The colorimetric method will be found of great value in the adjustment of the hydrogen ion concentration of media for organisms which are sensitive to the reaction of their culture fluids. The method is comparable in a way to the fine adjustment of a microscope. The method of titratable acidity serving only to adjust media coarsely for the growth of the average organism.

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Sarcoma occurring in a guinea-pig.

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On May 10, 1915, a large male guinea-pig which had seemed to be in good health in the morning became suddenly ill in the afternoon and died within a short time. The animal had been injected some months previously with a culture of what was supposed to be diphtheria bacilli, but it had survived the injection. At autopsy a large freely movable mass was found in the mid-line of the neck on the ventral surface, which was adherent to the underlying tissues about mid-way between the lower jaw and the shoulder girdle. The tumor was apparently encapsulated and showed no attachment to the skin. It measured 3½ x 2½ x 2½ cm. in the various diameters, was yellowish in color and quite firm. The capsule was fibrous and cut with some difficulty, but the central portion was quite friable. The cut surface was yellow with many mottled patches which were dark red in color.

Surrounding the tumor and in the right axilla were a number of metastatic nodules, the largest of which measured 1½ x 1 x ½ cm., and the smallest being about the size of a grain of wheat. Section of the larger nodules showed a cut surface which was identical with that of the large tumor.

The thoracic and abdominal organs showed nothing unusual.

On microscopic examination the body of the tumor is seen to consist of round and ovoid cells which vary considerably in size. In places the cells are closely packed together but in others they are separated by a reticulum of connective tissue. There are

many large areas of necrosis in which practically all cellular structure is lost. There is evidence of an unsuccessful attempt at encapsulation, but the tumor has invaded the connective tissue of the capsule as well as the adjacent areolar tissue.

The majority of the cells of the tumor resemble lymphocytes in size and in appearance. The nuclei are relatively large and are placed excentrically in the cell body. There are a few cells of about the same size in which two nuclei are present, but there are no large, multinuclear giant cells. In addition to the round cells there are other larger cells which vary in size and shape and which contain large, clear vesicular nuclei, and some very large, round cells with small nuclei which are apparently phagocytes.

The stroma of the tumor consists of a reticulum of connective tissue which contains typical spindle-shaped fibroblasts. In some places there is little fibrous tissue, but in others the fibrosis is quite marked. In the portions which have not undergone necrosis there is a rich blood-capillary network in the stroma.

In the necrotic portions of the tumor the cells show varying degrees of disintegration, and the stroma is studded with nuclear debris. In many places the large phagocytic cells are filled with nuclear fragments.

The appearance of the largest of the metastatic nodules is identical with that of the more cellular portions of the tumor, and there is marked necrosis and extensive invasion of the connective tissue of the capsule. The smaller nodules are of much more frequent development and show little evidence of necrosis.

Smears from the tumor and from the metastases showed no eosinophiles and no bacteria. Tissue cultures were not made.

An attempt was made to transplant the tumor into a small number of young guinea-pigs but it was unsuccessful. However as I knew nothing of the tumor until about two hours after the animal had died it was not possible to make the inoculations soon enough to justify any hope that they would be successful.