

the larvae and butterflies in all stages, from early in the season until late in autumn; in fact, the butterflies are at this moment engaged in laying their eggs. Their ravages, happily, are not at their maximum during the early stages of the plant, and a good deal may be done by destroying the insects at this time."

Hellebore and other poisons are hardly eligible in connection with the cabbage plant, however effective in killing the caterpillars. Hot water or brine at a temperature sufficient to kill the caterpillars but not injure the cabbages is suggested. But here, again, we have most to depend on a friendly little parasite to whose performances reference will be made presently. *Pieris rapae* has relatives on this side of the Atlantic, in two native butterflies (*Pieris casta* or *oleracea* and *Pieris protodice*), but they are rare and practically innocuous.

The Zebra Caterpillar (*Mamestra picta*) also attacks the cabbage. It is not very common here. The caterpillar and its moth, one of the night-flying species, are shown with other illustrations. (See Fig. 27.)

The Cabbage Plusia (*Plusia brassicae*) turns into a moth and feeds freely on the cabbage and cauliflower. The remedies fatal to the cabbage butterfly would also destroy the other above-mentioned cabbage plant enemies. (See Fig. 28.)

Of the Cut-worm (see Fig. 29) which attacks the cabbage, Mr. Bethune says:—

"The cabbage plant, in its young stages, is very liable to the attacks of cut-worms. Every gardener is familiar with the annoyance, after he has set his plants out, of finding them in the morning cut down and dead.

"This is the work of a caterpillar that hides under rubbish in the daytime, and comes out only at night. It divides the stem of the cabbage, pulls down the foliage, and feeds upon it during the night."

For this pest Mr. Bethune suggests the following remedies. He says:—

"One remedy is to dig around the plants that have been cut, bring up the insect and kill it. Another of the best remedies is to wrap a piece of stout paper around the stem of the plant when setting it out; place it a short distance below the surface of the ground, and a short distance above, so as not to interfere with either the root or leaves of the plant, and it will be found a pretty good protection against the cut-worm. Sometimes soot is put about the stem just on the surface of the ground, sometimes ashes, and sometimes salt. If the paper is used it will be found that by the time it becomes soft and useless, the plant is beyond the stage at which the worm is harmful. These cut-worms attack vegetation of all kinds, and are especially troublesome to young plants."

The Harlequin Cabbage Bug (*Strachia histrio-nica* (see Fig. 30), while a great annoyance to farmers in the States, is little known in Ontario.—*Ontario Agricultural Commission*.

HEALTH ON FARMS.

Farmers are wont to think that miasm is mostly confined to cities and large villages, and that country air is pure, and farm-houses necessarily healthful; but whoever has carefully inspected the premises of the average farmer has found abundant occasion for the low fevers which are the scourge of the country as well as the city. In the first place, all farmers should look well to their cellars. In too many of them will be found rotten apples, cabbages, turnips, onions, etc. In some will be found old brine, with pieces of decayed meat, sending forth an odour, when the cover of the barrel is taken off, vile enough to wrench the stomach of a pig. In others there will be musty cider barrels, possibly vinegar casks, in which the vinegar has passed on to the putrefactive stage, disseminating the spores of decay

and death, not only through the upper part of the house, but even escaping through the cellar windows and polluting the out-door air.

Decaying wood generates one of the most subtle of poisons, because the odour is not particularly offensive. Rotten timber in the cellars and mouldy wood and chips in the wood-house fill the air with spores, which, breathed by a person in the full vigour of health, may be thrown off with impunity; but inhaled by one whose blood is low may find a congenial seed-bed and generate disease. Under the cider and vinegar barrels, and around potato bins, may often be found old timbers and boards that are full of dry rot, ready to propagate itself wherever the rotted particles may find a lodgment. In the well, also, rotten wood is a subtle poison, more dangerous than a decomposing toad, as the latter makes his presence known, while few tastes are so keen as to detect the presence of decaying wood.

Probably the most prolific source of disease around our farm houses is the cesspool into which pass the kitchen and chamber slops. In the cities and large villages these are carried off in the sewers, but seldom does any farm-house have any system of sewerage. The slops are too often thrown out of the kitchen door, and left to generate vile odours on the surface of the ground. To keep the air of the cellar and around the house pure and sweet, we have never found anything more economical, pleasant and efficacious than a free sprinkling, as occasion may demand, of dry, air-slacked lime. Chloride of lime is a great absorbent of vile odours, but this is itself offensive to most olfactory nerves, and is also quite expensive. Common lime is cheap, and if scattered freely in the cellar and wherever there are impurities, will render the air sweet and wholesome, even in the most decomposing dog-days.—*Country Gentleman*.

