required. The following figures represent the general antiseptic values obtained in repeated tests:

Substance	Staphylococcus aureus in		B. coli in	
	Peptone Water.	Serum.	Peptone Water.	Serum.
Sensitol red	1:4,000,000 + 1:2,000,000 -	1:1,000,000 + 1:200,000 -	1:1,000 + * ? -	1:10,000 + 1:2,000 -
Sensitol violet	1:100,000 + 1:10,000 -	1:40,000 + 1:10,000 -	1:1,000 + ? -	1:4,000 + (1:1,000 inhibition)
Sensitol green	1:400,000 + 1:200,000 -	1:1,000,000 + 1:100,000 -	1:10,000 + 1:5,000 -	1:50,000 + 1:10,000 -

* Precipitation of dye.
+ = Abundant growth visible to the naked eye.
- = Sterile, as shown by subculture.

Accordingly, the following conclusions may be drawn as regards the cyanine group of dyes, which, so far as we know, have not been examined hitherto for their antiseptic properties.

1. Certain of the cyanine dyes are extremely potent antiseptics—for example, sensitol red for staphylococci in watery medium.

2. Selective antiseptic action as between staphylococcus and *B. coli* is exhibited to a higher degree by certain of these dyes—for example, sensitol red—than by any other compound hitherto investigated, the ratios of the sterilizing concentrations probably being greater than 2,000 to 1 (with crystal violet the ratio is 500 to 1).

3. Sensitol green is the most active of these dyes both in serum and watery medium for *B. coli*. Also, in the case of *B. coli* the antiseptic action in serum is more intense than in watery medium.

Observations on the toxicity of these compounds for mammalian tissues and on the action of further members of the series will be recorded later.

REFERENCES.

¹ Browning and Gulbransen, *Journ. of Hygiene*, 1919, vol. 18, p. 33; Browning and Cohen, *BRITISH MEDICAL JOURNAL*, October 29th, 1921; see also Browning's *Applied Bacteriology*, London, 1918, p. 65. ² Mills and Pope, *Photographic Journal*, 1920, vol. 60, pp. 185, 253. ³ Mills and Wishart, *Trans. Chem. Soc.*, 1920, vol. 117, p. 579.

THE INTERPRETATION OF SYMPTOMS IN DISEASE OF THE CENTRAL NERVOUS SYSTEM.

ABSTRACT OF THE GOULSTONIAN LECTURES, DELIVERED BEFORE THE ROYAL COLLEGE OF PHYSICIANS,

BY

ANTHONY FEILING, M.D., F.R.C.P.,

PHYSICIAN, HOSPITAL FOR EPILEPSY AND PARALYSIS, LONDON.

LECTURE I.

THE lecturer introduced his subject by saying that in conversation with many doctors he had been struck by the lack of comprehension of those main principles of neurology which were so essential to any accurate diagnosis of disease of the central nervous system. There was here a gap in knowledge, the more remarkable when contrasted with the appreciation of the symptoms and signs of disease in other systems of the body. It could only proceed from some defect in teaching, and therefore he would attempt in these lectures, which were based upon the general experience and the painstaking observations of many workers, to give an epitome of the general principles of diagnosis and an interpretation of some of the more important and characteristic symptoms of disease of the central nervous system. In the word "symptoms" he included those signs of disturbed function which were to be obtained only by the observer.

It had been pointed out by Head and others that every disease of the central nervous system manifested itself by disturbance of function, hence the absurdity of trying to classify such diseases as entirely either organic or functional. The observer was inevitably thrown back upon the disturbance of function as the basis of investigation. The first question which arose was as to the function or functions which were disturbed, and consequently the first endeavour must be to determine the physiological basis and anatomical situation of the disturbance. He took as an example a

patient who had a useless arm; in such a case inquiry must be directed to determining at what level of the motor pathway between the cerebral cortex and the muscles the damage lay. Having established the physiological, and if possible the exact anatomical, diagnosis, the question of the pathological cause had to be settled.

The statement was sometimes made that one physical sign was worth many symptoms. While this might be true in many cases, exception should fairly be made in disease of the central nervous system, where it was sometimes possible to make a shrewd guess at the nature of the disease by a careful examination of the subjective symptoms described by the patient. Careful inquiry into the details of many subjective symptoms would provide a useful clue in the diagnosis. Students should be encouraged to inquire into their case histories. In many cases a diagnosis could be made on the history alone. The subjective symptoms of the patient were of great diagnostic value in many diseases of the central nervous system, of which disseminated sclerosis was but one example. It was hardly necessary to emphasize the importance of a complete physical examination of the case. Mistakes were more frequently made from inadequate examination than from any other single cause. The examination should not be confined to the nervous system but include other systems.

