

much counter to one of the most widely accepted of evolutionary sub-doctrines, but facts are facts, and Mr. McAtee as a proper scientist is not the man to avoid them.

It would be impossible to discuss all of the hundreds of cases cited by Mr. McAtee, but his point is well established even by a few familiar ones, either from his own list or suggested by his examples.

The common potato beetle is often put forth as an excellent case of warning coloration. It is ill-smelling, to human noses at least, and is credited with being nasty-tasting to birds and other enemies. It is brightly marked in black and yellow, and makes no attempt at concealment. Its pestilential abundance is commonly accredited to immunity to natural enemies. Yet Mr. McAtee has found records of its presence in the stomachs of no less than 27 species of wild birds, and he states further that ducks, chickens and guinea fowl are known to feed on potato beetles. In addition to this score and a half of feathered foes, he lists snakes, frogs, toads, ten species of predacious bugs, fifteen species of beetles, robber flies, wasps, spiders and two spider-like creatures less known to the general public.

Potato Beetle's Markings No Help

"Despite all of its protective adaptations," Mr. McAtee remarks, "the Colorado potato beetle undoubtedly has its full quota of foes; its rapid increase and spread over the United States was due to enormous increase by cultivation of a favored food plant and not to lack of enemies."

Perhaps the most familiar and most widely cited case of mimicry is that of the monarch and viceroy butterflies. Both of these are fairly large, brightly marked insects with a background color of dusty red or orange. The monarch is supposed to be ill-tasting to birds. The viceroy is not, but is supposed to obtain protection by looking so much like the monarch that only a student of insects can tell them apart. Yet both monarch and viceroy pay toll in thousands to birds and other enemies—taste, color and all to the contrary notwithstanding.

Bees, ants and wasps are supposed to be recognizable as bad eating by all possible enemies, and their mimics are supposed to gain protection from their mimicry. Yet stingers and stingless alike are snapped up without discrimination by everything from birds to toads. Mr.

McAtee cites the case of one toad gorging himself on bees, in spite of the fact that they apparently used their stings inside him! And toads themselves, though clod-colored and exuding poison from some of their "warts," are in their turn eaten by snakes, skunks, and many other predators.

Monkeys Eat Spiders

Bright-colored spiders, like the common yellow-and-black orb weaver, are pointed out as good examples of "warning" coloration. Yet the most poisonous spiders, as well as the biggest, are earth-colored species that live on or close to the ground, and might therefore be called "protectively" colored. But in spite of their poison, and regardless of either "warning" or "protective" coloration, spiders get eaten. Birds, toads and wasps lead their manifold list of enemies in our temperate region, while monkeys delight in munching fat tropical spiders whenever they can catch them. And the spiders' kin-creatures, the centipedes and scorpions, fare no better. All are eaten by something or other.

Down in the sea there are brightly-colored fishes—presumably warningly colored, for some of them are poisonous. Nevertheless they get eaten. Sometimes the eater dies of the poison, more often not. And for the most part one experience will not teach him to avoid such fish in future, for the memories of fish are notoriously short: it is a common experience among anglers to have a fish bite again at a hook from which it has just succeeded in shaking itself loose. And even if a poisonous fish, or

any other poisonous creature, should make its eater sick or even kill him, of what avail is that? Its poisonousness has no "survival value" to itself, Mr. McAtee points out, for it quite obviously has not survived.

Among the higher vertebrates, perhaps there is no better example of "protection" than the skunk. It may not be able to punish its attacker with death, but it is abundantly able to make him wish he were dead. And the broad white stripe down its dark back, together with its creamy tail, have been cited over and over again as warning signals. But what happens to the poor woods-puss? The three nocturnal hunters of his own habitat that are big enough to overcome him make a meal off him at their pleasure: owls, mountain lions and bobcats are all known enemies of skunks.

Thus from lowest to highest among animals, all are meat to some other creature, and no development of protective adaptation avails to save them. Over and over again Mr. McAtee emphasizes that the only principle that seems to rule is the relative abundance of individuals. The more there are the more get eaten, but the more survive.

If there is any moral in all this, Mr. McAtee does not point it out. The only one even mistily visible would seem to be one quite unpopular at present: that it is sheer numbers of progeny, rather than cleverness in equipping them for getting along in life, that promises survival and success to a species.

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PHYSIOLOGY

Drinkers More Susceptible To Poisoning by Cleaning Fluid

DON'T use carbon tetrachloride if you have a "hang-over." This chemical, widely used for dry cleaning, cleaning machinery, as a fire extinguisher and in the treatment of hookworm disease, is often poisonous, and particularly so to persons who drink alcoholic beverages or who do not get enough calcium in their food.

Seven employees of a felt manufacturing plant, all wine drinkers, were poisoned by carbon tetrachloride when they used it in large quantities for cleaning

the felt, Dr. L. W. McGuire of Boston has reported to the American Medical Association. When the fluid was used in small amounts to remove individual spots, the men had not been affected by it. When the felt was passed through a large, warm bath of the chemical, all the men become ill and one nearly died.

Calcium lactate or calcium chloride are successful remedies for treating carbon tetrachloride poisoning, Dr. McGuire stated.

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