• New Machines and Gadgets •

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., Washington 6, D. C. and ask for Gadget Bulletin 434. To receive this Gadget Bulletin without special request each week, remit $1.50 for one year's subscription.

COMBINATION BROOM and mop, recently patented, has what might be called a divided skirt which fits over the straw, split on one side so that the device may be used for sweeping. With the skirt closed, the combination may be used for mopping and scrubbing. The mop-cloth covering can be removed and washed.

Science News Letter, October 2, 1948

FISHING LINE drying reel, a collapsible type that fits into a pocket-size case, can be opened and used anywhere without a fixed means of support. It has a fixed blade attached to a shaft and two blades which are set to rotate around the shaft. Braking means to prevent backlash in winding is provided.

Science News Letter, October 2, 1948

CAN CRUSHER enables housewives to flatten emptied fruit and vegetable containers before disposal in the trash receptacle. This recently patented collapsible device, which may be fastened to a doorjamb, has two plates to hold the can, the upper one being movable downward with the help of a lever arm.

Science News Letter, October 2, 1948

PENICILLIN can be inhaled in dry powder form by means of the transparent plastic device shown in the picture. There is also an interchangeable, dual-opening attachment to permit inhalation through the nose. Penicillin powder is supplied in sealed, one-dose cartridges.

Science News Letter, October 2, 1948

MASTER KEY to the study of musical scales is a business-letter-sized paper chart with a piano keyboard diagram at the top and a revolving dial below which can be turned to show the major scale of various keys. Information helpful to the beginner is printed on the chart.

Science News Letter, October 2, 1948

EXPOSURES OF MICROFILM are automatically timed by an electronic device that takes account of the light and the condition of the record being photographed for use or preservation. The exposure is prolonged until enough light has reached the film to give the proper exposure.

Science News Letter, October 2, 1948

ELECTRICAL RECEPTACLE, a locking plug-in type which children can not short circuit with wires or pins, is easily removed by a slight turning movement but can not be disengaged by a direct pull on the electric cord. This recently patented device has a contact spring fixed midway between the opposite ends of its base.

Science News Letter, October 2, 1948

• Nature Ramblings *by Frank Thone* •

➤ WINTER imposes a double strain on plants' survival capacities. Cold we think of readily enough; it is after all the most obvious thing about winter. To survive cold, plants must either keep their temperature above the freezing point of water, or they must prepare to endure freezing. More than that, they must be able either to prevent or to endure the repeated formation and thawing of ice crystals in their survival-organs, because every time water enters or leaves the ice-crystal state it expands powerfully, with resultant tearing effect on the tissues.

The other strain imposed by winter is that of drought. Exposed parts of plants must stand the buffeting of winds that are often very dry, and that will suck out every molecule of water the plant tissues release. In the West especially this is often a cause of great anxiety to winter-wheat growers. It is also one of the reasons why relatively little orchard planting is done in the Great Plains area.

In general, plants do not "keep warm under a blanket of snow and dry leaves,"

Survival in Winter

kindergarten rhymes to the contrary notwithstanding. Plant buds at ground level, rosette plants just above it, rhizomes and other storage-and-survival organs below ground, all become pretty cold when zero weather comes—almost as cold as the upper air. One thing the snow-and-leaf covering does for them, however, is slow down temperature changes and minimize their scope. Once cold, they stay cold, escaping the dangerous freeze-thaw-freeze fluctuations that would otherwise be imposed by the weather. The cover also prevents most of the dessication that would otherwise take place.

More important even than ground cover is the state of the plant juices themselves. In survival-organs, whether buds or seeds, moisture does not exist in the thin, sappy state familiar in the softer summer condition of the plants. During the autumnal process of maturing or "hardening," much of the water goes out, leaving the complex solutions of sugars, proteins and mucilage-like substances much denser. And as any first-year chemistry student will tell you, the denser such solutions are the harder they are to freeze.

Fuzzy or varnish-like coverings on buds of woody plants are much more useful in checking evaporation from the little knots of leaf- and flower-beginnings within than they are in keeping them warm. They are also useful in preventing the intrusion of moisture during the winter rainstorms that subsequently freeze into glaze ice, an especially trying form of winter stress on plants.

Science News Letter, October 2, 1948