already done it, again and again. For our purpose, the ancient chemists had a very good division of all matter into four elements; fire, air, earth, and water. Now by fire you separate plants into the other three elements. You are, reader, though perhaps you do not know it, somewhat of a practical chemist. Whenever you have burned a charcoal-pit, what did you do? You separated the wood into air, water, and earth.

You drove off by heat or fire the airy or volatile parts of the plant, you left its carbon, or coal; if you had burnt this, you would have left its ashes. Now these ashes are the earthy parts of plants. If you burn a green stick of wood, you drive off first its water and volatile parts, which form soot. You burn its carbon, and leave its ashes or salts. So that by simply burning, you reduce the substance or elements of plants to water, carbon, salts. All plants then, without exception contain the several substances in our list above, as water, carbon, and salts. To apply this knowledge to manure, we must say a word on the form in which some of these, which we call the elements of plants, exist in them. The sap is water; it holds dissolved in it some salts of the plant. This sap, or juice, forms a pretty large proportion of the roots, say seventy-five to eighty parts in one hundred, of potatoes, turnips, beets, &c. This may be called the water of vegetation. If we dry beet root, or any other plant, we merely drive off this water of vegetation. Now what have we left? To go back to our process of analysis, let us char the dried root. We drive off more water and volatile parts. This water did not exist as such in the plant. It existed there as hydrogen and oxygen gas. Now this word gas is a chemical term, and it means any substance in vapor, which cannot be condensed into a liquid or solid, at common temperatures. Different gases may unite, and so become solids or liquids. Steam is not gas, for it is the vapor of water, and immediately returns to the state of water, below 212 degrees. Perfect steam is invisible. So are most gases. The air we breathe is composed of two gases, oxygen and nitrogen. We do not see them; we cannot, by cooling or compression, make air take other shape than invisible air. This is the general property of gas, as distinguished from vapor or steam. Oxygen and hydrogen, in plants, exist in just the proportions to form water, but we do not know that they are united in these proportions. We have compelled them to unite, by heating the substance or root. The carbon is, by this same process, consumed, and, you know, has thus formed carbonic acid. Besides this, a portion of the carbon unites with some of the hydrogen of the plant. This forms light, inflammable air. Now you may collect this light, inflammable air, in any stagnant water where plants are decaying. Decay gives exactly the same products, as are formed in making charcoal. Decay is only slow combustion, or burning; no matter whether we char the plant or leave it to decay, we obtain exactly the same products as we did by our analysis, that is carbon and salts.

But because there is not heat enough, we leave by decay, a portion of the hydrogen and oxygen still united to the coal. A slow mouldering fire leaves products more like those of decay. Decay is a slow mouldering fire, hence the products of the decay of plants are very aptly termed mould. It is the product of a mouldering fire, that is, an imperceptible union of the oxygen of the air, with the carbon of the plant. A moon so slow that it gives out neither heat nor light, and yet it is in its results the same as if fire had actually been seen and felt. Mould contains, then, a part of the carbon, oxygen, and hydrogen, or, if you like the terms better, mould of soil consists of the water, coal, and salts of the plants. Mould is truly manure. If the mould of soil, as it has thus been defined, were separated from the earthy portions of the soils, it would deprive that soil of the power of growing crops. Here, then, we come to a broad distinction between soil and manure. The soil is the earth on which plants grow. The mould is the manure of that soil. The soil is the earthy; the mould, that is the carbon and salts, together with the elements of water, are the vegetable part of arable land. But though the earthy part, the soil, as it is usually called, acts as a support, on which plants grow, it does not play a merely mechanical part. It has a distinct, decided, and important action upon the manure. This action is chiefly chemical; and the fact that soils and manures do mutually effect the growing plant is proved by the circumstance that the first plants which grew derived their salts from the earth.

