Further Section
Confin nervol 1938:1:217–219

Book Reviews

Book-Notices -Buchbesprechungen - Livres nouveaux


The sympathetic part of the autonomic system is organized for diffuse discharge and to maintain homeostasis (constant internal environment). The cranial division of the parasympathetic system is shown to be protective, conservative, and upbuilding, while the sacral portion provides mainly for the emptying of hollow viscera.

In discussing the smooth muscle effectors, it is pointed out that older evidence indicated extracellular endings of autonomic fibers while much recent data demonstrate intracellular endings. It is not proved that any single smooth cell ever receives filaments from both sympathetic and parasympathetic sources. Important for the theory of chemical mediation is the fact that of all smooth muscle cells, only a few «key cells» are innervated. The finer innervation of cardiac cells is remarkably similar to that of smooth, muscle cells. Unfortunately the testimony of various observers as to the finer relations of nerve terminals to secreting units is either defective in detail or not concordant.

Evidence for chemical mediation from Loewi on is well presented. The sequence for excitation of an autonomic neuro-effector is taken to be, 1) electric shock, 2) local excitatory state, in nerve, 3) nerve impulse (conducted disturbance in nerve), 4) liberation of chemical mediator, 5) combination of mediator with receptive substance, 6) specific reaction of effector.

The parasympathetic postganglionic ends are pointed out as sources of the mediator acetylcholine. Tests for acetylcholine as blood pressure, frog heart, rectus abdominis of frog, and leech muscle are discussed. Eserine in all cases potentiates the effects of acetylcholine. Also, the Philipeaux-Vulpian, Rogowicz, and Sherrington phenomena were shown to be due to acetylcholine. Moreover, this same mediator influences denervated skeletal muscle. Lastly, sweat fibers were found to be cholinergic, although representatives of the (anatomic) sympathetic system.

Important experiments are cited to demonstrate that transmission from pre- to post-ganglionic neurons in the superior cervical and some other ganglia depend on acetylcholine which- has a nicotine-like action in this locality. Possible relations of chemical mediation to CNS phenomena as forward conduction, summation, recruitment, reinforcement, and after-discharge are presented. Post-ganglionic fibers of the sympathetic division are shown to be mainly adrenergic. The sympathomimetic substance is not adrenaline (adrenalin). Indicators of the substance are denervated heart, blood vessels, pilomotors, leg volume, nictitating membrane, retractor penis, uterus, salivary gland, spleen, and iris. In all cases the adrenal glands are excluded. The true mediator is termed sympathin. It is potentiated by cocaine (8 mgm./kg.). Under such natural conditions as rage, pain, cold, and hypoglycemia, sympathin is produced. While sympathin may diffuse and in a wide field reinforce sympathetic activity, acetylcholine acts only locally, since it is prevented.
from diffusing by a powerful blood cholinesterase. Sympathin differs from
adrenine in the following ways:— 1) Sympathin causes a rise in blood pressure
after ergotoxine while adrenine produces a fall. 2) Sympathin from purely
excitatory sources fails to stimulate the pupillodilator. 3) Sympathin from a region
where sympathetic impulses excite effectors is like adrenine in having a remote
excitatory action, but unlike it because lacking in inhibitory action. 4) Sympathin
is unlike adrenine in having two separable effects.

To explain contraction and relaxation in different areas to adrenine a theory of two
sympathins is postulated; Sympathin E, as a result of the union of adrenine at the
tissue ends with receptive substance E; and Sympathin I, as a result of the union of
adrenine produced at the nerve ends with receptive substance I. The receptive
substance varies from tissue to tissue. The mediator which is formed by the union
of a substance (adrenine) at the nerve ends with a receptive substance, produces
excitation if Sympathin E, and inhibition if Sympathin I. Diffusion of these
different mediators accounts for selective widespread effects.

Evidence is presented that smooth muscle is probably not directly excitable
electrically. From a pharmacological standpoint it is shown that all synapses
between pre- and post-ganglionic fibers are cholinergics all postganglionic
parasympathetic fibers are cholinergic, most post-ganglionic sympathetic fibers are
adrenergic. The likeness between the pre-post-ganglionic synapse and the somatic
motor neuromuscular junction with skeletal muscle is emphasized.

