Abstracts.

Neurology.

NEURO-ANATOMY AND NEUROPHYSIOLOGY.

[71] **Nervous control of the electrical resistance of the skin.**—CURT P. RICHTER. *Bull. Johns Hopkins Hosp.*, 1929, xlv, 56.

IN monkeys section of all nerves to the foot produces an enormous increase in the skin resistance of the plantar areas, containing many sweat glands, but has no effect on that of the dorsum of the foot, which has relatively few sweat glands. This increase seems to be permanent; it has been found to persist for more than a year after operation. It is not however maintained at a constant level but fluctuates through a wide range from day to day. Possibly local changes of pressure, temperature, etc., account for this.

Skin resistance does not depend on somatic nerves, for it does not change when these are cut so long as the sympathetic supply is uninjured. Removal of only the sympathetic nerve-supply to the foot results in an increase of resistance of approximately the same amplitude as when the entire nerve-supply is cut off. Yet this increase is not permanent, as it is under the above-mentioned conditions. According to the author, a possible explanation of this peculiar variation is that muscular activity is still present in the sympathectomised limb.

From observations made on narcoleptic and encephalitic patients it has been found that functional changes in the sympathetic centres of the third ventricle and its vicinity produce an increase in skin resistance, yet it is not comparable to that effected by lesions of the peripheral mechanism. In five patients who exhibited cataplectic phenomena clinically daily palmar skin resistance readings taken when the patients were awake were found to be considerably higher than in normal persons.

J. V.

[72] **Physiological factors involved in the electrical resistance of the skin.**—CURT P. RICHTER. *Amer. Jour. Physiol.*, 1929, lxxxviii, 596.

AN attempt has been made to find an experimental foundation for numerous observations made on the electrical resistance of the body in various normal and pathological conditions, such as sleep, stupor, narcolepsy, etc.

From previous observations it was known that the resistance offered by the body to a galvanic current is localised in the skin. An effort was made

to determine what components of the skin—sweat glands, capillaries, epithelial cells, or cornified cells—control the resistance. It was found that the sweat glands are responsible ; when they are stimulated to hyperactivity the resistance decreases greatly, and it is increased when they are inhibited. This result, however, applies only to the palmar surface of the hand ; the resistance of the dorsal surface is dependent primarily on epithelial cells, and very little, if at all, on sweat glands.

These resistance changes (both palmar and dorsal) can be brought into relationship with the heat-regulating mechanism of the body—the palmar with the sweat glands and sweating, the dorsal with the epithelium and insensible perspiration. They are further correlated with the mental condition of the individual, varying with degrees of tenseness or strain, with sleep, and with normal diurnal changes in mood.

J. V.

[73] **The galvanic skin reflex in normal, thalamic, decerebrate, and spinal cats under anaesthesia.**—G. WANG, J. PAN, and T. LU. *Chinese Jour. Physiol.*, 1929, iii, 109.

FROM a series of experiments on cats the authors conclude that there are three nerve centres for the galvanic skin reflex—a cortical, a thalamic, and a spinal centre. The spinal centre consists of cell-groups for sympathetic fibres to the fore- and hind-feet. Their localisation is approximately D4-10 for the former and D12-L3 for the latter.

The thalamic centre is most probably a vegetative centre in the tuber cinereum. The site of the cortical centre remains uncertain.

It seems surprising, according to these experiments, that with higher centres intact the galvanic skin reflex has a shorter latent period and a greater intensity than if these centres are first removed. Perhaps a special mechanism should be assumed in the spinal cord, which makes the lower (spinal) centre inaccessible to incoming afferent impulses under ordinary circumstances and diverts them to higher ones.

The galvanic skin reflex has nothing to do with the vasoconstrictor reflex. The latter is not affected by transections of the neuraxis until the hindbrain is removed, whereas marked changes in the former are observed when the cut is made through the upper border of the midbrain.

J. V.

[74] **The sequel to isolated stimulation and removal of the head of the caudate nucleus in cats** (Folgen isolierter Reizung und Ausschaltung des Streifenhügelkopfes bei der Katze).—R. ASHIZAWA and F. H. LEWY. *Zeits. f. d. g. exper. Med.*, 1929, lxvi, 157.

USING Clarke's stereotaxic instrument, the authors sought to bring fresh facts to light in connexion with the controversial question of the electric excitability

of the basal ganglia. They repeated older experiments on the head of the caudate nucleus in cats, both before and after degeneration of the pyramidal system.

