light the streets and shops by the chemists' "philosophical couple?" and yet now the lighting by gas has extended from one extremity of the civilised world to the other, and poor indeed is the town, or even large village, which has not its gas manufactory. And shall the farmer be the only one who shall refuse to avail himself of benefits open to all? Is it possible that he will any longer refrain from making himself acquainted with the truths of science, that he may apply these truths with success to the cultivation of the soil? I think not, for even the few improvements introduced into the art of farming, have already been productive of immense benefit, and sufficiently show what we might expect from their more extended application.

It has been well observed by Liebig, "that from science some further improvements in agriculture are to be expected." And indeed to those who compare the present state of agriculture with that of our ancestors, the aid given by chemical and mechanical means to the amelioration and better cultivation of the soil, will be readily apparent. These improvements, and the practical skill of the British farmer, have placed him far in advance of the cultivators of the soil in any part of the world. But if he would retain the proud position he has gained, he must not in our days of *railway* progression, rest satisfied with his present superiority. He must continue to avail himself of all that science can suggest, and prudence can perform; and above all, he must see that his youthful successors are well and early instructed in the principles of science and of chemistry.

Agriculture is a science as well as an art, and must depend for its successful pursuit, not only upon the information acquired by a practical pursuit of the subject but likewise upon the knowledge of the structure, functions, and properties of vegetables; upon the knowledge of the different geological strata of different districts, of the various mineral ingredients of each of these strata, together with a thorough acquaintance with the substances required, cannot be obtained without the study of botany, geology, and chemistry.

It might be objected that the farmer has no time, engaged as he is on his farm, to study these sciences. Though these observations may have some little force, yet, even with the farmer, time might easily be found for mental improvement. If less time were spent upon noisy dogs, and dangerous guns, mental opportunities would speedily increase.

But my object is chiefly to show the necessity of educating the young agriculturist in a suitable manner, and to prove that all the objections to a study of science are equally futile.

In the education of youth destined for agriculture, botany, geology, and chemistry ought to form a prominent part; a thorough knowledge should be given of the nature of all the chemical elements which occur in the soil, in the air, in water, and in the animal and vegetable kingdoms in general; practical instructions should be given in properly and conveniently constructed laboratories, in the various methods of analyzing minerals, soils and manures; and the methods of detecting and weighing every thing removed by the crop should be perfectly known.

We often hear persons unacquainted with the proper mode of teaching chemical science, object that it is impossible to cause young persons to acquire that practical knowledge of analyses, which shall enable to ascertain *by weight* the various ingredients in crops, manures, guanos, &c. We wholly differ with these persons because we have in our laboratories practically proved the contrary. Many of our youths have performed analyses of various substances with an accuracy that would not disgrace men double their age. Many of these analyses have been already published in various journals, and give the best evidence of the advancement of these young chemical students. In confirmation of these remarks, I subjoin the following original analyses, selected from many others performed by one or two of our pupils in the Session from January to June, 1845. It must be observed, that these youths had likewise to attend to their studies of the mathematics, classics, and modern languages.

I.—*Analysis of the inorganic matter of farm-yard manure.*

	Farm Yard Manure from Kent.	Farm Yard Manure from Surrey.
Per centage of Ash	9.2	7.6
Silica	72.79	71.32
Potash	3.32	5.14
Soda	0.92	1.68
Lime	6.90	12.22
Magnesia	0.56	0.82
Common Salt	1.43	1.22
Phosphate of Iron	2.04	2.03
Phosphate of Alumina	1.53	2.54
Sulphuric Acid	1.89	1.57
Phosphoric Acid	1.58	1.27
Manganese	a trace.	
ALLEN AND GREENHILL.	99.96	99.91

II.—*Analysis of two samples of Guano.*

	Peruvian Guano.	Ichaboe Guano.
Moisture	15.50	25.50
Ammonia	12.85	9.60
Organic Matter	38.95	32.40
INORGANIC MATTER.		
Silica	1.30	.44
Potash	3.21	4.19
Soda	.48	.34
Chloride of Sodium	2.03	1.61
Lime	17.81	11.55
Magnesia	.39	.83
Phosphate of Iron	.65	.48
Sulphuric Acid	.42	1.06
Phosphoric Acid	6.38	11.83
ALLEN.	99.97	99.83

III.—*Analysis of peat and wood ashes from Farnham.*

	Peat Ashes.	Wood Ashes.
Silica	5.50	4.25
Sand	46.10	10.00
Charcoal	16.85	.35
Lime	5.35	29.05
Magnesia	.10	6.65
Potash	...	7.55
Soda	...	4.89
Chloride of Sodium	.40	.80
Chloride of Potassium	.60	...
Sulphuric Acid	3.25	3.25
Phosphoric Acid	.60	4.70
Carbonic Acid	2.50	25.00
Phosphate of Iron	...	2.50
Oxide of Iron	13.50	...
Phosphate of Alumina	...	.50
Alumina	4.40	...
Manganese	...	a trace.
ALLEN.	99.15	99.40

The proof of the possibility, therefore, of giving chemical knowledge to boys is perfect; and in addition