

**THE PRACTICAL MEDICINE SERIES  
COMPRISING TEN VOLUMES ON THE  
YEAR'S PROGRESS IN MEDICINE  
AND SURGERY. NERVOUS AND MENTAL  
DISEASE. VOLUME X. NERVOUS AND  
MENTAL DISEASES. SERIES 1909**

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**GUSTAVUS P. HEAD & HUGH T. PATRICK & CHARLES L. MIX**

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IN MEDICINE AND SURGERY

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UNDER THE GENERAL EDITORIAL CHARGE OF  
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VOLUME X.  
NERVOUS AND MENTAL DISEASES

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## NERVOUS DISEASES.

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### SYMPTOMATOLOGY.

The **Bechterew-Mendel Flexor Toe-reflex** is made the subject of investigation by M. P. Nikitin, an assistant in Prof. Bechterew's clinic at St. Petersburg.<sup>1</sup> This reflex was first reported by Bechterew in February, 1901, as a special "tarsophalangeal reflex," called forth by striking the dorsal side of the tarsal bones or the bases of the metatarsal bones, and consisting of a slight flexion of the toes. Three years later Kurt Mendel published a report in which he stated that in a few cases of organic disease of the nervous system presenting spastic paralysis, striking the outer portion of the dorsal side of the foot "near the proximal portion" would cause a plantar flexion of the toes, with the exception of the great toe. The reflex, he said, was best obtained by striking about the center of the third and fourth metatarsal bones, or the cuboid or external cuneiform. If, on the other hand, the case was not one of spastic paralysis, or was functional, or if the patient were healthy, the toes were always extended (flexed dorsally) upon such a procedure. In the majority of cases when Mendel found this reflex, Babinski's toe phenomenon was also present. Mendel proposed his reflex (1) to distinguish organic from functional lesions, and (2) to determine the paralyzed side in comatose states.

Of late the Bechterew-Mendel reflex has been attracting more and more the attention of neurologists, and many articles upon it have appeared. In the literature the reflex is best known as the Bechterew-Mendel reflex, but it also goes by the names of the tarsophalangeal reflex, the flexor

(1) Berliner klin. Woch., Sept. 7, 1908.



toe-reflex, and the dorsal foot-reflex. [See Practical Medicine Series, 1908, Vol. X, p. 8.]

Nikitin has carefully studied this reflex in 35 cases of spastic paralysis, comparing it with the Babinski toe-phenomenon. The results are here tabulated:

Babinski Reflex.	Bechterew-Mendel Reflex.	Spastic Paraparesis.	Hemiplegia.	Totals.
+	+	17 cases	3 cases	20 cases
+	-	7 cases	2 cases	9 cases
-	+	2 cases	2 cases	4 cases
-	-	0 cases	2 cases	2 cases

Thus in two cases each of spastic paralysis and of hemiplegia the reflex was present when the toe-phenomenon of Babinski was absent.

**A Contralateral Plantar Reflex** is mentioned by H. Steinberg,<sup>1</sup> an assistant in E. Stadelmann's clinic. In one of Babinski's own cases, a woman with a spastic hemiplegia of several years' standing, he observed that while irritation of the sole of the paralyzed foot caused the toe-sign to appear, strangely enough, irritation of the sole of the *sound* foot also caused the toe-phenomenon in the paralyzed member. This observation seems to have been forgotten until record of it was found by Steinberg when he searched the literature for this phenomenon which he had himself just observed. The French observers of late are giving attention to this contralateral reflex, which they call the "contralateral heterogeneous plantar reflex." Steinberg reports six cases, the last one being very interesting. In this case there was an early right-sided paralysis, which had disappeared except for a slight paresis, and a very severe recent left-sided paralysis. Stroking the right sole caused plantar flexion of both the right and left great toes; stroking the left sole gave extension of the great toe on the left side, and flexion on the right.

Steinberg believes the contralateral reflex to be of diagnostic value, occurring even when the Babinski reflex is absent. It indicates to him involvement of the cerebral part of the upper motor neuron, when it is found. Still Steinberg admits that more cases must be examined before this conclusion can be ardently maintained.

