

SCIENTIFIC SECTION

DERMOGRAPHIA: DERMOGRAPHIC TESTS AND OBSERVATIONS.*

BY ALBERT SCHNEIDER, M.D., PH.D.

Dermographia alba indicates adrenal hypo-function whereas dermographia rubra indicates adrenal hyper-function. Somewhat over sixty per cent of a group of 93 students showed endocrinal imbalance according to the two tests mentioned and including the Goetch test for thyroid hyperactivity.

Dermographia or skin writing has been observed for some time but it is only within recent years that any attempt has been made to explain its significance. Three kinds of dermographia have been described: *Dermographia alba*, *dermographia rubra* and *dermographia elevata*. These skin graphs are mechanically elicited and are not to be confused with the usual skin reactions due to the introduction of proteids.

Nothing definite can at this time be stated as to the exact nerve control of dermographia, excepting that the indications are that they are reflex in nature and that they are under the control of the augmentory sympathetic division of the parasympathetic system (vaso-dermal system). The innervation of *dermographia alba* and of *dermographia rubra* is apparently antagonistic. *Dermographia elevata* appears to be governed by the pilomotor nerve supply.

Dermographic reactions are the result of capillary disturbances but no satisfactory explanations have as yet been offered as to why and how they are produced. They apparently depend upon disturbances of endocrinal function; *dermographia alba* apparently being caused by adrenal hypo-function, whereas *dermographia rubra* indicates adrenal hyper-function. In *dermographia alba* the capillaries are reduced in diameter with a resultant blanching of the skin areas affected, whereas in *dermographia rubra* the capillaries are much enlarged. Dermographia is apparently not emotionally attuned although there appears to be some similarity between emotionally produced pallor and *dermographia alba*, and blushing and *dermographia rubra*, while *dermographia elevata* appears to bear some kinship to gooseflesh. For further information the recent medical literature must be consulted. (Goldschneider und Hohn. "Ueber Dermographia." *Deutsche medizinische Wochenschrift*. Nos. 11, 12, 13, 1925. This article also contains a fairly complete citation of literature.)

Each of a group of 115 students was asked to make the following tests at home, preferably several hours after the evening meal, or just before retiring for the night; record the results and submit a report of the findings. Fifteen students failed to submit acceptable reports of findings.

1. After resting quietly for half an hour, or longer (reading and studying is permissible), draw the end of a fountain pen (end of the barrel, not the writing pen) or a hard rubber rod, or the end of a tooth brush handle, or the broad side of the finger nail, over the flexor surface of the forearm, for a distance of ten or more inches, stroking slowly and deliberately, using rather gentle pressure. Draw parallel and cross lines, a triangle or square, a letter, a word, a circle or other pattern

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design, etc. The skin reaction (paling, reddening) which appears in the wake of the stroke, at once vanishes. From eight to twelve seconds later a distinct white line will appear in the exact path of the rod and will endure for several minutes, to again slowly disappear in the course of from ten to fifteen minutes. The lines will promptly disappear on brisk rubbing with a towel or with the palm of the hand. If the skin is first briskly rubbed, or after active physical exercise, the white dermatograph cannot be elicited for some time after. The lines will show much more distinctly in dimmed indirect lighting and viewed at an angle.

2. If the skin is not rubbed, the *dermatographia alba* can be elicited an indefinite number of times, on flexor surface of forearm, on upper chest region, on forehead, on lower leg and on abdominal surface; but not at all or only indistinctly on face, on back of hand, on extensor surfaces, on upper arm and on neck. On the other hand, the red dermatograph is most readily developed on upper arm (over the region of the biceps muscle). Pass the back of the finger nails (broadside, not edge) of the right hand rapidly and firmly, with a down stroke, over the upper arm, and the red streaks will appear almost at once to endure for several minutes and longer. *Dermatographia rubra* is accompanied by an elevation of the skin area involved, whereas *dermatographia alba* shows a slight skin depression.

