MEETING HELD IN CANBERRA, AUSTRALIA
22nd-26th August, 1983
REFLEX ORGANIZATION OF THE SPINAL CORD AND ITS
DESCENDING CONTROL

Dr W. W. Davies, the Director of the Spinal Injuries Unit in Brisbane, Australia, and Dr John Yeo, The Director of the Royal North Shore Spinal Injuries Unit in Sydney, and I attended this Conference in Canberra.

This Conference was an important one and was attended by eminent physiologists from many countries interested in neurophysiology.

More detailed knowledge of the morphology of the spinal cord and in particular, its reflex morphology was emphasised. It was pointed out that the reflex systems of the spinal cord are both excitatory and inhibitory, with many afferent types focusing on a final efferent pathway. The importance of the internuncial neurones and their great importance in sorting out the afferent stimuli as they arrive in the spinal cord via the afferent pathways was also stressed. Most of the work reported had been undertaken in animal experiments, e.g. the cat, and with particular reference to the gastrocnemius muscle of the cat in spinal preparations.

Little work was reported in relation to the postural reflexes coming from the cervical area and even less from the upper limb.

One important decision that came from the Conference was that reflexes in the spinal cord only function with repetitive techniques, and those repetitive techniques which are already well used in the physical rehabilitation of spinal cord injury patients. Thus, the importance of maintaining physical rehabilitative techniques over many years. It is clear that a nice balance is effected by the very complicated morphology of the nervous system, particularly, that in the spinal cord associated with the afferent stimuli from the brain stem and from the cerebral cortex.

No speaker in this most important physiological Conference mentioned 'spinal man' and yet spinal man has been readily available for investigation and observation for well over 40 years. From the point of view of the clinicians present (only three or four), it was disappointing not to have any particular work reported from spinal man, and the applications of this particular work to spinal man must therefore remain unknown.

It was felt by some speakers, in summing up, that there is some danger in using animal experiments with the lesions which are developed in such animals and applying the results to perhaps just the afferent and efferent systems. It must be realized that there may be three or four efferents coming from the basal ganglia, for example, which can be affecting the animal and the experimental model after such a lesion.

Morphology, and thus the physiology of the descending tracts which were briefly reported, shows that such are not only monosynaptic but disynaptic and polysynaptic. Function varies at times ultimately between motor and sensory arrangements and requirements.

The Conference emphasised repeatedly the adaptability of the nervous system and the changing physiological function that may be expected from

time to time as requirements changed. This was an important Conference for a number of reasons:

1. It emphasised the importance of the repetitive stimuli in obtaining a most satisfactory reflex function.
2. It emphasised the extremely complicated morphology and thus physiology before the final pathway was reached.
3. It emphasised the importance of the internuncial neurones.
4. It pointed out the various types of afferent fibres and afferent stimuli that are present.
5. It leads us to the conclusion that physiologists might be guided into taking more interest in spinal man in relationship to defining the functions of the isolated spinal cord. It clearly leads to better communication between members of the International Medical Society of Paraplegia and the physiologists concerned.

Already as President, I have taken some steps towards contacting some of the scientists concerned at the John Curtin Medical School, hoping that they will take part in the 1988 meeting in Australia.

SIR GEORGE BEDBROOK