

the other hand, the circumstance of the other ten being a residue in all cases of incineration and decomposition, makes *elements of the ashes*, an appropriate appellation. The following, are the two classes of elements :

PRINCIPAL ELEMENTS.

1. Carbon.
2. Hydrogen.
3. Nitrogen.
4. Oxygen.

ELEMENTS OF THE ASHES.

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| 5. Phosphorus. | 11. Calcium. |
| 6. Sulphur. | 12. Potassium. |
| 7. Iron. | 12. Magnesium. |
| 8. Chlorine. | 13. Fluorine. |
| 9. Sodium. | 14. Silicon. |

These are the elements of all organized bodies ; of plants as well as of animals. As whatever constitutes the elements of the food, constitutes also the elements of the organs and of the excrements ; so, we find, that the fourteen elements mentioned here, exist in all three of these different circumstances or forms.

First, in plants, which derive their food from the air and the soil. The last ten of the above fourteen elements, being found in the soil, in the form of salts. And the first four, partly in the air and partly in the soil, in the form of carbonic acid and ammonia.

Second, in the graminivora, which subsist exclusively on plants, such as hay, clover, grasses and herbs ; the constituents of which are exactly the fourteen elements here enumerated. Boussingault's analysis of oats, dried at 212° F., gives 50.7 per cent. carbon, 6.4 hydrogen, 2.2 nitrogen, 36.7 oxygen, and 4. ashes. By the analysis of Dr. Will, oat straw which is eaten readily by cattle, yielded, when dried at 212° F., 46.3 carbon, 5.68 hydrogen, 43.93 oxygen, and 4.02 ashes. These ashes, by Berthier's analysis, contained, in 100 parts, the following :

Carbonic acid.....	a trace.
Sulphuric do.	1.
Phosphoric do.	.60
Muriatic do.	6.50
Silica	55.
Lime	2.90
Oxide of iron and charcoal.....	5.
Potash and soda.....	29.

100.

Third, in the carnivora, which feed on the bodies of the graminivora ; and, therefore, consume and appropriate the same fourteen elements. The following analyses of the chief parts of the ox, which are eaten as food will exemplify this :