change at all was visible on the skin of the other frog. The brown spot persists for a few hours and then slowly disappears, while a slight darkening of the whole skin becomes noticeable.

Figure 2 demonstrates this darkening process. The first photograph shows the frogs, both of the same colour and characteristics, before the passage of the current; on the second photograph the darkening at the place where the positive electrode was applied is clearly visible.

This experiment was repeated many times with the same results.

All control experiments carried out by saturating the electrodes with distilled water or saline solution were negative. Neither does application of the hormone solution to the skin, without passage of the current, produce any change.

## 11730

## A Lethal Dermatitis in Chickens Produced by External Application of Fat.

BEN-AMI BEN-DOR. (Introduced by H. J. Almquist.)

*From the Division of Poultry Husbandry, College of Agriculture, University of California, Berkeley.*

It was noticed during the course of a joint experiment of the Institute of Experimental Biology and the Poultry Division of the University of California that Single Comb White Leghorn chicks fed purified diets containing 40% fat contracted a severe dermatitis. This dermatitis was found not to be of nutritional origin, since chicks on a normal diet whose entire skin was coated with the same fat developed the same dermatitis and died within 3 to 5 days. One or two applications were sufficient in the case of chicks 4-5 weeks old; older birds were more resistant. Furthermore, the ingestion of the purified diets containing 40% fat was shown to be harmless if care was taken to prevent the fat from coming in contact with the superficial skin.

Thirty-one chicks were used in the following experiment. They were kept in battery brooders provided with wire mesh floors, and fed the normal chick mash. The 6 control chicks remained in perfect health. The coating was performed by gently applying the oil or liquefied fat (heated to about 42° C) to the skin of the chick by means of a cotton swab, or by pouring it between the feathers di-

TABLE I.
Effect of Coating Chicks' Entire Skin with Fat.

| No. of chicks | Age in wk | Fat or oil used | Times treated | Reaction of chicks* |
|---|---|---|---|---|
| 6 | 4 | Lard | 1 | All died within 4 days |
| 1 | 5 | " | 1 | Healed |
| 1 | 5 | " | 2 | " |
| 1 | 7 | " | 1 | " |
| 1 | 7 | " | 6 | " |
| 1 | 7 | Cottonseed oil | 1 | Died within 5 days |
| 1 | 7 | " " | 3 | Healed |
| 1 | 7 | Hydrogenated cottonseed oil | 5 | " |
| 1 | 7 | Chicken fat | 1 | Died within 5 days |
| 2 | 7 | Mineral oil | 1 | One died within 3 and the other within 5 days |

*Coating the skin with fat invariably caused dermatitis.

rectly onto the skin. The results of such treatment are given in Table I.

Coating a limited area of the body produced a dermatitis limited to that area. The chick in this case survived the treatment. The following treatments, applied to chicks of the same age, failed to produce the dermatitis:

1. Injection of fresh or rancid fat (lard) in amounts which, when applied externally, caused dermatitis and death.

2. Subjection of the skin of the chick's entire body (with the exclusion of the head) to an atmosphere of $CO_2$ for a period of 7 days.

Gross lesions and histological findings: In the last stages of the dermatitis the chick was listless; the skin was hyperaemic, it ruptured and bled easily, and was covered with a yellowish flaky material which came off readily. Histological examination of the skin affected by this dermatitis revealed the following:

1. A marked thickening of the cornified layer to several-fold that of a normal skin.

2. A marked proliferation of the cells of the Malphigian layer to several-fold that of a normal skin.

3. Loosening of the underlying connective tissue, and its infiltration with blood elements proportionately higher in leucocytes. The connective tissue appeared also more highly vascularized.

4. Appearance of hemorrhages in the Malphigian layer.

It was also noted that in a normal chick the skin in the immediate neighborhood of the outlet of the uropygeal gland, as well as the lining of the ducts of the gland, showed thicker cornified and Malphigian layers when compared with the skin taken from other parts of the body.

Thus, an external application of fat to the skin of the chick caused a lethal dermatitis, whereas the incorporation of the same fat in the diet or its injection (subcutaneously) caused no apparent ill effects.

The histological studies were made under the guidance of Dr. Alexei Koneff of the Department of Anatomy, University of California.

## 11731

## Effect of "Prospermin" on Immature and Mature Hypophysectomized and Normal Male Rats.*

J. H. LEATHEM. (Introduced by P. E. Smith.)

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The induction or restoration of sperm formation in mature and immature hypophysectomized ground squirrels by Prospermin† injections has been reported.[1] However, this material is stated to have only a slight effect on the normal rat testes.[2, 3] The present investigation was undertaken to determine the effect of Prospermin on sperm formation and on the interstitial tissue of hypophysectomized mature and immature male rats.

The majority of the immature male rats were operated at 24 to 28 days of age, a few being 30 to 37 days of age. A postoperative interval of 5 to 10 days was allowed to elapse after hypophysectomy before beginning treatment. The mature rats were 78 to 120 days old at the time of operation; the injections being begun after a postoperative interval of 0 to 60 days. All pituitary capsules were serially sectioned, stained with Masson trichrome and examined microscopically. Data from only completely hypophysectomized animals are presented.

The Prospermin was injected, subcutaneously, in daily doses of 1 and 2 mg. Higher dosages were not given as this extract was poorly

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† Prospermin is stated by the manufacturers, E. R. Squibb & Sons, to be prepared from normal male urine. This material was generously supplied by Dr. J. A. Morrell.

1 Wells, L. J., and Overholser, M. D., *Anat. Rec.*, 1938, **72**, 231.

2 Moore, C. R., *Am. J. Anat.*, 1936, **59**, 63.

3 Morrell, J. A., *Anat. Rec.* (*Suppl.*), 1933, **55**, 29.