sistent relationship that is evident is that the changes in water intake parallel the changes in urine output reasonably well.

The straight line relationship obtained in Exp. 3 is not quantitatively consistent from experiment to experiment. In Exp. 4, dosage of 400 r elicited twice the volume of urine. As far as could be ascertained, the physical conditions of both experiments were equivalent. The fact that a quantitative relationship between x-radiation dosage and urine output does occur sometimes suggests that a single biologic component or mechanism on which flow of urine depends is specifically responsive to irradiation. Since polyuria is dependent on the polydipsia, it is evident that x-irradiation stimulates thirst. The experiments of Gilman(8) suggest that cellular dehydration is the prime factor in arousing thirst. Since France(1) has been able to show a significant increase in the thiocyanate space in rats 2 days after a single total-body irradiation of 400 r, it seems probable that this is the mechanism that is responsible for polydipsia. It is not yet clear in exactly what manner the hormones of the adrenal cortex mediate the shift in body water. Experiments to further elucidate the above-mentioned relationships are in progress.

Summary. 1. Experiments have failed to show any influence of body-weight on the amount of urine excreted by the rat following total-body irradiation. 2. Rats that had at all times an excess of drinking water always showed an increase in the flow of urine following exposure to 400 r. 3. If water was withheld immediately following total-body irradiation, no immediate diuresis resulted. If drinking water was allowed after being withheld for 6 hours following irradiation, polyuria then followed the polydipsia. Under these conditions, a quantitative relationship sometimes obtained between the amount of x-radiation and the increase in urine excreted. 4. Following adrenalectomy, a time lapse of at least 12 days must be allowed before an obliteration of the diuretic response to total-body x-irradiation is apparent.

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Chromatophore Hormones in the Pituitary of Albino Animals. (23623)

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We have shown(1) that at least 2 chromatophore hormones exist, one a hormone of the anterior pituitary lobe and one situated in the posterior lobe. The studies of Zondek(2) and Lerner(3) as well as our own(1) indicate that as many as 3 hormones may exist. To distinguish between them we have proposed the following nomenclature: Posterior chromatophore hormone = Melanophore hormone (Herring), Intermediate chromatophore hormone = Intermedin (Zondek), and Anterior chromatophore hormone = Chromatophorotropic factor of ACTH (Sulman). It is difficult to ascribe definite functions to the various chromatophore hormones, particularly to the posterior chromatophore hormone, but it is known that the intermediate chromatophore hormone is directly concerned with albinism

since albino frogs lack the pars intermedia of the pituitary(4).

The existence of more than one chromatophore hormone justified a reexamination of the problem of melanophore activity in albinos. Bloch(5) and Schultz(6) established that albinism is characterized by the lack of DOPA oxidase. Since 1925 only few studies have been devoted to albinism. Beadle(7) and Russell *et al.*(8) confirmed the absence of DOPA oxidase, as did the research of Fitzpatrick and Lerner(9). The latter, however, proposed the use of the wider term tyrosinase in preference to DOPA oxidase, and also confirmed earlier histochemical studies (10) of albino skin which failed to demonstrate the presence of tyrosinase in the melanocytes of albinos. Meirowsky(11) stated that inheritable albinism is a recessive characteristic which is contained in the genes in a cryptomere condition. He further stated that albinism may disappear in some patients in the course of their lives due to formation of tyrosinase. A preliminary experiment conducted by us in patients suffering from vitiligo has shown that pigmentation can be partly restored to the albinotic areas by the injection of a combination of tyrosinase and melanophore hormone(12).

Technic. The pituitaries were removed from rabbits immediately after they were sacrificed. Separation of the pituitary lobes was carried out under a 10 x magnifying glass immediately after death. The separated lobes were weighed on a torsion micro-balance and homogenized in a glass tube with barrel homogenizer, by adding 0.5 ml of n/10 NaOH/10 mg tissue. The resulting emulsions were neutralized (bromthymol blue indicator) with a few drops of 1.5% acetic acid, brought to a concentration of 10 mg/ml with water and assayed for chromatophore hormone in green-adapted tree-frogs of the species *Hyla arborea*(13-15). Three frogs were used for each dose, and one pituitary lobe was titrated on at least 20 frogs. One frog unit chromatophore hormone in tree-frogs (*Hyla arborea*) is approximately equivalent to 0.1 γ active substance.

