Abstracts.

Neurology.

NEURO-ANATOMY AND NEUROPHYSIOLOGY.

[100] A study of sinistrality and muscle co-ordination in musicians, iron-workers, and others.—CLARENCE QUINAN. Arch. of Neurol. and Psychiat., 1922, vii, 352.

The word sinistrality is used by Quinan to designate partial as opposed to established left-sidedness. Having adopted the view that the disorders of speech so often noted in left-handed people are due to congenital inferiority of the nervous system, the author proceeded to look for evidence of muscle inco-ordination in 16 sinistral individuals. Six admitted an unaccountable and capricious tendency to 'bump into things'. One was unable to 'reverse' in waltzing. Of 5 who had studied instrumental music, 2 had made fair progress up to a certain point, but considered that they had accomplished little for the outlay of time and money. Both were hampered by a defective sense of tempo and found 'sight-reading' an embarrassment. Two others abandoned the study of music because they were unable to make any headway. The remaining one was a talented player, but stated that she found it difficult to keep in time. Of these 5 musicians, 2 were left-handed and left-eyed (dominance of the left eye in binocular vision), 1 was left-handed and right-eyed, and 2 were right-handed and left-eyed. The remaining 5 patients were free from motor symptoms. A study of these cases seemed to show: (1) That sinistrals are especially prone to various forms of muscle inco-ordination, and (2) that in some of these persons both the sense of equilibrium and the sense of rhythm are defective.

With a view to obtaining further data, Quinan next studied sinistrality in three series of 100 men each, classified as (1) professional musicians, (2) machinists, and (3) male inmates of a public relief house. Four per cent of the machinists proved to be left-handed, and an additional 4 per cent had sinistral peculiarities. In striking contrast to these figures, 8 per cent of left-handedness was found in the series of musicians, while the lesser forms of sinistrality reached the remarkable total of 24 per cent.

It was noted in this research that the left-handed and sinistral musicians were much more nervous and 'temperamental' than the dextrals, and the conclusion is drawn that left-handedness and sinistrality usually are indicative of the psychopathic constitution.

R. M. S.

**Intravenous** injection of a hypertonic solution (30 per cent NaCL or saturated NaHCO₃) is followed by a marked decrease in size of the brain; when the skull is opened, the brain may be seen to fall away several millimetres from the inner surface of the skull after such injection.

Intravenous injection of a hypotonic solution (water) causes a marked swelling of the brain; when openings are made in the skull, the brain will rise, forming tense herniae protruding several millimetres through the trephine openings. These changes are independent of the volume of the fluid injected, and are probably due to fundamental osmotic effects of the hypotonic and hypertonic solutions.

The brains of old cats fail to respond readily to intravenous injection, particularly to the intravenous injection of hypotonic solutions. Internal changes, recognizable histologically, have been found quite constantly in the brains of animals which have been given intravenous injections of hypertonic or hypotonic solutions, and which have not been trephined. On the contrary, in animals in which the skull is opened and the brain thus allowed to change its volume freely, these histological changes have not been demonstrated.

These findings lead one to assume that the cranial cavity is relatively fixed in volume and is completely filled by brain, cerebrospinal fluid, and blood; variations in any one of the three elements may occur, compensation being afforded by alteration in the volume of one or both of the remaining elements.

R. M. S.


**Systemic effects of the intravenous injections of solutions of various concentrations, with especial reference to the cerebrospinal fluid.—L. H. Weed and W. Hughson. Amer. Jour. Physiol., 1921, lviii, 53.**

The intravenous injection of relatively large amounts of Ringer’s solution causes a temporary rise in the pressure of the cerebrospinal fluid and in the brachial venous pressure; both quickly return to normal levels. Arterial pressure is usually reduced during the period of injection, and remains at a slightly lower level than that shown initially.

The intravenous injection of a hypotonic solution (distilled water) causes a prolonged increase in the pressure of the cerebrospinal fluid. This increase in pressure is accompanied by an increase in brachial venous pressure of far smaller degree and of shorter duration. Arterial pressure rises slightly in response to such injections.

The intravenous injection of strongly hypertonic solutions causes a prolonged and profound fall in the pressure of the cerebrospinal fluid, preceded usually by a sharp rise. The brachial venous pressure increases markedly during the period of injection, and then falls rapidly to maintain
NEUROLOGY

a new level, usually slightly below the normal. Arterial pressure is lowered during the period of injection, but recovers to a level somewhat higher than the initial.

