

Citation:

Langelaan, J.W., On the determination of sensory spinal skinfields in healthy individuals, in:
KNAW, Proceedings, 3, 1900-1901, Amsterdam, 1901, pp. 251-253

increase of tonicity of the m. gastrocnemius of about 25 pCt. According to the definition of muscle-tone here adopted, the m. gastrocnemius became more distensible and this fact was already seen by BELL and afterwards found again by SHERRINGTON.

The variation of the tonicity becomes discontinuous, when the muscle contracting under a little charge, retains a residual shortening. In this case the tonicity-curve is built up of straight lines, at the end of each of those a part of the shortening is given back, while at the same moment the tonicity varies. The number of rectilineal part of which the curve is constituted, is almost constant for the same muscle, varying for different individuals. The length of each of these parts is mostly variable, but under favourable circumstances it is possible to obtain tracings in which they are nearly equal. In other cases doubtless compensations are found.

Amsterdam, September 1900.

Physiology. — “*On the determination of sensory spinal skin-fields in healthy individuals*”. By Dr. J. W. LANGEJAAN (Communicated by Prof. C. WINKLER).

What we know about this subject in man, was mainly due to pathological cases, and the schemas of HEAD were the most complete we had. But the physiological experiments by SHERRINGTON on *Macacus rhesus*, carrying on the investigations of TÜRK and many others, and the minute dissections of BOLK on man, have given, independently of each other, results so accordant, that we can believe this problem to be solved in great features. Therefore not to add new facts, but only to show how it is possible to determine these fields in normal persons, this paper is communicated.

It was found in a case of locomotor ataxy by my colleague BEYERMAN, that in pricking the skin with a pin, there were narrow hyperalgetic bands, which closely seemed to follow the skin-field borders. I saw the same fact in another case of tabes and we interpreted them as the fields of overlap.

In order to research if these fields could be determined in a healthy person, I chose intelligent individuals, who could fix their attention for some time. I began to prick over the skin of the limb first crossing the mid-ventral line, great care being taken to prick in equal distances, with the same force and with equal intervals of time. Approaching the mid-line they all accuse a quickly increasing sensation of pain. Now I claimed them to note the just perceptible

increase and marked this place with a blue pencil. Pricking from the opposite side in the same direction a second spot of pain increasing was fixed. In this manner, by all the persons I examined, the mid-dorsal and mid-ventral lines were easily found as bands extending along the axis of the limb, from a half to one centimeter breadth. In no case this crossed overlap on the limbs was found to be larger.

The limits of the fields formed by an anterior and posterior overlap were much more difficult to find, because the increase of the sensation was slighter and this difficulty grew in the vicinity of the joints. In harmony with this, it was found by SHERRINGTON, that the edge of the sensory skin-field is less abrupt at the anterior and posterior overlap than at the crossed overlap.

When the person under examination got tired, the limits of the fields of overlap came closer to each other; on the contrary, by repeating the experiment on the same person after a lapse of time, the borders became wider, because minuter differences were discriminated. The same relations are commonly met in determining the extent of the tactile spheres by means of the compasses of WEBER.

It is clear, that the fields of overlap fixed in this manner must be too small, for in the first place we know through the researches of SHERRINGTON, that the nerve supply from a single posterior root to its skin-field is less abundant at and near the edge of the field, and in the second place it is evident, that the increase of the sensation must reach a certain extent, before the difference is perceived.

I am convinced, that the subjectiveness of the method, exposes to many faults, and therefore I give only the photographic reproduction of the areas as found in some cases, without drawing any conclusions from it.

This method extended to the sensibility of temperature could perhaps give good results.

Amsterdam, September 1900.

All the persons examined were believed to be healthy individuals. The roman cyphers denote the number of the posterior root to which the skin-field probably belongs.

Fig. I. Inner side of the left arm. Person of research J. V., aged 27 years ²¹/VIII. 2—3.30 P.M.

Fig. II. Outer side of the left arm; narrow overlap, p. of r. W. A. V., aged 25 years ²³/VIII 2—3.30 P.M.

Fig. III. Outerside of the left arm; broad overlap. p. of r. M. H., aged 27 years ¹/IX 2—3.20 P.M.

Fig. I.

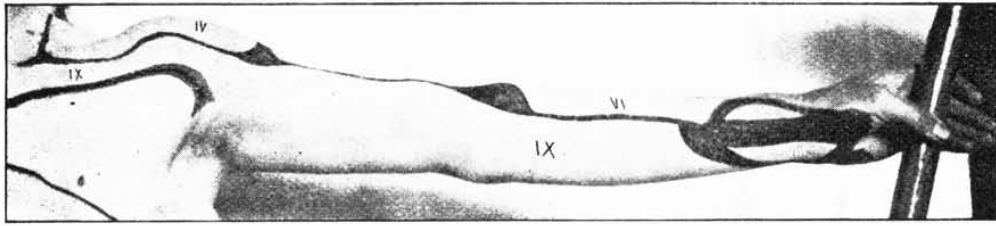


Fig. II.

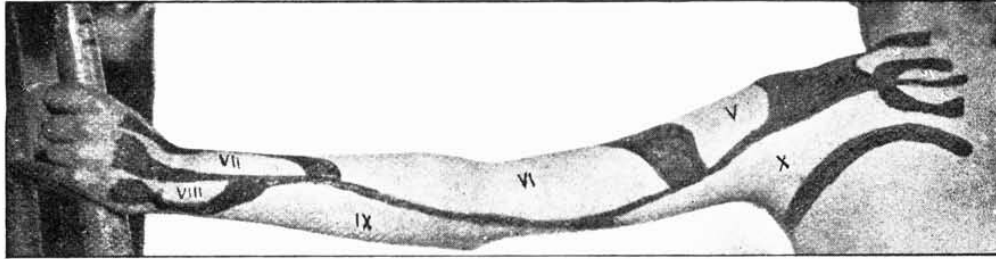


Fig. III.

