

ploughed, either late in the fall or early in the spring, in either case burying the midge to a far greater depth than is natural for it, and consequently confining it under the soil, but by its being in a lower temperature keeping it back in the season for changing into the fly shape. In due time the fields are again ploughed, the former furrows reversed, and the midge once more exposed to the air and the heat. All those which have survived the burial (and generally it is a very large proportion) then come out in the fly shape, it may be days, or it may be weeks after the first hatch from the clover fields, and they then attack the wheat which may be within reach. This is the cause of an apparent irregularity in the visits of the plague, which often seems to come out at unexpected seasons, and to continue longer than its natural habits would lead us to expect. To such an extent are the yellow cocoons of the midge seen in the reversal and cultivation of the wheat stubbles, that the cocoons seem to follow the track of the harrow, and in the small indentations formed by its action the cocoons are seen to lie thickly, like so much drilled seed.

Well, fortunately for Canada, the midge, like all other insects of similar nature, after a time becomes affected by a parasite which destroys it; and it is now so affected throughout many districts which were only three or four years ago devastated. This parasite is now following the midge all through the Province, and we have every reliance that, in the course of God's providence, a very few years will see us free of it.

So far from the climate being so rigorous or the ground so poor in Canada as not to be able to grow fall wheat, our very best crops often occur after the severest winters, and it is moderation of winter, and not severity, that we have to dread. Our land is so adapted to the growth of wheat, so naturally fertile, and, so to say, elastic, that it always answers to a bare fallow; and if, in addition, a crop of green clover is ploughed in, a good crop of wheat, if not affected by the midge, is the certain result.

No doubt, the system of cropping land so long as it will grow crops, and then fallowing, is a bad one; but the fact of being able to farm so badly, and yet produce crops, is the best proof we can give of the fertility of the soil.

#### VECTIS.

NOTE BY ENTOMOLOGICAL EDITOR.—While we agree in the main with the foregoing remarks of "Vectis" upon the ravages of the wheat midge for many years past, and its noticeable decrease this year, we regret that we are unable to coincide with his conclusions respecting the cause of the absence of the midge. We should be only too delighted if we could be sure that there are insect parasites in this country to check this fearful pest. In Europe, whence the insect has come to us, it is well known that there are several para-

sites that prevent the midge from inflicting anything approaching the amount of injury that we have too much experience of here; but, alas! these minute friends do not appear to have reached our land yet. Because we have very little trouble with the midge this year, it is jumping to a conclusion to say that we owe the relief to parasites, it is just possible that we do, but there are not sufficient data to establish it as a fact. Our own impression is—we do not advance it as a certain conclusion—that the excessive drought and heat of the previous two seasons combined with the wide-spread cultivation of the "midge-proof" varieties of wheat, has been the cause, under Providence, of our freedom from the pest this year. We very much fear—we hope we may be wrong—that we have by no means seen the last of the ravages of the wheat midge. We agree most thoroughly with the remarks of "Vectis" in condemnation of the general practice of seeding down midge-infected wheat fields with clover; as we stated in the columns of the CANADA FARMER last year, such field should be deeply ploughed in the fall, and so have its midge tenants well buried, and their transformation retarded.

#### Manures—How and When to Use Them.

The best method of using stable or barnyard manure for corn or potatoes, is to haul it fresh from the cellar in the condition in which it rests in the vaults, spread it upon the ploughed field, and harrow it in with a Geddes harrow. This is what is called "long manure," and is a form which, according to the opinions of many farmers, is unsuited to immediate use; also, it is objected, that in spreading fresh manure upon ploughed fields, and covering it only superficially with earth, much of it is lost by evaporation, or, more correctly speaking, certain volatile, gaseous constituents rise on the breeze and are wafted away. In our view, both of these notions are incorrect. The excrement of animals must undergo a kind of fermentation, or putrefactive change, before it is assimilated by plants, and it is better that this be carried forward in the field, as there it is in contact with the soil, which is greedy to absorb all the products of the chemical change. Creative power has bestowed upon dry earth prodigious absorptive capabilities. If a lump of fresh manure as large as a peck measure is placed upon a ploughed field uncovered, and allowed to ferment or decay in the open air, the absorptive powers of the earth are such that it will actually attract towards it ammoniacal and other gases, and thus rob the atmosphere of its natural volatile principles. A film of earth no thicker than the rind of an orange, placed over a lump of manure, will effectually prevent loss of manurial products under all possible circumstances. It will be agreed, then, that a harrow is equally as effective as a plough in

protecting manure in the open field. It is better to have the manure near the surface, as the rains can reach it, and dissolve the soluble salts, and by percolation carry them down to the hungry roots of plants. Long manure is not lost when deeply turned under by the plough, but the farmer does not secure the whole value of his dressing under this mode of treatment in any case, and on some soils the loss is a most serious one. In the process of soap making, it is necessary to set up a leach. Now, the farmer will not try to exhaust the tub of ashes of its potash by forcing water into the bottom and dipping the liquid off from the top. The natural percolating or exhausting process is downwards, in accordance with the laws of gravity. The soluble alkalies and salts are driven downwards, and in the case of the leach we must have a vessel ready to receive them at the bottom, and in the case of the same substances leached from manure, we must have the manure so placed that plant roots will be at hand to absorb them before they pass beyond their reach.

Manure is never so valuable as when it is fresh. It then holds in association not only all the fixed soluble substances natural to the solid excrement, but much that is of great value, found only in the liquid. It is in a condition to quickly undergo chemical change, and the gaseous, ammoniacal products secured are double those resulting from that which has been "weathered" in a heap out of doors for several months.—*Boston Journal of Chemistry.*

#### Wheat-growing Capabilities of Upper Canada.

In an article in the *Agricultural Gazette* of August 28, 1869, a very able writer, well posted in statistics, disparages the wheat-producing capabilities of North America, and especially of Canada, and after quoting various authors in confirmation of his views winds up by saying that the people in the States eat maize from necessity, not being able to procure the nobler grain, wheat!

Now, I have lived in Canada 37 years, and during that time have been intimately acquainted with the wheat-producing capabilities of every section of this Province, from Kingston to Sarnia, and northward from Lake Ontario to Cabot's Head, as well as those of very many portions of the United States, and must beg to differ most materially from the writer of the above article, and the excellent authorities whom he quotes. Canada has not, so far as the land in Canada is concerned, disappointed any reasonable practical agriculturist in regard to her wheat growing powers. I have myself a hundred times verified by actual measurement very large yields of the best wheat, often 30 to 40 and 50 bush. per acre—those yields occasionally extending over large areas. Only last year, a tenant of mine harvested and measured 374 bushels of good fall wheat per acre