

infinite variety of results produced with them. Whatever it may be that is burned, only twelve elements can be found in the ash left behind, in proportions worth noticing; these elements are combined together, and their most important compounds in the ash are potash, lime, magnesia, phosphoric and sulphuric acids, and silica.

In like manner we can find in the volatile or combustible part but six elements, which are likewise united together, forming by their combination several classes of substances that are found in the products of vegetable and animal growth; four of these classes of substances, that occur in the plant, are of special importance to us; the most convenient names for these are, fibre, soluble non-nitrogenous matters, fats and albuminoids; all of these are found in the animal also, except the one first mentioned. These four classes of substances, although requiring for their separation from one another more complicated processes than are necessary in the case of the components of the ash, and even with these more difficult processes not, after all, so sharply separable, are yet no less unmistakeably different from each other, than those. There is no more danger of a good chemist's mistaking one of these substances, whether belonging to the volatile or non-volatile part, for another, than of your mistaking a sheep for a pig, or a milk-pan for a cheese.

Now some of you, either dairymen farmers, or dairymen manufacturers, in the course of your daily practice have to deal with soils, waters, amendments or manures, fodder crops or foddering materials, and milk and its manufactured products. All these classes of materials cannot be considered at this time, as was at first intended, according to the programme laid down in the beginning of the lecture, without taxing your patience altogether too severely. I will therefore begin at once with the consideration of manures.

FERTILIZERS.

Of these the most important, by far, is barn-yard manure. But every intelligent farmer knows about what his stable manure is worth; he knows, or ought to know, how much care it is worth his while to bestow upon it in order to bring its quality up to a