DERMOGRAPHIA IN THE INSANE.

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"In a recent murder trial at Los Angeles, California, one William Edward Hickman was indicted for the murder of a young schoolgirl. At the trial an attempt, which appears to have been unsuccessful, was made to set up a defence of insanity (dementia præcox).

"The usual battle of opposing experts was staged and led to a rather curious incident. Dr. Paul E. Bowers, called for the prosecution, testified that Hickman was sane, and he based his conclusion in part on the absence of dermographia. The witness was called upon to repeat his test in court."

Quoting further: (1)

"Hickman was stripped to the waist, and Dr. Bowers, with his thumb-nail, marked a large H on Hickman's back and chest, explaining that in a true case of dementia præcox the scratch-marks would get very red and stay red. Hickman was then walked up and down before the jury for several minutes and the scratch-marks grew red, but the witness explained that they would fade away quickly. The fading did not occur, and an hour and a half later when photographed in Hickman's cell the marks were as red as ever."

This raises the obvious question: What is the relation of dermographia to insanity? And more particularly: To what extent can dermographia be regarded as a physical sign of dementia præcox? A search into the literature is not very helpful.

Dermographia or urticaria factitia, an exaggerated susceptibility on the part of the cells of the skin to mild forms of trauma or pressure, has long been a well-known phenomenon.

Hallam states that the condition is met with in apparent good health (2), though he says that the incidence is higher in cases of epilepsy, alcoholism and secondary syphilis.

According to both Lewis (3) and Ebbecke it is by no means infrequent among young and healthy people, and the former claims conspicuous whealing in about 5%.

Mumford also believes its appearance to represent a healthy response to an irritant, in that all skins wheal under suitable stimuli (5). A lash from a horse-whip will raise a wheal on the most hardened hide.

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But Purves-Stewart states that it is commoner in hysterics (6) than in normal people and commonest in neuropaths (7). Dreschfield (8) affirms that it is particularly common in exophthalmic goitre, and Oppenheim that it plays a specially important part in neurasthenic conditions of anxiety (9). The latter writer goes further and states that it is present in the majority of traumatic neuroses, and that he is convinced that it is a pathological condition, although he says it may be the only manifest expression of the neuropathic diathesis. Stursburg (10), again, shows that no great importance can be attached to this symptom.

Kraepelin in his classical work on dementia præcox (11) holds that dermographia, among other vaso-motor disturbances, is very widespread among primary dements, especially at the beginning of states of stupor, and in this opinion he is upheld by White (14).

Most of the other works on urticaria factitia consulted gave very little or no information germane to the subject in hand.

Now, in an endeavour to throw some light upon the questions at issue a series of cases of various forms of insanity was investigated for manifestations of dermographia.

This was done by the simple expedient of drawing a blunt instrument (the unsharpened end of an ordinary lead pencil) twice down the skin of the back between the scapulæ, once on each side of the spine, with an even pressure as near as could be calculated to about 2 lb. Any variations in the instrument or in the pressure used were found only to affect the duration of the subsequent skin changes and not their existence or quality. All cases giving results above the average for the group were repeated and those showing wheals were all tested on three separate occasions, and finally the best of these were photographed after fourth and fifth tests.

Before proceeding to the enumeration of the results obtained, it might be as well to review current theories on the causation and mechanisms of whealing and its attendant phenomena.

Both urticaria factitia and ordinary urticaria, in which the wheal is secondary to internal causes, are due to the release of a histamine-like substance in the cells of the skin. This has been incontestably shown by Lewis (4). Why the dermographic patient acquires an increased susceptibility of the cells of the skin is not so clear. Unlike true urticaria, there is no itching in the factitious variety.

Gilchrist, by excising portions of the affected skin at varying intervals after wheal formation, was able to describe the actual tissue changes, which include local congestion, escape of serum through the capillary walls and other signs of inflammation in well-marked cases.

When the phenomenon of anaphylaxis came to the fore, Wolff-

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Eisner advanced the conception of urticaria factitia as an allergic condition; and now Baker and Oriel include it in their ichthyosis-asthma-hay-fever-eczema-prurigo-urticaria-migraine syndrome, in which they believe there always occurs some inborn metabolic kink comparable with Garrod's "inborn errors of metabolism" (13).

This theory would lead one to anticipate the possibility of the occurrence of urticarial phenomena in such hereditary diseases as dementia præcox and epilepsy.

Furthermore, Dr. H. Wordsworth Barber would include psychical stimuli as distinct from reflex nervous stimuli in his list of factors predisposing to the sensitization of the cells of the skin to the histamine-like substance of Lewis (3). In his third Lettsomian Lecture (12) he describes a case in which genuine attacks of urticaria occurred whenever the patient was confronted with an important business appointment or the prospect of meeting strangers socially. He concludes that it is more rational to postulate psychical stimuli than an emotional liberation of histamine.

Sir Thomas Lewis in his notable work on *The Blood-Vessels of the Skin and their Responses*, shows the local action of the histamine-like substance in the skin to be independent of nervous tissue, and to consist in (1) local dilatation of capillaries and small vessels by direct action (*local dilatation*); (2) a local increased permeability of minute vessels by direct action (*local œdema*); (3) a reflex nervous dilatation of surrounding arterioles causing the "*flare*," the three mechanisms constituting his "*triple response*."

