with a considerable portion of rain water. This discovery shows the value of experiments, even when it may be thought that those researches can hardly lead to much good. For if any chemist had been asked, if by mixing a quantity of water with urine and then putrifying it, such a process would add to the bulk of ammonia, that chemist would most unhesitatingly have answered, "No," But that it does increase the bulk of the ammonia, and that not to a small, but to a very considerable extent, is beyond dispute (*hear, hear*). Now upon the quantity of ammonia contained in farm-yard manure, its fertilising powers to a very considerable degree depend. M. Sprengel analyzed urine in three different states—1. When fresh, 100,000 parts he found to contain 205 parts of ammonia; but after putrefaction this proportion of ammonia was increased to 487 parts, or considerably more than doubled; and when watered previously, it was then found to contain, after putrefaction 1622 parts of ammonia, or nearly eight times, the quantity it did when fresh. The following are the results of his analysis:—

	Fresh.	Putrid.	Watered.
Urea,	4,000	1,000	600
Albumen	10	...	...
Mucus	190	40	30
Benzoic acid	90	250	120
Lactic acid	516	500	500
Carbonic acid	256	165	1,533
Ammonia	305	487	1,622
Potash	664	664	664
Soda	554	554	554
Silica	36	5	8
Alumina	2	...	...
Oxide of iron	4	1	...
Oxide of manganese	1	...	...
Magnesia	36	22	30
Chlorine	272	272	272
Sulphuric acid	405	338	332
Phosphoric acid	70	26	46
Acetic acid	...	1	20
Sulphuretted hydrogen	...	1	30
Insoluble earthy phosphates and carbonates	...	180	450
Water	92,624	95,444	95,481
	100,000	100,000	100,000

These experiments seem to me to bear directly upon the question of the dry and wet preparation of manure—a point so important to be well understood that I should be glad to hear the opinions of those who will follow me in this discussion upon it. The more carefully in fact that we investigate the question which is the subject of this evening's discussion, the more important does it appear, and the more numerous the sources of loss to be guarded against. For as I have elsewhere remarked—Nothing appears at sight so simple as the manufacture and collection of farm-yard dung, and yet there are endless sources of error into which the cultivator is sure to fall if he is not ever vigilant in their management. The late Mr. Francis Blakie, in his valuable little tract upon the management of farm-yard manure, dwells upon several of them; he particularly condemns the practice "of keeping the dung arising from several descriptions of animals in separate heaps or departments, and applying them to the land without intermixture. It is customary," he adds, "to keep the fattening neat cattle in yards by themselves, and the manure thus produced is of good quality, because the excrement of such cattle is richer than that of lean ones. Fattening cattle are fed with oil cake, corn, Swedish turnips, or some other richer food, and he refuse of waste of such food, thrown about the yard increases the value of the manure; it also attracts the pigs to the yard; these rout the straw and dung about, in search of grains of corn, bits of Swedish turnips, and other food, by which means the manure in the yard becomes more intimately mixed, and is proportionately increased in value. The feeding troughs and cribs should, for obvious reasons, be shifted frequently. The horse dung is usually thrown out at the stable doors, and there accumulates in large heaps. It is sometimes spread a little about but more generally not at all, unless where necessary for the convenience of ingress and egress, or perhaps to allow the water to drain away from the stable door. Horse-dung lying in such heaps very soon ferments, and heats to an excess; the centre of the heap is charred or burnt to a dry white substance, provincially termed *fire-fanged*. Dung in this state loses from 50 to 75 per cent of its value. The diligent and attentive farmer will guard against such profligate waste of property by never allowing the dung to accumulate in any considerable quantity at the stable doors. The dung from the feeding hog-sties should also be carted and spread about the store cattle yard in the same maner as the horse dung." *

I have ventured to read the remarks of Mr Blakie, because they come from a man who was a thoroughly practical farmer, and in the district in which he long excited considerable attention and exercised very great influence he did more for improving the preparation of the manure of the farm-yard than any other man in the north of Norfolk (*hear, hear*). I do not think it desirable in this discussion to attempt to exhaust the widely extending theme now before us. There are many questions regarding the econonical manufacture of manure, which can hardly be comprehended in one evening's discussion. Of this class is the enlargement of the bulk of the farm-yard compost by mixing it with peat, tanners, bark, and other slowly decomposing vegetable substances; a practice very advantageously followed in favorable localities, and easily available by the Lancashire farmers where they have access to the extensive cesspools of the manufacturers, yet the practice does not come within the reach of the majority of the farmers of England. As to mixing these substances, peat with ordinary manure, I think there are considerable doubts whether the practice has ever answered the porpose of those who have employed it. I therefore, from the causes I have assigned, venture to leave these branches of the inquiry out of this evening's discussion, and pass on to a still more important branch of the subject, viz., the enrichment of the farm-yard manure by improving the food of the live stock kept in it. This is a question peculiary interesting not only to the tenant farmers, but to the farmers' landlord. For when it is generally known amongst the landlords of England how much the quality of the manure is improved by the use of superior food, they will then see very speedily that it is the most wretched policy to discourage, or restrain, by a covenant in the lease, the exchange of straw and hay,

* These is no doubt of the superior fertilizing effect of horse dung. In an experiment with beans, in which six acres were manured with horse dung and nine with that from the cow-yard, the six yielded more beans than the nine (*Agri. Report of Essex*, vol. ii., p. 280). The same observation was made in Lincolnshire (*Sinclair's Agriculture*, p. 214). The heat produced by the fermentation of the dung of different animals has been made the subject of repeated experiment (*Farmer's Magazine*, vol. iv., p. 160). When the temperature of the air was 40 deg., that of common farm-yard dung was 70 deg.; a mixture of lime, dung, and earth, 65; and a mixture of swine and fowls' dung, 58.