It went on falling to 0.052 per cent, and never even regained the initial value.

In a normal cat morphine and insulin were administered at the same time. A marked hyporglycemia developed, the blood sugar sinking from 0.13 per cent. to 0.033 per cent. A similar experiment was performed on a cat whose right adrenal had been excised and the medulla of the left destroyed by a drill, the left gland being then denervated, 19 days before the experiment. The result on the blood sugar was the same as in the normal cat, the percentage falling from 0.103 to 0.040, with no attempt at return towards the initial value. The general symptoms were the same in the two cats, which presented a characteristic mixture of hyperexcitation (due to the morphine) and depression. In both animals the paradoxical pupil reaction was strongly marked in the left eye throughout the experiment (the left superior cervical ganglion had been previously excised), and quite as pronounced in the cat whose epinephrin secretion had been abolished as in the normal cat. The usual hyperthermia produced by morphine in cats was absent in both cases. Except for a slight temporary rise in the animal with the adrenal operation, the rectal temperature went on falling throughout the experiment. In this respect the insulin apparently caused the morphinized cats to behave like dogs or rabbits.

166 (2126)

The relation between chronic irritation of peritoneal mesothelium and the formation of adhesions.

By R. S. CUNNINGHAM.

[*From the Department of Anatomy, Johns Hopkins University, Baltimore, Maryland.*]

During a systematic investigation of the normal and pathological reactions of the peritoneal mesothelium, certain rather surprising facts have been revealed which are interesting because of their bearing on the question of adhesions.

Elsewhere[1] experiments have been reported in which rats re-

[1] Cunningham, R. S., *Amer. Journ. of Physiol.*, 1922, lx, 448-460.

ceived repeated injections of solutions of glucose, the mesothelium undergoing certain changes of a morphological character which were not followed by adhesions. It seemed important to determine to what extent such changes could be produced without sufficient injury occuring to cause the development of adhesions. Such experiments have been carried out by the repeated introduction into the peritoneal cavity of various types of mild irritants, the best results having been obtained with laked heterogenous blood. Cats were given injections of 10 to 20 c.c. of laked rabbit's blood made isotonic with NaCl, the dose being repeated twice weekly over a period of 3 to 6 months. In such animals when the procedures were carefully guarded to prevent undue injury on puncture of the abdominal wall, and precautions taken to avoid any septic involvement, there resulted very remarkable changes in the entire mesothelial membrane without the formation of a single adhesion.

The peritoneum on section was often made up of two or three layers of cuboidal or columnar cells, attaining at times a thickness of 20 micra, and yet such a peritoneal lining seemed entirely adequate to prevent the formation of adhesions. From such observations the conclusion seems wholly justified that the presence of a complete layer of peritoneal lining cells, no matter how much their morphological appearance may be altered by such irritations as those used, is entirely sufficient to prevent the adherance of the two layers of peritoneum and thus prevent adhesions.

167 (2127)

Note on the permeability of the placenta in the rabbit.

By R. S. CUNNINGHAM.

[*From the Department of Anatomy, The Johns Hopkins University, Baltimore, Maryland.*]

The observations of various anatomists have shown very clearly that there are wide variations in the structure of the placental barrier in such species as the ungulate, the carnivora the rodentia, the chiroptera, and primates. Grosser[1] classifies

[1] Grosser, O., Vergleichende Anatomie und Entwicklungsgeschichte der Eihäute und der Pacenta, Leipzig, 1909, W. Braumüller.