It is important to note that Lewis states "the flare is called forth through nervous channels, the local dilatation and the œdema are not." Also that "the flare and the œdema are related, so that if this flare develops some degree of whealing may be expected (4).

This was found fully borne out in all the cases tested.

Mumford (5) points out that dermographia is assisted by a raised surface temperature. This again was completely substantiated, and it was found necessary to keep the patients warm when photographing their backs if good pictures of the whealings were to be made.

In all 811 cases were tested for the purposes of this investigation, 241 females and 570 males, comprised as follows:

104 epileptics.	68 imbeciles.
120 primary dements.	53 secondary dements.
199 acute and chronic maniacs.	10 senile dements.
103 melancholics.	17 general paralytics.
105 delusional types.	7 encephalitics (epidemic).
24 confusional types.	1 organic.

With regard to the primary dements every endeavour was made

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to verify the diagnosis, including consultation with colleagues, and doubtful cases were relegated to other classes according to type.

56 cases (6·8% of all cases) produced definite wheals.

Of the others, 63 cases (7·7%) produced a hyperæmia (local dilatation as distinct from flare) along the line of pressure considerably in excess of the average for the total, as borne out by the length of time the redness persisted, with, in some cases, a slight amount of œdema hardly to be described as whealing.

Males gave by far the most consistent results both as regards the persistence of phenomena and the association of persistent local hyperæmia with whealing; while the best specimens of œdema were also found in the males.

Thus the average length of persistence of the hyperæmia in the females being 35 min., 24 cases (10%) persisted for 60 min. or more, 3 cases actually lasting 150, 120 and 110 min. respectively without any attendant œdema; while, among the 20 female wheals, 4 were below the average in redness and one showed none at all. But in the males only 39 (7%) reddened above the average and then not to extreme degrees, while none of the male wheals were under the average in redness.

The 56 cases with very definite whealing consisted of—

Males 36	6·3% of all males.
Females 20	8·3% ,, females.
Total 56	6·9% ,, cases.

and were comprised as follows:

8·3 %	of all epileptics	9 cases.
10·0 %	,, dementia præcox . . .	12 ,,
8·0 %	,, mania	16 ,,
3·9 %	,, melancholia	4 ,,
8·6 %	,, delusional	9 ,,
3·8 %	,, secondary dementia . .	2 ,,
5·9 %	,, imbeciles	4 ,,

The most persistent wheal occurred in a male epileptic, and lasted five hours. It is interesting to note that Trepsat was able in one case after forty-eight hours to make the dermographic writing again visible by light rubbing with the finger-tips. This was tried in many of the cases, but no such recrudescence was found.

It will be seen from these figures that while melancholics, secondary dements and imbeciles tend to wheal less than the average, epileptics, maniacs and delusional patients give figures somewhat higher, while primary dements wheal to the extent of 50% more than the average. Also, females wheal slightly more

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readily (by 2%) than males, and incidentally the average percentage of 6·9 corresponds very closely to Sir Thomas Lewis's 5% for sane people.

Results of Testing 811 Cases.

Forms of insanity.	M.	F.	T.
Epilepsy	78	26	104
Dementia præcox	93	27	120
Mania	112	87	199
Melancholia	66	37	103
Delusional	77	28	105
Senile	10	...	10
Secondary dementia	33	20	53
Imbecility	61	7	68
Confusional	17	7	24
General paralysis	15	2	17
Encephalitis	7	...	7
Organic	1	...	1
			811

Wheals—		
Male	36=6·3%	
Female	20=8·3%	
	56=6·9%	

MALES.

Average hyperæmia, 20 min.
39 gave 30 min. or more redness without whealing.
Including 3 of 60 min.
,, 1 ,, 65 ,,
,, 1 ,, 75 ,,
36 gave wheals None under average.

FEMALES.

Average hyperæmia, 35 min.
24 gave 60 min. or more redness without whealing.
Including 1 of 150 min. (epileptic).
,, 1 ,, 120 ,, (mania).
,, 1 ,, 110 ,, (melancholia).
20 gave wheals—including 1 no redness, 4 with 20 or less.

ANALYSIS OF ALL WHEALS.

Percentage of cases of each group.

Epileptics	9= 8·6%
Primary dements	12=10·0%
Maniacs	16= 8·0%
Melancholics	4= 3·9%
Delusionals	9= 8·6%
Secondary dements	2= 3·8%
Imbeciles	4= 5·9%

CONCLUSIONS.

(1) Dermographia in the insane tends to occur slightly more frequently among females than males, and with less consistency in regard to the related phenomena of urticaria.

(2) Dementia præcox is the only class of insanity which shows a percentage of dermographia sufficiently in excess of the average to warrant its being claimed as a characteristic phenomenon, but the total percentage is even then so small as to preclude any suggestion of its being pathognomonic.

(3) While dementia præcox is said to be the commonest form of insanity to show dermographia, the most conspicuous examples are to be found in other classes, so that in any individual case the symptom cannot be regarded as diagnostic in any more than a relative sense and of proportional valuation.

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