Atropin, either locally or intravenously, also inhibited the peristalsis, as had been shown by Harnack.

The same effects were also obtained with the nitrites and with atropin when increased peristalsis was brought on by the local effect of heat, secured by placing warm water in the crystallizing dish window. The increased peristalsis resulting from this procedure was inhibited by amylnitrite, nitroglycerine and sodium nitrite, and atropin, exactly as was the lead peristalsis. Similar effects were obtained when the peristalsis was produced by direct faradization of the solar plexus which also was inhibited by these drugs.

These experiments establish the rôle of the nitrites as inhibitors of intestinal peristalsis, and furnish an experimental basis for the therapeutic results obtained by Riegel and Pal in lead colic, and by the latter also in the gastric crises of tabes, by the administration of amylnitrite; and they demonstrate that the mechanism in these cases is probably not merely the change in blood pressure but particularly the inhibition of intestinal spasm.

The results are quite uniform, sudden and striking enough to warrant its use as a class exercise in experimental pharmacology.

132 (1064)

Observations upon a rat sarcoma treated with emulsions of embryonic tissues. (Preliminary Report.)

By KENNETH TAYLOR, M.A., M.D. (By invitation.)

[*From the Department of Pharmacology, University of Minnesota, Minneapolis.*]

In view of the accepted value of total embryo emulsion as on immunizing agent against propagable tumors first demonstrated by Schöne (Munch. Med. Woch., 1906, LIII, 2517) and later used successfully by many other investigators, the following notes on the influence of special embryonic tissues and of placenta on established rat sarcoma seem of sufficient interest to be reported.

The tumor used in these experiments was a sarcoma kindly supplied the laboratory by Dr. Loeb. During the period covered by the investigations it showed the following biological characteristics:

It was readily inoculated by direct subcutaneous transplantation of small intact fragments, giving by this method successful transplants in 93.2 per cent. of albino rats used in five separate operations. A palpable tumor usually developed in about six days, growing progressively and rapidly and having an average diameter of 30 mm. at the end of seven weeks. It usually invaded the skin and body wall only in the late stages of its growth. The average life of the animals after the inoculation was about ten weeks. No metastases were found on macroscopic post mortem examination. Retrogressions to complete disappearance occurred in six out of the fifty controls used in these experiments (12 per cent.). These retrogressions occurred only in the tumors which remained under 12 mm. in diameter. Recurrences after retrogression were not observed.

The animals used were albino rats about two thirds grown, males and females in about equal numbers.

The treatment was conducted with normal salt emulsions of the thyroid, the spleen and the liver of rat embryos prepared under aseptic precautions and preserved in the ice-chest under toluol, and also with an extract of placenta with the attached uterus washed free of blood and prepared in a similar manner. The emulsions were injected subcutaneously three times a week, the dosage so regulated that each animal received in the course of twelve injections the emulsion of two complete thyroids, or two spleens, or two placenta, or one liver.

Treatment was begun in each case the twelfth day after inoculation with the tumor. As the experiments were carried on practically simultaneously, the same controls have been used for each series. Among them are included five rats treated with embryo spleen. The other control animals received no treatment.

The results of treatment are shown in the table below:

Treatment.	Number of Animals.	Retrogressions Number.	Per Cent.
CONTROLS	50	6	12
Fœtal thyroid	7	4	57.0
Fœtal liver	7	3	42.5
Placenta and uterus	7	2	28.5
Fœtal spleen	5	0	0

It may be of interest to note that the size of the tumors which

did not retrogress in those animals treated with embryo thyroid, liver, or placenta, was at the end of seven weeks usually above the average size in untreated animals (average 40.3 mm. as against 30 mm. an increase in size of 34). In nearly every case, then, these treated tumors have shown a deviation from the normal growth of the controls.

The number of animals treated is obviously too small to permit definite conclusions to be drawn in the case of any tumor showing even a low percentage of retrogressions, but the results are, I believe, sufficiently marked to make it desirable to record them while more extensive tests are being carried out.

There appeared, however, to be an increased incidence of retrogressions in tumor-bearing rats after treatment with embryo thyroid, liver or placenta and uterus. Embryo spleen seemed to have little or no inhibitory action on the growth of the tumors. It seems probable that further analysis of the embryonic tissues may reveal a wide variation in the therapeutic value of different issues, and that special tissues may prove to be more effective against the growing tumors than the emulation of the whole embryo.

I wish to express my thanks to Dr. Arthur D. Hirschfelder, director of the Department of Pharmacology of the University of Minnesota, for his valuable criticism of my experiments.

(*Note by Dr. Hirschfelder.*) Since the deparutre of Dr. Taylor for Europe some months ago, all the transplants of this rat sarcoma both in our laboratory and in Dr. Loeb's, have undergone retrogression or failed to develop. This retrogression occurred only in tumors about two generations later than those of Dr. Taylor's experiments. The possibility therefore suggests itself that at the stage of Dr. Taylor's experiments the tumor, though of demonstrated virulence, may have been in a stage particularly favorable for therapeutic procedures; and these experiments are reported in the hope that they may be repeated with other tumors which are nearing, but have not yet reached the stage of spontaneous retrogression.