on the glomerular permeability to protein, as well as on the tubular reabsorption of protein is now under investigation.

Summary. 1. Bilateral adrenalectomy abolishes or greatly reduces the types of experimentally produced proteinuria studied in the saline maintained rat.

2. The normal, spontaneous proteinuria of the male rat is significantly reduced by bilateral adrenalectomy.

3. Cortisone administration to bilaterally adrenalectomized male rats increases their spontaneous proteinuria to normal control levels.

4. Adrenal cortex extract, desoxycorticosterone acetate, and cortisone restore the ability of the salt-maintained, adrenalectomized rat to respond to renin injection with massive proteinuria.

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The Dermal Loss of Iron.* (17804)

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It has been generally accepted that the human being has a limited capacity to lose iron except by hemorrhage. Voluminous data obtained from careful iron balance studies have indicated that: (a) very little dietary iron will keep a normal individual in iron balance; (b) the loss of iron in the urine and stool amounts to no more than 1 mg per day; (c) only a small amount of iron is absorbed from the gastro-intestinal tract even when iron is given in large amounts; and (d) the body supply of iron, once across the intestinal barrier, is closely conserved(1-5). The findings of Mitchell and Hamilton(6) who report as much as 6.5 mg of iron lost in sweat per day indicate a hitherto unsuspected avenue of iron loss.

This paper presents the results of 118 determinations of iron in sweat obtained from 25 normal subjects.

Method. 1. The method of Leslie and Levin(7), used in obtaining the sweat sample, consists essentially of carefully washing one forearm with soap and water, rinsing with copious amounts of distilled water, and drying carefully with specially cleaned towels. Finger cots are applied to preclude fingernail contamination and a full-length rubber glove is then drawn over the hand and forearm to catch the sweat. The other arm is placed in a water bath at 110° F for one hour. In most instances a sufficient volume of sweat is obtained. The sweat which accumulates in the glove is measured in a graduated centri-

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TABLE I.
Determinations of Iron in Sweat.

No. of samples per subject	Avg volume of sweat collected, cc	In "cell poor" sweat, μg per cc	In "cell rich" sweat, μg per cc
4*	9.3	.31	8.45
1	15.	.18	19.5
3	16.	.51	2.56
3	14.7	.26	3.63
3	9.7	.64	10.73
8	12.3	.30	6.94
2	10.5	2.15	17.2
5	10.4	.52	3.74
1	5.	.00	4.9
2	10.	.00	4.2
1	5.	.00	6.1
1	5.	.00	4.5
1	6.	.00	2.2
1	14.	.00	9.5
8	10.1	.23	5.3
1	15.	.00	4.1
1	4.	.00	8.3
1	5.	.00	10.4
2	11.8	.38	9.
2	19.5	.45	.78
1	20.	.00	4.9
1	7.7	.55	9.5
1	5.	.20	4.3
4	8.1	.19	4.75
1	7.5	.55	10.9

* Where more than one sweat sample per subject was analyzed, figures represent averages.

fuge tube and the volume recorded.

Iron analyses of distilled water rinsings and arm washings were made in order to be sure that iron was not introduced erroneously into the sweat sample. All subjects were in a fasting state before the sweat was obtained. Two glasses of water were drunk before the sweating period.

2. Iron determinations were made using an ortho-phenanthrolin method(8-12), modified for these purposes. In this method iron is reduced by hydroquinone to the ferrous state and unites with ortho-phenanthrolin in a solution of pH 3.5-4.5 to produce a pink color. The solution is buffered with ammonium acetate. The procedure is carried out as follows: To a 2 cc aliquot of the sample in a 20 cc test tube are added one cc of C. P. concentrated sulfuric acid and 2 glass beads. The test tube is then heated over a micro burner, care being taken to avoid loss from bumping. The digestion usually takes about 15 minutes. The solution is then cooled and enough 30% hydrogen peroxide is added dropwise until clear. The sample is then re-heated to boiling to destroy the excess H_2O_2, after which the total volume is re-adjusted to 2.0 cc with distilled water. To the tube are added, in order, the following solutions: 0.3 cc of 1% hydroquinone (freshly prepared), 1.0 cc of 0.1% ortho-phenanthrolin and 7.0 cc of 50% ammonium acetate. The tubes are shaken vigorously. Color is allowed to develop for one hour. It is then read in a colorimeter (the Klett-Summerson photoelectric colorimeter with light filter No. 50 was used in these experiments). Distilled water blanks and standards containing .002 mg of iron per cc were run simultaneously. Using this method, we were able to recover 98% of known amounts of added iron. However, great caution must be exercised to avoid

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the introduction of iron, either by accident or by contaminated chemicals.

Discussion of results. The analyses of "cell rich" and "cell poor" sweat from 25 different normal subjects are given in Table I.

"Cell rich" indicates sweat just as it came from the glove. "Cell poor" refers to the supernatant obtained after centrifugation. The former material was opalescent, the latter clear. By far the larger amount of iron was present in the "cell rich" sweat. With one exception all determinations of "cell poor" sweat showed less than 0.64 μg of iron per cc, which is below the limits of accuracy of this method.

In order to check the results further a rubber glove was applied to a subject's arm after the usual preparation. Distilled water was allowed to remain in contact with the arm for one hour and the contents of the glove were then analyzed for iron. The material obtained was opalescent and rich in epithelial cells; it yielded an iron content of 8.5 μg/cc, corresponding to "cell rich" sweat. The supernatant after centrifugation gave a blank reading for iron. This has been repeated several times with similar results.

From the data obtained it is concluded that the loss of iron in human sweat is negligible. Loss of iron from desquamation of the epithelium may be considerable, although no quantitative estimates were made. Further iron balance work with reference to the loss of iron by means of desquamation of epithelial cells is indicated.

Summary. "Cell poor" and "cell rich" sweat samples from 25 normal subjects have been analyzed (total of 118 determinations). The iron content of "cell poor" sweat was negligible. On the other hand "cell rich" sweat contained a high concentration of iron. This iron loss is not an essential function of the process of sweating, but is associated primarily with desquamation.

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Effect of DDT on Testes and Secondary Sex Characters of White Leghorn Cockerels. (17805)

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With the introduction of the insecticide DDT (2,2-Bis(p-chlorophenyl) 1,1,1-Trichloroethane) and its subsequent widespread application, there came a need for a complete understanding of its toxicity, and metabolic effects in animals other than insects. Studies on several species of mammals have resulted in a rather wide variety of findings regarding the action of this compound. In general, mammals are extremely sensitive to relatively small amounts of DDT. On the other hand, birds have been shown to possess a high degree of resistance to this substance(1). Since experiments dealing with the effects of DDT on birds are notably less numerous than similar studies on mammals, it appeared that additional information regarding this important compound might be obtained from a study designed to reveal the effects of long-term poisoning in chickens. In the course of this study on cockerels, some interesting effects were noted on the development of the testes and secondary sex characters.

Method. White Leghorn cockerel chicks were selected at random and divided into 2 groups, one to serve as controls and the other as experimental animals. They were placed in a commercial brooder and allowed free access to food and water. Two series of experiments were carried out involving a total of 30 controls and 40 treated birds. Starting on the 8th day after hatching, the experimental chicks were given daily subcutaneous injections of purified DDT (M.P. 109°). To

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