Johnston, Solly, &c., on Agricultural Chemistry, you will see a remarkable virtue attributed to this substance. It was supposed that plants derived their carbon from the organic matter of the soil; that the brown decaying substances called humus were directly absorbed by plants, and their carbon appropriated: it is now known that this is not the case. Mulder, about the year 1847, taught that vegetable matter, during its decay in the soil, liberated hydrogen, which in its nascent state united with nitrogen and formed ammonia; that humic and other organic acids united with ammonia, potash, &c., and that these compounds formed the chief food of plants. Mulder spoke in the strongest terms against Peruvian guano, and other artificial manures then coming into general use. Lawes, in his Rothamsted experiments, tested (and continues, I am happy to say, to test) every variety of manure known to man. In order to settle the question of the use of organic matter in the soil he applied 4000 lbs. of rice to the acre in combination with superphosphate, and again with superphosphate and alkaline salts, while in other two experiments the minerals were used with out rice. During the four years the trial lasted, rice produced no appreciable increase in the growth of the crop. Now, rice contains almost 90 0/0 of organic matter.

Again, of two plots, A and B, receiving superphosphate and alkaline salts as manures, A received in addition 1000 lbs. of cut wheat straw per acre for 12 years. The mean yield of twelve years was; A = 1901 lbs., B = 2034 lbs.

Dr. Lawes, as a practical farmer, comes to the conclusion, that if humic acid does obtain ammonia from external sources, its influence will only be perceptible when taken over considerable periods of time.

In the Woburn experiments, too, whereas the wheat dressed with mixed mineral and and ammoniacal manures produced per acre 27.3 bushels, the plot dressed with *farm yard dung* containing the same quantity of ammonia &c., fell nearly 8 bushels short. As to the barley crop, Dr. Voelcker found that 200 lbs. sulph. potash, 100 lbs. sulph. soda, 100 lbs. sulph. magnesia, 336 lbs. superphosphate, and 550 lbs. nitrate of soda, (equal to 150 lbs. of ammonia) gave 37 bushels per acre, while 6 tons of dung, estimated to contain 200 lbs. of ammonia, and made from 1400 lbs. of decorticated cotton cake; 2240 lbs. maize meal; 16,800 turnips; 2,800 lbs. wheat straw chaff as food, and 3220 lbs. of wheat straw as litter, gave only 27 bushels.

You will gather from these experiments that the two great agricultural chemists, Lawes and Voelcker, are practically indifferent to carbon.

Think a little.—Superphosphate grows turnips year after year, and as fine crops as need be. Ammonia as sulphate, or nitrogen as nitrate of soda, combined with mixed mineral manures has given Dr. Lawes' crops of wheat and barley, sometimes as much as 60 bushels per acre, and always far above the average yield of the neighbourhood, and this not for a year, or for a rotation, but for 40 years in succession. I fancy the inquiry, is organic matter, or humus, necessary to the growth of plants? can meet with only one reply, No! But a French chemist, Mr. Ville, and mind, there is no nonsense about Frenchmen of science, Mr. Ville, I say, has expressed himself very fully on the point we are considering. And he first defines the matter on which he is about to experiment: "humus, a black substance, found in heath-mould and also in farmyard dung, is soluble in a solution of caustic potash but insoluble in water. Its composition is doubtful, but it is supposed to contain carbon combined with hydrogen and and oxygen in the proportions necessary to form water."

"Humus has its origin in the actual substance of plants, which, by a kind of spontaneous decomposition, has lost a portion of its water. Many intelligent men place humus in the front rank as a fertiliser, but can give no proofs in support of their opinion. The nutrition of plants is an extremely complex affair, the *thorough* investigation of which hardly dates back 20 years. When sufficient data were wanting to explain, hypotheses and words supplied their place. Humus had the honour of serving as an explanation for everything that could not be understood."

After giving some results of experiments on land in various of France, and stating that M. Payen, M. de Mathard, as well as M. le Chevalier de Mussa, in Italy, all arrived at the same conclusion, he ends with the following pregnant remark:

"If we observe that in these experiments, in which the land was of very inferior quality, farmyard manure, containing compounds analagous to humus, proved to be much less efficacious than chemical manures, it is clear that we can, strictly speaking, do without humus and still obtain very fine crops."

What then are the real offices of this humus? First it retains water, and thus helps to keep the soil moist. If, however, we remember that the per centage, in any soil, is very small, it cannot have much power to modify the condition of the soil. Like clay, it fixes the ammonia in the soil and prevents it being filtered out by rains, giving back this ammonia to vegetation, and it has a solvent power on certain minerals, and especially on phosphate of lime and limestone.

These offices are doubtless useful in Nature's laboratory but to expend hours of labour, both of man and horse, in the farmer's laboratory is simply to buy dearly what can be procured cheaply in another form.

But to enter more into details, we are advised, in the work we are considering, to make a trench 24 feet long by 14 feet wide, on the sides of which is to rest a grating on which is to be collected grass, corn-stalks, straw, vegetable refuse of all kinds, earth, swamp-mud, &c., &c., &c. If one thing won't do, another will. To a heap of these substances a liquor, called *fermentative*, is to be added, and in three weeks, or so, the mixture is to be equal, or rather superior, in value to *poudrette*, i. e. dried human excrement! In this "ferment," changes may be made at the convenience of the compounder. For instance, it does not seem to signify whether you use mortar rubbish or soot, for as the author says, 'mortar rubbish contains the principles of soot!" Two antiseptics, lime and salt, are added to the heap to promote *fermentation*, and saltpetre is not to be bought, but manufactured on the premises by the simple, cheap and rapid process of scraping the walls of the stables, and making piles of earth and manure. Among other trifling ingredients, 100 barrels of water are to be laded, or pumped, over the compost heap; which water is to be mixed with.

Lime	2 bushels
Soot	2 "
Wood ashes	2 "
Salt	4 pounds
Crude saltpetre	2 "
Plaster (burnt, I hope)	5 bushels
Human excrement	3 barrels
Yeast! (levure)	1 "

This last, I suppose, I ought to call *leaven*, seeing that it is the juice of old heaps which have been used, and this is to start the new mass into fermentation—by contact, I presume. All right enough, I doubt not, but what I most admire is the easy manner in which the expense of labour is treated. Collecting these materials is no slight job, to be done at what our Scotch friends call "an orra time"; "In well managed operations the ordinary labour employed on the farm will be found sufficient. The farmer, in arranging the work of his servants, can always find time for them to prepare these