

are converted into some form of sugar, which enters the blood by absorption from the intestinal canal

295. A Proper Balance of Nutrition. We have now reached that part of our subject, where trouble is easily in evidence. Food products can be so compounded that a proper balance between the three elements of food nutrition may be maintained, and yet not be the correct ration for the animal we are feeding

296. Acids and Bases. The Ohio experiment station has recently concluded experiments and announced the same in their bulletin number 207, dealing with balanced rations for animals from a new standpoint. The one thing of most value to feeders and breeders resulting from this experiment, is that not only should there be a balance between the protein and other food elements, but that the balance between the inorganic acid and base forming elements in the food should also be maintained, that the acid formers should not predominate over the bases in the feed. This bulletin is far in advance of anything ever published upon the subject, a part of which follows.

297 Inorganic Matter. There are in all food stuffs minerals taken from the soil by the plant. These minerals form the ash left when the portions of plant material are burned, and because they are not destroyed by fire they are called inorganic. Some of these elements which remain behind in the ash when food-stuffs are burned unite with oxygen and water to form acids; others unite with oxygen and water to form what is known as bases, of which slacked lime is a good example. Now the process to which foods are subjected in the body is really a burning process; at all events the end products are similar to those resulting from ordinary burning. Thus when foods are taken into the body these inorganic elements form acids and bases as final products.

298. The Balance Between Acids and Bases. Bases and acids have peculiar properties. However, when an acid and a base are brought together they neutralize each other and the resultant product is something entirely different from either of the original compounds, having lost all its active and irritating properties. In the animal body, as we have said, the inorganic, or ash elements, of the food form acids and bases. If the base formed is in excess of the acid, the acid is neutralized and the functions of the body continue normal, since the normal condition of the blood and body tissues seem to be slightly basic. If, however, the acid formed in the body as a result of the breaking down of the food materials is in excess of the bases, then an abnormal condition results, and if long continued, the animal will be affected with a disease known as acidosis or acid intoxication. This may become so serious as to cause the death of the animal.