of ascorbic acid required for maintenance of the optimal plasma level during treatment. In conclusion our data indicate the necessity for a high ascorbic acid intake during certain types of medication with heavy metal compounds, to meet excessive requirements either for physiological demands, or for detoxification of drugs in certain cases before therapeutic levels can be attained.

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Respiratory Metabolism of Pigeons after Adrenalectomy and its Increase by Prolactin.

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Recent experience in the maintenance of adrenalectomized animals in fair or good condition without use of cortical hormones gives new interest and value to measurement of the basal metabolism of such animals, and the adrenal-pituitary relationship is now the subject of much investigation. The pigeon has been found useful in such studies. It seems to survive complete adrenalectomy readily, though it is best to do the operation in two stages and to inject desoxycorticosterone just before the second operation; thereafter pigeons maintain themselves well without special nutritional or hormonal supplements. Repeated metabolism measurements have been made on 12 such pigeons of various races (both sexes) and on 4 of these birds the ability of prolactin to increase the B.M.R. was demonstrated.

Thirty measurements made at 30°C indicate that adrenal removal in pigeons has little effect on heat production; a decrease of 6% was found. Measured at 25°C this decrease was also 6%. Respiratory quotients obtained after a 24-hour fast were the same in operated (0.73) and intact pigeons. In 10 tests made on birds from which a single adrenal was removed no significant effect was observed. The effect of adrenalectomy on the metabolism of the bird is thus found to be less though similar in direction to that previously reported by others for certain mammals. Interpretation

of depressions noted in most mammalian tests is usually obscured by the regimen imposed to insure survival or by poor condition of the animals. In pigeons it seems probable that the observed small decrease in B.M.R. was the indirect result of some (presumptive) reduction in bodily activity and of some protection against low temperature. One thyroidectomized pigeon showed a 10% decrease in metabolism following adrenalectomy. Body weights may be well maintained for at least a few months. Measurements were made at intervals varying from 2 days to 4 months after operation.

Four adrenalectomized pigeons with an average B.M.R. of 3.78 calories per kilo-hour were injected with 5 mg (20 units) prolactin daily for 3 days. The heat production of these 4 birds was then +7, +34, +51 and +56. The preparation used (495H2) had been heated to 60°C, at pH 8.0, for 5 hours. This treatment should have been particularly adverse to glycotropic and growth factors if they were present. The prolactin used gave no apparent increase in dove thyroids, and contained little FSH. One of the 4 pigeons used in this test was completely thyroidectomized, and had previously shown no increase in B.M.R. after 5 and 8 daily injections of 4 mg of a prolactin-free preparation of thyrotropic hormone. In this thyroidectomized-adrenalectomized pigeon prolactin increased the B.M.R. by 34%. Earlier studies[1, 2] have shown that prolactin increases the B.M.R. of hypophysectomized and thyroidectomized pigeons when measured at 30°C. Contrary to an earlier assumption[2] the present tests indicate that this action of prolactin is not mediated in part by the adrenals.

[1] Riddle, O., Smith, G. C., Bates, R. W., Moran, C. S., and Lahr, E. L., *Endocrinol.*, 1936, **20**, 1.

[2] Riddle, O., Smith, G. C., and Dotti, L. B., *Am. J. Physiol.*, 1938, **123**, 171.