

ica, are particularly fond of cheese when inhabited by the larvæ of a very common fly. In the United States the large octopus or squid, common on the Pacific coast, offends the American palate, but the Italian, Frenchman or Portuguese eats it with avidity and considers it a delicacy. The meat is clear and white like chicken and has the flavor of crab.

The question of national tastes is an interesting one, and the contrast between those of China and America is remarkable. The objects displayed in the Chinese quarter as dainties are often repugnant to Americans. We find the Chinaman selling eggs of unknown age, especially ducks' eggs containing ducklings ready to be hatched. Shark fins—a tough, disagreeable food—are in demand, while deer horns in the velvet and lizards of various kinds are eaten. The nest of the swallow, with its embedded secretion of the mouth glands of the bird, is nearly worth its weight in gold. Trepang, the tough, impossible holothurian, is eaten, and its collection is an important industry along the Malay coast, valued at at least \$100,000 per annum.

In France the sea anemone is used as food; stuffed like peppers and boiled it calls to mind crab or crayfish. The echini of various species is also used, cooked in the shell, like an egg, and eaten with a spoon. In nearly all the old countries of Europe of the type of Spain and Italy, the poor are so poor that everything in the nature of food is utilized. Absolutely nothing is wasted and meat is rare. The writer recalls the surprise of an Italian fisherman who landed in California after a trip around the Horn, and was amazed, not at the country, but with the abundance of food. He found his countrymen eating meat twice, perhaps three times a day, when he rarely had it once a month. He saw hundreds of pounds of fish wasted, and discarded merely because the people did not care for it, when in Italy even the heads would be boiled and eaten. He saw big tunnies towed out to sea and thrown away because they were tough, when in his own land every scrap of this fish was saved. America was indeed the land of plenty to the poor of other nations.

Certain Indians consider earth worms a dainty. They are dried and rolled together into a peculiar flour. In Bahama and some of the Florida keys the conch is eaten—by far the toughest food known; more like India rubber than anything else, having to be beaten and pounded before it can be masticated or even cooked.

ODDITIES IN SELF-DEFENSE.

BY ERNEST INGERSOLL.

A certain page of my notebook contains a lot of interesting memoranda on the way in which certain small and feeble creatures are guarded against their enemies, or guard themselves, by wearing overcoats of spiny, fuzzy, or rather disagreeable textures, or by having the power to throw out from the skin, or from a special reservoir, some offensive moisture or odor.

Thus extraordinary miniatures of the skunk are found in the small, brilliantly-colored ground beetles called by the French *bombardiers*. A typical species, common in Louisiana, when pursued by its special enemy, the fierce *Calosoma*, a much larger beetle, seems at first to have no chance for escape; but suddenly a popping explosion is heard, and a blue smoke, attended by a rancid smell, is seen to proceed from the hinder extremity of the body, which immediately stops the progress of its assailant. Should the *calosoma* recover from this and renew the pursuit, a second volley again arrests its course. The bombardier can fire its artillery twenty times, if necessary, and so protect its retreat, and in most cases make sure of an escape.

Not far removed from this, in classification, is the scorpion-fly (*Panorpa*), which, in spite of the formidable-looking forceps at the tip of the abdomen, would be quite harmless were it not that it carries a long gun—the Kentucky rifle of the insect hosts. When it is disturbed, this pretty fly darts out a slender tube, takes aim at the disturber, and lets fly a drop of yellow, malodorous fluid, which will send most, if not all, of its enemies to the right-about. Many true bugs, especially those of the aquatic group Heteroptera, emit an annoying spray, as also does the larva of the saw-fly. The vile odor of the cockroach and one or two other household pests are other too familiar examples of a long list of bugs provided with this disgusting property as a means of protection against their natural enemies, that is, enemies other than man; for here, as so often elsewhere in nature, provisions and habits and instincts, highly serviceable in all other relations, may be a source of danger and harm to an animal when it comes in contact with mankind. The brutes, large and small, are disposed to avoid bad-smelling bugs, but man often seeks them on purpose to put an end to the nuisance by killing its source. This is very different from the accidental death which many such an insect has suffered in spite of its protection, under the tread, or in the careless, browsing jaws, of some creature perhaps a thousand times as large as itself, for it is a direct turning against it of its own trusted method of defense.