1. In intact cats they obtained by moderate to strong faradic excitation a combined tonic movement of both sides of the body, limbs (both sides) and tail which they liken definitely to that described by Graham Brown from stimulation of the cross-section of the mesencephalon in decerebrate animals, at a spot corresponding to red nucleus, superior cerebellar peduncle, and posterior longitudinal fasciculus, and quite removed from the pyramid. They consider this movement distinct from any obtainable by pyramidal stimulation ; it has the character of a ' Gemeinschaftbewegung.'

2. In cats similar excitation, after complete extirpation of the motor cortex and degeneration of the pyramidal tract, results simply in a minimal motor reaction, so slight as to be negligible, and the authors' conclusion is that " without implication of the pyramidal system excitation of the caudate nucleus does not lead to the above-mentioned series of movements."

They also conclude that " the function of the corpus striatum is to be regarded much less as one of excitation to movement than of influencing and regulation of posture."

At the same time it is not proved that excitation occurs only via the pyramidal system in the case of caudate function, seeing that bilateral removal of the motor cortex in the cat does not greatly affect movement.

S. A. K. W.

[75] **Stimulation experiments on the central pupillary innervation in the corpus Luysii** (Reizversuche zur zentralen Pupilleninnervation am Corpus Luysii).—T. SHINOSAKI. *Zeits. f. d. g. exper. Med.*, 1929, lxvi, 171.

THE author undertook to repeat older experiments of Karplus and Kreidl on the central paths for pupillary innervation, with special reference to the corpus subthalamicum. In eight cats that structure was specifically stimulated with the faradic and galvanic currents and subsequently destroyed (pathological confirmation). The result was as follows : with weak or moderate galvanism (3-5 ma.) the homolateral pupil dilated ; with moderate faradism, the pupil contracted, while sometimes the heterolateral pupil slightly dilated. Both currents had also the effect on both eyes (more on the homolateral) of widening the palpebral fissure and protruding the bulbus oculi.

In nine cats the excitation and destruction proved to be in the neighbourhood of the corpus Luysii. No specific reactions were obtained as with direct implication of the corpus, but in six instances bilateral dilatation of the pupil occurred (galvanic current), and in five with the faradic current. In two

cases where the corpus was destroyed directly with a needle, a typical Horner syndome (paralysis of the cervical sympathetic) developed and was demonstrable for at least six weeks, confined to the homolateral side.

In none of these numerous experiments, both excitatory and destructive, was any evidence obtained for a motor function in the corpus Luysii, and the author is convinced that the association of hemiballismus with that body is incorrect ; in his view any disorder of motor function is not caused by lesions of the corpus Luysii but by involvement of motor systems in the vicinity.

S. A. K. W.

[76] **Experimental investigations into the problem of sleep** (Experimentelle Untersuchungen zum Problem des Schlafes).—STURE BERGGREN and ERIK MOBERG. *Acta Psychiat. et Neurol.*, 1929, iv, 1.

THE authors have succeeded in producing somnolence in cats by injecting isotonic solutions of various salts into certain regions of the brain. Their results suggest that the analogous results obtained by Demole are not the effects of calcium chloride itself, as potassium chloride can produce identical results, as can in fact mere acupuncture. The observations of the authors tend to localize more accurately the so-called sleep centres to the nuclei infundibulares and hypothalamici.

M. C.

[77] **The effect of normal and of increased cerebrospinal fluid pressure on the velocity of intracranial blood flow.**—H. G. WOLFF and H. L. BLUMGART. *Arch. of Neurol. and Psychiat.*, 1929, xxi, 795.

IN cats the average ' crude ' intracranial time is 6.05 seconds. This indicates that in normal cats the average true circulation time of the brain is approximately 3 seconds. In normal animals there is a definite relation between the velocity of the intracranial blood flow and the height of the arterial pressure ; the higher the blood pressure is, the faster the blood flow. The velocity of the intracranial blood flow is dependent not only on the height of the blood pressure but primarily on the intracranial arterial-venous pressure difference. If through an increase in intracranial pressure the arterial-venous pressure difference becomes small, the velocity of the intracranial blood flow is slowed. Through cerebral vasodilatation, the flow, though slower, is increased in volume and the circulation remains adequate. However, if the arterial-venous pressure difference becomes so small that the velocity is reduced to approximately half of the normal, the blood pressure rises, the arterial-venous pressure difference increases, and the velocity of intracranial blood flow again approaches the normal. Variation in the systemic arterial pressure and the diameter of the cerebral blood vessels, regulating between them the velocity and volume of the intracranial blood flow, apparently keep constant the internal environment of the brain.

R. M. S

[78] **Transmission of intracranial pressure in hydrocephalus in infancy.**—KENNETH D. BLACKFAN, BRONSON CROTHERS, and ROBERT N. GANZ. *Amer. Jour. Dis. Child.*, 1929, xxxvii, 893.

