

In a few instances only has the cause of immunity become as well disclosed as in the one mentioned. Neither differences of organization in animals nor in the constitution of the poisonous substance generally afford any clew for interpreting an exceptional want of effect. Unaccountable is the immunity of rabbits against belladonna leaves (*Atropa belladonna*, deadly nightshade). You may feed them with belladonna for weeks without observing the least toxic symptoms. The meat of such animals, however, proves poisonous to any one who eats it, producing the same symptoms as the plant. Pigeons and various other herbivora are also to some degree safe from this poison, while in warm-blooded carnivora it causes paralysis and asphyxia. In frogs the effect is a different one, consisting of spasms. The meat of goats which had fed on hemlock has sometimes occasioned poisonous effects. Chickens are nearly hardy against nux vomica and the extremely dangerous alkaloid, strychnine, contained in it, while in the smallest amount it is a fatal poison to rodents. More remarkable yet in this respect is the immunity of *Choloepus Hoffmanni*, a kind of sloth, living on the island of Ceylon, which, when given ten grains of strychnine, was not much affected. Pigeons are possessed of high immunity from morphine, the chief alkaloid of opium, as well as from belladonna. Eight grains were required to kill a pigeon, not much less than the mortal dose for man. Cats are extremely sensitive to foxglove (*Digitalis purpurea*), which on the contrary may be given to rabbits and various birds in pretty large doses. Many kinds of fish may be killed by just a trace of *Cocculus indicus*, although their meat is not made injurious by it. Laughing gas, or nitrogen monoxide, a means used to relieve pain in light surgical operations, affects man more than any other creature; when breathed in a mixture of four parts of laughing-gas and one part of oxygen it produces a pleasant kind of intoxication together with diminished sensibility, though in animals no such effect has been observed.

The immunity of certain animals against the bite of venomous serpents is remarkable. Numerous observations have been recorded proving the polecat, hedgehog, and buzzard to be proof against the bite of the viper; it is mortal for most other animals of the same size and nearly related to them.

Immunity, however, is not limited to the relations of animals to poisons of vegetable or animal origin, but is manifested as well in conditions and processes in the healthy animal organism and in its susceptibility to diseases. The resistance offered by the living stomach of an animal to the dissolving effect of the juice secreted by the stomach itself has to be explained by immunity. A watery solution of pepsin—the digestive principle of the stomach—acidulated by muriatic acid, and thus as to composition, corresponding to the digestive juice of living animals, upon addition of pieces of the stomach of any mammal, dissolves them, forming a perfect solution. The stomach of the living healthy animal, on the contrary, does not undergo the least change by the secreted juice; it is proof against the digesting effect of its own secretion, as well as to a certain degree against various sickening external influence.

Prominent naturalists are at present occupied in inquiring for a reasonable way of interpreting the cause of sickness and the conditions of immunity from it, or the resistance offered by a sound organism. Sickness, as well as health, according to one of the prevailing theories, depends upon chemical causes, viz., on the presence and predominance of various complex substances generated in the juices and tissues of the body by unknown processes, in which bacteria may sometimes play an important part. According to another theory, the living animal cells are engaged in a continual struggle against intruding micro-organisms. Animal cells are considered as individuals similar in character to the order of *Amœbæ*, which unicellular organisms of the class of *Protozoa*. Metschnikoff found that certain cells of the animal body are endowed with