sume five hundred pounds of barley-meal, containing about fifty-three pounds of albumenoids, it will increase in weight about 109 lbs., which animal increase will be found to contain about 78 pounds of albumenoids. Whence it follows that for every hundred pounds of albumenoids consumed, 14.7 are stored up as carcase, 21 appear in the solid dung, and 64.3 as urea, etc., in the urine. In the same way, deducting the ash constituents stored up in the animal from those originally present in the food, we get at the quantity pre-ent in the manure. And to make this the clearer by a concrete statement —for these abstract calculations are always troublesome to my mind, which is not half as well trained as it ought to be —you may study the following table:

NITROGEN STORED UP AND VOIDED FOR 100 CONSUMED.

	Stored up as increase.	Voided as solid dung.	Voided in urine.	In total manure.
Oxen	3 9	22 0	73 5	96 1
Sheep	4 3	16 7	79 0	95 7
Pigs	14 7	21 0	64 3	85 3

ASH CONSTITUENTS STORED UP AND VOIDED FOR 100 CONSUMED.

	Stored up as increase.	In total manure.
Oxen	2 3	99 7
Sheep	3 8	96 2
Pigs	4 5	85 5

How very small is the amount of nitrogen and ash stored up in the fattening animal! It seems, at first sight almost incredible. More than 95 % of the ash, in each of the three cases, finds its way into the dung, and with oxen and sheep, more than 95 % of the nitrogen too! The pig converts a larger amount into carcase; but no great things after all.

Again look at the urine. From three to four times as much nitrogen in it as in the solid dung! This proportion depends entirely on the food, however: in the case of an animal fed on hay, the nitrogen will be found to be a little in excess in the solid dung; on straw, the excess will be still greater; but if cake, corn, and roots be given, the urine will contain a large excess of nitrogen over the solid excreta From this, as cake, in fact feeding stuffs of a high class in general contain large quantities of nitrogen, we may conclude that if the food be nitrogenous and easily digested, the nitrogen in the urine will greatly preponderate; if, on the other hand, the food be poor in nitrogen and hard to digest, the nitrogen in the solid, may exceed that in the liquid, dejections.

Lime, magnesia, and phosphoric acid are chiefly found in the ash constituents of the solid dung—in the urine nearly all the potash. Where, as in Lawes' experiments, sheep were fed on hay, 95 % of the lime, 70 % of the magnesia, and 83 % of the phosphoric acid, contained in the food, were found in the solid dung, but only 3 % of the potash.

The next table gives a good idea of the general composition of the solid and liquid dejections. The sheep were eating meadow-hay; the oxen, clover-hay and oat-straw, with about eight pounds of beans (horse-beans, not haricot-beans) per day.

PERCENTAGE COMPOSITION OF SOLID AND LIQUID EXCREMENT. SHEEP FED ON HAY.

	Solid excrement.		Urine.	
	Fresh.	Dry.	Fresh.	Dry.
Water	66 2	....	85 7	....
Organic matter	30 3	89 6	8 7	61 0
Ash	3 5	10 4	5 6	39 0
Nitrogen	0 7	2 0	1 4	9 6

OXEN WITH NITROGENOUS DIET.

	Solid excrement.		Urine.	
	Fresh.	Dry.	Fresh.	Dry.
Water	80 3	....	94 1	....
Organic matter	12 3	89 7	3 7	63 0
Ash	1 4	10 3	2 2	37 0
Nitrogen	0 3	1 9	1 2	20 6

See how much less water the solid and liquid excreta of the sheep contain than those of the ox; they are of course more valuable—that is why, in the South of England, we value a folding of sheep at $18 an acre!

How rich, too, the urine is, both in nitrogen and ash. We find that in the more highly-fed oxen the dry matter of the urine contains more than 20 % of nitrogen.

The next table, and the last, I suppose, that I shall trouble you with, is given to show the average amount of nitrogen, and of phosphoric acid and potash, the only two ash constituents worth bothering ourselves about, contained in ordinary cattle-foods. In reading it, you will please to bear in mind what I have repeated more than once: nitrogen is the most costly of all plant-foods as well as of all cattle-foods; phosphoric acid and potash being present in manure, our cultivated plants can, on an ordinary farm, find their other ash-constituents in the soil, and even potash may be neglected, as far as purchased manure goes, if cattle are decently well fed. It comes to this: what is wanted on a fairly well managed farm is *nitrogen* and *phosphoric acid*.

Oilcakes, you see, yield the best manure; they are rich in nitrogen and phosphoric acid, and contain no small amount of potash. (1)

(1) A feeding bullock, in England, often has 14 lbs., of linseed cake a day, for five and six months at a stretch; the beasts are not expected to pay—the manure makes the profit on the grain crop.

MANURIAL CONSTITUENTS IN 1000 PARTS OF ORDINARY FOODS.

	Dry matter.	Nitrogen.	Potash.	Phosphoric acid.
Cotton cake (decorticated)	900	60 0	15 0?	21 2
Rape cake	900	48 6	13 2	24 0
Linseed cake	880	45 0	14 7	19 6
Cotton cake (undecorticated)	895	29 9	20 1	29 9
Linseed	905	30 0	12 8	15 4
Palm-kernel meal (English)	930	25 0	5 5	12 2
Beans	885	41 0	12 0	11 0
Peas	857	36 0	9 8	8 8
Malt Dust	905	33 0	19 5	17 2
Bran	865	22 0	14 8	32 3
Oats	870	20 6	4 6	6 2
Wheat	850	18 8	5 4	8 0
Barley	860	17 0	4 9	7 3
Maize	880	16 6	3 6	6 1
Clover hay	840	19 7	19 8	5 6
Meadow hay	857	15 5	16 8	3 8
Bean straw	840	10 0	25 9	4 1
Wheat straw	857	4 8	5 8	2 6
Barley straw	850	5 0	9 7	2 0
Oat straw	830	5 0	10 4	2 5
Potatoes	250	3 4	5 6	1 8
Mangels	115	1 9	3 9	0 7
Swedes	107	2 4	2 0	0 6
Carrots	142	1 6	3 2	1 0
Turnips	83	1 8	2 9	0 6

Beans and pease, malt-dust and bran, come next: malt-dust is terribly neglected here—I could hardly give it away at my brewery at Chambly.

A queer thing, and one that will surprise many: clover-hay yields a richer manure than barley, oats, or wheat, but meadow-hay stands below the cereals in this function.

Dung from animals eating potatoes is richer than dung from root fed animals.

Straw is, as we all know, the worst manure-yielding food, but it is worth while to notice how far superior in all points bean-haulm is to the straw of the cereals, as is pease-haulm in a minor degree.

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FROM a quotation in the *Gardeners' Monthly*, the *American Agriculturist* appears to doubt whether *Kalmia angustifolia* is poisonous to sheep. It is not often poisonous to "sheep," for the simple reason that they do not eat enough of it; but it is often poisonous to early *lambs*, as these nibble the leaves in early spring time, and it does not require much to kill them.