But this chemical action of soil does not belong to the present discussion. We can understand what manures are without deciding how they act. We can theorize and guess about the how of their action, when we have learned what they are. That is chiefly what the farmer wants to know. He wants to know what manure is, and what is likely to act as a manure. To these points we shall confine our present remarks. Pointing out the great principles, applicable to all manures, the nature of soils, and the manner in which they affect manures, must be left for another essay. The vegetable or manure part of soil alone is to be considered. Consider now, reader, the the great results to which our analysis has led us: that a slow, smouldering fire gives us the same products as are formed by decay; that this is only a slow, smouldering fire, and that mould, its product, is the natural manure of plants. It follows, that whatever substance produces mould, that is water, carbon, and salts, may be used instead of this natural manure. Among the salts found in mould some are volatile, and are easily dissolved by water. Others are fixed, that is, not evaporating easily, or not at all, and are insoluble in water. Now the first, or volatile and soluble, first act when used in manure. They act quick, and are quickly done. The fixed and insoluble act slower, but they last longer. The volatile act in the early stages of growth, the fixed in the later periods. The great difference in the action of manures, depends almost entirely upon the salts which they contain. These are the most important and essential. It is not so much the vegetable mould of manure which you want as the salts which it contains. This is a well settled principle. Land which has undergone the skinning process, old, worn out, and run out land, still contains a very large portion of vegetable matter: the coal or carbon of mould without its, salts. Give this worn out land salts, and you may, by these alone, bring it back not only to its first virgin freshness, but you may even, by salts alone, make it finer and richer than it was before man ever cultivated it.

Too much stress has all along been laid upon the kind of soil. Go now to "Flob," in West Cambridge, no better farms or farmers look the world through. Ask any of these practical men whether the sandy and gravelly soil of old Cambridge Common, or even of Seekonk Plain, can be made to bear as rich crops as their land! They will tell you yes. If your land will hold manure, muck it well, and it will be as good. Now, this holding of manure belongs to the subject of soils, and, throwing that out of consideration, it is found that even lands which do not hold manure, which have been worn out and exhausted by cropping, hold yet a great deal of insoluble coal of mould. They want salts, and something which will make this inert, dead vegetable matter of the soil, active. The mould is active in proportion as it is more or less dissolved by water. Mould consists of two parts; one is dissolved, though only in a slight degree, by water; the other is not dissolved by water. Some substances, however, do render mould very easily dissolved by water. Hence, if you reflect a moment on these facts, it will be seen that mould itself, being valuable in proportion to the ease with which water dissolves it, that whatever substances so enables mould to dissolve, may be added to it, and thus increase its value. Now the things which do this are the alkalies, soda potash, and ammonia. These principles being well-settled, we may enter on the consideration of each different manure. They will be valuable in proportion to the quantity and quality of salts each contains, added to the power they have of producing by their decay, substances which make their mould soluble. Now this last property, that is, the property of producing a substance which makes mould soluble, depends wholly upon the nitrogen of the manure. This nitrogen in the process of decay becomes volatile alkali or ammonia. The word ammonia will occur so often in the present discussion, that we should endeavour to fix some definite idea to it. You need not, reader, be acquainted with all its chemical properties. I suppose every man who will be likely to read these remarks, has smelled ammonia. It has been already said that it gives the peculiar pungent smell to the common smelling bottle.

This is volatile ammonia. It is always formed when animal or vegetable bodies decay.

It has been already said, and is now repeated, in order that it may never be forgotten, that ammonia is formed by the union of nitrogen and hydrogen. Hydrogen and nitrogen, two airs, nitrogen forming four-fifths of the air we breathe, let that be borne in mind, and, without going into the chemistry of ammonia further, or the mode of calculating how much ammonia a pound of nitrogen will make, it may be laid down, and must be remembered too, that every pound of nitrogen may be called two and a half pounds of sal volatile, or smelling salts of the smelling-bottle. Two and a half pounds of volatile ammonia formed from one pound of nitrogen. If, then, we can determine, as chemistry may, how much nitrogen exists or forms a part of manure, two and a half times that will be the ammonia of that manure. If, then, the vegetable part of manure is as we have said, valuable and active in proportion to its degree of being dissolved by water, then, as ammonia gives it this easy solubility, we may safely say, that the quantity of nitrogen in manure, is the measure of the value of its vegetable part. One thing must be guarded against, not to place from this view the whole of the value of manure upon its ammonia. Remember that manure consists of carbon, water, and salts. The whole are equally essential to its action. There is no eye, nor ear, nor foot, nor hand in manure, which may say to the other members, "I have no need of thee" The whole act together; but it is not to be doubted, that ammonia is the heart of manure, and keeps up the healthy circulation among the other members.

(To be continued.)

To Correspondents.—J. J. B.; your request is attended to.

CANADA FARMER.

July 31, 1847.

