1833. EFFECT OF SULFAGUANIDINE AND MEAT MEAL ON THYROID ACTIVITY. C. J. Ackerman, N. O. Price and J. R. Rooney (intr. by R. W. Engel). Dept. of Biochemistry and Nutrition, Virginia Polytechnic Inst., Blacksburg.

Growth is inhibited when rats are fed 1% sulfaguanidine but this can be prevented or reversed by the concomitant feeding of meat meal. The instability of meat meal activity to alkali suggests that thyroxine is not the growth promoting agent. Although rats grow normally when fed sulfaguanidine plus meat meal, hostological examination of the thyroid glands reveals a marked hyperplastic condition similar to that observed in animals fed only sulfaguanidine. Adult thyroid weights are 2-3 times that of normal rats. Total iodine of the tyroid and protein bound iodine of the blood are lower in rats fed sulfaguanidine plus meat than either normal or sulfaguanidine-fed rats. Hog stomach, hog pancreas and hog intestine are the only tissues tested which possess growth promoting activity. It is tentatively suggested that the thyroid hormone normally stimulates the production of some factor in the pancreas or small intestine which in turn, affects metabolism. Goitrogenic agents inhibit the synthesis of thyroid hormone and thus inhibit the production of the factor in the pancreas or intestinal tract.

1834. EFFECTS OF GAMMA RADIATION AND HEAT ON CERTAIN NUTRIENTS IN GROUND BEEF. H. D. Alexander* and W. D. Salmon. Depts. of Animal Husbandry and Nutrition, Agricultural Exper. Station, Alabama Polytechnic Inst., Auburn.

Previous work by this laboratory (Fed. Proc. 15:180, 1956) has shown that some of the water soluble vitamins in raw beef are destroyed in varying amounts by gamma radiation and that others are resistant. Further studies were made with raw beef irradiated at 2.79 megarad. As indicated by biological (rat growth) and microbiological assays, pantothenic acid was resistant to the destructive effects of this level of radiation; methionine (microbiological assay) appeared to be stable; and, as indicated by microbiological assays, approximately 40% of the vitamin $B_{12}$ was destroyed. Results from studies on the total effect of radiation and heat treatments show that a very large portion of the thiamine was destroyed by this combination, radiation being the major destructive factor. Riboflavin was much more resistant to this combination treatment than was thiamine. (Supported in part by Dept. of the Army, SGO, Contract No. DA-47-007-MD-543.)

1835. PROTEIN EFFICIENCY DETERMINATION. J. B. Allison and R. W. Wannemacher, Jr.* Bureau of Biological Research, Rutgers Univ., New Brunswick, N. J.

The protein efficiencies (gm gained in body wt/gm nitrogen intake) have been determined for a number of dietary protein sources such as casein, fish meal, cottonseed meal, cereals and wheat gluten, protein sources which represent different patterns of amino acids. These determinations involved the establishment of curves between protein efficiencies and nitrogen intakes in male and female rats. The shapes of the curves were correlated with the pattern of essential amino acids by assuming a mathematical relationship between efficiency and the nitrogen available for growth, the concentration of a limiting essential amino acid and a maximum rate of growth inherent in the animal. The curve had a sharp peak, representing a critical nitrogen intake for maximum efficiency when the protein supplied a pattern of amino acids optimum for maximum rate of growth. A marked deficiency in an essential amino acid, such as the deficiency of lysine in wheat gluten, resulted in a low and relatively constant efficiency over a wide range of nitrogen intakes. Evidence for differences in the rates of filling of some tissue protein compartments was obtained. The effect of the magnitude of the protein reserves on reproduction and lactation also was partly evaluated.

1836. DIETARY ASCORBIC ACID AND SERUM CHOLESTEROL. Joseph T. Anderson, Francisco Grande* and Ancel Keys.* Lab. of Physiological Hygiene, Univ. of Minnesota, Minneapolis, and Hastings State Hosp.

Last year we reported that ascorbic acid (1.0 gm daily) and safflower oil (30 gm daily) when fed together to men produced a lowering of serum cholesterol (Fed. Proc. 16:380, 1957). This relationship has been further investigated by feeding with and without an ascorbic acid supplement (1.0 gm/day) diets in which linoleic acid rich oils (100 gm safflower, or 100 gm corn oil/day) were substituted for an equivalent amount of the ordinary meat and dairy fats in a "normal" American diet containing a total of 140 gm of fats. The ascorbic acid supplement was given to half of the men receiving each oil during the first 3 wk and to the others during the last 3 wk. The subjects were 24 physically healthy schizophrenic men aged 41-66 yr. The mean effect of adding ascorbic acid on serum cholesterol was +3.6 mg/100 ml (SE = ±4.2) in the safflower oil group and +0.7 mg (SE = ±2.6) in the corn oil group. These effects are without statistical significance. The change from meat and dairy fats to these linoleic acid rich oils produced large decreases in serum cholesterol concentration but no statistical difference between the effects of the two oils was demonstrated. Considering these more critical experiments it is concluded that giving a supplement of ascorbic acid has no effect on serum cholesterol in any of the diets examined.