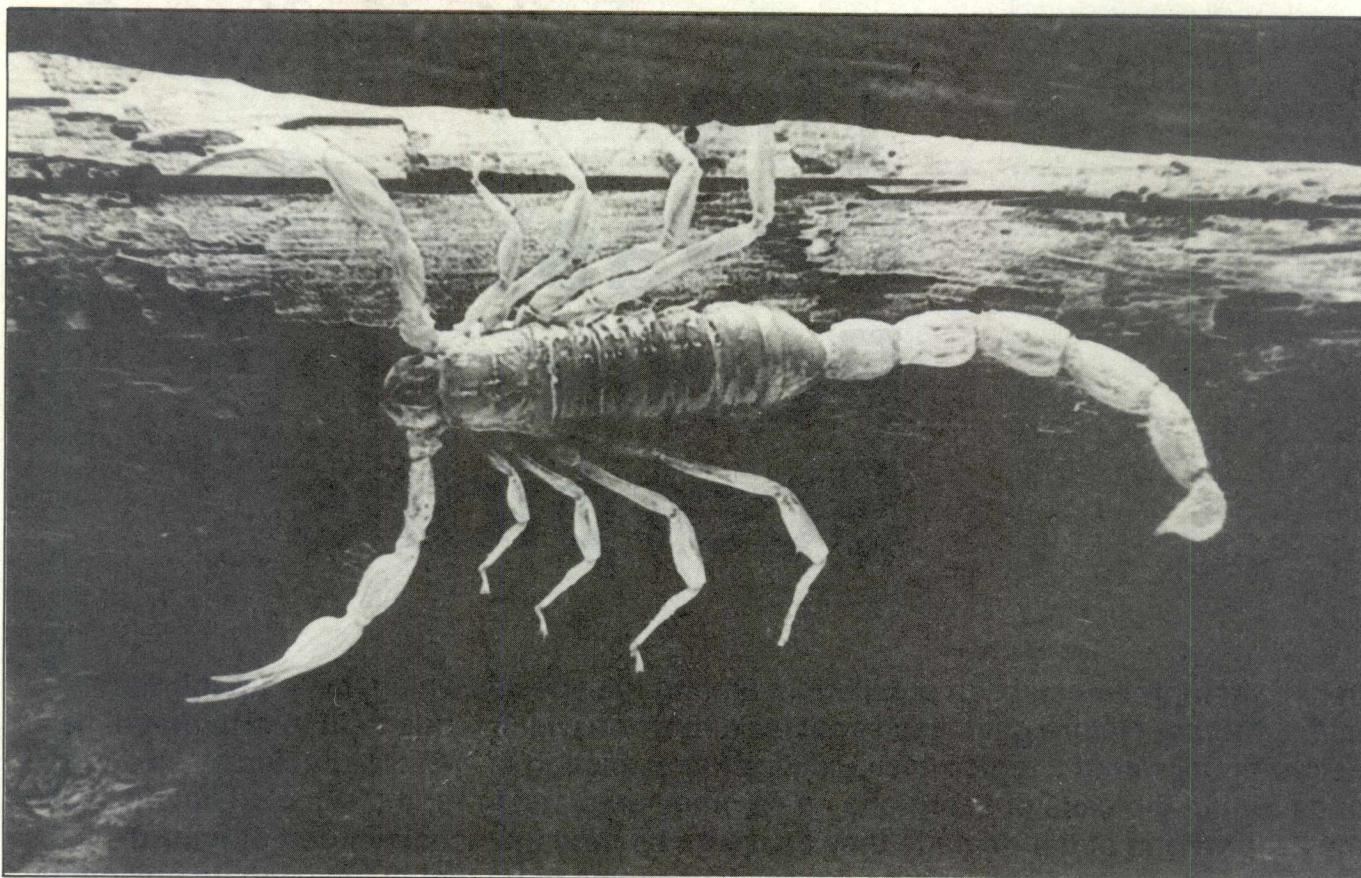
Scientific studies made in Mexico about the behavior of these predators of unsociable customs, which inhabit warm and dry climates, show that there is nothing really noteworthy except the "wedding parade". During the period of copulation the male scorpion becomes more active in his search for a female scorpion, especially in the dark. The mating takes place after a strange long and slow dance that

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lasts almost an hour. At daybreak the female, much like her spider counterpart, devours the remains of the male in a type of tragic end to the wedding night.

Much has been said about scorpions. Of the approximately 28,000 species of arachnids that exist in the world, the scorpions of Mexico and Africa are considered the most dangerous because they produce the most active poison.

The majority of poisonings by scorpion bites are caused by the species *Centruroides suffusus suffusus* (the



The poisonous scorpion from Durango. Reproduction by Alejandra Novoa

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scorpion from Durango), *Centruroides limpidus limpidus* (from Guerrero) *Centruroides limpidus tecomanus* (from Colima) and *Centruroides noxius* (from Nayarit). For many years these different species have caused a serious health problem.

Deaths due to scorpion bites have been recorded since the time of the Spanish conquest in the sixteenth century. One of these was that of Fray Jacinto de San Francisco, better known as Fray Cintos, who accompanied the conqueror Hernán Cortés. There was no antidote at that time to save his life.

It was not until 1925 that there was research done in the city of Durango (state of Durango) to "obtain a medicine that would cure people who had suffered the

consequences of a scorpion attack". This was reported by Doctor Carlos León de la Peña over fifty years ago.

The incidence of deaths due to scorpion bites (as many as four cases a month) in the middle of this century obliged public health authorities to begin a new research project to obtain an anti-scorpion serum. The National Hygiene Institute, part of the Department of General Biological and Reactive Research of the Public Health Ministry, started this project some 25 years ago using the poisons of the above mentioned species as antigens in the preparation of the anti-scorpion polyvalent serum.

#### The Serum or Antidote

It was considered that the majority of the active components of the poison are antigenic, that is, they create antibodies.

Researchers also based their studies on the premise that an antidote would be determined by the ability of the substance to inhibit the effect of any poison. Thus these researchers from the National Hygiene Institute obtained the toxic substance of the scorpion from the poisonous glands which were sold by peasants from different regions who hunted scorpions for sport.



Nelson Palomo.

Close to 80,000 glands were collected through this technique. The glands were crushed to free the poison and this liquid was put in a centrifuge to eliminate the remains of cell tissue, muscle fibers and chitin. Once this substance was sterilized and put through a lyophilic process (elimination of liquids), it became the raw material for production of the anti-scorpion serum.

With this concentrated material, tests for immunity were begun first with mice and then with horses. These latter animals have a reflex that constantly creates antibodies in an attempt to eliminate toxic substances from their bodies. The horse's plasma was collected when it was determined that this animal was producing the correct antibodies used for the serum.

This blood plasma had the scorpion poison composed of hundreds of proteins and was then quantified, bottled and put through a lyophilic process under strict quality control.

The Department of General Biological and Reactive Research of the Ministry of Public Health now distributes the serum and also determines the amount of antidote needed for any given year. At present 150 to 170 doses are produced to cover the needs of the country for the period of one year. Thus, the danger that the scorpion bite might produce serious complications for the health of the general population has been greatly reduced since Mexican doctors now have this serum to use against this type of poisonings. ■