Summary and Conclusions. There is a marked shortening of the bowel in simple ileal obstruction (30 to 50%). The bowel wall above the site of simple ileal obstruction increases over 100% in weight. When the factor of shortening of the bowel is eliminated, the increase of weight is 34%. Edema of the bowel wall accounts for only 7% increase in weight. Next to shortening of the bowel the increase of blood in the bowel wall is most responsible for its great increase in weight.

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Comparison of Serum and Saline Extracts as Nutritive Media for Mammalian Lymph Node Cultures.

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It has been reported by King (in press) that autogenous serum extracts of bone marrow promoted a more prompt and vigorous migration of lymphocytes, as compared with a saline extract of chick embryo, in cultures of mesenteric lymph node of the adult rabbit. It was also stated that the serum extract was definitely inferior to the saline extract as a coagulant for heparinized plasma.

Stenstrom and King[1] have reported the first study of a series on the effects of radiation of lymph node fragments. The next study is to be a more detailed consideration, the response of lymphocytes to radiation in such cultures. Since the response is prompt and since the characteristic activity of lymphocytes in such preparations is early, attempts were made to determine the medium of choice for promoting a prompt and vigorous lymphocyte migration.

The results of the comparison of the extracts referred to above encouraged further study to determine whether the desirable migration-promoting properties of serum marrow extract might be combined with the desirable coagulant properties of the saline embryo extract. To this end a study was made comparing saline and serum extracts of chick embryo.

In general technique followed was that described by King.[2] The mesenteric lymph node was removed promptly on stopping the cir-

[1] Stenstrom, Wilhelm, and King, Joseph T., PROC. SOC. EXP. BIOL. AND MED., 1934, **31**, 909.

[2] King, Joseph T., *Arch. f. Exp. Zellforsch.*, 1930, **9**, 341.

culation. It was fragmented quickly in saline. The fragments were chosen in pairs, one of each pair being planted in each series. Attention was given to size, shape and color when choosing the fragments.

Blood was drawn into sterile heparin solution in such manner that 3 or 4 different concentrations of heparin were obtained. In this way a sensitive plasma was obtained.

Serum was obtained by drawing blood into a tube containing pieces of hard glass. It was defibrinated by moving the tube gently during clotting.

Extracts were made of 6-day chick embryos. Embryos were washed and extracted with serum or saline, 1 cc. of the medium being used per chick.

The cultures were incubated at 37.5°C. in Maximow slides. One drop of plasma and 3 drops of extract were mixed, the fragment oriented and the slide, with a vaseline ring inverted over the cover. The preparations were left until clotting had occurred when they were inverted and sealed with a vaseline-paraffin mixture. They were incubated as lying drops.

Observations were made at incubation, 3 hours, 1, 2, 3, and 4 days. Careful measurements were done on the original fragments, on the migration zone and the area covered by fibroblasts.

Observation at incubation showed that even at room temperature the lymphocytes were migrating quite uniformly in the serum series whereas there is rarely migration in the saline series. Long experience with saline extract cultures teaches that migration may occur in occasional instances. Here, however, the difference between the 2 series is striking and quite uniform. Not infrequently nearly all the cultures in the serum series will show quite a dense rim of lymphocytes around a large part of the periphery. In a single series part of the saline and part of the serum cultures were left at room temperature until the end of the 3-hour incubation period, at which time all the serum cultures showed rims to 15-20 eyepiece units (100 units = 1 mm.) while the saline series showed only scattered cells.

A general statement may be made concerning the appearance of the cultures for the 3-, 24-, and 48-hour observations. The serum series show earlier, more dense, more regular and more extensive migration as compared with the saline series.

The cells in the saline series tend to assume more extreme ameboid forms in spite of the fact that migration is not as vigorous.

Polyblastic proliferation starts earlier in the serum series and is much more dense.

No differences can be made out in the fibroblastic growth in the living preparations.

In general these differences parallel, at least in some degree, those already reported in the study on saline chick and serum marrow extracts and suggest that the characteristic difference noted there may be more a function of the extracting medium than the material extracted.

Concerning the coagulative properties of serum chick extracts, it may be stated that the result is much better than that found with serum marrow extracts. The clotting time is sufficiently short and the clots mechanically satisfactory.

The results of study of the fixed material will be presented in a final paper.