Many insects smell decidedly of certain herbs, and sometimes this is pleasant to our nostrils, though evidently disagreeable to others, just as mosquitoes disagree with us in respect to the aromatic pennyroyal. Insect odors are the product of essential oils; and the secretion exudes so plentifully from the joints in the family of oil-beetles, and is so corrosive, that it can be used in medicine as a substitute for the evil-smelling cantharides in making blistering preparations. Is it not fair to suppose that when an animal detects the odor of these corrosive insects, it avoids them for fear of their burning taste and that thus many oil-beetles are saved from an accidental as well as from intentional destruction? And as a further measure of safety, most of them are conspicuously colored, as though for the express purpose of advertising their harmfulness, just as we hoist a red or yellow flag over the door of a house where there is contagious disease.

This endowment is widely distributed and powerful among insects. The ladybird, for instance, has been recommended for the toothache, because its secretion furnishes a powerful counter-irritant; and in colonial times in New Orleans, says Von Reizenstein, the disgusting darkling beetle (*Blaps*) was in vogue as "an old woman's remedy" for chronic ulcers, when applied with cypress oil.

Here, as elsewhere, the kind of foes against which insects guard themselves must be considered, and, as has been said, man must be left out of account. The principal enemies of insects are other insects, birds, and some small mammals. A whole order of mammals, the Insectivores, subsists altogether upon them, and these seem irresistible; but the higher mammals will often refuse certain kinds. On the other hand, dogs seem furious to put to death certain evil-smelling ones, as cockroaches, without wanting to eat them, so here the odor defensive against most foes excites the destructive enmity of a few highly powerful ones.

Turning to the other extreme, the various fuzzy or malodorous exudations of caterpillars and other larvæ are often meant to repel parasites, such as ichneumons, etc.—a matter of the highest importance in insect life.

Birds destroy a vast number of insects, but it is unquestionable that large numbers are quite uneatable by birds, and safe from them, though highly colored and slow of flight, because of the nauseous odors or fluids that impregnate their bodies. The very common fritillaries are good examples among conspicuous butterflies; and more than a thousand species of three tropical families, Heliconids, Danaids, and Acraeids, are thus protected, as also are millipeds and many other forms.

Speaking of this matter, Alfred Russell Wallace says that specimens of heliconid butterflies captured in South America by himself and Mr. Bates were less subject to vermin than those of other families, and were not attacked by insect-eating birds or dragon-flies. Although they swarmed in the forests, flying slowly and gaudily, the birds passed them in a chase after far swifter insects.

Thomas Belt's tame monkey in Nicaragua, which would greedily munch up other butterflies, would not eat heliconids. Similar testimony comes from India; and a series of experiments in an aviary, and with frogs and lizards, showed a numerous list of caterpillars that none of these animals would devour, spitting them out with every sign of disgust and of smarting when one was forced into the mouth.

An important reason why certain noxious "worms" (foliage-eating larvæ of moths) are so difficult to subdue is that most of them are covered with bristly hairs, and are not liked by most birds, apparently on that account. It is true that the list of birds which will eat the hairy caterpillars of the tent-worm, the gypsy-moth, and other like pests, has been increased by closer observation of late (though some will eat nothing but the soft inner parts), yet as a rule birds avoid these for the smooth sorts, that have no hairs to prick their throats and irritate their digestive organs. The spiny protection enjoyed by many fishes and shellfish gives material for another essay.

Nearly under this head comes the exudation of slime with which some of the lower animals cover themselves. Snails appear to have no other means of repelling an enemy that may catch them out of hiding, and the naked slugs in particular exude a white mucus over their whole skin, the viscid consistency of which, clinging to a bird's beak or a hairy animal's lips, would seem to be disagreeable enough, apart from any bad taste, to make everything leave the creature alone; as a matter of fact, slugs are eaten mainly by carnivorous members of their own race, and by some reptiles. They are safe, as a rule, from birds and mammals.

A gigantic galley-worm, or myriapod of the tropics (*Peripatus*), offers a remarkable example of this repulsive armament; for when annoyed it ejects from gland openings near the mouth quantities of a sticky, tenacious fluid that forms into a network of threads about its head. An animal whose feathers or whiskers had once become entangled by this natural bird-lime would be very careful to avoid a second experience. That it takes a very small amount of such experience to teach

young animals to recognize and let alone things they have found distasteful, is known to everybody who has watched young chicks or ducklings in a farmyard; the careful studies of Prof. Lloyd Morgan in this direction, as given in his valuable book, "Habit and Instinct," are well worth reading.

