

formed. Attempts were made to produce placentomata in the guinea pig between the ninth and fourteenth days after oestrus, a period during which they cannot normally be produced in the animal. These animals were injected daily with the corpus luteum hormone from the sixth to the fourteenth day. The mucosa was stimulated on the tenth day but no placentomata were formed. It would seem as though too long an interval had elapsed since the previous oestrus, and the effect of the follicular hormone had been lost. This, too, is being investigated at the present time.

These results are in accord with the findings of Brouha,³ who by injecting extracts of the anterior lobe of the hypophysis into the rat causes a great enlargement of the corpus luteum and the inhibition of ovulation over extended periods. He finds that in such rats placentomata may be produced only between the fourth and seventh days after ovulation, although the corpora lutea persist without any indication of involuntary changes having taken place. The probable explanation of this is that the follicular hormone is absent after the seventh day so that the uterus is not in the proper physiological condition to respond. Hisaw, by experiments in which the pelvic ligaments of the guinea pig were relaxed by injections of corpus luteum extracts, finds that relaxation occurs only when the animal is under the influence of the follicular hormone. This influence is manifested from the fourth day before oestrus until 7 days after, the intensity reaching a maximum at oestrus and gradually diminishing until practically all effect is lost after the seventh day. The reaction in this case occurs under the same conditions as those found necessary for the production of placentomata.

¹ Loeb, Leo, *J. Am. Med. Assn.*, 1908, 1, 1897.

² Hisaw, F. L., reported at the meeting of the A. A. A. S. at Nashville, Tenn., 1927.

³ Brouha, L. L., *Proc. Soc. Exp. Biol. and Med.*, 1928, xxv, 488.

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Erythrocytaphagic Capacity of the Hepatic Peritoneum in the Splenectomized Horned Toad, *Phrynosoma Solare*.

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The data are a byproduct of splenectomy experiments. From an operative standpoint the horned toad seemed the most favorable

reptilian material. However, both controls and experimentals succumbed indifferently, until at 74 days after operation only 1 of each

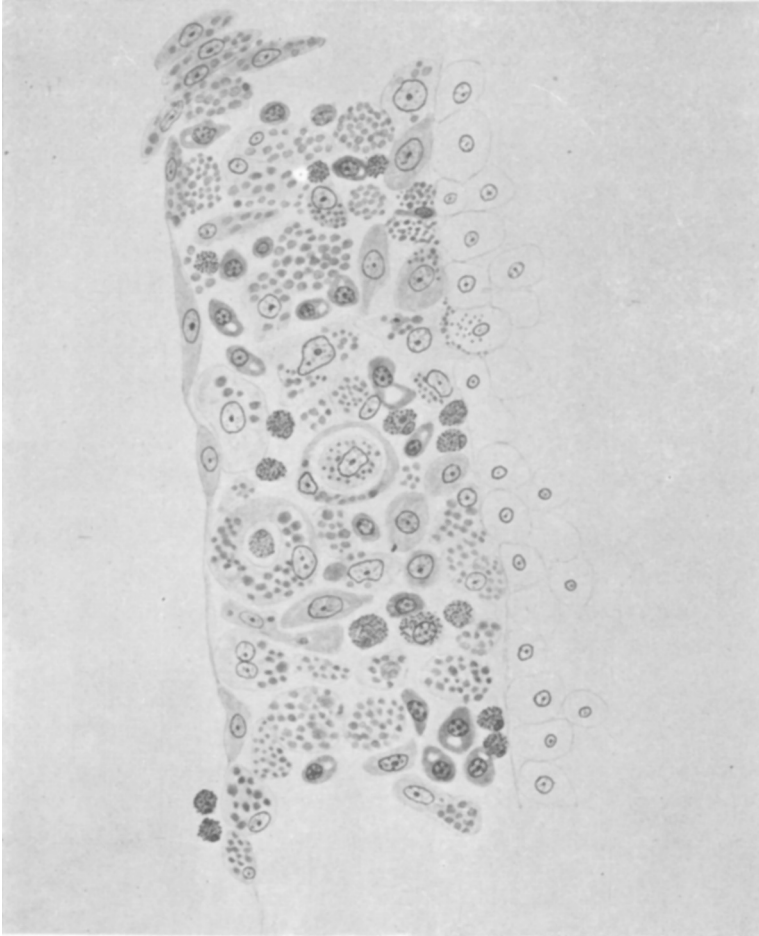


FIG. 1.

