NEUROANATOMY AND NEUROPHYSIOLOGY

[112] A contribution to the study of sensory nerve fibres: (1) The size and function of sensory nerve fibres: (2) The nerve tracts which conduct pain sensation from stomach and intestine: (3) The existence of sensory fibres in the autonomic nervous system (Ein Beitrag über die sensible Nervenfasern, u.s.w.).—Ken Kuré, Souity Hiramatsu and Shigeo Okinake. Zeits. f. d. g. Neurol. u. Psychiat., 1934, 151, 225.

The authors sum up the results of their research as follows:

I. By comparing the histological structure of different nerves they conclude that (a) thick medullated fibres convey the sensation for touch. This does not preclude such fibres from conducting other forms of sensibility. (b) Medullated fibres of moderate thickness convey the sensation of pain. This does not indicate that the sensation for pain may not also be conducted by thin, non-medullated fibres. (c) Medullated fibres of fine calibre serve as sensory nerves in the viscera and to a certain extent for different special senses, also these fibres may subserve that form of sensibility known as 'visceral sensation.'

II. For a long time it was a disputed point whether sensibility for pain passes from the intestines through anterior or posterior spinal nerve roots. The experiments described were performed on dogs in which the stomach was inflated in order to cause pain. It was ascertained that the sensation for pain was conducted by visceral fibres—the vagus nerve, sympathetic fibres running in the vagus, the periaortic plexus and the sympathetic trunk.

The sensation of pain passing through visceral fibres is partly conducted through the posterior roots, partly through the anterior. The irritability of these visceral fibres to a faradic current is exclusively conducted through the posterior roots, and conduction of the sensation of pain from the stomach is invariably carried out by visceral fibres in the vagus. Other tracts may conduct the sensation arising from inflating the stomach. Since Foerster ascertained that a sympathetic sensory by-path first becomes more sensitive some time after cutting out the cerebrospinal sensory tract, it is believed that the above-mentioned secondary tracts for stomach sensations also function as sensory tracts in certain circumstances after the chief tracts have been eliminated.

III. From the experiments described above, it was definitely shown that the sensation for pain arising in the stomach from extreme inflation is
conducted from the spinal cord by fibres passing through the anterior roots and having their cells of origin somewhere outside the spinal ganglia. In the same way it has been proved that sensory fibres exist which belong to the autonomic nervous system.

With regard to the existence of parasympathetic fibres in the spinal cord, the authors maintain that some of the fine sensory fibres which subserve certain forms of sensibility, e.g. the feeling of sexual pleasure and other forms which are related to the sensibility of the viscera, are to be looked upon as parasympathetic in origin.

M.

[113] The relation of the premotor cortex to motor activity.—P. C. Bucy. 


The cerebral cortex exerts its motor effects largely through two principal channels of outflow, the pyramidal tracts arising from the true motor area (area 4) and extrapyramidal pathways arising from the premotor area (area 6). In studying the activities of area 6, the following observations have been made in monkeys.

1. Stimulation of area 6 gives rise to (a) isolated, sustained responses mediated entirely by pathways to area 4; (b) complex contralateral responses effected by paths which pass both to area 4 and to subcortical centres; (c) movement in the ipsilateral extremities; (d) torsion of the trunk; (e) epileptiform after-discharge more readily than stimulation of area 4.

2. Extirpation of area 6 results in (a) deficit in the initiation of purposeful movement; (b) awkwardness in complex movement; (c) involuntary reflex grasping; (d) the appearance of spasticity and certain righting reflexes.

3. Extirpation of areas 4 and 6 bilaterally reduces the animal to the motor status of a thalamic preparation.

Areas 4 and 6 constitute the origin of the major motor projection systems of the cortex. Area 6 is primarily concerned with the integration of complex movements. Involuntary movements of the type seen in athetosis and torsion-spasm are associated with the activity of area 6. Area 6 exerts direct control over the ipsilateral extremities; area 6 may be more prone than area 4 to give rise to involuntary seizures of cortical origin.

Area 6 exerts an inhibitory influence over the subcortical centres concerned in the postural and righting reflexes.