We have given up a large portion of our agricultural space to the Report of the Committee of the Victoria District Agricultural Society, appointed to examine into the condition of the wheat crop. Our Editorial remarks will therefore be somewhat restricted. We recommend to our readers the perusal of this Report; it is well drawn up and contains two valuable suggestions, viz., to sow wheat later than usual, and to obtain the *White Flint* variety. The evidence upon which these recommendations are made, appears to us quite satisfactory. By the way, why is it that Societies in other Districts have not appointed committees for similar examinations? The value of information obtained from each District of the Province in this way, coming to us with an air of authority, would be immensely great. Are we ever to see the day when a spirit of inquiry, of activity, of patriotic emulation, will be infused into our farmers in every part of Canada. We hope so, and we hope it is near.

The Weather—Crops, &c.—From being intensely hot, the weather within the last three or four days, has become quite cool, with occasional showers of rain. Hay, in this vicinity, was all got in in good order, during the fine hay-weather. The Wheat-harvest is nearly over and we believe is not so bad as was feared. The Wheat Fly has done considerable injury in the townships adjoining this city. We were told by a farmer of West Gwillimbury of the appearance in that neighborhood of another enemy to the wheat, viz., a worm about ½ of an inch long, which lodges itself in the upper joint of the stalk. But notwithstanding the attacks of insects and the injuries of the winter there will be, except in a few townships, a fair yield of wheat. Other crops are middling; potatoe disease is giving daily evidence of its general prevalence.

NEXT YEAR'S PROSPECTS.

The probable supplies of food for the next year is at present unknown, and cannot yet, with any thing like certainty be estimated. Not more than one third of the usual extent of land in England, has, it is believed, been planted with potatoes. Still on the failure or success of that crop much will depend. The stock of foreign grain now in the English market is very small. The stock of Home grown grain in the English market cannot be accurately ascertained; we have but one means of information: that afforded by the quantities taken to market in the 290 towns in which the official averages are taken. These have fallen off very much of late, but there is no proof that the stock in first hands are proportionably small. The following were the quantities of wheat taken to market, and the average prices during the first five months of 1846 and 1847:—

	1846.		1847.	
	Qrs.	*Price*	*Qrs*	*Price*
January ...	100,662	55s. 10d.	134,252	63s. 9d
February ...	108,984	54s. 8d.	65,746	73s. 1d
March	105,630	54s 8d.	101,556	74s. 8d
April	111,031	55s. 11d.	79,249	75s. 8d
May.....	106,185	56s. 8d.	97,431	84s. 2d

These figures do not prove that large holders are not keeping back their stocks. There is very little communication between holders of corn in first hands; and even by those between whom communication does exist, the greatest blunders as to the actual state of the supply are often committed. The grain crops throughout Europe generally promise well. A larger extent of land than in ordinary years is sown. In the United States the crop, which covers a much greater extent of surface than in any previous year, promises at least an average yield. A demand for food in Ireland equal to that of last year is not likely to occur again. The present downward tendency of prices, and the prospect of a generally good harvest do not hold out the hope that prices equal to those of last year will this year be realized.

REPORT OF THE COMMITTEE OF THE VICTORIA DISTRICT AGRICULTURAL SOCIETY, ON THE WHEAT CROP

To the Members of the Agricultural Society of the Victoria District, and all others interested.

Gentlemen:—

The Committee appointed by your Directors to report on the Prospects of the coming wheat crop—the ravages of the louce or maggot of the Hessian Fly, (commonly called the wheat insect, &c. &c.,) having given the subject their full and most serious consideration, and having made minute enquiries on the subject from ocular examination and from various sources, respectfully report, that the following facts appear to them to be fully and satisfactorily established, viz:

That a very great proportion of the wheat of this District (probably one third of the whole crop) has been destroyed by the louce or maggot of the Hessian Fly.

That the eggs of this fly are deposited on the leaf of the young wheat plant twice a year—on Fall wheat during the month of September, and on Spring wheat during the month of May, or early in June.

That the number of insects on each plant varies from two to ten, and are found near the root between the outside leaves and the stem of the plant, being of an ashy pale colour, at first with a stripe of green, and afterwards becoming a brown colour reaches what is called the Chrysalis, or by some the "flax seed state," from its resemblance to that seed.

From this Chrysalis issues the Hessian fly.

That the maggot of this fly is generally formed in the shoots and not in the main stem itself, the shoots being more tender for the insect to feed upon than the main stem.

That where there are four insects or more on the stalk it is generally eaten off and destroyed altogether—but if only one or two be found, it often happens that both stalk and grain reach maturity though perhaps not uninjured.