THE VALUE OF OATS.

The better farm economy and the feeding value of crops are understood, the more oats will be appreciated, and the larger will be their consumption upon the farm. The claim is frequently made that they are not profitable as compared with corn, and hence, though possessing merit, they must always take a secondary place. Let us compare the cost of producing an acre of oats, and their value with corn.

It is estimated that four dollars per acre will cover the cost of ploughing, sowing, harvesting and stacking an acre of oats, including seed.

The straw, if valued by the amount of proteine and fat it contains, is worth by the pound more than one-half good meadow hay, or one-third that of corn. When corn is worth twenty-five cents per bushel, oat straw is worth three dollars per ton; or if the product per acre of oat straw be one ton, its equivalent in corn is twelve bushels. The feeding value of oats by the pound is determined by the proteine about twenty per cent. above corn; this places the value of a bushel of oats at about two-thirds that of a bushel of corn. If a crop of corn be thirty-six bushels per acre, it will require the oat field to produce one ton of straw and thirty-six bushels to make an equivalent in feeding value. If the product of corn be sixty bushels per acre, it will require one ton of straw and seventy-two bushels of oats on an acre to make its feeding equivalent. These are, however, simply theoretical values, measured by proteine; practically, the oats and straw are worth more than the corn, because they will be better masticated and they furnish more bulk.

Again, there is a difference in the cost of production in favour of the oats amounting to nearly three dollars per acre, if the oats be fed in

the sheaf; so that upon an average, if the number of bushels of corn and oats in two fields be the same, the greater profit for feeding to cattle is in the oats. This supposed the oats to be cut early, and fed in the sheaf; and it makes no allowance for the corn stalks, for which the oat-field makes full compensation by allowing the farmer to plough in a crop of rye for fall pasture.—*Prof. Knapp, in Iowa Homestead*.

HUNGARIAN GRASS.

A large crop of good fodder may be secured upon early rye or other stubble by Hungarian grass. The ground should be prepared as for oats or any other grain, well manured, and the Hungarian sown broadcast and harrowed in slightly. The seed may be sown as late as the middle of July, about one bushel per acre, but the best results are obtained from sowing in early June. If it is desired to have green fodder for a number of weeks in autumn, the Hungarian seed may be sown at intervals of a week or so for upwards of six weeks. The ripe heads of this grass contain a large number of hard and sharp awns or bristles which are irritating to the stomach of animals, especially horses. This trouble can be avoided by cutting the crop soon after the heads mature, and before the awns have grown to full length and become hard. This grass when cured is equal in feeding value to good hay. If there is a demand for late fodder, it would be well to sow some Hungarian during the present month.—*American Agriculturist*.

THE MANURE HEAP.

The mine of wealth to a farmer is his manure heap. Upon his ability to get a large one depends his profits, to a great extent. An exchange gives the following practical advice to farmers: Manure should be forked over occasionally to make it fine. If it is heating, then muck or loam should be mixed with it to absorb the ammonia which is formed during the process of decomposition. Sprinkling the manure pile with ground plaster is advisable. The plaster will absorb any ammonia which escapes from the pile, and save it for the use of growing plants. Ammonia is too valuable an element of plant food to allow it to be wasted. Again, upon some lands plaster is an excellent fertilizer. A great deal of material to add to the heap could often be got together, and the heap made to grow in size considerably.

PRESERVING FENCE POSTS.

Mr. Parker Earle, the well-known horticulturist, writes to the *Chicago Times*: "In building a fence around our young orchard, several years ago, we tried many plans for preserving the posts. Having occasion to remove the fence this winter, we noted the condition of the posts as follows: Those set with no preparation were decayed an inch or more in thickness; those coated with a thick wash of lime were better preserved, but were quite seriously attacked by worms; those posts coated with hot tar were as perfectly sound as when first put in the ground; those painted with petroleum and kerosene were equally sound, and as good as new. In future we shall treat all posts in the following manner before setting: Let the posts get thoroughly dry, and then, with a pan of cheap kerosene and a whitewash brush, give the lower third of the post (the part to go into the ground) two or three good applications of the oil, letting it soak in well each time. Posts so treated will not be troubled by worms or insects of any kind, but will resist decay to a remarkable degree. This we find to be the simplest, easiest, cheapest and best method of preservation."