The Significance of Pain.

Pain, a symptom common to many diseases of the central nervous system, should be regarded as an exaggerated response by an irritated nerve. The grey and white matter of the central nervous system was insensitive to the ordinary forms of stimuli, and pain in this connexion was produced chiefly either by disease of the meninges of the brain or spinal cord, or by some pathological process which could compress or stretch them, or some lesion which directly related to the sensory afferent neurons in their course outside the spinal cord or brain and within the dural sheath, such lesion being usually of meningeal origin.

Increase of tension was a common cause of pain. Among the characteristic features of pain in increased intracranial tension, the first, generally speaking, was its paroxysmal character, the paroxysms being excited by any sudden form of exertion or change of posture. Mental activity would not uncommonly precipitate a paroxysm of pain. Even when the pain was constant paroxysms of intenser pain occurred. The position of the pain was variable. At first it might have a more or less close relation to the lesion which caused it, but more frequently such localization was lacking. The frontal and occipital regions were the parts of the head where the pain was most commonly felt. It did not generally have the throbbing character which was found, for instance, in arterial hypertension, and generally it was relieved by rest in the recumbent position and sometimes by lumbar puncture.

He dealt next with pain in the face due to intracranial tumours. He had seen two cases of pituitary tumour where the distinction between pain in the head and pain in the face was absolutely definite and perfectly well appreciated and described by the patient. Other characteristic forms of pain were those found in lesions in the posterior nerve roots, in cases of syphilis of the central nervous system, and especially in tabes dorsalis. In making an early diagnosis the exact character of the pain assumed great importance. Farquhar Buzzard had given a good description of the "lightning" pains in tabes dorsalis. The pain of tabes dorsalis or of syphilitic disease of the central nervous system did not as a rule radiate in the long axis of the body or follow the course of the nerve distribution. The pain was typically described as stabbing or cutting, and the sensation, as Buzzard said, was as if some sharp instrument were forced into the skin at a right angle to the long axis of the limb. Further, the actual area in which any one pain was felt was usually circumscribed. The lecturer also touched upon pain of central origin, and repeated Gordon Holmes's description of pain of central origin apparently arising from disease of the cervical part of the spinal cord, and also in disease of the posterior lateral part of the optic thalamus.

It had been his endeavour to show how a study of the character and distribution of the pain in disease of the central nervous system could help to localize the site of the lesion and also to elucidate the nature of the disease present. Obviously in this matter it was necessary to depend largely on the co-operation of the patient, which was sometimes difficult to obtain, especially if pain had existed for a long time. The longer the pain was experienced the wider became

its distribution and the feebleness of the patient's resistance. Even the most stolid and heroic person could not prevent the tendency whereby repeated attacks of pain or continuous pain produced this inevitable result. Hence the need to go back to the early symptoms which were unclouded by the process of auto-suggestion.

Other Subjective Symptoms.

While pain was the most urgent and most frequent subjective symptom for which advice was sought, there were others which had an importance not always adequately realized. To such subjective symptoms the useful but ugly term "paraesthesia" was generally applied. These abnormal sensations formed an important part in the symptomatology of many diseases of the central nervous system. Such symptoms might be called functional, but it was important not to be led, in the absence of other and more definite reasons, into confusing this diagnosis with one of hysteria. Increasing experience would render it possible to restrict more and more the number of cases in which the observer would be content with such a diagnosis. He did not need to speak of the facility with which subjective sensations, such as numbness and tingling, were ascribed, often correctly, to neuritis, whether peripheral neuritis or multiple neuritis of toxic origin. When it was remembered how lesions of the central nervous system itself could be responsible for severe pains it was all the more necessary to envisage the possibility of central origin for these other subjective symptoms. There were two diseases in which these symptoms were very important—namely, disseminated sclerosis and subacute combined degeneration of the spinal cord. He would emphasize the early occurrence of these purely subjective disturbances. There were, of course, many other conditions in which abnormal subjective symptoms formed the earliest indications of the disease, notably syphilis of the central nervous system.

Memoranda :

MEDICAL, SURGICAL, OBSTETRICAL.

SLIPPING RIB.

IN view of the interesting article by Mr. R. Davies-Colley on slipping rib (March 18th, p. 432) the following case, which I had noted as "recurrent dislocation with arthritis of costo-sternal joint," may prove of interest.

A Canadian soldier, a man of very good physique, came under my care in June, 1918. He complained that strong forward displacement of the right shoulder was frequently accompanied by pain alongside the sternum, and said that he believed the inner end of the rib slipped out of place. Physical examination demonstrated this beyond doubt; in addition to the dislocation, there were swelling and persistent tenderness, the joint in question being the third right chondro-sternal.

