and in attempts to determine the vitamin A content of different foods.

The body can also store vitamin A at later ages. Thus two male rats of the same litter and of the same weight at four weeks of age were placed on two diets one of which was richer in vitamin A because of containing a higher proportion of milk than the other. After completion of growth, both were placed at the same time upon the same experimental diet deficient in vitamin A, and the survival period was found to be nearly twice as long in the case of the one which had received the diet containing the larger proportion of milk.

Rats of the same litter grown to adult size on the same diet, showed strikingly uniform survival periods when placed at the same age on diets devoid of vitamin A, even though these latter experimental diets were made to vary widely in their mineral content.

The investigation is being continued in several directions: (1) by further experiments with rats transferred at different ages from adequate diet to diet devoid of vitamin A, (2) by experiments in which the vitamin stored in different organs and tissues is determined directly by dissecting animals of known age and dietary history and feeding the different parts, (3) by further studies of possible relationships between vitamin A and the mineral metabolism.

100 (2060)

Some modifications of Emil Fisher's micro-polarimeter.

By SOMA WEISS

[*From the Department of Pharmacology, Cornell University Medical College, New York City.*]

The quantitative determination of organic compounds by means of their optical activity is often convenient, and it is often necessary to employ small amounts of the solutions to be investigated.

Emil Fischer's micro-polarimeter[1] has been used but very little, and it became impossible to follow his technique because of the inability to obtain the Nernst light as a consequence of the war, but I have applied the principle with several modifications, while using the Schmidt & Haensch polariscope, which permits of readings of 0.01 degree, and specially prepared capillary tubes which are 50 millimeters, and 100 millimeters in length, respectively, and which have an inside diameter of about 1.5 millimeters. The walls of the tubes are 3 mm. in thickness.

It is especially necessary that the tubes be perfectly straight. They hold 0.1 c.c. and 0.2 c.c. respectively, of the solution to be tested, the specific gravity of which is determined by means of a pycnometer holding 0.2 c.c.

The following method was used for the source of light: To a solution of 1.25 Gm. of pure uranium sulphate in 50 c.c. of distilled water was added 0.5 Gm. zinc powder and 1.8 c.c. of sulphuric acid, in three portions. After four hours, when the reaction was complete with the conversion of the uranyl sulphate into the uranosulphate, 2 cm. in length, the solution was filtered and the anterior cell of the polarimeter was filled with this solution completely avoiding air bubbles. The posterior cell, 2 cm. in length, was filled with a six per cent. solution of potassium bichromate. An electric lamp of opalescent glass of 150 watts intensity was placed in a galvanized iron casing into the side of which was fitted a telescope tube, permitting of variation in the distance of the light, and into which the end of the polariscope projected. This arrangement avoids the disturbance due to external light.

The capillary tubes were not encased in hard rubber, since that interferes with the observation of air bubbles during filling, but after filling they were placed in a previously slit rubber tubing. It was then found that the light which penetrated the glass walls of the tubes introduced a disturbing factor and this was avoided by covering the ends of the capillary tube with black paper which had an opening corresponding to the inside diameter of the tube. This arrangement insured that only that light which passed through the solution in the capillary tube passed on to the eye piece of the polarimeter.

---

[1] *Ber. d. deut. chem. Gesell.*, 1911, xliv, 129.

A luer syringe, graduated in hundredths of a c.c., with a blunt needle corresponding to the lumen of the capillary tube, serves very well for filling the tubes, which are held nearly perpendicular while filling, thus avoiding the entrance of air.

Successive readings did not vary more than 0.03 degree and were often not more than 0.01 degree apart. The further technic and the calculations are carried out in the usual way.

The availability of the method is shown by the following results of a determination in which this method was employed:

Saccharose solution percentage.	Sp. Gr.	Rotation read in:		Spec. rotation in:	
		50 mm. tube	100 mm.	50 mm.	100 mm.
4.839	1.021	1.66°	3.32°	67.18	67.18
4.860	1.022	1.78	3.36	66.84	67.20
5.360	1.026	1.95	3.68	66.61	66.90
9.140	1.036	3.18	6.34	67.24	67.10
10.120	1.038	3.52	7.01	67.00	66.70

The table gives an average of +66.98 instead of +66.73, the theoretical value, for a 5 per cent. solution, and +67.00 instead of +66.65, the theoretical value for a 10 per cent. solution.

101 (2061)

Studies on the physiology of the parathyroids.

By HARALD A. SALVESEN (by invitation).

[*From the Physiological Institute of the University of Christiania, Norway.*]

We possess at the present time no exact knowledge concerning the function of the parathyroids. There are many theories, but only three have gained some importance, namely that the parathyroids control (1) the guanidine metabolism and by doing so regulate the tonus of the muscles; (2) the calcium metabolism; (3) the acid-base equilibrium and their removal cause alkalosis. The parathyroids also are supposed to control the sugar metabolism to some extent.