

ence or absence of the fat-soluble vitamins has not yet been ascertained. The mineral constituents of the soy bean are inadequate for growth. Whether the deficiency is a qualitative or quantitative one remains to be determined. Rats eat foods containing commercial soy bean flour more readily than those containing meal made by grinding the entire seed. The latter is non-toxic; for the few animals which have eaten enough have grown well. Preliminary experiments indicate that the heating to which the commercial soy bean flour is subjected may be the cause of the superiority of the latter. Unlike cotton seed, soy beans extracted with ether are not improved in nutritive value. Unheated soy bean meal and corn gluten has proved satisfactory as the sole source of protein in the diets of chickens. We are continuing our investigation of the nutritive value of this seed.

104 (1282)

#### The determination of hemoglobin.

By WALTER W. PALMER (by invitation).

[From the Hospital of the Rockefeller Institute for Medical Research,  
N. Y.]

The method for the determination of hemoglobin described below has proved accurate and convenient. 0.1 c.c. of blood is introduced into a 10 c.c. volumetric flask half filled with 0.4 per cent. ammonia water (4 c.c. strong ammonia in 1 liter of water) and filled to the mark with the ammonia solution. The contents are poured into a large test tube (25×200 mm.) and illuminating gas bubbled at a rapid rate through the hemoglobin solution for at least 30 seconds. The resulting carbon monoxide hemoglobin is then compared with a standard solution in a colorimeter (Duboscq).

The standard is a 1 per cent. solution of defibrinated ox or human blood having an oxygen capacity of 18.5 per cent. which has been thoroughly saturated with carbon monoxide. The oxygen capacity may conveniently be determined by the method described by Van Slyke in the PROCEEDINGS of this Society, 1917, XIV, 84. It has been found convenient to prepare a 10 or 20

per cent. solution of a standardized CO saturated blood kept sealed in the ice chest from which a 1 per cent. standard may be made from time to time. The standard solutions must at all times be protected from bacteria and kept saturated with CO, also controls should be made from time to time with blood of known oxygen capacity. The 0.4 per cent ammonia solution is also used in making up the standard.