Portion of the erythrocytographic hepatic peritoneum of a splenectomized female. On the left surface appear three cells of intact mesothelium. At the upper left hand border the mesothelial cells have assumed columnar shapes. At the lower left hand border occur two eosinophils over a denuded area. Along the right hand border is indicated in outline the hepatic parenchyma. One of these cells, near the middle, is shown with a considerable content of ingested hemoglobin debris. The hyperplastic erythrocytrophic capsule consists predominantly of large pale mononuclear cells whose cytoplasm contains many spheroidal red cell fragments. Many of these macrophages are in process of disruption. The small cells with black granules represent eosinophils. The lymphocyte-like cells, with conspicuous cytoplasmic vacuole are prospective, third generation, macrophages, *in situ* derivatives of stromal cells. Helly fixation, Giemsa stain. X600.

remained alive. The splenectomized toad was a large female, apparently in perfect health at the time it was killed and tissues preserved for microscopical examination. Normally the spleen represents practically the sole organ of blood formation. No sign of splenic regeneration, or compensatory myeloid metaplasia in any of the tissues examined could be detected. But sections of the liver showed a striking change in the capsule. Both serosal cells and subserous fibroblasts had assumed quite unexpectedly intense phagocytic properties (Fig. 1).

The hyperplastic and extensively phagocytic capsule has acquired an average thickness of approximately 1 mm. The normal capsule includes barely more than a mesothelial layer. In an effort to explain this unusual condition it was recalled that at operation this animal bled profusely. The splenectomy experiment, done for the purpose of studying the hemocytopoietic effect, had accordingly changed to one concerning the reaction of the peritoneum to whole blood in the cavity, in the absence of a spleen. The intestinal peritoneum showed no phagocytic activity, the ovarian tissues a moderate amount, the hepatic peritoneum a very intense degree.

The method by which the fragmenting erythrocytes are handled by the cells of the hepatic peritoneum is especially interesting. The irritation resulting from the presence of blood in the peritoneal cavity stimulated the mobilization of mononuclear and eosinophilic leucocytes in the cavity. The mononuclears ingested the hemoglobiniferous and nuclear fragments, apparently selectively, and carried them to the hepatic capsule. Here they suffered disruption and deposited the debris in the interstitial spaces. The presence of these relatively large blood-cell fragments stimulated hypertrophy and phagocytic activity on the part of both the serosal cells and the underlying connective tissue cells. Apparently also, both serosal cells and subserous macrophages (clasmatocytes) migrate from the hepatic capsule into the peritoneal cavity and return laden with debris. These cells likewise disrupt and deposit their ingested contents, which are reingested and converted into smaller particles by fibroblasts transformed into macrophages. Subsequently this second generation of macrophages suffers dissolution with deposit of contents in the intercellular spaces.

These masses of smaller hemoglobin derivatives (hemosiderin) stimulate the origin of a third generation of macrophages. At the stage examined these cells occur extensively, both singly and in small compact groups. These cells are much smaller, sharply contoured deeply staining elements. They originate *in situ* and have

the general nuclear and cytoplasmic characteristics of small lymphocytes, except that the cytoplasm is more extensive and invariably contains a lighter staining circular area close to the nucleus. These cells represent fibroblast differentiation products. A few are in mitosis. They are prospective macrophages. A few contain 1 or 2 fragments of hemoglobin debris. A final stage, sparsely represented, appears to be one in which these cells with their ingested hemoglobin debris in the shape of minute dark brown granules have suffered disruption in the intercellular spaces of the superficial parenchymal hepatic cells. Here the granules are finally ingested by the liver cells to be converted into bilirubin.

Three additional striking details concern the apparently functional specificity among the subserous macrophages, these not ingesting both nuclear and cytoplasmic fragments at the same time but only one or the other variety; the presence of a few phagocytic eosinophils with hemoglobiferous fragments; the presence of a few multinucleated giant cells; and the occurrence of a number of "cannibal" macrophages which have ingested one or several older macrophages and occasionally one or several eosinophils. Apparently the phagocytic capacity of peritoneum is determined at least in part by its location with respect to tissue that can dispose most advantageously of the phagocytosed materials.

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Experimental Scurvy in the Guinea Pig.

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Increasing abstinence and loss of weight, decreasing activity and drowsiness, or marked nervousness and greatly heightened activity in some animals, are characteristic of early scurvy. In later stages, stiffness, weakness and even complete helplessness may supervene in the hind quarters, especially of young animals. Many animals were very fat at time of death. Gross hematuria and melena, drooling and a foul odor were sometimes present.

Evidences of pain were noticed seldom, and bleeding and ulcerated gums, loose incisors, fever and constipation were never observed. Thirst and chewing movements, even when complete anor-

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