

off of CO<sub>2</sub>. The data from one of our experimental dogs are given below.

TABLE I.

Oct. 30	Lactic acid mg. %	CO <sub>2</sub> content vols. %	CO <sub>2</sub> capac- ity vols. %	pH	Remarks
10:00 A. M.	28.7	33.3	43.9	7.44	Violent tetany
10:30 A. M.	56.5	22.2	27.6	7.25	CO <sub>2</sub> for 20 min Recovery
3:40 P. M.	27.9	35.0	42.7	7.45	Tetany
4:05 P. M.	88.9	29.2	32.7	7.29	CO <sub>2</sub> for 20 min Recovery

Following return of the lactic acid to a normal level, *i. e.*, (about 27.5 mg. per 100 cc. blood) tetany symptoms again appear. The evidence at hand seems to indicate that the change in the blood reaction toward the acid side relieves tetany by rendering serum Ca more diffusible, and also probably stimulates excretion of the excess phosphorus. The total serum Ca in all of our animals remained unchanged by the CO<sub>2</sub> treatment, despite the fact that the animal appeared normal and was free from tetany.

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#### Survival Period in the Pregnant and Lactating Cat Following Adrenal Extirpation.

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H. A. Stewart<sup>1</sup> first called attention to what he considered to be an unusual prolongation of the life-span of the pregnant cat following adrenal removal. He states "In most instances the pregnant and lactating animals survived the extirpation of the adrenal glands longer than normal, non-pregnant or male animals." The average prolongation in good cases of non-injected pregnant cats was 7.2 days, whereas the average prolongation of male and non-pregnant females was only 2.2 days.

Stewart and Rogoff,<sup>2</sup> working with dogs, cited cases of pregnant bitches which lived for considerable periods following bilateral adrenal removal. Several animals survived throughout the gestation period, and one animal gave birth to a litter of pups. These authors do not attempt to explain the reason for such prolongation of the survival period of adrenalectomized dogs, but merely suggest that possibly the *corpus luteum* may be involved.

In an earlier series of experiments on bilaterally adrenalectomized cats,<sup>3</sup> the writer observed that pregnant individuals did not survive any longer than male or non-pregnant animals. The observations at that time were limited to only a few cases, hence no significance was attached to them. During the fall and spring of 1927, however, the problem of the survival period of double-operated, pregnant cats was carefully studied. Sixteen female animals were operated under anesthesia and their survival periods were checked against those of 6 operated male and non-pregnant female animals which served as controls.

All animals were operated with a 3 to 17-day interval between the removal of the right and the left adrenal glands. They were kept at a temperature of approximately 22° C. and were permitted the freedom of the animal room. Food was at all times available to them but no attempt was made to feed them forcibly, following the onset of anorexia which invariably succeeds (50-58 hours) the removal of the glands. All animals eventually died in coma, following the typical syndrome attendant upon the extirpation of both adrenals. At death each animal was carefully autopsied and histological sections were made of the ovaries in those cases in which any doubt existed as to whether an intervening ovarian cycle had taken place since absorption or resorption, where such was indicated by the condition of the uterine walls.

The average life-span of untreated, bilaterally operated cats is approximately 100 to 120 hours from the time the second adrenal is removed. If the animals are forcibly fed, or injected with considerable quantities of fluids, the survival period is greatly increased.

Sixteen cats in various stages of pregnancy were employed. The animals were always autopsied at death and the number and measurements of the fetuses recorded. Six male and non-pregnant females operated at the same time, and kept under identical conditions, served as controls. The results of the experiment are as follows: (1) The presence of the adrenal cortex has little or no ameliorative effect upon the syndrome following adrenal extirpation of the mother. (2) The survival period of bilaterally operated pregnant cats is approximately the same as that of male and non-pregnant female animals similarly operated. (3) The mechanism present in the dog which enables the adrenalectomized mother to live throughout the period of gestation is apparently lacking in the cat.

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<sup>1</sup> Stewart, H. A., 17th International Congress of Medicine, London, 1913, Sec. III.

<sup>2</sup> Stewart, G. M., and Rogoff, J. M., *Am. J. Physiol.*, 1927, lxxix, 508.

<sup>3</sup> Corey, E. L., *Am. J. Physiol.*, 1927, lxix, 633.