

pared, in 1896, the first antivenom serum that has been used for the treatment of human envenomations by cobra bite and to have largely promoted the use of antivenom *sérum-thérapie*.

Calmette, A. (1894a) *Ann. Inst. Pasteur* **8**, 275–291.

Calmette, A. (1894b) *C. R. Soc. Biol.* **46**, 120–124.

Phisalix, C. and Bertrand, G. (1894) *C. R. Soc. Biol.* **46**, 111–113.

Venomous snake systematics: implications for snakebite treatment and toxinology. W. Wüster (School of Biological Sciences, University of Wales, Bangor, Gwynedd LL57 2UW, U.K.).

Many of the most medically important venomous snakes are part of complex groups of often very similar species. The systematics of many such complexes, and the definition and identification of the individual species, are the subject of considerable debate. Venom composition can vary considerably even between closely related species; as a result, a sound and explicit taxonomic framework is of great importance for toxinological and clinical research and the production and use of antivenoms. Using the Asiatic cobras (*Naja naja* species complex) as an example, I explore the implications of taxonomic developments for toxinology and clinical science. Bibliographic research suggests that greater mutual awareness, communication and collaboration between herpetological systematists and biomedical researchers would be beneficial.

New epidemiological aspects of scorpionism. M. Goyffon (Muséum National d'Histoire Naturelle, 57 Rue Cuvier, 75005 Paris, France).

The scorpions, predator carnivorous animals, are generally endemic. However, some species, including dangerous ones, can develop in new territories, either step by step, or by passive transport by people. In all cases, their expansion is favoured by the abundance of accessible preys. Therefore, it is possible to observe a stability in the frequency of stings, despite attempts at descorpionization, or even an increase or a recrudescence of scorpion envenomations in suburban areas developing rapidly in an uncontrolled manner. Similar observations with some venomous snake species led us to consider the frequency of scorpion or snake envenomations as an indicator of public salubrity in suburban or urban zones.

Venomous sea creatures: significance as human health hazards. D. Mebs (Zentrum der Rechtsmedizin, University of Frankfurt, Kennedyallee 104, 60596 Frankfurt, Germany).

Venomousness is characterized by the use of a specific apparatus to apply a toxic gland product. This phenomenon is widespread among marine animal taxa. Coelenterates possess highly effective cell organelles, the nematocysts, to inject venom. Snails of the gastropod family Conidae (cone shells) have modified their radula teeth to arrow-like injecting devices. A cephalopod, the blue-ringed octopus, applies tetrodotoxin during biting. Sea snakes inject the product of their venom glands through front fangs, like elapid land snakes. Here venom is offensively used mainly for prey capture. Fish, however, have developed puncturing devices for defence. Fin spines covered with venom glands are found in lionfish, sculpins and stonefish, and caudal spines in rays. With the exception of tetrodotoxin, all venoms are protein in nature and consist of potent toxins affecting vital functions in other organisms and of enzymes exhibiting various activities. Although venoms of marine animals also have high lethal potency to humans, severe and fatal envenoming in humans is a rare event. This is in contrast to poisoning due to the ingestion of marine food such as shellfish (PSP, paralytic shellfish poisoning) or fish (ciguatera), which may easily reach epidemic proportions.

Experience of envenomation at the Marseille Poison Centre. J. Jouglard (Centre Anti-Poisons, Hôpital Salvator, 29 Boulevard Sainte Marguerite, 13009 Marseille, France).

Envenomation represents an important part of the work in a poison centre. In France, the geographic location of the Marseille Poison Centre, in the south and by the sea, means that many cases of stings and bites are collected. The groups of animals involved are numerous: ophidians (vipers), fish (weevers, scorpionfish, rays), arachnids (black widows, scorpions), insects (hymenoptera, lepidoptera), other invertebrates (medusa, sea anemone), etc. This large zoological diversity is the reason for the great variability in the history and the clinical features observed. Although it can sometimes be difficult, the management of these native causes of poisoning is part of the everyday work of the Marseille Poison Centre, with some interesting discoveries like the neurotoxicity of a localized population of *Vipera aspis* near the city of Nice (de Haro *et al.*, 1994). However, and for various reasons, exotic animals have been imported into our country for some years. Snakes, spiders and scorpions coming from all over the world are included as such special pets. The toxicity of these animals is at the origin of medical problems, both as a result of the severity of the symptoms and because of the novelty of such disorders in our country.

Haro, L. de *et al.* (1994) *Rev. Prat.* **8**(265), 20–23.