Chemical mediators (Acetylcholine and Sympathin) act independently of one
another on the effector. They do not neutralize one another. The effect produced
by simultaneous action is the resultant of the two influences.

Effectors may be sensitized by chronic denervation which results in an
increased permeability of the surface membrane of the denervated cells.

Cocaine potentiates sympathin and adrenine by increasing permeability.

Eserine potentiates acetylcholine by checking the action of blood cholinesterase.

M. Oppenheimer (Philadelphia).

Gegenseitige Auswertung der Augen- und Rontgensymptome bei der
Tumordiagnostik im Sellabereich (Mutual Evaluation of the Eye- and X-ray
Symptoms in the Tumor Diagnosis in the Region of the Sella). W. Loepp.
Publisher S. Karger. Basel. 1936. 58 p. and 28 fig. on 8 Tables. The monograph is
the result of an analysis of 120 cases. Except in the eosinophilic adenoma, it is
not possible as yet to diagnose from the endocrine vegetative symptoms alone,
which, part of the pituitary-infundi-bulum system is affected. In a large number
of cases the diagnosis may be made by the X-ray picture alone, as in acromegaly,
calciﬁed tumors, and in meningeoma. The sella may, however, be intact in supra-
sellar meningeoma with typical chiasma syndrome (temporal hemianopia in one
eye, blindness and atrophy of the optic disc in the other eye). The shape of the
enlargement of the sella is determined not only by the causing disease but also by
the development of the sphenoidal sinus. If the sphenoidal sinus: lies below the
anterior half of the sella and spongy bone below its posterior half, then
dilatation
of the sella occurs mainly in its posterior part. This is perhaps due to the higher pressure in the sphenoidal sinus which communicates with the environment. Besides the relation to the sella, the author proposes to group the cases according to their relation to the chiasma (pre-, retro-, etc. chiasmatic processes). Pressure on the posterior part of the chiasma may produce central skotoma (lesion of macula fibers). While hydrocephalus usually affects both sides symmetrically, the hemianopia may be asymmetric in tumors. The syndrome: temporal hemianopia on one eye and atrophy and blindness on the other eye is found not only in suprasellar meningiomas, but also in other tumors of suprasellar location. The book is well illustrated by typical X-ray findings and should be read by neurologists as well as by ophthalmologists and roentgenologists.

E. S.


After a brief historical survey and a description of the anatomy of the choroid plexus and the ventriculo-subarachnoid system, the normal and pathologic physiology and chemistry of the spinal fluid, the technic of lumbar and cistern junctures and the routine examination are described. The main value of the book lies in the synopsis of the findings and quantitative data found in various diseases, since the enormous material of the authors was tested under standard and personally observed conditions. Additional chapters deal with the therapeutic use of lumbar puncture, the roentgenography of the ventricles and the subarachnoid space (the latter by V. v. Storch) and the various laboratory methods (by M. D. Orvine). The book can be highly recommended.

E. S.

L. BENEDÉK and TH. HUTTL: Ueber den diagnostischen Wert der zerebralen Stereoangiographie, hauptsächlich bei intrakraniellen Tumoren. (Diagnostic Value of Stereoangiography, particularly in Intracranial Tumors.) PV and 316 pag. 250 fig. S. Karger, Basle 1938. SFr. 28.—.

The authors improved Moniz' method of roentgenography of the cerebral vessels, particularly by making stereoscopic photograms. They present a detailed description of the method and a careful analysis of their cases. In some cases they combined the angiography with encephalography. For the analysis of diagnostically difficult cases, for instance some vascular tumors, the stereoangiography seems a valuable help. Most clinicians may, however, hesitate to apply this method routinely, in view of the necessity to expose and to puncture the carotid arteries for the injection of thorotrust. In any case this monograph is a valuable introduction into the technique of angiography and the interpretation of its results.

E. S.