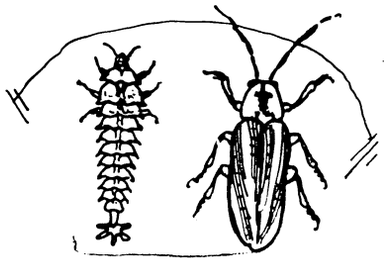
PHYSIOLOGY

NATURE RAMBLINGS
by Frank Thone



Living Lanterns

THERE is no monopoly of luminescence among animals. Indeed, the property of shining in the dark extends even to the lower plants, for luminescent bacteria are rather common. But as one rises in the two scales of evolution, animal and plant, it is much more common to find shining animals than shining plants. There are luminescent worms, jelly-fishes, sponges, insects. Backboned animals, even, are represented, by fishes, especially certain forms that live in deep water.

Most numerous of all luminescent animals are the smallest and humblest of them, the one-celled forms in the great class protozoa. These at times fill the sea with such uncountable billions that the water seems to be turned into flowing fire, and the passage of a fish, or even a chance flung stone, looks like an inverted rocket-flight. By day, these same forms color the water brown.

Their terrific swarming numbers may use up all the oxygen surplus and cause serious upsets in the life-balance of the sea. Then they disappear as suddenly as they came. They multiply with incredible swiftness when the conditions are favorable; a slight change in even one necessary life-factor, like a temperature drop or a shortage of food, causes equally swift wholesale death.

These smallest and simplest of luminescent or phosphorescent animals give off light from their whole bodies, and so do some of the largest animals of the lower life-ranks. But the phosphorescent higher animals, especially the insects and fishes, usually have special light-giving parts or organs. Everybody knows how the luminous part of the firefly's body is placed aft and underneath, leaving the rest of the insect normally dark. Deep-sea fishes have luminous spots, sometimes in long lines like the portholes of a ship, sometimes on dangling appendages extending from the body.

Why do some animals shine thus in the dark? The question can hardly be answered with any confidence for the lowermost ones. If anything, it would seem that the light would be a disadvantage to them because it makes them conspicuous and therefore presumably easier prey for their larger hungry neighbors.

But luminescence has two very distinct lines of usefulness to some of the larger animals. It helps to get food, and it helps to get mates. Some of the fishes with luminous appendages dangle them over their mouths, like fish-baits over a landing-net. Smaller fish, attracted by these shining spots, swim directly into the waiting jaws.

And the fireflies use their shining bodies as veritable love-lanterns. In some species the males only fly; the females lurk in the grass as "glow-worms." The flashes back and forth tell each where the other is, and the prospective mates work out their little romance in a telegraphic lantern code.

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ENTOMOLOGY

Migrating Butterflies Marked for Identification

MARKING butterflies for identification when recaptured later on, as migrating birds are marked by numbered aluminum bands on their legs, is a new idea being tried out by Dr. Patrick H. Smyth of Montgomery, Ala. His experiment is being watched with interest by entomologists who have long been endeavoring to obtain more definite information about the great cloud flights of apparently migrating butterflies.

Dr. Smyth himself is not an entomologist. He is a meteorologist, who served the U. S. Weather Bureau for 44 years, 25 of them in Montgomery. He began to watch the annual flights of the common yellow sulfur butterfly in the summer of 1920, and has kept it up as a hobby ever since.

It was not until a year ago, however, that the idea of putting his name and address on the wings of yellow butterflies occurred to him. In a single season there was not much chance for definite returns, but he intends to keep it up and hopes that others, whether professional scientists or serious hobbyists like himself, will adopt the idea also.

There is no great trick to it, Dr. Smyth states. He uses four compact rubber stamps, giving his name and address, with the date of capture and marking of the butterfly. Holding the insect gently against a piece of blotting paper with one hand, he presses the inked stamps lightly on each of its four wings, then lets it go.

It is not necessary, not even desirable, to use a net in capturing the butterflies, Dr. Smyth has found. At first he did net them, but discovered that they could be handled without risk of injury if one waited until they were on a flower, so intent on the business of feeding that human approach went unnoticed. Then he could pick them off with his fingers, almost as if they themselves were flowers.

The drift of migrating yellow butterflies in his locality is always toward the southeast, Dr. Smyth reports. Where they come from, and how far and fast they travel, remain mysteries which he hopes the stamped identification marks may help to unravel.

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CHEMISTRY

New Chemical Advances Include Fabrics From Fish

NEW advances in chemistry as gathered by the American Chemical Society are:

A Hungarian process makes seafood products out of freshwater fish by treating them chemically with various salts. These saturate the fish with the components of salty ocean water.

In Brazil, a special manufacturing process for producing castor oil on a large scale as a substitute for imported lubricating oil is under consideration.

Textile fibers are made out of fish skin by a new Italian method.

Soap nut, used since ancient times in India to wash woolen fabrics, silks and jewelry, contains the essential element saponin which is now employed in the manufacture of soapless shampoos.

Japan is making synthetic gasoline but at a cost of three times the market price of imported gasoline. Subsidies by the government make it possible.

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