

or a little later. This area (larger than the scarified area) showed in every case a scaling or desquamation through the fourth week and in some cases even longer. After the fifth or sixth week practically all traces of the inoculation had disappeared.

Monilia were isolated from the scales from two of the eight inoculated individuals after eighteen and twenty-one days respectively; at later periods the organisms could not be demonstrated.

It appears then from these experiments that monilia may stimulate the epidermis to an activity which at least in part simulates that noted in psoriasis.

## 228 (2751)

### Physical-chemical changes of the blood in thyroidectomized guinea pigs.

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As far as we have been able to learn, no studies have been made of the surface tension of the blood in thyroidectomized animals. In the course of a series of experiments it became essential to study the surface tension of the plasma of such animals.

We removed the thyroids of a number of guinea pigs and determined the surface tension of the plasma at various periods after operation.

We used the DuNouy Tensiometer for making surface tension determinations. The animals were bled from the carotid artery through a cannula into tubes containing one per cent sodium oxalate. One part of oxalate solution to nine parts of blood was used throughout the entire series. Several experiments were made to determine the effect of different quantities of oxalate solution, and these showed that, within reasonable limits, dilution of blood with varying quantities of oxalate did not appreciably alter the surface tension.

In thyroidectomized animals we found a rise in the surface tension of the plasma, progressively increasing with the longer post-operative period. This rise reached its maximum in from twenty-two to twenty-eight days.

Plasma obtained from animals six and thirteen days after operation showed no appreciable increase; we can therefore eliminate the operative procedure as a factor in the changed surface tension. On the eighteenth day after operation the increased surface tension became evident. From the eighteenth to the twenty-eighth day there is a distinct increase in the number of animals showing high surface tension. The average surface tension of all thyroidectomized animals on or after the eighteenth day was 57.7 dynes; the average surface tension of the corresponding normal animals was 53.8 dynes. Thus the plasma from sixteen out of twenty-seven operated animals was found to be above 55.4 dynes; on the other hand 23 out of 26 normal plasmas were below this figure. Between the twenty-second and twenty-eighth days, fourteen out of seventeen operated animals had plasmas showing a surface tension considerably higher than that in an equal number of controls done simultaneously. The average difference in individual groups (controls compared with thyroidectomized animals) varied from 5.1 to 5.7 dynes.

There are probably many compensatory factors involved which tend to prevent this increase in the thyroidectomized animals, so that variation may occur in different animals. Thus some plasmas have already reached the maximum in from eighteen to nineteen days after operation, while others are occasionally found within normal limits even after twenty-four days. Our findings so far suggest that this is largely a factor of the time element in the individual animal.

In one small series, examined twenty days after operation, we used serum in place of plasma; the difference between the operated and control animals was distinctly less marked than when plasma was used.

A few experiments were undertaken to ascertain whether this difference between the plasma from normal and operated animals was in any way related to the length of time that the plasma was allowed to remain in contact with the cells. It was found that there was little or no difference between the surface tension of plasma immediately separated and the plasma allowed to remain in contact with the cells for two to five hours.

Viscosity determinations of the plasma are now being carried out, and the results so far seem to indicate an increased viscosity of the plasma of the operated animals; however, additional experiments are required before a definite statement can be made in this regard.

## 229 (2752)

### Epinephrin anhydremia and its relation to the emergency function of the adrenals.

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It has been well known, since Lamson<sup>1</sup> first worked on this subject, that the blood concentrates in response to small increases in its epinephrin content. This phenomenon has been studied very little in unanesthetized animals, no attention having been paid to the threshold dose of epinephrin which produces anhydremia.

We have performed 25 experiments in which epinephrin has been injected in varying amounts in a number of unanesthetized dogs. In most of these the total blood solids were determined before each injection, and at five minute intervals thereafter. To insure observation of the maximum effect, ten of the experiments were controlled by following the specific gravity (Falling Drop Method<sup>2</sup>) at approximately one minute intervals. It was found that the threshold dose for epinephrin anhydremia is approximately .0001 mg. per kilo animal, while to produce the maximum effect about .01 mg. per kilo is required. With this latter dose the greatest effect was a change of specific gravity in one case from 1.0504 to 1.0562, which occurred within 2 minutes after the injection. The normal level of blood concentration is always regained within about 10 minutes, and a definite although slight dilution often follows. It is thus seen that in unanesthetized

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<sup>1</sup> Lamson, P. D., *J. Pharmacol. and Exper. Therap.*, 1915, vii, 169.

<sup>2</sup> Barbour, H. G., and Hamilton, W. F., *Am. J. Physiol.*, 1924, lxi, 654..