PRESENT KNOWLEDGE OF THE NUTRITIONAL VALUE OF GRASSLAND HERBAGE

W. M. Neal

GRASSLAND herbage and browse are the natural feeds of the Herbivora. In the natural or wild state the grass-eaters ranged far and wide, making rather systematic migrations during the course of the seasons. Requirements of these migratory animals from the nutritional standpoint were for growth, maintenance, reproduction, and sufficient milk production for the rearing of the young. These requirements were met by the native forage grazed from many soils.

With the domestication of livestock, followed by breeding and selection for high productivity, and the restraint of such livestock in fenced pastures of limited botanical composition oftentimes growing on soils containing too little of some of the plant nutrients, the modern problems of inadequate nutrition of livestock have come to the fore. Methods utilized to overcome inadequacy have included the use of supplementary feeds and mineral mixtures. The selection and production of grassland herbage of required intrinsic nutritional value should obviate the necessity for the use of a part of the present supplementary materials and permit the development of an agriculture more in keeping with the principles of conservation.

NUTRIENTS SUPPLIED BY HERBAGE

A ration, if optimum, contains all of the compounds necessary for the physiological well-being of the animal and its production of growth, milk, wool, etc. They must be present in satisfactory ratio and not diluted with undigestible residue to the point where consumption of sufficient feed is impossible. A grouping of these essential compounds may be made under the headings of protein, energy, minerals, and specific organic compounds.

The occurrence of at least 22 amino acids in various proteins has been established. The indispensability of 10 of these has been shown for the rat. Specific amino acid deficiencies have never been developed in cattle, due to the difficulty of compounding suitable rations and the probability of the synthesis of amino acids by microorganisms in the alimentary tract. The ability of urea to supply a part of the protein requirement of cattle may be construed as evidence for such synthesis. The recommendation for a diversity of protein sources in livestock rations for insurance of protein quality is based on results with other species of animals. However, quantitative requirements for crude protein are well established.

Energy is not derived from any specific group of compounds. Compounds capable of supplying energy include, among others, sugars, starch, organic acids, the complex polysaccharides, fats, and