COMMON CHARCOAL.—It is stated by Dr. Lee, in an agricultural address delivered in Western New York, that common charcoal is the cheapest, and therefore the best material to apply to cultivated fields for fixing and appropriating to the use of plants the large quantities of ammonia which descend in rain and snow. It will absorb 90 times its bulk of ammonia, and will give it out slowly to the vital attraction of roots of plants. The liberal application of this well known substance to the wheat fields in France, has mainly, in connection with the use of lime, added within the last ten years, 100,000,000 bushels to the annual crop of wheat grown in the kingdom. The charcoal should be sown down in May, at the rate of 75 bushels per acre, well pulverized. It would, undoubtedly, be equally useful to other kinds of grain. There are many places where other manures are not easily obtained, but where charcoal is cheap; farmers so situated would find it greatly for their interests to resort to its use.

LIQUID MANURE.

We have stated that the solid matter contained in the urine of man and animals is equal to the best guano as a fertilising agent, and that it contains all the elements that are found in guano, capable of supplying plants with either organic or inorganic food. That such is the case we are prepared to expect, when we reflect that the herbivorous animal derives its sustenance from the plants used by it as food, and that, after those substances which are required in the animal economy are separated and worked up, the remainder is expelled from the body as excrementitious matter—the urine containing the greater portion of the soluble saline and earthy salts, as well as the principle amount of nitrogenous matters—while the solid excrements are principally made up of undigested woody fibre, with a few salts and a little nitrogenous matters. All these salts having originally existed in the plant, but been separated and rearranged during their passage through the animal, they are capable of again entering the texture of the plant, ministering to its growth, and assisting as a means of perfecting its seed. Before such can be the case, however, the substances must be in a state of perfect solution in water, the roots of plants being incapable of receiving into their texture any solid matter, however minutely divided. Hence the cause of the rapid and marked benefit following the application of soluble saline manures, such as the nitrates of potash and soda; or mixed manures containing soluble salts in combination with substances which must undergo decomposition before they become soluble, and capable of ministering to the growth of plants. This fact should always be borne in mind, that no substance can enter the texture of a plant except in solution. From the above circumstances it necessarily follows that the liquid portion of the excrements must be of more value as a manure to plants than the solid portion, since the liquid excrements contain by far the largest portion of saline and nitrogenous matters, and in the only state in which they can be serviceable to plants. The composition of the urine of the cow will serve as an example to illustrate this point; at once showing the large amount of potash, soda, ammonia, phosphates, and other saline ingredients lost to the farmer who allows the urine of his cattle to run into the nearest ditch, or by finding its way into his horse pond, to become the disgusting beverage of his farm-yard stock.

The following is the composition of the urine of the cow, as given by Sprengel, and examined under three circumstances, viz., when fresh—after it has undergone putrefaction—and when allowed to putrefy with the addition of its own bulk of water.

	Fresh.	Putrid.	Putrefied with Water.
Urea	4000	1000	600
Albumen	10	—	—
Mucus	190	40	30
Benzoic Acid	90	250	120
Lactic acid	516	500	500
Carbonic acid	256	165	1533
Ammonia	205	487	1622
Potash	664	664	664
Soda	554	514	554
Silica	36	5	8
Alumina	2	—	—
Oxide of Iron	4	1	—
Oxide of magnese	1	—	—
Lime	65	2	3
Magnesia	36	22	30
Chlorine	272	272	272
Sulphuric acid	405	388	382
Phosphoric acid	70	26	46
Acetic acid	—	1	20
Sulphurated hydrogen	—	1	30
Insoluble earthy phosphates and carbonates	—	180	150
Water	92.624	95,442	95,481
	100,000	100,000	100,000

By far the largest portion of the organic constituents contained in the solid matter of the urine is the *urea*, and this also is the most important, since it contains a larger amount of nitrogen than flesh or blood,—two powerful manures. It is composed of

Oxygen	26.7
Hydrogen	6.6
Carbon	20.0
Nitrogen	46.7
	100.0

When in a state of purity, the urea exist as transparent colourless crystals of a slightly pearly lustre. It deliquesces in a moist atmosphere, but otherwise undergoes no change. Its solution in water may be exposed to the atmosphere for several months, or be heated to the boiling point without change; but when the other constituents of urine are present, it putrefies with rapidity, being almost entirely resolved into carbonate of ammonia; this change proceeds at a more or less rapid rate, depending on the temperature of the atmosphere. The carbonate of ammonia thus formed is partly held in solution in the water of the urine, and partly escapes into the air; this escape of ammonia continuing for a considerable time, the solution becoming gradually weaker and weaker until at last a very small portion of the original quantity is left. The ammonia thus generated by the decomposing urea of the urine is sensibly felt on the eyes and nose on entering a stable in the morning that has been closed during the night, and is frequently the cause of those inflamatory affections of the eyes which young horses are subject to, from its acting as a direct and constant irritant on the delicate conjunctival membrane of the eye.

When the urine is diluted with an equal bulk of water before it is allowed to putrefy, a much larger quantity of ammonia is retained in solution; thus, on referring to the analysis, we find that when the urine is allowed to putrefy alone, only 487lbs. of ammonia are found in 100,000 of urine; but when diluted with an equal bulk of water previous to fermentation, the amount of amonia is found to be 1622 pounds, or upwards of three times the quantity contained in the undiluted urine; but even this is not the whole quantity of ammonia capable of being yielded by the urea, by one-fourth;