BOOK REVIEW

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SOMATIC AND VISCERAL SENSORY MECHANISMS
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This number of the British Medical Bulletin is a collection of fourteen short reviews on the general theme: somatic and visceral sensory mechanisms. There is a general introduction by Professor G.S. Brindley, F.R.S. A glance at the notes on contributors on pp. 178-179 shows that most of the authors are practising academic physiologists. There are three pharmacologists, two neuroanatomists and three clinical neurologists among them.

The number begins with a study by R.A. Henson on Henry Head: his influence on the development of ideas on sensation. The next few articles deal with cutaneous and subcutaneous sense organs (A. Iggo), cutaneous hyperalgesia (B. Lynn), cutaneous axons and sensory neurones in the spinal cord (A.G. Brown) and somaesthetic pathways (K.E. Webster). Much of the information reviewed in these articles, although current, is of a basic nature and I feel would only be of peripheral interest to most readers of this journal. In contrast, A.G. Brown and G. Gordon's review of subcortical mechanisms concerned in somatic sensation will repay careful study by the reader. From animal studies (which may be cautiously extrapolated to man) it is now known that there are three or more subsystems of tracts and nuclei that are concerned with somatic sensation. These are the classical spinothalamic pathway in the anterolateral portion of the cord and the dorsal columns which reach their greatest development in man. The presence of the other subsystem, the spinocervical system, best developed in carnivores, has been questioned in man. From experimental evidence these systems cannot now be thought of as acting independently. There is much interactions both at the segmental and suprasegmental levels. Moreover, the sensory nuclei belonging to these subsystems are under descending control. The effects of a lesion in one subsystem can be offset to some extent by the brain learning to interpret the information that it now receives only from the other systems.

Another article worth careful study is P.B.C. Matthew's review (Muscle afferents and kinaesthesia) which seeks to restore a kinaesthetic role for muscle afferents from most parts of the body bringing signals to the brain which contribute to our conscious awareness of the position and movement of joints. Other articles deal with the somatic sensory cortex (T.P.S. Powell) and Temperature sense in the primate (I. Darian-Smith and K.O. Johnson). The remaining five articles on Pain (P.W. Nathan), Opioid peptides (J. Hughes and H.W. Kosterlitz), Abdominal and pelvic visceral receptors (B.F. Leek), Thoracic receptors connected with sensation (A.S. Paintal) and Respiratory sensations in man (A. Guz) are of definite interest to clinicians.

Nathan's masterly review of the neuroanatomical basis for pain deserves further comment. At the level of the peripheral nerve, studies in man have now confirmed the previous experiments on small mammals that stimuli causing pain affect the small delta myelinated and non-myelinated fibres. Lamina I (external to the substantia gelatinosa) of Rexed's nomenclature of the spinal cord grey is particularly concerned with nociception and its neurones project to the thalamus via the spinothalamic tract. This constitutes a direct line for nociceptive impulses. The function of the neurones in the substantia gelatinosa (Rexed's laminae II and III) appears to be that of sensory information processing rather than the direct projection to the thalamus as classically taught. Guz reviews the evidence on the origin of respiratory sensations in normal human subjects and shows that, for example, that the thoracic discomfort of breathholding depends chiefly on movements of the diaphragm. His own experiments of vagal blockade or unilateral vagotomy in patients with a wide variety of cardio-pulmonary disease show that the dyspnoea exeprienced by these patients is due to an abnormal drive to breathe and that this is actuated through vagal afferents.

Lastly, I may say that the quality of reporting in all the articles is very high, something that we have come to expect from the British Medical Bulletin.

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