R. G. G.

[114] Experimental lesions of the pyramidal tract.—C. Marshall. _Arch. of Neurol. and Psychiat., 1934, 32, 778._

Following lesions of the pyramids in the medulla of cats (twelve bilateral and five unilateral) the initial symptomatology included the following:
(1) diminished or absent contact placing reactions; (2) reduced visual placing reactions; (3) difficulties in walking a ladder or narrow track; (4) delayed and otherwise disordered hopping reactions; (5) increased resistance to passive flexion; (6) diminished resistance to passive extension and a reduced spontaneous struggling in the affected limb; (7) spontaneous postural abnormalities; (8) non-correction of abnormal postures imposed on the feet; (9) occasional transient staggering; (10) a certain stiffness in the gait; (11) a heavy and awkward landing after jumping down from a height; and (12) reduced activity and a slowness and deliberation in motion.

In the case of unilateral lesions the defects were chiefly on the contralateral side. A certain amount of homolateral damage was, however, usually present. In the case of bilateral and unilateral lesions there were not infrequently differences in the forelimbs and hindlimbs, with a certain tendency for the hindlimbs to appear more disordered. In some cases, however, there was difficulty in equating the tests for the forelimbs and hindlimbs.

In all of the symptoms a certain amount of recovery took place. In some it was partial, while in others it appeared complete. There was no constant set of symptoms remaining over at the end of the period of observation of from two to three weeks. Pathologically, the pyramidal tracts were found partly or completely cut. The medial lemniscus was almost always damaged to a certain extent, and the predorsal bundle occasionally showed a small amount of degeneration.

The severity and duration of the symptoms generally paralleled the amount of degeneration found histologically. Since the injuries were not confined to the pyramidal tracts, it is probable that pure lesions of their structures would produce a smaller symptomatology than that described.

The findings were on the whole of lesser severity than those reported in cases of removal of the motor areas.

R. M. S.


Stimulation of the cervical sympathetic nerve in a completely isolated head, when directly and adequately perfused by the blood of a living intact animal, was followed by (a) constriction of the ipsilateral arteries of the pia mater; (b) no change in diameter of the contralateral arteries of the pia; (c) dilatation of the ipsilateral pupil; (d) decrease in cerebrospinal fluid pressure. The authors believe that their experiment is crucial, proving (in cats) the existence of a true vasoconstrictive action of the cervical sympathetic nerve on the ipsilateral pial arteries.

R. M. S.

It is highly probable that taste is not localised in one single centre. A case observed by the author of this paper supports the assumption that the cortex of the insula is concerned in the representation of taste. Clinical and anatomical observations indicate that the temporal lobe and adjacent regions are closely associated with the projection fibres for taste.

M.

NEUROPATHOLOGY

[117] Curves typical of blastomatosis in the spinal fluid tested with the Berlin blue colloidal reaction (Curve a tipo blastomatoso nel liquor alla prova colloide del bleu di Berlino).—V. M. BUSCAINO. Riv. di pat. nerv. e ment., 1933, 42, 596.

The author claims to have demonstrated a spinal fluid test for blastomatosis of brain or cord. This consists of a floccular deposit in tubes 5 and 6, or in 5, 6, or 7. He does not claim specificity for the test, but regards it as of prime importance in the diagnosis of intracranial or intraspinal pressure from blastoma of the brain, spinal cord, intrathecal nerve-roots, or meninges. These curves are not noted in pressure on the cord from blastomata or tubercular disease of the vertebral column.

R. G. G.


The principal fact which becomes apparent is that the diastase of the cerebrospinal fluid is increased mainly in patients suffering from some degenerative or inflammatory process involving the central nervous system. It is supposed that in such diseases the permeability of the meninges to this colloidal substance is increased. Available information is not sufficient to suggest that diastase subserves any useful purpose in the central nervous system, or that estimations of its concentration are of diagnostic value. Nor does it appear that there is promise that this line of research is likely to lead to results of clinical value.

C. S. R.


The colloidal gold reaction curve of ‘paretic’ type is considered a characteristic sign of general paralysis. The author of this paper has detected this