Results. Table I shows that the chromato-

TABLE I. Chromatophore Hormone Content of Anterior + Intermediate and Posterior Lobes of Rabbit Pituitaries.

Color of rabbit	Rabbit wt, g	Pituitary lobe	Wt of lobe, mg	Homogenate (10 mg/ml) dilution 1:1 .3 ml	1:1 .1 ml	1:10 .3 ml	1:10 .1 ml	1:100 .3 ml	1:100 .1 ml	1:1000 .3 ml	1:1000 .1 ml	Chromatophore hormone, frog units/lobe
Grey	1550	Ant. + int.	12.5	+++	+++	+	±	—	—	—	—	38
		Posterior	5	+++	+++	+	+	+	±	—	±	150
"	1600	Ant. + int.	11	+++	+++	+	±	—	—	—	—	33
		Posterior	3	+++	+++	+	+	+	—	—	—	90
"	1700	Ant. + int.	14	+++	+++	+++	+	±	—	—	±	140
		Posterior	5	+++	+++	+	+	+	±	±	—	150
"	1650	Ant. + int.	10	+++	+++	+++	+	±	—	±	—	100
		Posterior	3	+++	+++	+	+	+	±	—	—	90
"	1500	Ant. + int.	13	+++	+++	+	+++	—	—	—	—	130
		Posterior	5	+++	+++	+++	+	±	—	±	—	50
"	1750	Ant. + int.	15	+++	+++	+	+	±	±	±	—	150
		Posterior	5	+++	+++	+	±	±	—	—	—	15
Black	1700	Ant. + int.	13.5	+++	+++	+	+	—	—	—	—	135
		Posterior	4	+++	+++	+	+	±	—	±	—	40
Albino	1700	Ant. + int.	14	+++	+++	+	±	—	—	—	—	42
		Posterior	5	+++	+++	+++	+	+	±	±	—	150
"	1650	Ant. + int.	18	+++	+++	+	±	±	—	—	—	54
		Posterior	5	+++	+++	+	±	—	—	—	—	15
"	1700	Ant. + int.	14	+++	+++	+++	+++	+	±	±	±	42
		Posterior	4	+++	+++	+++	+++	±	±	—	—	40
"	1750	Ant. + int.	15	+++	+++	+++	+	—	±	—	—	150
		Posterior	5	+++	+++	+	+	+	+	±	—	500

phore hormone content in pigmented rabbits varies in the anterior + intermediate lobes between 33-150 frog units and in the posterior lobes between 15-150 frog units. In albino rabbits the values found amounted to 42-150 frog units in the anterior + intermediate lobes and to 15-500 frog units in the posterior lobes. Thus it is evident that the albino animal produces chromatophore hormone at least to the same extent as the normally pigmented rabbit and there is no significant difference in the pituitary content of this hormone between either type of animal.

Summary. The chromatophore hormone content of the pituitaries of pigmented and of albinotic rabbits has been examined in tree frogs (*Hyla arborea*). There is no significant difference between the two types of animals, the hormone content in the anterior + intermediate lobes in pigmented animals amounting to 30-150 frog units and in albinotic animals to 42-150 frog units. In the posterior lobes the values for pigmented animals were between 15 and 150 frog units and for albinotic animals between 15 and 500 frog units. We conclude that the only difference between the albinotic and the normally pigmented individual is the lack of enzymes of the type of DOPA oxidase or tyrosinase. This fact should be borne in mind in the approach to the treatment of vitiligo.

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Effect of Large Loads of Sodium on Bone and Soft Tissue Composition.* (23624)

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Recent data from this laboratory have demonstrated that in acute sodium depletion, approximately 70% of the sodium removed from the body is derived from the extracellular phase, 25% from bone mineral, and only 5% from the intracellular compartment(1). In view of these findings it was decided to determine whether bone could also act as an acceptor of sodium ions, under conditions of prolonged sodium-loading, or whether excess sodium would be retained in the extracellular fluid or the body cells. Therefore, a small group of rats was given a daily sodium load approximating 50% of their total body sodium. After 24 days they were sacrificed and the sodium content of bones and soft tissues determined. It was found that this procedure caused an increase of 8.6% in bone mineral sodium, associated with a 24% loss of bone water. These changes in bone occurred in the absence of changes in body weight, extracellular fluid composition, or the composition

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