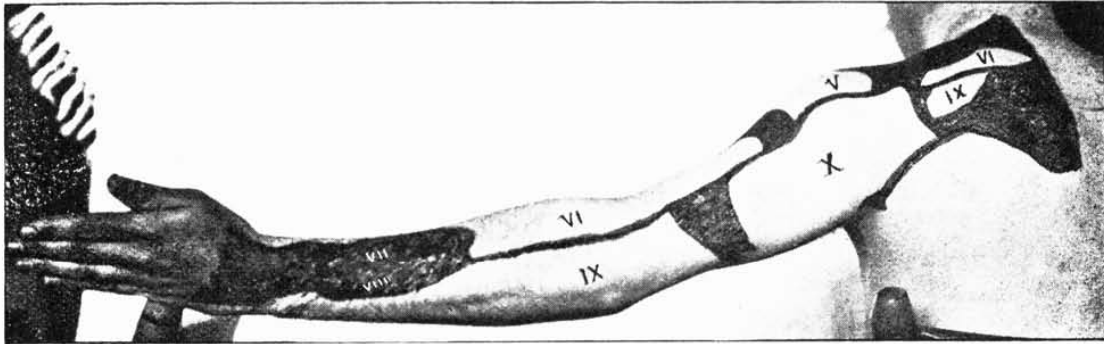


Fig. V.

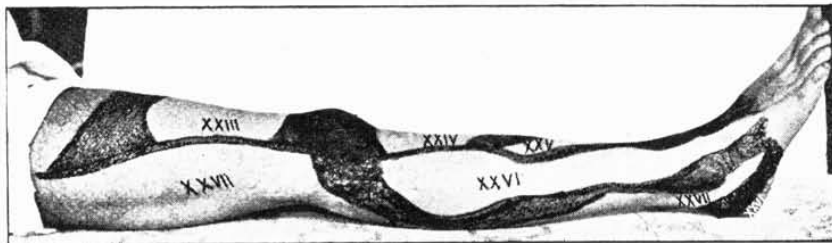


Fig. IV.

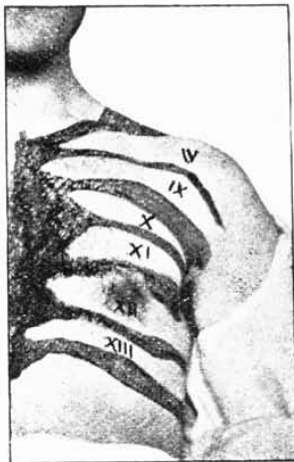


Fig. VI.

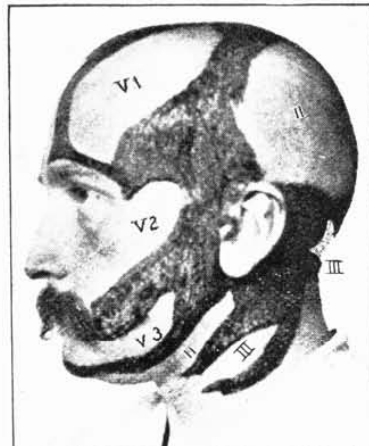


Fig. IV. Left half of the chest; the skin round the nipple was at all hyperaesthetic and the border of this field was not certainly to determine. p. of r. J. v. D. L., aged 21 years ⁸/IX 10.30—11.30 A.M.

Fig. V. Outer side of the right leg; at the place marked with a cross skin field XXVII is divided in two parts by a broad overlap, p. of r. A. A. J., aged 27 years ²⁵/VIII 1.30—3.20 P.M.

Fig. VI. Left half of the face. The field of overlap round the eye was not determined. The skin of the ear lays in a broad field of overlap. p. of r. E. W. DE F., aged 24 years ⁶/IX 2—3 P.M.

Pathology. — *“Curious disturbances of the sensation of pain in a case of tabes dorsalis”*. By D. H. BEYERMAN (Communicated by Prof. C. WINKLER).

The following case was observed in the service of Prof. WINKLER.

C., 52 years old, married to a husband, who made excesses in Baccho and in Venere, had three times abortus, one child born dead, three others dying a few days after their birth, and only one child alive. Seven years ago, she complained of diminishing of vision, afterwards of pains in the limbs and round the chest, the gait became staggering and difficulties in the deposition of urines with diarrhoea were observed.

On 13 July 1900, the following symptoms are stated.

Internal organs normal. Pupils equal, no reaction upon light and with convergent. Slight ptosis on both sides. Visus greatly diminished, large retraction of the field of vision on the right side, and atrophy of both optic nerves.

No ataxia, no paralysis in the upper limbs, only a slight paraesthesia in the ulnar fingers. Anaesthetic patches on the skin of the chest.

The ataxia in the lower limbs is very marked, increasing if the eyes are shut. Muscular force also diminished, the muscles are weak with marked hypotonicity of the joints. The knee-jerks and the reflexes of the tendo of Achilles are abolished, the plantar reflexes are present.

The sensation of pain has diminished in both legs, especially in the left, except on definite tender spots, where the slight pricking of a pin, or even a slight touch causes painful expression of the face.

The exact marking of those tender spots gives characteristic figures (photo's N^o. 1 and N^o. 2) in which they appear as joined together