

**Osseous and muscular changes in thyroidectomized sheep.****S. A. GOLDBERG and S. SIMPSON.**

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In about thirty cretinized sheep and goats it was noted that the abdomen and the digestive tract were distended. Several showed either abdominal hernia or prolapse of the rectum. A case of cretinism in a human subject three years of age observed by one of us also had distension of the abdomen and prolapsed rectum. The skeleton in all of them was smaller, in some instances being less than half the size of the controls.

In the femurs of three cretinized sheep and one goat, the marrow of the shaft was red and the epiphyseal cartilages intact and irregular. The bones were fragile. Histologically, there was an increase in hemopoietic marrow with large numbers of megakaryocytes, formative erythroblasts and granular leucocytes. The center of the epiphyseal cartilage showed absence of nuclei, the presence of a homogeneous blue area, while at the periphery there were proliferating cartilage cells. In the control of the same age the epiphyseal cartilages had entirely disappeared.

Chemical analysis of one of these, performed by R. C. Miller, showed the per cent of ash in dry matter 32.564, while in the control 37.065.

The skeletal and cardiac muscle was constantly pale and flabby as compared with the controls. Histologically there was practically complete absence of the cross striations with the nuclei in the sarcolemma smaller and more numerous than in the controls. The cardiac muscle showed an increased number of what was thought to be swollen Purkinje cells. They contain large pale staining nuclei with much cytoplasm having longitudinal striations at the periphery. It is the opinion of Dr. B. F. Kingsbury that they are embryonal myocardial fibres. It now seems possible that they are premature muscle fibres that have degenerated.

The plain muscle of the aorta showed areas of marked atrophy with vacuolation of the remaining fibres. It seems possible that

this change in the muscle fibres precedes calcification previously described in these cretins<sup>1</sup>.

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FIG. 1.  
Head of femur, Sheep I,  
Control.

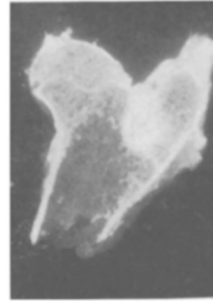


FIG. 2.  
Head of femur, Sheep I,  
Cretin. Note the dark mar-  
row of the shaft and the  
epiphysal cartilage which is  
absent in the control.

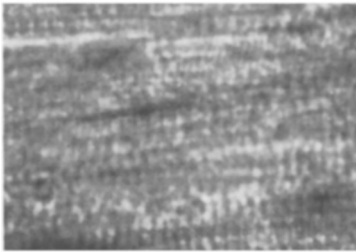


FIG. 3.  
Skeletal muscle, Sheep I, Control.  
Showing normal cross striations.

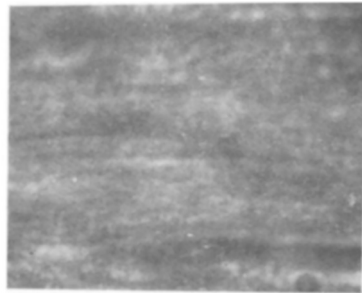


FIG. 4.  
Skeletal muscle, Sheep C, Cretin, of  
the same age as Fig. 3. Showing  
absence of the cross striations.

These changes seem to indicate that as a result of the thyroidectomy there are degenerative changes following an arrested development of the osseous and muscular tissues.

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<sup>1</sup> PROC. SOC. EXP. BIOL. AND MED., 1924, xxi, 567.