The same sort of defense is secured in various insects, especially in the Hemiptera, an order of true bugs, by the secretion of a cottony or scaly covering, as in the case of the bark lice and related forms so troublesome to fruit growers; and still others, as the frog hoppers, or froth flies, conceal their sap-sucking larvæ in the grass, or upon a leaf, beneath a frothy exudation, called by the country people "cuckoo spit" or "frog spittle." The pear and vine "slugs" are additional instances. These coverings not only hide and disguise the insects, but make them distasteful to many insectivorous animals.

One might carry this review very widely through the animal kingdom, but enough has been said to give a hint of the importance this sort of self-defense has among otherwise feeble folk.

AUTOMOBILE NOTES.

The recent automobile events of the Brescia Circuit, which were among the most successful ever held in Italy, have resulted in the founding of a new challenge cup by the Chevalier Florio, a well-known millionaire of that country and an ardent chauffeur. After having engaged two Panhard and two Mercedes cars in the Brescia Circuit, he now offers for next year's events a cup having the value of \$20,000. It is to be competed for over the same circuit as before. This offer, as might be expected, has made quite a sensation in automobile circles; it will also give an added impulse to the question of races in Italy, where the movement has already taken a good start. Chevalier Florio has also offered the sum of \$1,000 for the construction of a special automobile track in the Montechiari region. This route will be four kilometers (2.4 miles) long in a straight line and is to be "westrumited" throughout. It is intended exclusively for the kilometer and mile tests with high-speed racing cars.

The annual hill-climbing contest up Mount Ventoux, in France, which took place recently, resulted in some extraordinary performances. The course is 21.6 kilometers (13.4 miles) in length, and the total vertical rise is within 39 feet of one mile, or 5,241 feet. Rougier, on a 45-horse-power Gordon-Bennett Turcat-Méry racer, covered this distance in 21 minutes, 12 2-5 seconds, which broke the record, previously made by himself, by 3 minutes, 37 3-5 seconds. His average speed was about 40 miles an hour, which means that his machine rose vertically 4.11 feet every second, or 247 feet a minute, which is somewhat more than half the speed of the fastest passenger elevators. The average gradient of the Mount Ventoux course is eight per cent, which is considerably less than that of Mount Washington in this country, where, it will be recalled, Mr. Harry Harkness made last July on a 60-horse-power Mercedes, the remarkable time of 24 minutes 37 3-5 seconds on the 7½-mile road leading to the summit through a vertical rise of 4,600 feet. The Stanley steam car also made a record of 28 minutes, 19 3-5 seconds in the Mount Washington climb. In that at Mount Ventoux this year, two Darracq machines gained second and third places in 21:41 and 22:26 respectively, while a Hotchkiss car came in fourth in 22:49 4-5. The second Darracq car broke the previous record for lightweight cars by 2 minutes, 59 seconds, while a Darracq voiturette broke the existing record for cars of its class by 14 minutes, 10 2-5 seconds, reducing it to 29:25. A Griffon motorcycle covered the distance in 32 minutes, 20 seconds.

Probably the most scientific long-distance test of an automobile that has ever been made was that of a Packard touring car on the Grosse Point mile race track at Detroit, when the machine was driven around the oval 1,000 times without stopping the motor, in 29 hours, 53 minutes, and 37 3-5 seconds, or at an average speed of 33½ miles an hour inclusive of stops for replenishment of fuel, lighting of lamps, and changing of tires. Exclusive of these stops, the speed figures out over 35 miles an hour. The great uniformity of running is shown by the fact that out of 35 consecutive miles run at an average time of 1:46, the time of but four of these miles was as much as 1 second away from the average. This certainly is as fine a showing as any foreign car could make. That the present model Packard car performs equally well upon the road has lately been demonstrated by some San Francisco men, who drove such a machine from that city to Los Angeles in 53 hours and 40 minutes, crossing the coast range of mountains five times and fording many rivers, without the use of a single spare part, and with the renewal of but two inner tubes of their tires. No mechanic was taken along or found necessary; and, although one of the inner hub brakes gave out, thus making it necessary to use the motor as a brake in descending the steep grades, the great strain thus put upon it and the transmission did not damage either.