

(v) Rarely employable outside the home unless of high intellect.
(This group includes the patients with the severe sequelae of the Acute Anterior Cervical Spinal Cord Syndrome.)

3. No Recovery

- (i) Complete motor and sensory paralysis below the level of the lesion.
- (ii) Wholly confined to bed and wheelchair (except for therapeutic standing).
- (iii) Neurogenic bladder.
- (iv) Rarely employable outside the home unless of high intellect.

This classification has been developed during the five years since 1964. The author's series of acute injuries to the cervical spinal cord presently numbers 257, and it is felt that the classification of a series of this size provides a reasonable test. Having classified the series as a whole and also the separate types of injury to the cervical spine and cord, it is felt that this classification is practical, easy to use, and, most important, is of real value in leading one to a clear vision of the functional end-results of specific lesions.

SUMMARY

1. The necessity for an adequate classification of the functional end-results of injury to the cervical spinal cord is discussed.
2. Such a classification, covering the complete spectrum from total recovery to total tetraplegia, is presented.

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THE FRENCH POINT OF VIEW IN THE CLASSIFICATION AND NOMENCLATURE IN PARAPLEGIA

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In an attempt to give an idea of the actual neurological classification of spinal cord lesions, in France, a meeting was held by M. MAURY (*Fontainebleau*), PH. LACERT and S. PANNIER (*Garches*), J. P. WILLOT (*Berck*), G. PELOT (*Invalides*), J. BENASSY (*Paris*) and the reader. This paper was afterwards submitted to all participants.

All French Centres, except one, have adopted a classification of tetraplegia or paraplegia, wanting to remain *within* the affected area and not *below* the last intact

segment, as described in the Anglo-Saxon method. The logic of the latter would lead, all proportions being kept, to call a right-sided hemiplegia a 'hemiplegic healthy on the left side'!

A second example could be that of an ascending cervical lesion, in the acute phase, which would affect one or two sensitive rami of the trigeminal nerve. Can we say, in this case, that a lesion can be incomplete or complete below, for instance, the lower ramus, if this one is spared?

The French method is not only more rational, but also simpler. If we take the example of a tetraplegic patient, which is described in Fig. 1, we can see that, with the Anglo-Saxon method, that the first intact segment (here C7) is described, in fact, in relation to the number of an incomplete segment (below C6), on the other hand, the French definition offers a considerable conciseness, fewer letters,

ANGLO-SAXON DESCRIPTION	{	Incomplete lesion below C ₅ Complete below C ₆ , Sparing S ₄ -S ₅ = 49 letters = 10 spaces — Total = 59 bits
FRENCH DESCRIPTION	{	Incomplete Lesion C ₆ , Complete C ₇ -S ₃ = 30 letters = 5 spaces — Total = 35 bits

FIG. 1

Computing Aspects

nearly as much as one third: 'time is money', especially in computing, but also is of greater advantage in clinical reports and correspondence.

We must also notice in Michaelis's report that there were as many in favour of the 'in—or—at' system than the 'below' one.

For some people the discussion can appear as slightly Byzantine! We must add that it is important to define, at the same time, the motor and sensory level (each time they are different) eventually on both sides.

The muscular classification adopted by all French Centres is that of the British M.R.C.

Numerous classifications of myotomes and dermatomes have been described since the beginning of this century. Practically every author has his own. The French School has published in *Paraplegia* (1963) an essay of motor-segmentation, which is, in fact, the working instrument of most French paraplegic Centres.

Our opinion is that the segmentation of the dermatomes is subject to more variations than the myotomes of the lack of precision of the usual examination methods.

A trial of classification of incomplete lesions was attempted: they can be defined as those which, in the affected territory, have kept a certain conservation of objective sensibility and/or a certain direct voluntary control.

The terms of Brown-Sequard, Central Medullary Syndrome, Anterior Spinal

Artery Syndrome, when their semeiology is complete, beyond doubt, are a supplementary anatomical and functional precision.

The description of a spinal cord or root injury can be only exhaustive if it is accompanied by the statement of flaccidity or spasticity, and, furthermore, a description of the remaining functional possibilities.

We approve, without reserve, the effort made by Michaelis in his attempt to clarify and unite the 'paraplegist's language'.

It would, nevertheless, be a great achievement to agree, on the territory of each segment: myotome, dermatome, as well as the bony, articular and visceral one.

We have thought indispensable to put forward the advantages of the French method, which is, at the same time, simple and logical.

Chairman. A 'battle' between the French and the Anglo-Saxons seems to have started. Of course, I can see already it will be difficult to develop a Common Market in the nomenclature, but we have to try our best to do it. I personally have a slight doubt about that remark of the more exact expression in the French language. I think every other language can make the same claim.

METAMERICAL TOPOGRAPHY OF THE CORD AND ITS ROOTS

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THE study of the para- and tetraplegic patients allows us not to establish the different metameric levels of the cord and of its roots, and we hope that everybody will agree with the following propositions.

UPPER LIMB

C₅ Root (fig. 1). In its area of supply are found deltoideus, supra-spinatus, infra-spinatus, biceps, brachialis and supinators. The function of C₅ is abduction of the arm, external rotation of the shoulder, flexion and supination of the forearm. It is the position of the arm which is usually adopted by tetraplegics with a complete lesion below C₅, at least during the acute stage—X-ray shows the scapula fixed parallel to the vertebral column as a result of the action of the rhomboids. The deltoideus and the supra-spinatus drag the humerus laterally, the sub-scapularis being extended passively. The topography of the muscles innervated by this root is characteristic. Its long muscular bulk extends from the upper part of the limb, clavicular and spine of the scapula to the tip of the styloid apophysis of the radius constituting an homogeneous muscular group.

In this chart we do not include serratus anterior; it is an easy muscle to test. Occasionally paralysis of this muscle occurs as a result of an accidental section of the nerve of Charles Bell in Halstedt's operation. However, in our experience of patients suffering from brachial plexus lesions or in tetraplegics, we have never seen a paralysis of the serratus anterior. If, macroscopically, the nerve of Charles Bell appears to originate from the brachial plexus, it appears that the fibres which innervate serratus anterior come from the anastomosis between the fourth and fifth cervical roots and thus from the cervical plexus. This we regard as important, since the serratus is an accessory external inspirator muscle, as the diaphragm. It