

conditions improved markedly when the feeding of oil was suspended.

Calcium lactate, lime water, Fowler's solution and tincture of ferric chloride were fed at different times with the olive oil without, however, appreciably diminishing the effect of the oil. The action of the olive oil depends upon its content of triolein (oleic acid). Pure oleic acid was fed to a rabbit and found to be no more toxic than olive oil.

A noteworthy phenomenon in the chronically poisoned rabbits was a swelling of the heels, evidently hematmata, which came on suddenly in all of the rabbits, furthermore a crusted suppurating skin lesion which appeared on the inner surfaces of the ears of six out of eight of the rabbits.

The post mortem examination of the rabbits which died after only a few doses showed practically nothing except a slight congestion of the small intestine. In the autopsies on rabbits which had received many doses general absence of fatty deposits together with fatty changes in liver, heart and kidneys and an atrophic condition of the spleen and lymphoid apparatus were noted.

From this and from the appearances observed in human beings suffering from pernicious anemia, it is fair to assume that the lymphoid tissue, particularly of the intestine, is chiefly concerned in handling the fat absorbed from the food by the intestine.

## 2 (611)

### **The influence of age on the symptoms following thyro-parathyroidectomy.**

By **SUTHERLAND SIMPSON.**

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With regard to the question as to whether the thyroid and parathyroid glands become less and less essential to the organism as age advances there is some difference of opinion. Vincent and Jolly<sup>1</sup> found that in the various species of animals which they used (cats, dogs, foxes, monkeys, rats, guinea-pigs, rabbits), the symptoms following thyroidectomy and parathyroidectomy were

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<sup>1</sup> Vincent and Jolly, *Jour. of Physiology*, 1904, xxxii, p. 80.

not influenced, to any extent, by age or sex. In the case of dogs the writer can corroborate this statement, but it appears to be otherwise in the sheep, as the following account of experiments on this animal will show.

In the course of another investigation<sup>2</sup> the thyroids were completely removed from eighteen lambs, from seven to eight months old, and twelve adult sheep, without, in the course of the six months which intervened between the operation and their slaughter, any apparent ill effects. There was no falling out of the wool, nor any of the other symptoms of myxœdema supposed to be associated with complete thyroidectomy, and several of the adults gave birth to full-time, and to all appearance, perfectly normal lambs.

From three of these lambs, at the age of two months, the thyroids were removed, the two external parathyroids being left behind, and from two others at the same age (also born of thyroidectomized mothers) all the thyroid and parathyroid tissue was taken away. The latter, in the course of ten and nineteen days respectively, developed typical and acute parathyroid tetany. In one, the first fit was fatal in less than an hour from the onset, the rectal temperature being 112° F. one minute after death, and in the other, which was killed during the fit, the thermometer reached 108.7° F. immediately before death.

The three from which the thyroids alone were removed developed into typical cretins.

In these three, about one year after the first operation, the two remaining external parathyroids were removed. As a result of this there followed what appeared to be some gastro-intestinal disturbance, and on three or four occasions, several weeks apart, each lasting about a week, some stiffness of the limbs, but nothing of the nature of acute tetany with rise of temperature, increased respiration, etc., which was so marked in the other two. These three sheep are still alive more than four months after the second operation.

In addition to the three above mentioned, other two adult sheep, aged two and seven years respectively, have had the com-

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<sup>2</sup> Simpson and Hunter, *Quart. Jour. Exper. Physiol.*, 1911, iv, p. 340.

plete operation of thyro-parathyroidectomy performed on them and no noticeable symptoms have followed.

In the sheep therefore it would appear that both the thyroid and parathyroid glands are much more important organs in the young than in the adult animal, and consequently that they become functionally less active as age advances.

In relation to the influence of the parathyroids on calcium metabolism it is interesting to note that the two young lambs which showed acute parathyroid tetany were fed almost entirely on milk, rich in calcium salts, while the three which had the external parathyroids removed when they were about fourteen months old, and the other two parathyroidectomized adults, lived on a purely herbivorous diet in which potassium salts predominate. It may be, however, that in the young animal, where bone is being rapidly formed, the ratio between the demand for calcium and the supply is even greater than in the adult, although in the latter a far smaller quantity is being ingested.

In the case of the adult sheep the results of thyro-parathyroidectomy are in agreement with those of MacCallum<sup>1</sup> who from a similar operation found that "Practically no effect whatever was produced in these five sheep, although in at least three of them ample time elapsed for the development of symptoms." The other two died early of pneumonia, due probably to the administration of ether.

### 3 (612)

#### **Peculiarity in the mode of entrance of the optic nerve into the eyeball in some rodents.**

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In the majority of animals the optic nerve enters the eyeball as a round compact bundle of nerve fibers and the optic disc is circular in outline or nearly so. While removing the eyes from the woodchuck and prairie dog for histological material, I observed that here there was an exception to the general rule in that the

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<sup>1</sup> MacCallum, *Johns Hopkins Hosp. Bull.*, 1907, xviii, p. 335.