3. Record the character of the reaction (white, red, elevated), the time of the onset of the reaction, and the duration of the reaction, and draw a skin area map indicating the location of the reactions; and also a statement of additional signs of disturbances of the ductless glands. The following tests may be tried:

1. *Sergent's Test for Adrenal Insufficiency*.—Allow the patient to lie in bed quietly for from one-quarter to one-half hour, lightly covered. By means of the finger nail, or a fountain pen handle, draw a square or lines about the umbilicus. If the adrenal glands are inactive, pale white lines will appear in the path of the strokes. The lines gradually widen to again disappear. The lines must not be preceded nor be followed by redness. This is nothing more than the usual *dermatographia alba* above described.

2. *Goetch's Test for Thyroid Hyperactivity*.—Inject one drop of a 1-4000 solution of adrenalin hydrochloride intradermally. A pale white area appears about the site of the injection, surrounded by an areola of red, if the subject tested has hyperthyroidism. Frequently the erector muscles in the area injected will show tiny elevations, resembling gooseflesh. If the thyroid function is up to normal, the pallor at the site of the injection is alight and evanescent, and there is scarcely any reddening. A positive reaction will endure for from one to twenty-four hours, whereas in normal thyroid function the pale spot will usually disappear within half an hour.

Instead of making intradermal injections of adrenalin, the von Pirquet scarifier may be used. Cleanse skin area with a little alcohol; place a droplet of the adrenalin solution on the cleaned skin area and introduce it intradermally by a twirl or two of the scarifier.

SUMMARY.

The so-called Sergent test for adrenal insufficiency is nothing more nor less than the *dermatographia alba* reaction above described and as such has therefore no special significance and may be canceled for the general white line reactions.

Dermographia alba indicates adrenal insufficiency, and *dermographia rubra* indicates adrenal hyperactivity, and the Goetch test reaction indicates thyroid hyperactivity. The results of the three tests made on 93 students, with age ranges from 20 to 38 years, were as follows:

Tests.	Positive.	Negative.	Per cent.
Goetch	19	74	20.40
D. alba	16	77	17.20
D. rubra	26	57	28.00

Eight students showed a positive Goetch reaction combined with *dermographia rubra*, while only four showed a positive Goetch with *dermographia alba*, which would indicate that hyperactivity of the thyroids is more frequently associated with hyperactivity of the adrenals. Only 34.40 per cent of the students tested for the three reactions showed entirely negative results, which would indicate that endocrinal imbalance is even more common than is generally supposed.

SOME OBSERVATIONS ON DIGITALIS ACTION.*

BY ALBERT SCHNEIDER, M.D., PH.D.

Pulse rate reduction is utilized as a measure of Digitalis action and of dosage.

The following subjective tests on digitalis action were made by students of North Pacific College of Oregon, class in laboratory pharmacology. The purposes of the tests were as follows:

1. To determine if the pulse rate reduction in man, due to digitalis action, is uniform, and whether such reaction might serve as a measure of digitalis action and as a guide to digitalis dosage.
2. Does the simultaneous administration of digitalis and of calcium (lactate) increase and stabilize digitalis action?
3. Data regarding the rate of deterioration of digitalis leaf.

The infusion of digitalis was used in all of the tests, made from the crushed leaf of a one-pound can of "Allen's selected leaves of *Digitalis purpurea* grown in England (Stafford Allen and Sons, London, imported by Lehn and Fink, N. Y.). According to the label, this lot of leaf was assayed on July 19, 1923, with a M. L. D. of 0.0004 to 0.0005 Gm. per Gm. of body weight of frogs, and was therefore (using the average figure, 0.00045) about 25 per cent above standard strength. The leaf was again assayed (by the one-hour frog method) in the pharmacologic laboratories of North Pacific College of Oregon, on April 5, 1926, nearly three years later (2 years, 9 months, 16 days), and found to be about 8 per cent below U. S. P. standard; the leaf therefore lost about 33 per cent of its original strength within the period of time mentioned.

The infusion was made according to the U. S. P. directions, excepting that the aromatic oil was omitted. Each student received 0.1 cc. of the freshly prepared infusion per kilo of body weight, making suitable allowance for clothing (about 6 pounds). The following were exempted from the tests:

* Scientific Section, A. Ph. A., Philadelphia meeting, 1926.