Cerebrospinal-fluid pressure is invariably higher than that of the brachial vein, except after the intravenous injection of strongly hypertonic solutions.

The changes in cerebrospinal-fluid pressure induced by the intravenous injection of solutions of various concentrations seem to be independent of the changes in the systemic or venous pressures.

R. M. S.


Repeated intravenous injections of strongly hypertonic solutions fail to reduce the pressure of the cerebrospinal fluid to negative values in animals in which the bony skull over one cerebral hemisphere has been removed. Negative pressures of the cerebrospinal fluid are obtained by intravenous injections of strongly hypertonic solutions in animals in which the opening through the skull has been subsequently sealed; under these experimental conditions, opening of the cranium by removal of the sealing device causes an immediate rise in the pressure of the cerebrospinal fluid to positive readings. These findings indicate that the bony coverings of the central nervous system constitute, within tested physiological limits, inelastic and rigid containers; the ordinary physical laws of a 'closed box' may therefore be applied to the cranium.

R. M. S.


The alterations in the pressure of the cerebrospinal fluid, effected by the intravenous injection of solutions of various concentrations, are in large part independent of the alterations in the intracranial arterial and venous pressures. The pressure of the cerebrospinal fluid, while dependent in part upon cerebral arterial pressure and in large measure upon cerebral venous pressure, is independent of either.

The pressure of the cerebrospinal fluid, in the etherized animal under constant experimental conditions, is practically always higher than that of the superior sagittal sinus. This relationship holds during alterations in pressures effected by the intravenous injection of isotonic and hypotonic solutions; it is reversed after the intravenous injection of strongly hypertonic solutions. Alterations in the intracranial venous pressure effect changes in the pressure of the cerebrospinal fluid, in the same direction but not to the same extent. Within certain physiological limits, changes in pressure of the cerebrospinal fluid brought about by the intravenous injection of solutions of various concentrations, effect changes in the cerebral venous pressure as measured in the superior sagittal sinus. A marked
correspondence between venous pressures as determined in the superficial brachial vein and in the superior sagittal sinus seems demonstrated; the exact levels of the two pressures are modified by the local conditions of their situation.

R. M. S.

NEUROPATHOLOGY.


This short paper purports to be "a discussion of the pathogenesis of tabes dorsalis and general paralysis with a view to the bearing on treatment." The subject is one which deserves much fuller treatment than is possible in the six pages devoted to it by the writer. In fact, no fair summary could be made of the various theories extant for the origin of either disease alone in a paper of this length. As it is, we are given only one theory of the pathogenesis of tabes, that of Obersteiner and Redlich, and this is but lightly touched on. In connection with this we are told that the nerve roots lose their "neurilemmal or connective-tissue sheath" on piercing the pia mater. This is quite true; but it is also true that they lose their neurilemmal sheath or sheath of Schwann at or near the same situation, and it is on the latter point that Orr and Rows and other writers lay stress.

With regard to general paralysis, we are told that the spirochaetes "are certainly not co-extensive with the distribution, or in proportion to the severity, of the anatomical changes". In support of this the writer quotes a case which both in its serological and histological aspects resembles cerebral vascular syphilis much more closely than general paralysis.

The vexed question of the relation of the cerebrospinal fluid to the nerve centres is dismissed in a few lines. The writer mentions the work of Mott on this subject, but does not state the means whereby he succeeded in making coloured solutions pass from the subarachnoid space into the tissues of the cerebral cortex. He adds "that others believe that experiment alters relations, and that normally the flow is in the opposite direction".

The relation of these theories to the treatment of neurosyphilis is dismissed in the same brief manner. We do not agree with the writer that present methods "aim too much at the destruction of the parasite", although we cordially endorse his view that they give results far short of the ideal. But syphilologists cannot improve their technique in the treatment of neurosyphilis without a knowledge of the main facts and theories concerning the pathogenesis of the disease, and we cannot think that this paper supplies the deficiency.

J. G. GREENFIELD.

[106] The excretion of Spirochaeta pallida through the kidneys.—A. S. WARTHIN. Jour. of Infect. Dis., 1922, xxx, 569.

An important paper in which Warthin demonstrates that the elimination of the organism of syphilis may take place under the same conditions, and apparently with the same mechanism, as described for the spirochaeturia of infectious jaundice. In three cases of congenital syphilis studied—one of a child dying at birth, another dying eight days after birth, and the