

SCIENTIFIC PROCEEDINGS

ABSTRACTS OF COMMUNICATIONS.

One hundred third meeting.

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28 (1488)

The rôle of fat-soluble vitamine in the dietary of infants.

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It has been shown that the fat-soluble vitamine is an essential constituent of the dietary of rats. There have also been clinical reports attributing marked malnutrition in infants and children to a lack of this dietary factor (Japan, Denmark). As a result of these experiences it has been accepted that this vitamine is highly important for man, and that the lack of it leads to nutritional disorder in children. This has been emphasized all the more as this vitamine is not nearly as widely distributed in nature as is the water-soluble vitamine. In order to study this question five infants, varying in age from 5 to 12 months, were given a diet which was complete except for a very small amount of fat-soluble vitamine. It consisted of 180 g. daily of highly skimmed milk (Krystalak 0.2 per cent. fat), 30 g. of cane sugar, 15 to 30 g. of autolyzed yeast (to supply water-soluble vitamine), 15 c.c. of orange juice, 30 g. of cottonseed oil, and cereal for the older infants.

On this diet the children have done well for a period of eight to nine months. They have shown no anemia, no eye trouble, no bone changes, as seen by the X-ray, nor has their growth in length or in weight suffered. We believe, therefore, that either a very small amount of this vitamine suffices to supply the needs of human nutrition, or that this deficiency has to be maintained

for a period of years in order to bring about any harmful result. Danger from a lack of this dietary factor need not be apprehended if the diet is otherwise complete.

The development of rickets has been attributed by Mellanby, as a result of experiments on dogs, to a lack of fat-soluble vitamine, and Hopkins and Chick have termed this vitamine the "anti-rachitic factor." It was found, however, that infants fed on this "fat-soluble vitamine minimal diet" did not develop the well-established signs of rickets—beading of the ribs, enlargement of the epiphyses, weakness of the muscles, etc. We cannot believe, therefore, that rickets is brought about by a deficiency of this principle; all the more so, as this disorder developed in infants receiving large quantities of milk containing ample fat-soluble vitamine. It may be added that neither cream nor the leafy vegetables, both of which are rich in this principle, were found to be comparable to cod liver oil as growth stimulants.

29 (1489)

A method for the determination of calcium, magnesium, potassium, sodium, chlorides and "acid-soluble" sulfur and phosphorus in one sample (25 c.c.) of blood.

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The blood is laked with eight volumes of water and the protein is then precipitated by the addition of one volume of 1:1 nitric acid. In a portion of the filtrate chlorides are determined gravimetrically by precipitation with silver nitrate and filtering on a Gooch crucible. The excess of silver in the filtrate is removed with hydrochloric acid and the resultant filtrate and the remainder of the blood filtrate are combined and treated with copper nitrate and perchloric acid, evaporated to dryness and then to blackness.¹ The residue is treated with concentrated hydrochloric acid, again evaporated to dryness and then dissolved in dilute hydrochloric

¹ Redness must be avoided, or potassium will be lost. This is a modification of Benedict's method (*Journal of Biological Chemistry*, 6, 363, 1909).