 資 料

Poisonous Snakes of Brazil¹⁾

BY

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With preliminary greetings to the many friends I have made during my most pleasant stay in this wonderful country as well as to all my distinguished Japanese colleagues in the fields of general and applied biology and medicine including tropical medicine and public health, may I caution everybody against the impression one gets from reading those phantasmic stories on the wonders of the warm countries in the Western World as written particularly in the course of the 17th and 18th centuries by some European travellers who were rather seeking easy sensationalism than the promotion of truth, may I caution you all against the widespread impression that snakes are to be found everywhere in our lands even on the streets of our rapidly expanding cities, our forests in particular being crowded with venomous reptiles.

As a matter of fact, veneniferous serpents are mostly encountered in those open areas which have been put under extensive cultivation. The reason for this is because, in the jungle, serpents are apt to meet many predatory stronger animals, such as birds (particularly hawks) and animals (such as skunks) that feed on them, whilst in the agricultural fields not only those enemies of theirs become much scarcer but vipers are likely to find a readier, more abundant food supply on which to survive and multiply as represented by all sorts of rodents (rats, mice and moles, for instance) which themselves feed on cereals and vegetables. Thus the work of man rather than the work of nature is apt to increase the ophidic problem.

In the light of this perfunctory explanation it is easy to understand why the veneniferous snakes population seems to be on increase in the southern section of Brazil whose soil is under widespread cultivation. In view of the large numbers of farmers, as counted by millions, particularly of Brazilian origin or of Italian, Portuguese, Spanish, Japanese, German or Polish extraction, the chances are frequent, in the course of their ground tilling activities, for them to find by accident many specimens of vipers. And the very success of my own Institute, the world famous "Instituto Butantan" of S. Paulo, lies in the unique system we have been applying from the beginning of our scientific activities, in order to secure live serpents as well as all sorts of parasites and animals having medical interest. Our system consists of inducing farmers not to kill those animals but to catch them alive for which we provide the apiculturists with lassos, boxes and free transportation. Following receipt at the Institute, these animals are scientifically classified and their senders or collectors receive in exchange, and free of any charge, all kinds of serums, antitoxins, vaccines and bacterins as produced in our own laboratories. By this interesting mechanism not only is the interest of science promoted but the health of our immigrants is definitely kept under control and efficiently defended.

With this introducing remark I must say now that, in the particular case of Brazil, out of some 220 species of serpents thus far described, only 30 forms are venomous. In this number are included 12 coral snakes, all of the proteroglyphodont type, that is, those usually red-coloured serpents having anterior fixed fangs, small mouth opening and which are not inclined to bite.

Out of the remaining 18 species, all pit-vipers and so included in the solenotodont group, the majority are considered rare and so represent no medical or public health problem. Really dangerous are the Cascavel (*Crotalus terrificus*), the Caissaca (*Bothrops atrox*), the Jararacu (*B. jararacu*), the Urutu (*B. alternata*) and the Jararacussu (*B. jararacussu*).

1) 本稿は Prof. Amaral が 1958 年 12 月来朝されたさいの NHK 放送原稿を佐々学が編集したものである。

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The Cascavel found throughout all of the Latin American countries (with the exception of Chile) has the strongest venom of all snakes in the world, although the amount of poison it yields is very small indeed, thus showing how nature is wise. The Caissaca, although in general living in different sites, has about the same distribution as the cascavel, but is found particularly in the banana plantations of the Cariblean region from Mexico to Colombia or on the Brazilian island of Marajo, at the very mouth of the Amazon river at the end of its flood period, that viper being pushed away from its hiding grounds by the impetuous course of the water. The Jararacu, being confined to the section around the Southern Tropic, is the most abundant of our vipers in some agricultural fields, particularly in the States of Parana and Santa Catarina (and in the States of S. Paulo and Rio de Janeiro as well) where it is responsible for the majority of the reported ophidic accidents. The Urutu prefers rather dry, high and rocky places in which to live especially from the temperate, subtropical section of Brazil (including S. Paulo) to Uruguay, Paraguay and Argentina. Finally, the Jararacussu, although quite widespread in our territory, is mostly confined to warm sections and lives in marshes, lagoons and river banks where it finds the sort of food it relishes.

Although vital statistics cannot be expected to be complete and accurate in those huge and undeveloped countries like Brazil or India, Mexico or Colombia, we have found that at least in the open sections of Brazil the number of ophidic accidents (so-called snake-bites) averages some 12,000 cases a year. Without specific treatment as was the case until early in this century—the death incidence was about 20 %, and it has

now decreased to 2 or 3 % only, death occurring particularly in those cases in which antivenies are given too late to be of any avail.

Among the non-venomous species the only really noteworthy is the Anaconda (*Eunectes murinus*), of the Boidae family. This is by far the largest snakes of the world. According to reliable measurements, it reaches the length of some 14 meters (40 feet) with a diameter of 0.80 m. (nearly 3 feet), its circumference (girth), therefore, being 2 meters and half, that is, over 8 feet. It lives in the big rivers, deep in the jungle areas, especially in the Amazon and Parana basins.

The last but not the least is the Bush-master (*Lachesis muta*), called “Surucucu” in Brazil. Although it is by far the world’s largest viper, as it may reach 3.60 m (nearly 12 feet) in total length and excretes up to 3 ml (about 1 g, dry) of venom at a bite, it represents no public health problem as yet, since it lives but in the thickest sections of the South American tropical jungle, where civilized men usually do not dare entering.

In conclusion, permit me to say that I had for many a year cherished the idea of visiting this country some day, so much did I admire Japan for her deeds, for her energy and ambition, for her spirit of enterprise, for her economic and cultural achievements. Now that my dream has come true I must confess that, for all I have seen, for the warm reception I have met with everywhere, I have come to fall in love with her and only expect to render my Nipponese friends any service and assistance that may be in my power in Brazil, that huge mysterious country lying on the opposite side of earth.