III. *Physiological effects.* In an attempt to measure any physiological effects, a 20 kg. dog was anesthetized with ether and the blood pressure and heart rate measured. An intestinal plethysmograph was also employed. A solution containing 250 mg. of rhenium was injected into the femoral vein. The changes observed indicated a very slight splanchnic dilatation. However, this effect was not subject to adequate experimental control to warrant interpreting this effect as being due to the injected salt.

Continuation of the toxicity study is being held up pending the development of a satisfactory quantitative method for the determination of rhenium in the presence of organic matter. The work will be resumed at an early date.

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Effect of Hypophysectomy on Growth of the Walker Rat Tumor.

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Since hypophysectomy is known to lead to cessation of body growth, it seemed interesting to investigate its effect upon the growth of a tumor such as the Walker rat tumor. Twelve out of 25 young albino rats bearing tumor transplants 8 to 12 days old were therefore hypophysectomized (by Doctor Hans Selye), the remainder being kept as controls. The area of the largest cross-section of the tumors was measured by sketching them upon squared paper with the aid of calliper measurements; the total weight of the rats was also followed. The results are summarized in Table I.

TABLE I.

Days after operation	Hypophysectomized (Average of 12 rats) Tumor area, cm.²	Total wt.	Control (Average of 13 rats) Tumor area, cm.²	Total wt.
0	3.8	176	3.3	188
12	8.2	170	10.9	203
18	10.7	171	15.4	216
24	13.1		19.3	

Hypophysectomy evidently retards but does not prevent the growth of the tumors; but the total weight of the rats and their tumors remained stationary (as in hypophysectomized rats without

tumors) or slightly declined. With one exception, in which the growth-curve suggests that the operation was incomplete, the hypophysectomized rats died in from 21 to 36 days, and in none of them did the tumor attain 50 gm. weight. In the unoperated rats the rate of increase of the size of the tumors was obviously greater, and the total weights increased. These rats were killed off at intervals as the experimental animals died; not one of them died, although in many cases the tumor exceeded 100 gm. in weight. It was noted that in the hypophysectomized rats, in the last few days of life, the total weight decreased; in more than half of the cases the size of the tumor also decreased before death.

The volume and weight of the tumors may be roughly estimated from the measured cross-sections, allowing for slighter development in the third dimension; this method has been checked in another series in which the tumors were weighed *post mortem.* It appears to be sufficiently reliable, on the average, to permit the conclusion that in the present series the weight of the rats *minus* their tumors decreased, after the first few days. Thus in the hypophysectomized rats the gain in weight of the tumor is almost exactly equal to the loss of weight of the rest of the body, whereas in the normal rats the growth of the tumor is absolutely and relatively greater, the loss of weight of the rest of the body being approximately the same as in the hypophysectomized rats. One possible interpretation may be that in the normal rat the growth of the tumor is supported both by the existing healthy tissues and by the assimilated food-stuffs, whereas in the hypophysectomized rat it takes place solely at the expense of the tissues. It was found histologically that the tumors borne by hypophysectomized rats showed larger areas of necrosis than the control tumors; no other difference was observed. Further experiments on the effect of various hypophyseal extracts on the growth of this tumor are in progress. The present findings are in agreement with those on a mammary carcinoma reported by Ball, Samuels and Simpson.[1]

[1] Ball, H. A., Samuels, L. T., and Simpson, W., *Am. J. Cancer,* 1932, **16**, 351.