

workers believe that if a sufficient number of animals are sampled so that the values obtained may admit of statistical analysis, then the use of blood-phosphate determinations offers a satisfactory method of diagnosing phosphorosis in the field. A separate report has been made covering my observations on the many activities of the Division of Animal Nutrition.

*Photosensitization of Sheep.*—In two cases investigated from the Gisborne district, a pigment has been isolated from the bile, identical with phylloerythrin, a fluorescent porphyrin which has been shown to cause geeldikkop in South Africa.

*Cobalt Metabolism.*—In view of the prominence given to cobalt by the findings of Filmer and Underwood in Western Australia, and Marston and Lines in South Australia, that the administration of cobalt was successful in combating enzootic marasmus and coast disease of sheep, feeding experiments have been instituted. Reference to the literature will show that surprisingly little is known of the part played by this element in animal nutrition. Several workers have reported a polycythæmia following the ingestion of cobalt so as a starting-point it was thought desirable to confirm some of the observations recorded.

In one experiment where rats were placed on a diet containing 1 per cent. cobalt sulphate a marked polycythæmia occurred after eight weeks. During this period the average values for hæmoglobin and red cell counts rose from 93 per cent. (Sahli) and 9.3 millions per c.mm. to 120 per cent. and 15.2 millions per c.mm., while the average weight fell from 190 grammes to 149 grammes. The control group were normal. Another experiment is in progress wherein rats are receiving 0.5 and 1.0 mgm. cobalt daily. At the time of writing, four weeks after the administration of cobalt, a slight rise in hæmoglobin and red cell count is apparent.

In the case of hoggets receiving 5 mgms. cobalt as cobalt sulphate daily no blood changes have been observed after a period of eight weeks. It is intended to continue this experiment over a long period, and to institute others using increasing amounts of cobalt.

*Mineral Deficiency.*—Ash determinations are being made on bones from lambs of varying ages in order to establish provisional limits of normal variation. It has been shown that the head of the femur and proximal epiphysis of the humerus are normally lower in ash than other bones, and that in cases of mineral deficiency a lowered ash content is first observed in these bones.

*General.*—Blood and other analyses have been performed for field officers dealing with the following conditions :—

In sheep : Congenital deformity in lambs, ante-partum paralysis, milk fever, facial eczema, suspected mineral deficiency, and hæmolytic jaundice.

In cattle : Grass staggers, milk fever, ergot poisoning, and redwater.

In most of these cases isolated investigations were made so that no deductions could be made. In addition blood and bone analyses were performed in connection with poultry feeding experiments in co-operation with the Poultry Station.

*Total Specimens examined.*—Sheep blood, 301 ; cattle blood, 34 ; pig blood, 8 ; fowl blood, 43 ; rat blood, 88 ; urine samples, 18 ; bone samples, 148 ; total, 640.