TABLE I.

HARVEST 1844. SUMMARY OF RESULTS.

DESCRIPTION OF THE MANURES.	Dressed corn per acre in bushels and pecks.	Total grain per acre in lbs.	Straw per acre in lbs.
	bush. pecks.	lbs.	lbs.
Pot 3. Unmanured	16 0	923	1120
Pot 2. 14 tons of farmyard manure	22 0	1276	1476
Pot 4. The ashes of 14 tons of farmyard manure	16 0	888	1104
Pot 15. Maximum produce of 9 plots with artificial mineral manures: Superphos. of lime... 350 lbs; Phos. of magnesia... 168 lbs; Phosphate of potass. 150 lbs; Silicate of potass.... 112 lbs	17 3¼	1096	1240
Pot 8. Minimum produce of 9 plots with artificial manurial manures: Superphos. of lime.. 350 lbs; Phosphate of potass. 364 lbs	16 1	980	1160
Mean of the 9 plots with art. minerals	16 3¾	1009	1155
Mean of 3 plots with minerals and 65 lbs., each, of sulphate of ammonia	21 0	1275	1423
Mean of 2 plots with minerals and 150 lbs. and 300 lbs. of rape-cake respectively	18 1¾	1078	1201
Plot 18. With complex mineral manures and 65 lbs. sulph. am. and 150 lbs. of rapecake	22 3¼	1368	1768

TABLE II.

HARVEST 1845. SELECTED RESULTS.

DESCRIPTION AND QUANTITIES OF MANURES PER ACRE.	Dressed corn per acre in bushels and pecks.	Total grain per acre in lbs.	Straw per acre in lbs.
	bush. pecks	lbs.	lbs
Section 1.			
Plot 3. No manure	23 0¾	1441	2712
" 2. 14 tons farmyard manure	32 0½	1967	3915
Section 2.			
" 5a No manure	22 2¼	1431	2684
" 5b. Top-dressed with 252 lbs. of carbonate ammonia (dissolved) at 3 times during the spring	26 3¾	1732	3599
Section 3.			
" 9 { Sulph am. 168 lbs; Muriate am. 168 " } Top dressed at 1 time	33 1¾	2131	4058
" 10 { Sulph. am. 168 "; Muriate am. 168 " } Top dressed at 4 times	31 3¼	1980	4266

the contrary, was diminished by about 2¼ lbs.: there was, also, a slight decrease in the weight of straw. (1)

Out of the 9 plots treated with mineral manures, we have in no case an increase of 2 bushels; the yield of the average of the 9 being not quite 17 bushels. On the other hand, we see that a *soupçon* of a nitrogenous manure—for 55 lbs. of sulphate of ammonia (= 13 lbs. nitrogen) is a mere pinch of snuff, and the rape-cake does not contain much nitrogen in such a small dose: probably about 8 lbs.—adds 7 bushels to the yield of an acre, surpassing the return made by the exhibition of such a heavy dressing as 14 tons of farmyard dung.

Here, I should remark that the surperphosphate of lime was made by acting upon burnt bone-dust with sulphuric acid, and was therefore free from all organic matter.

If, as I well remember, the summer of 1844 was unpropitious to the growth of wheat, it was not so with the season of the following year. The same *unmanured plot*—exhausted still more by the growth of the wheat-crop of 1844—this exhausted plot, I say, yielded in 1845, 23¾ bushels of wheat, weighing 60 lbs. the bushel, as will be seen in table II.

The plot No. 5, previously ⅔ of an acre, was this year divided into two equal portions, one of these (5a) being unmanured, and the other (5b) was dressed with carbonate of ammonia at the rate of 250 lbs. per acre: the yield by this pure but highly volatile salt alone was 4½ bushels more than on the unmanured plot. And a very remarkable, though by no means enormous increase it is, for so highly volatile a salt is not at all suited as a top-dressing to a soil like Rothamsted, where the large proportion of lime would probably mighty soon chase away the ammonia into the air. Since these trials were made, the late Augustus Voelcker found that even in the case of the *sulphate* of ammonia, a *fixed* salt, the lime so largely contained in the soil of the College farm at Cirencester rendered that manure inoperative, unless it was well harrowed into the land: if used as a top-dressing, the odour of it was perceptible with in twenty-four hours of its application.

In section 2, we see the results of plots 9 and 10, the former of which received the previous year superphosphate of lime and a trifle of sulphate of ammonia, and the latter, superphosphate of lime and silicate of potass. In 1845, to each of these plots 1½ cwt. of sulphate of ammonia, and the same weight of muriate of ammonia, were supplied. on plot 9, the salts were applied at one time, on plot 10, at 4 times. What was the consequence? The produce obtained by these salts of ammonia alone turns out to be 33⅜ bushels, in the one case, and 32 bushels in the other: ten bushels more than the produce yielded by the unmanured land! In fact, the yield of No. 9 exceeds the yield of the land that received 14 tons of dung by about 1¼ bushel, and the yield of No. 10 about equals it, More; if we take the weights of total grain instead of the measure of *dressed* corn, we find that No. 10, manured with ammonia alone, has given 364 lbs. of grain and straw together, more than the plot 2, manured with 14 tons of dung, with all its mineral and carbonaceous constituents.

It was at this last point, that the excellent Philip Pusey aimed, when, forgetting that unlimited supplies of carbonaceous matter is furnished to plants by the atmosphere, he said that "he feared the experiments of Messrs. Lawes and Gilbert would tend to excite an indifference to carbon." It *was* a difficult thing for a man of the times when nothing but bulky dressings of farmyard dung were used as manure, to *feel* that a stout man could carry on his back sufficient "mendment" to increase the yield of an acre of wheat by from ten to fifteen bushels. And I fear that, even now, we should not have to look far before we found a few thousand farmers, who not only do not *feel*, but do not *believe* in, the truth of what I have just shown to be the case. Further on, Mr. Lawes proves clearly that carbon is entirely unnecessary

(1) This is really very surprising at first sight, but when we see that these ashes, though useless for wheat, would, alone, produce a fair crop of turnips, we are forced to confess that Herr Von Lie'g was on the right road—only he missed his way. A. R. J. F.