THE adult cranium and spinal column are relatively fixed in shape and in capacity, not so the infantile cranium and spinal column. Accordingly variations in pressure readings from the ventricle and the lumbar region are likely to occur in children. The authors by graphic methods recorded simultaneously the pressure in the ventricle and in the spinal theca. They found that the propagation of abruptly applied pressure of short duration from ventricle to spinal space was immediate; and they assumed the probability of widened channels between the two cavities. When delay occurred they suggested narrow channels of communication, but also found this to occur in normal infants. If complete block of propagation of the pressure was present it indicated a complete discontinuity of the channels. From these observations they concluded that such measurements were of possible use in the diagnosis of hydrocephalus and that the application of the 'closed box' theory to infants was unsound.

E. A. C.

[79] **On some systems of fibres in the tegmen of the mesencaphalon** (Su alcuni sistemi di fibre nel tegmento mesencefalico).—U. POPPI. *Riv. di pat. nerv. e ment.*, 1928, xxxiii, 59.

THE knowledge we have of the systems of fibres in the area of the lemniscus of the pons seems to point to the following facts:

1. In the most caudal section of the pons at the side of the raphe there are descending fibres from the brachia conjunctiva and perhaps also fibres from the predorsal fasciculus.

2. At the same point but further forward appears the temporopontine bundle of the tegmen. This is only visible in the upper part of the pons and rejoins the main bundle at the beginning of the substantia nigra. It originates from the outer third of the peduncle, and runs obliquely to the side of the interpeduncular fossa, whence it becomes fused with the longitudinal fibres of the pons and proceeds to the median nuclei of the pons and perhaps to the reticular nucleus.

3. The frontopontine fibres of the tegmen are erroneously described as a continuation of the frontopallidal bundle. This system is inconstant and its development varies. In the oral section of the pons it is placed more laterally than in the caudal section. It is obvious that in the peduncle it is confused with the main frontopontine bundle.

4. The pallidal systems. In the pons they are only represented by a few fibres which are visible in cases of degeneration of the lemniscus. In the substantia nigra they occupy the lateral dorsal angle in the form of a compact

bundle. The author thinks that this constitutes a direct connection between pallidum and tegmen. He also claims to have established the existence of a subthalamico-peduncular system of fibres.

R. G. G.

[80] **The phylogenetic development of the substantia gelatinosa Rolandi.**—E. KEENAN. *Konin. Akad. v. Wetensch. t. Amsterdam*, 1929, xxxii, No. 4.

CONTINUING his researches on the substantia gelatinosa Rolandi through the animal series, the author summarises the results of his investigations in favour of the view expressed by Ranson, according to which protopathic sensation is associated with the substantia gelatinosa, while epicritic sensation chiefly passes upwards in the cord, by way of the posterior funiculi. In lower animals where protopathic sensation is practically the only kind present the posterior funiculi are small or absent; in mammals, these form no less than 39 per cent. of the total white substance of the cord. Ranson found unmyelinated fibres in the lateral part of the posterior root at the point where the latter enters the cord; they proceed into Lissauer's zone and end in the substantia gelatinosa. Similar unmyelinated fibres have been seen in the descending root of the fifth as well as in its peripheral branches, and they are considered by some to be conductors of protopathic sensibility.

S. A. K. W.

[81] **The diencephalic vegetative mechanisms.**—S. E. JELLIFFE. *Arch. of Neurol. and Psychiat.*, 1929, xxi, 838.

THE author presents a masterly review of the anatomy and physiology of the central vegetative mechanisms. The illustrations have been chosen with care and make it easy for the reader to follow the intricate fibre connections of the diencephalon.

R. M. S.

NEUROPATHOLOGY.

[82] **A contribution to the knowledge of the process of nervous disintegration** (Contributo alla conoscenza del processo di disintegrazione nervosa).—G. B. BELLONI. *Riv. di nerv. e ment.*, 1928, xxxiii, 169.

A REVIEW of the literature is given and the author's experiments are described, bearing on the healing of non-septic wounds of the brain and the influence thereon of certain internal secretions. The neuroglia of the grey matter forms a barrier separating wounded from healthy tissue. That of the white matter shows amœboid transformation and hypertrophy typical of protoplasmic behaviour. The neuroglia does not show proliferation or phagocytosis and

Neurology: NEURO-ANATOMY AND NEUROPHYSIOLOGY.

J Neurol Psychopathol 1929 s1-10: 144-149
doi: 10.1136/jnnp.s1-10.38.144