for comparison, spectrograms of known solutions. These are obtained by soaking a small roll of ashless filter paper in the solution and introducing it into the center of the spark. Strips of epidermis may be cut and held in small pyrex glass tubes and burned in the same way.

The high frequency generator used in our experiments is similar in design to that employed by the previously mentioned authors. Certain modifications were necessary, however, before the apparatus was adaptable to our purposes. These and other technical details will be fully described later.

With the techniques described, using a Gaertner L 250 W quartz spectrograph, we have experienced no difficulty in obtaining strong lines of Ca, Mg, K, Na, Fe, Cu, and P in a large variety of tissues examined.

7742 C

Action of Parathyroid Hormone in Normal and Hypophysectomized Pigeons.*

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Current studies of this laboratory on the relation of the various anterior pituitary hormones to carbohydrate and calcium metabolism made it necessary to learn whether the parathyroid influences the blood calcium level in pigeons as it is known to do in certain other animals. Data on this latter point only are presented here. Collip[1] has shown that mammalian species show extraordinary differences in their response to the parathyroid hormone, and could demonstrate no effect of the hormone on non-laying hens. Concurrently with the present study Hutt[2] observed in a case of idiopathic hypoparathyroidism in which the normal serum calcium level was restored with parathormone. Macowan[3] found parathormone to have no effect on the blood calcium of moulting hens.

Sugar was determined by the Hagedorn-Jensen method, calcium

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1 Collip, J. B., *Can. Med. Assn. J.*, 1931, **24**, 646.

2 Hutt, F. B., and Boyd, W. L., *Endocrin.*, 1935, in press.

3 Macowan, M., *Quart. J. Exp. Physiol.*, 1932, **21**, 383.

by the Collip and Clark method. Usually only 1.0 to 1.8 cc. serum was used for the calcium determination, and blood was taken from the wing vein. Parathormone (Lilly) was employed in intramuscular injections. Though no attempt was made to find the time after dosage at which the maximum effect of parathormone is obtained the data of Tables I and II make it clear that in adult, normal, hypophysectomized and in thyroidectomized pigeons the serum calcium is markedly and rapidly increased. Both males and females gave this response; the average increase being 18% in normal, 24% in hypophysectomized, and 30% in thyroidectomized birds.

TABLE I.

Effects of injections of parathormone (Lilly) on blood sugar (mg. per 100 cc.) and serum calcium (mg. per 100 cc.) of normal tippler pigeons.

	First control 8/22		Test 8 hours after injection of 10 units 8/23		Test 22 hours after further injection of 20 units 8/24		Later control 8/29	
Bird	Sugar	Ca	Sugar	Ca	Sugar	Ca	Sugar	Ca
♀ A503	219	9.8	217	11.9	283	11.9	217	10.1
♂ A526	214	10.2	263	12.8	303	10.6	214	10.2

TABLE II.

Other tests of effects of parathormone on normal, hypophysectomized, and thyroidectomized pigeons.

		Dosage		Test		Control	
Condition of pigeon	No. of birds	Hours before test	Units	Sugar	Ca	Sugar	Ca
Normal	2	19; 4	20; 10	231	15.3	194	12.6
Hypophysectomized	2	19; 4	20; 10	199	13.9	184	10.4
Thyroidectomized	2	19; 4	20; 10	197	13.4	183	10.4
Hypophysectomized	2	5.5	12	180	10.9	183	9.6
Thyroidectomized	2	5.5	12	179	12.4	181	9.4

An unexpected but apparently definite (22%) effect of the parathormone injections on the blood sugar level was obtained in 5 of 6 tests made on normal pigeons—and in normal pigeons only. Possibly something other than parathyroid hormone (but present in "parathormone") was responsible for this action on the blood sugar.

Summary. The parathyroid hormone (parathormone) effectively increases the serum calcium level in normal, hypophysectomized and in thyroidectomized pigeons. Pigeons are therefore to be added to the few species now known to be suitable for use in studies which seek to identify the particular anterior pituitary hormone which stimulates the parathyroids. The parathormone preparation used

contained something which led to increased blood sugar values in 5 of 6 tests made on normal pigeons.

7743 C

Response of Adult Rat Testes Sex Accessories and Adrenals to Injections of Prolactin.*

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The testes of mature doves[1, 2] and the ovaries of mature fowl[3, 4] quickly and strikingly diminish in size during dosage with prolactin. In the fowl the oviduct (uterus) simultaneously involutes. In all these cases follicle-stimulating hormone (F.S.H.), admixed with some thyreotropic hormone, has a directly opposite effect. It is of more than theoretical importance to know whether prolactin exercises a similar action in mammals, and for a first test of this point we chose the testes of adult rats. It seemed best to make simultaneously tests of effects of F.S.H. and Prolan (Elberfeld) on some of these adults; and also to search in several organs for size changes which might throw light on the action of each of the hormones used. A group of younger rats was ultimately included in the study.

Adverse effects upon the ovary have been repeatedly reported, and such effects upon the testis occasionally found, from the use of crude anterior pituitary preparations, and attempts have been made to associate such adverse effects with one or another pituitary principle. On this point Loeb[5] recently concluded that the hormone causing follicular atresia is probably closely associated or identical with the thyreotropic hormone. It is therefore noted here that the prolactin used was free or practically free of thyreotropic (and F.S.H.) hormone, and that thyreotropic hormone is found in fair quantity in our F. S. H. preparations (also in all such preparations made by others from pituitary tissue and examined by us).

* Aided by a grant from the Carnegie Corporation of New York.

1 Riddle, O., and Bates, R. W., *Endocrin.*, 1933, **17**, 689.

2 Riddle, O., Bates, R. W., and Lahr, E. L., unpublished data.

3 Bates, R. W., Lahr, E. L., and Riddle, O., *Anat. Rec.*, 1933, **57**, 30.

4 Bates, R. W., Lahr, E. L., and Riddle, O., *Am. J. Physiol.*, 1935, in press.

5 Aff, H. M., and Loeb, Leo, PROC. SOC. EXP. BIOL. AND MED., 1934, **31**, 957.