

New Machines and Gadgets

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PLASTIC STEPLADDER consists of aluminum rungs bonded into siderails of plastic reinforced by glass fiber. The 35-pound ladder may be used as a 10-foot stepladder, a 20-foot extension ladder, or two 10-foot straight ladders.

Science News Letter, February 13, 1960

INDUSTRIAL EYE GUARD can be worn comfortably, even over prescription eyeglasses, for many hours. The wide brow rest and .080-inch-thick lens are of one-piece construction. The one-ounce guards are available with green or clear lenses.

Science News Letter, February 13, 1960

CONTAMINATION METER can be used for measurement of small traces of atmospheric contaminants such as hydrogen sulfide, sulfur dioxide, carbon dioxide, chlorine and ammonia. The instrument can measure any gas or vapor that will ionize in water, or those gases whose decomposition products on heating will ionize in water.

Science News Letter, February 13, 1960

PAINT SCRAPING GUIDE, shown in the photograph, permits faster and neater painting of door and window frames. Adjustable to three different positions, it fits over and against the painted framework



and serves as a guide for removal of excess paint with a razor blade. At the same time, the steel guide allows a certain amount of paint to remain on the glass as a weather seal between it and the frame.

Science News Letter, February 13, 1960

SHOCK ABSORBER TOOL features a new and faster way to remove and install bayonet type shock absorbers in automo-

biles. The short member of the "T"-shaped tool fits over the bayonet of the shock and holds it while the retaining nut is removed or replaced. The threaded stem end screws on the shock over the bayonet so that new shocks can be pulled up through the coil spring.

Science News Letter, February 13, 1960

PORTABLE AIR COMPRESSOR for farm and ranch use can be rolled to the job to provide up to 150 pounds per square inch of air pressure for spraying of paint and insecticides, powering of air tools, cleaning of equipment, maintenance of tires, and for a variety of other applications.

Science News Letter, February 13, 1960

NO-MORTISE HINGES allow home owners, carpenters and industrial maintenance men to eliminate difficult and time-consuming mortising in hanging all types and sizes of doors. The steel hinges feature five-knuckle, loose-pin construction, and are available in four sizes.

Science News Letter, February 13, 1960

SHELL MANICURE SET of plastic consists of a shell holder, forged cuticle scissors, a cuticle pusher, a nail cleaner and a file. Metal parts are of quality tempered steel. The set stands 4½ inches high.

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Nature Ramblings



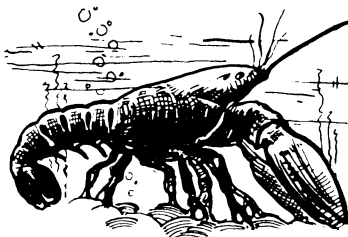
By HORACE LOFTIN

WHEN SOMETHING happens to a person's sense of balance, so that he cannot stand without toppling over, this person is "out of the running." He simply must go to bed until his balance is restored. All wild creatures whose sense of balance is impaired can expect a quick death.

From protozoa to man, almost every animal that moves about in its environment must be something of a tightrope walker. Some creatures solve the problem of staying right-side up simply by not having a "right" side. The one-celled paramecium, for example, swims in a corkscrew-shaped path, and no one side need be uppermost for the proper functioning of the animal. Some lesser animals may keep their balance merely by having the lower portion of the body heavier than the top.

Up the ladder of evolution, the jellyfish are among the first to develop true organs of equilibrium. At the margins of the jellyfish's body are hollow cells containing tiny granules. If the jellyfish tips to one

Telling Up From Down



side, the granules roll over, stimulating nerve endings which "tell" the animal it is off balance.

This kind of arrangement is found in more complicated form among many higher animals. Mollusks such as the snail have a hollow organ (the statocyst) in which a limy particle (the statolith) rests among hair-like sensory cells. When the snail's body goes up or down, the little particle tilts and indicates the body position in respect to gravity. In crustaceans, such as the shrimp (shown in the illustration), tiny

grains of sand are used as the balance particles. When the crustacean molts its old shell for a new one, the grains of sand are lost. Until new sand enters the balance organ, the molting crayfish has trouble telling up from down!

Among the backboneed animals, including man, the inner ear is the organ of equilibrium. This typically consists of three fluid-filled canals, each in the form of a semi-circle. When an animal tilts in one direction or the other, the fluid in these canals rushes forward or backward, up or down. This moving fluid sets off nerve impulses which "tell" the brain about the balance of the body.

Each of these semicircular canals also has a swelling (ampulla) containing limy particles on sensory "hairs." These act similarly to the balance organs of the more primitive animals. In fish, a new layer of limy material is placed over the balance particles each growing season, so that by counting the rings of the particles the age of the fish can be estimated.

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