Resection seemed to me to be preferable to a fixation operation, particularly in view of a probable arthritis. The patient agreed, and three-quarters of an inch of the cartilage was resected under local anaesthesia. Villous fringes were found projecting into the joint. When seen nine months later the patient expressed himself quite cured; he was able to "get his full chest expansion again"—it had been prevented by the nagging pain he always experienced at the site of dislocation.

There is no statement in my notes as to preceding injury; it is difficult to be sure after this lapse of time, but my impression is that no such history was given. I personally have been subject to slipping forward of the ninth left cartilage on acute flexion of the trunk on three occasions and am positive the condition cannot be traced to a trauma in my case.

London, W.1.

C. JENNINGS-MARSHALL.

I READ Mr. Davies-Colley's article on slipping rib with interest (p. 432), for it bore out precisely my own experience of these cases, of which I have seen several. They have all been in females, and I have failed to find any convenient reference to the condition, though I am sure that I had read of it somewhere and was thus able to recognize the lesion. The patients have, two of them, been unusually thin, with

very flexible lower ribs, but not all of them were delicate women. One case interested me, because removal of the spleen had been advised. In this case the lesion had been originally produced by the patient, when in an almost squatting position, lifting a heavy box with both hands from the ground. The pain was instant and agonizing and a tumour was felt due to the hyperposition of the lower over the upper rib. For some days tenderness remained over the site of the injury. My three cases have all been left-sided. I have found that if the patient can lie quite flat on her back, take her courage in both hands, and a deep breath, the rib slips back. Abdominal massage to the muscles, and feeding up the over-slim ones, produced improvement; but the stronger patient I have not heard of again, for she left for abroad much relieved at keeping her spleen.

London, W.1.

F. JOHN POYNTON, M.D., F.R.C.P.

THE following case may be of interest in connexion with Mr. Davies-Colley's note on slipping rib:

Miss A. B., aged 30, worked in a munition factory during 1917 and 1918. It was customary there to carry shells with the weight supported by the left side. Since demobilization she had complained of pain in her left hypochondrium. The pain was constant, but varied in intensity; it was relieved by rest in bed, but never failed to reappear after exertion. In addition there was much constipation and frequent attacks of colitis.

As enteroptosis seemed marked a belt was ordered; this relieved the symptoms of ptosis, but the pain persisted. Being anxious to eliminate any bowel trouble before investigating the costal cartilages, I sent her to Dr. F. A. Roper of Exeter for his opinion and for an x-ray examination. He confirmed the enteroptosis, but could find no evidence of stricture. Moreover, he was much impressed with the definite localization of the pain to the tip of the eleventh rib. Resection of the end of this rib was done early in February, and has apparently removed the pain.

Although occurring in a floating rib, the condition seems analogous to Mr. Davies-Colley's cases.

Ilfracombe.

H. K. V. SOLTAU.

PRIMARY COLECTOMY FOR ACUTE INTESTINAL OBSTRUCTION IN A PATIENT AGED 70.

M. F., a lady aged 70, had been suffering from constipation, with severe colicky pains and vomiting, since September, 1921. In February, 1922, she commenced to vomit, the vomit ultimately becoming faeculent. She was removed to a nursing home, and the condition subsided, but a week later acute intestinal obstruction supervened. The caecum could be felt to be greatly enlarged, but nothing more was found on examination. The abdomen was opened: the caecum was enormously distended; it could be easily lifted out of the abdomen, but midway to the hepatic flexure the mesentery was shorter, so that a certain amount of volvulus was produced. At the splenic flexure was a marked constriction due to malignant growth, the distal end of the colon being contracted to the size of the small bowel. Resection of the growth was decided upon; 8 in. of the colon were removed, and end-to-end union established by two rows of linen thread sutures; difficulty was experienced owing to the great difference in the size of the two ends; no glands were felt in the omentum, and the abdomen was sewn up without drainage.

She passed liquid faeces immediately after the operation, and subsequently made an uninterrupted recovery, leaving the nursing home in twenty-four days after the operation. The growth had so obstructed the bowel by contraction, that it only allowed a probe to pass through.

I am indebted to Dr. Bruce, who saw the case in consultation, and to my partner, Dr. T. Murray Newton, for his skilful help.

C. L. GRANVILLE CHAPMAN, F.R.C.S.Ire.,
Surgeon, Grimsby and District Hospital.

IN New York 145,000 children have received preventive treatment against diphtheria. Coincident with this effort to confer immunity it has been shown that there is an actual decrease in the number of cases and of deaths in diphtheria. The latter six months of 1921, as compared with the same period in 1920, show a reduction of the number of cases of diphtheria by 1,852, and of the number of deaths by 155.