(2). Fat (or ether extract) is the portion of the food which is dissolved from the water-free substance by ether, benzine, gasoline, etc. It is a very important component of feeding stuffs on account of its high value for the production of fat, energy, and heat.

(3). Crude fibre is a term applied to a group of substances that are of limited value to the feeder, because not only are they largely indigestible, but what is still more important, they often render the rest of the food less digestible by protecting it from the action of digestive fluids.

(4). Ash is the inorganic portion of feeding stuffs. Some of the foods richest in protein are also rich in ash material, and are, therefore, of high manurial value. The ash is also of great importance in the food of young and growing animals, as it furnishes the constituents from which the bone is built up.

(5). Soluble carbohydrates (or nitrogen-free-extract) is that portion of the food which is dissolved by boiling it with dilute acids and alkalies. It consists mainly of starches and sugars. When taken into the system nitrogen-free-extract forms fat or is oxidized to produce heat and energy.

(6). Moisture. However dry a feeding stuff may appear, it always contains a considerable amount of moisture which can be driven out by heat. A high water content in a concentrated feeding-stuff is a decided detriment: first, because it diminishes the percentage of actual food material, and, second, because it causes the food to mould or turn sour sooner than if less moisture were present.

In addition to the chemical analysis, the samples that we collected were subjected to careful microscopic examination, so far as time permitted. The chemical analysis alone gives valuable information as to the total quantities of important food materials contained in the feeding But as will be noticed in the following tables, certain by-products stuff. vary considerably in composition, according to the character of the season, methods of the intervent etc., and unless they are decidedly abnormal in compositi. mpossible to say with any certainty whether they have been : he d or not. Since, however, foreign material can be readily s: .der the microscope, the combined chemical and microscopic examination is almost certain to detect any adulteration. It is grativing to know, on account of the importance and wide use made of these materials, that the quality of the samples in most cases examined has been found to be quite up to the average. The only adulterants we were able to detect were particles of flour, whole wheat screenings, and oat bran, which under the conditions of manufacture might be expected to be present.

The tables which we are about to examine show how great are the differences in composition between different kinds of feeding-stuffs. Take, for example, the percentage of protein in cotton seed meal and compare it with that in corn bran, or even with that of some of the oat