or a metallic salt is added, the addition of the test will at once exhibit its reaction, though tannin, if in large quantity, somewhat masks it. From this, it appears that the failure of the test to indicate pepsin in wine or dilute alcohol, or in the presence of tannin, or a metallic salt, does not result from the action being masked, but from the fact of the pepsin (under the conditions) being inert.

If, then, these elegant pseudo-pharmaceutical preparations will not accomplish the conversion of a protein substance into a peptone in the test tube, there is, I think, small likelihood of their doing so in the disabled stomach. It is true the other ingredients may be of service, but often it is the pepsin that the physician is prescribing the compound for, and frequently the one thing the patient most requires; so that, if the above conclusions are true, then, indeed, are physicians laboring in the dark, and their patients done out of their health and their money.

Since writing the above, I have tried samples of Dr. Hawley's preparation, and find that his wine and glycerole of pepsin are good articles, but the wine does not appear to be a pure sherry, and the proportion of alcohol so small as not to interfere with the functions of the principle. They both will dissolve albumen, but not so actively as Sheffer's.

I give these few facts for what they are worth, and hope at least they may be of some service to the profession, especially to those who have not the time for making the investigations they otherwise would do, and to those who may have been disappointed in not obtaining results they may have been led reasonably to expect.

PARALYSIS DURING VARIOLA.

By S. G. WEBBER, M.D.

THE article by Dr. Goss in the number of the JOURNAL for May 8th, recalls to my mind a communication by Westphal, which I had lately read on this subject. Paralysis may occur after variola as after other febrile diseases, typhus, typhoid, yellow fever, and especially it is seen after diphtheria. In most cases, except after diphtheria, paralysis is seen most frequently after the severer forms of the disease, and seems dependent upon the severity. It occurs generally towards the close of the disease, or during convalescence. That it may occur near the beginning is, however, recognized by Trousseau; and Graves refers the causation of the post-febrile paralysis to the initial backache. Both these writers consider that there is congestion or inflammation of the cord.

Trousseau is most clear in the statement of these views. He says: "This backache is not, as has been supposed, a muscular pain, it depends upon an affection of the spinal cord; here is the proof: in rather a large number of cases—and last year within a few days I

was able to show you two cases—the lumbar pain is accompanied with paraplegia. Without being questioned on this point, the patients themselves complain of this paralysis; they complain of painful numbness in the legs, which they cannot move; and on examination you find the arms not affected. This paraplegia sometimes attacks the bladder, as shown by retention of urine, or at least dysuria.

“Though generally fugitive, these paralytic symptoms may in some cases persist until the ninth and tenth day of the disease; they frequently disappear spontaneously when the eruption appears. In other cases, however, they remain not only during the whole course of the variola, but even afterwards, and then form one of the complications of convalescence.” (*Clinique Médicale de l'Hôtel Dieu*, tome i. p. 5.)

Trousseau mentions paralysis as one of the initial phenomena in modified variola. (*Ibid*, p. 28.)

Trousseau also reports a case of paraplegia in a young woman, at the commencement of a light attack of typhoid. The patient, six years previously, had been paraplegic for a year. In this case, as in Dr. Goss's, there was a predisposition on the part of the nervous system. (*Ibid*, p. 268.)

It is unfortunate that Dr. Goss could not obtain an autopsy. In Westphal's cases, to which reference has been made, this was possible.

On July 17, 1872, Westphal reported to the Berlin Medical Society two cases of disease of spinal cord in paraplegia after variola.* One case he followed in his clinic, of the other he only saw the autopsy. In the first, a young man previously healthy, 22 years old, was taken sick November 5, 1871, with headache, anorexia and chills. A few days later, a very scanty eruption of smallpox appeared. The whole disturbance was so slight that he did not stay a day in bed. On the third day, while going up stairs, his legs felt heavy, and for that reason he lay down. The urine had to be drawn off. The next morning both legs were entirely paralyzed. On November 12th, he was sent to the smallpox hospital, and, on December 2d, was transferred to Westphal's clinic. At the latter date, there was complete motor paralysis of the legs—only a slight movement of the toes could be accomplished—loss of reflex action, sensibility retained, paralysis of the bladder, bed-sore. The faradaic irritability of the muscles was retained. There was a gradual improvement until, on January 19, 1872, he could stand, and with the help of a cane could walk a few steps. Perityphlitis set in, and, on April 8, 1872, he died.

The second case was a patient of Dr. Levinstein, a man 32 years old, who, after slight prodromic symptoms, was taken sick with smallpox, January 24th. The eruption was moderately thick, but not at all confluent. On February 4th, there was incontinence of urine; the next day he awoke with complete motor paralysis of the left leg, with a sense of prickling, as if “going to sleep;” the next day the

* *Berliner Klinische Wochenschrift*, Nov. 18, 1872.

right leg was also paralyzed, and the fæces passed involuntarily. The insensibility of the legs was very much diminished. The muscles reacted well to the faradaic current. He died, with bed-sore and cystitis, March 3d.

Westphal found, at the autopsy, the spinal dura mater and pia mater not especially changed; the grey substance of the cord was hyperæmic, and, in some sections in the lumbar portion, the two halves differed in color; the right half had a clear grey appearance, the left half was of a dark brownish red color. The latter color was common to both halves at a higher level; this gradually shaded off into the normal color at the cervical portion. The white substance was not colored, contained little blood. The nerve roots were apparently normal. There was no special change in the brain. The sciatic nerve showed a very slight infiltration of blood between the bundles of nerve fibres.

Bichromate of potassa colored the diseased portion with unusual intensity, showing a very great severity in the disease; the distribution of the change was very irregular. In one spot, the gray and white substances on both sides were changed; at another, one side was affected alone, or more than the other: on other sections, the white and gray substances were differently affected, or the diseased portions were separated by healthy tissue. Foci of softening of the size of a pin's head, were found in the grey substance of the upper dorsal region. The microscope showed immense collections of granular fatty cells in the grey and white substance, and at the confines of the foci of softening; also hyperæmia confined to the diseased portions without a sign of hæmorrhage. The infiltration of the sciatic might have been post-mortem.

In the first case, the disease of the white substance was greater than that of the grey; the sciatic was normal. Westphal considers these cases of disseminated myelitis, and that the changes in the cord are sufficient to explain the paraplegia; therefore, the paralysis is not "functional."

The first of these two cases, it will be seen, closely resembles the case reported by Dr. Goss in the mildness of the variolous attack, and the early appearance of the paralytic symptoms, on the third day after the eruption. The arms were not, however, affected, and a cure was probable, until another complication occurred.

In view of these facts and quotations, it is legitimate to conclude, that in Dr. Goss's case, the paralysis was the direct result of the variolous disease, and would not have occurred alone.

Chalvet, in a thesis on *paralysie ascendante aiguë*, tabulates, under *etiologie*, three cases as occurring during or after variola, but does not refer to the cases nor the authors. As his bibliographic index includes only French authors, those three are probably to be found among them.