

specimens were in the form of a black granular mass, moist, cohering under pressure, and having a very fishy odour. A proximate analysis of these manures was first effected by exposing a weighed portion to a temperature of 200° F. till it no longer lost weight, and then calcining the residue, from which the carbonaceous residue very readily burned away. The oil in the first specimen was obtained by digesting a second portion, previously dried, with ether, so long as anything was taken up. The solution by evaporation left the oil, whose weight was deducted from the loss by ignition. The portion of oil remaining in the second sample was not determined.

	I.	II.
Animal matters and carbon.....	33.7	21.0
Oil.....	6.6	
Water.....	13.5	21.8
Earthy matters.....	56.2	57.2
	<hr/> 100.0	<hr/> 100.0

The residue of the calcination was digested with hydrochloric acid, which dissolved the phosphate of lime from the fish-bones, together with portions of lime, magnesia, alumina, and oxide of iron, derived from the shale and clay. The solution from No. 1 contained, moreover, a considerable portion of sulphate from the gypsum of the shale. Small quantities of common salt were also removed by water from the calcined residues. The dissolved phosphoric acid, lime, and magnesia were separated by precipitating the phosphoric acid in combination with peroxyd of iron, from a boiling acetic solution, and were determined according to the method of Fresenius. The nitrogen of the organic matter was estimated by the direct method of burning a portion of the dried substance with soda-lime, and weighing the disengaged ammonia-chloride of platinum. The results were as follows for a hundred parts :

	I.	II.
Phosphoric acid.....	3.40	3.99
Sulphuric acid.....	2.16	.15
Lime.....	5.90	4.44
Magnesia.....	1.20	1.15
Ammonia.....	3.76	2.60

If we calculate the value of the first specimen according to the rules already laid down, we have as follows for 100 pounds :—

Phosphoric acid, $3\frac{1}{10}$ pounds at $4\frac{1}{2}$ cents.....	\$0.153
Ammonia, $3\frac{3}{4}$ pounds at 14 cents.....	0.525
	<hr/> \$0.670

At 98 cents the 100 pounds this manure would be worth \$13.60 the ton. The sulphuric acid is of small value, corresponding to 80 pounds of plaster of Paris to the ton, and we do not take it into the calculation. The somewhat