

being noted. It was thought that cupreine might penetrate tissue and reach the peritoneal cavity more readily than quinine, and undergo in this experiment more frequently an accelerated absorption. Later therefore (Series 1 and 2) the site of injection was shifted for half the animals to the dorsum so as to hinder penetration into the abdominal cavity. The toxicity of the cupreine plainly fell (March 16), that of quinine remained of the same order as before. Late deaths became negligible. Further observations (Series 2) indicate that this shift of injection site makes little difference in the 50% lethal dose of quinine but probably doubles that of cupreine. It is clear that in comparative toxicity determinations the use of relatively large numbers of animals on each dose may by itself be inadequate to give reliable results; the method must be given close scrutiny.

### 7779 P

#### Creatine Content of Heart in Experimental Cardiac Hypertrophy Due to Hyperthyroidism.

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Cowan<sup>1</sup> has recently reported that the administration of thyroxin to rats, while producing an increase in ventricular muscle mass, resulted in a loss of creatine. Before the publication of Cowan's data, we had independently observed the same phenomenon in rats receiving desiccated thyroid. Indeed, the creatine values were depressed to much lower levels in our experiments than in those of Cowan. While it is to be recognized that the response to thyroid varies somewhat in different individuals, and depends upon a variety of factors to be described later, our results have been averaged as outlined in Table I for the purpose of comparison with Cowan's data. The usual daily dose of the powdered thyroid was 200 to 250 mg. per 100 gm. of body weight.

That the increased size of the heart represents a true hypertrophy is indicated by the fact that the water content of the hyperthyroid ventricles was practically the same as that of the normal ventricles (average of 76.48% for 11 hyperthyroid hearts and 76.21% for 6 normal hearts). On histological examination the hearts of the

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<sup>1</sup> Cowan, D. W., *Am. J. Physiol.*, 1934, **109**, 312.

TABLE I.  
Average Data Obtained in a Series of 27 Hyperthyroid and 8 Normal Control Rats.

	Normals	Hyperthyroid
Initial body wt., gm. ....		224
Final body wt., gm. ....	197	178
Wt. of ventricles, mg. ....	510.4	768.8
Ventricular wt./body wt. ratio .....	2.59	(3.43)*
Creatine concentration in ventricles, mg. % .....	198.3	4.32
Total creatine in ventricles, mg. ....	.996	104.4
		.825

\* The upper figure is calculated on the basis of original body weight; the lower on the basis of the final weight.

hyperthyroid rats showed hypertrophy, signs of acute degeneration, mononuclear cellular infiltration, and occasionally fatty metamorphosis.

Not infrequently death overtook the thyrotoxic animals in a sitting posture, sometimes following relatively slight exertion, and without being preceded by the usual signs of serious illness.

Our acknowledgment is due to Eli Lilly and Company for their generous cooperation in supplying a part of the desiccated thyroid used in these experiments.

## 7780 C

### Differential Effect of Some Gonadotropic Substances on Development of Cyclical Sex Characters in the English Sparrow.\*

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The English Sparrow, like all other wild birds of the temperate zone, has a cyclical sexuality. During the breeding season in spring and early summer the sex glands are large and active; in July or August they undergo a rapid involution. In the males the testes shrink to approximately one-thousandth of their maximal size and the ovary of the females regresses to about the condition characteristic of immature birds 2 or 3 months old. Some of the secondary sex characters, especially bill color and gonadal ducts, follow this seasonal cycle. During the period of gonadal involution the bill of the male is as light as that of a castrate and the oviduct of the female is as thin and straight as that of an immature or an ovariectomized

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