from twenty to twenty-five bushels wheat per acre; those without, from three to five bushels per acre. There is, however, one definite experiment of the utmost importance to be tried; it is the experiment of establishing agricultural schools, and experimental farms throughout this vast and flourishing agricultural country. What is the reason why youth pant after commerce or the learned professions? It is because they require the exercise of the utmost energy of the mind, and this exercise is precisely what youth demands; the want of it drives them into all kinds of foolish excesses; for the desire for it is invincibly strong and will be gratified. Now, is it not possible to divert those energies of the mind to the successful pursuit of agriculture? The experience of other nations answers, yes; but only by a preparation of a previous suitable education of the first order. Young men generally consider a farmer as a mere machine, a plough, a cart, or a hoe, with nothing to do but what their fathers did before them. Will these ideas apply to any other industrial pursuit, or any other profession? Had they been so applied, the railroad, the steamboat, the electric telegraph, had still been unknown—as long as these ideas exist amongst them, so long will the best of our agricultural population flock to the cities, and many a fine mind be irretrievably lost.

THE FOOD OF FARM HORSES.

There is perhaps, hardly any branch of the economy of husbandry in which greater variations occur than in the feeding of farm horses. It is also not seldom, that in the necessary variation of their food great mistakes are committed. It is true that the market value, more than other circumstances, must often regulate the mixture of the food; but then how often is that food given to the horse without any accurate calculation as to its nature, and its nutritive powers. It is also certain that the horse soon feels the effects of such errors, that his altered appearance or his inability to properly perform his work, speedily warns his owner of the error he has committed; but that warning is merely a means of escaping further and needlessly incurred danger. The question of the requisite composition of the food of the horse has been carefully and laboriously pointed out by Professor Lyon Playfair, and still more recently by Mr. W. C. Spooner, in a valuable prize essay (Jour. R. A. S., vol. 9, p. 249); and in examining some of the results of their labours, we are assured that we could not, perhaps, direct the attention of our readers to a more valuable or a more practical theme. It is true that these involve some chemical details, but this is a certain advantage, since we can hardly ever rest upon a more secure foundation.

"Food," observes Mr. Spooner, "it is well known, consists of two kinds, one carboniferous and devoid of nitrogen, whose use it is to keep up the animal warmth; the other kind possessing nitrogen, and thus supplying the muscular system with the requisite nourishment The usual forms of the latter are albumen and gluten; those of the former, starch and sugar. It is essential, therefore, that the food of the horse should contain both these classes of elements. Unless the nitrogenised elements are supplied, the expenditure of muscular vigour cannot be replaced; and unless the carboniferous portion is furnished, there will not be sufficient fuel to keep up the animal temperature. We must therefore endeavour to ascertain how far the various articles of horse provender supply the essential ingredients required by the system. Now, according to Professor Johnston, and other good authorities, the following little table will represent the nutritive qualities, in 100 parts, of the various articles used for horse food:—

Articles of food.	Water.	Husk or woody fibre.	Starch gum, and sugar.	Gluten, albumen, &c.	Fatty matter.	Saline matter.
Oats	16	20	45	11	6	2.5
Beans	14	8 to 11	50	26	2 5	3
Peas	14	9	50	24	2.1	3
Indian corn	14	6	70	12	5 to 9	1.5
Barley	15	14	52	13.5	2 to 3	3 3
Meadow hay	14	30	40	7.1	2 to 5	5 to 10
Clover hay	14	25	40	9.3	3 to 5	9
Pea straw	10 to 15	25	45	12 3	1 5	4 to 6
Oat straw	12	45	35	1.3	0.8	6
Barley straw	12 to 15	0	30	1.5	...	5
Carrots	85	3	10	1.5	0 4	1½ to 2
Swedes	90	3	14	2	0 3	5
Linseed	9.2	8 to 9.2	35.2	20.3	20	6.3
Bran	13.1	13.1	2	19.3	4 7	7.3

"From the table," continues Mr. Spooner, "it will be perceived that the nutritious part of food consists of three portions—the nitrogenous or flesh making elements; the fat; and the gum, sugar and starch. In estimating the relative value of horse food let us consider separately the value of each of these kinds, and in so doing take clover hay as the standard of comparison. Clover hay then consists of—

Starch, gum, and sugar..... 40 lbs.
Fat..... 4
Albumen, &c..... 9

Making of nutritious elements 53 parts in 100. If we value these 53 lbs. at 1d. per lb., we shall find that it will bring the value of the hay to 4s. 5d per 100 lb., or £5 per ton, which is pretty nearly the truth for the best hay. It does not, however, seem fair that the starch, &c., should be valued so high as albumen, as if we seek for a larger proportion of the latter in any food we are obliged to pay a higher price for it. Let us therefore assume that the value of albumen is 50 per cent. higher than that of starch; and as fat is also a rare and costly product, and of much value in food, I shall place that at the same rate as albumen, so that estimating in this way we