**Modifications of Sensibility in Disease.** T. A. Williams<sup>2</sup>

- (1) Berliner klin. Woch., Dec. 7, 1908.  
 (2) Amer. Jour. Med. Sciences, April, 1909.

calls attention to Head's later work upon the subject in an article upon the importance of modifications of the sensibility in the diagnosis of disease. According to Head,<sup>1</sup> there are not, as was formerly taught, impulses of touch, temperature, and pain, but instead impulses (1) of *deep* sensibility; (2) of *epicritic* sensibility, and (3) of *protopathic* sensibility. (1) The fibers of *deep* sensibility originate in the muscle spindles and analogous bodies, and accompany motor nerves, and those in tendon, joint, and connective tissue in general. They are expressed in terms of pressure and attitude, and are commonly known as the nerves conducting muscle- and joint-sense impulses. They are also susceptible to vibration,<sup>2</sup> and when powerfully stimulated transmit impulses felt as pain. When they are diseased, ataxia and astereognosis follow. (2) *Epicritic* impulses proceed along the cutaneous nerves and consist of impulses of (a) light touch, (b) fine distinctions of coolness and warmth, and (c) the appreciation of two or more spots touched simultaneously, along with localization. (3) *Protopathic* sensibility enables us to perceive only the extremes of heat and cold, and only vaguely the tactile and painful impressions which are badly localized. Head believes that it is this form of sensation which is stimulated in visceral disease, and he lays stress upon the discomfort of an inexplicable kind which often accompanies the stimulation of these fibers. Of all our sensations, this form is the least differentiated phylogenetically. Head thinks it is probably that part of the afferent arc which expresses itself efferently in the pilomotor, vasomotor, and secretomotor reflexes. Unlike the epicritic system, the protopathic has no end-organs for the perception of heat and cold, and it is this system which shows the great overlapping discovered and investigated by Sherrington.

The groupings of the fibers carrying impulses of deep sensibility, of epicritic and of protopathic sensibility in the spinal cord are much involved. The painful impulses are conducted along fibers in Gower's tract on the opposite side of the cord, very closely associated with fibers carrying the impulses of heat and cold. The impulses of deep

(1) See Practical Medicine Series, 1906, Vol. X, p. 108.

(2) See articles on pallesthesia, Practical Medicine Series, 1904, Vol. X, p. 110.

sensibility travel along the fibers of the posterior columns on the same side of the spinal cord, those of which we are conscious passing to the brain through the columns of Goll and Burdach, and those of which we are not conscious passing to the cerebellum through the homolateral direct cerebellar tract or the heterolateral anterior spinocerebellar tract and in the *tractus spinothalamicus et tectalis*. The impulses of epicritic sensibility also take two courses, some proceeding upward through the homolateral posterior columns for a few segments only, with the impulses of muscle- and joint-sense, and others proceeding upward through the heterolateral anterior column.

"Methods of investigation in practice: (1) Epicritic sense: (a) By drawing soft cotton-wool over the skin; (b) by localization; (c) by a pair of compasses; (d) by test-tubes between 22° C. and 47° C. (2) Protopathic sense: (a) By test-tubes nearer the freezing and the boiling points; (b) by the prick of a pin; (c) by an iron-cored faradic current. (3) Deep sensibility: (a) By pressure on the part; (b) by altering the attitude of a limb and asking the patient to describe or imitate the new position; (c) by the estimation of weights (muscular sense); (d) by the estimation of deep pain with the algometer. The tuning fork affects all these modes, and they are all necessary in stereognosis. (4) Cerebellar sense: (a) By the chair-mounting test; (b) by the diadochokinesis test; (c) by the revolving platform; (d) by the static equilibrium test.

"Experience teaches the neurologist to view with the greatest scepticism all evidence depending upon the statement of the patient, knowing empirically how they are fallacious even when without intent to deceive; and knowing psychologically that this must be so, on account of the very defective power of observation and introspection of the untrained laity. Some of the traps devised are: (1) La piège du peaucier of Jacquet; (2) Mankopf's pulse-sign; (2a) pupil-dilation sign; (3) simultaneous pressure trap; (4) faradic current trap; (5) counting touches; (6) diversion of attention."

**Cutaneous Hyperalgesia.** The diagnostic value of cutaneous hyperalgesia in abdominal disease has been recently