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The Biochemistry of Dementia Præcox.

The physiological disturbances in schizophrenia appear to consist of a disturbed carbohydrate metabolism, as shown by some evidence of abnormal sugar-tolerance curves, a disturbed lipoid metabolism and a variability in biochemical constituents greater than that shown by the normal individual.

G. W. T. H. FLEMING.

Electro-encephalographic Analysis of Behaviour-Problem Children.

Abnormalities in brain potentials were found in 71% of a group of 71 behaviour problem children. 59% showed marked abnormalities. Epileptiform electrical activity was observed in 39% of the cases. These latter cases showed mental and emotional disturbances similar to those found in epileptic personalities. The special feature of the E.E.G. was the occurrence of slow waves from one or more regions of the head.

G. W. T. H. FLEMING.

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Correlation of Insulin Shock and Convulsive States Relative to Symptoms and Site of Greatest Disturbances in the Central Nervous System.

The neurological manifestations of insulin shock indicate that the site of greatest disturbance in the central nervous system is the region of the basal ganglia, central grey matter and brain-stem. Hardly any symptoms are referable to the pallium. Those which ordinarily would indicate cortical involvement (amnesia, disturbances of speech) seem referable to the disturbance of consciousness which presents proper apperception. (Authors' Abstr.)

The Pharmacological Shock Treatment of Schizophrenia.

This study is based on 1,356 cases treated with insulin and 523 treated with metrazol. Of the 1,356, 14·2% recovered, 20·6% were much improved and 26·3% showed improvement. Of 195 cases of more than six years' duration, 9 recovered and 22 were much improved. Of the 523 treated with metrazol alone, 4·4% recovered, 9·8% showed much improvement and 33·1% were improved. The combination of metrazol with insulin apparently assists the action of insulin in selected cases. Treatment with camphor is not recommended.

G. W. T. H. Fleming.

Use of Metrazol in the Functional Psychoses.

All these observations point towards a profound alteration of the metabolic process of the organism as an effect of metrazol, which is of much longer duration—usually 2½ hours—than one would generally assume. While the unconscious state lasts not more than a few minutes, a careful study of the extent and duration of the mental confusion following the metrazol convulsion, by means of psychometric tests, shows a decided drop in almost all cases half-an-hour after treatment. The patient's efficiency on the tests (attention, immediate reproduction, retention, and association) was usually at zero level at this time. Two and a half hours after the injection, when the blood-constituents had already returned to normal, the psychometric tests were still low. At this time the patients' efficiency had returned to 70% of its preconvulsive level. The before-treatment efficiency was equalled or surpassed between 4 and 8 hours after the injection. The increased efficiency in some of the patients seemed to be based principally on a change of attitude. These patients showed a greater interest and better attention and rapport with the examiner. It has been said that the marked anoxæmia which occurs, giving rise to a stimulation of the sympathetic nervous system, is the therapeutic factor of metrazol therapy in dementia præcox. There is no doubt that such a stimulation occurs, as we have shown by the liberation of a large amount of adrenalin, similar to the effect of insulin-shock therapy, but we are inclined to believe that other factors are responsible for the amelioration of symptoms in functional psychoses, since the stimulation of the sympathetic nervous system with thyroxin and other

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sympatheticotonic drugs does not produce any beneficial effect upon the patient's mental condition.

In spite of the fact that the specific effect of metrazol on the central nervous system is unknown, we think that this agent is a valuable aid in the treatment of some of the functional psychoses. (Author's abstr.)

Analogies and Opposites in Schizophrenia and Epilepsy.

(1) The statistical treatment of the results of this study indicate that patients diagnosed as schizophrenic and epileptic tend to fall at opposite ends of a scale of classification based on the amount of brain potential activity of alpha frequency or below. Persons clinically considered normal tend to fall in the median range on the scale.

(2) It cannot be said that there is any general antagonism between the epileptic and the schizophrenic conditions. Schizophrenic and epileptic reactions were found clinically combined, and a significant number of schizophrenic patients showed electro-encephalographic evidence of brain activity similar to that characteristic of the epileptic group.

(3) Twenty-three per cent. of patients diagnosed as schizophrenic by hospital staffs showed either clinical or electro-encephalographic evidence of epileptiform disturbances. Twelve of these patients showed clinical symptoms of epilepsy and six had definite clinical convulsions.

(4) Fifteen per cent. of our group of patients diagnosed as schizophrenic may well be suffering from mental disorders due to head injury, mental deficiency, or other organic defect of the brain.

(5) The abnormalities found in the schizophrenic patients included extreme dissociation of the activity of homologous brain regions, poor regulation of the frequency and amplitude, and abnormal grouping of potentials, in addition to the random slow and epileptiform types of waves.

(6) Individual schizophrenic patients show extremely wide differences in the characteristics of brain function detected by the electro-encephalogram. Some give records which overlap considerably those found in normal individuals, others are in the direction of the type of activity found in epileptic patients, and others appear to be in the opposite direction.

(7) Work with the electro-encephalogram suggests that the clinical entity schizophrenia is a highly individualized reaction to a number of different kinds of cerebral activity. (Author's abstr.)

Constitutional Differences between Deteriorated and Non-deteriorated Patients with Epilepsy.

An anthropometric study was made of 50 deteriorated and 39 non-deteriorated epileptic patients to determine whether differences in body habitus exist between these two groups. Eighty measurements were recorded for each patient, according to the technique described by Martin, Saller and Draper; in addition, 57 indices were calculated for each patient to show the relation in size existing between a given part of the body and other parts. With a few and unimportant exceptions it was found that the mean values for the various measurements are greater in the deteriorated patients. Significant differences also exist in the mean values of the indices calculated. All indices relating weight to height indicate that the deteriorated patients are heavier per unit of height than the non-deteriorated ones; the trunks of the deteriorated patients are wider and deeper per unit of height than are those of the non-deteriorated patients; the deteriorated patients have narrower faces per unit of face-height than do the non-deteriorated ones. From attempts to determine the relative incidence of unusually small or unusually large measurements and indices in the two groups of patients it was found that: Trunk and entire body measurements and indices of exceptional size (large or small) occur more frequently in the non-deteriorated patients; whereas values of unusual size in

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head, hand and foot measurements and indices occur more frequently in the deteriorated patients.

It is concluded, therefore, that constitutional differences, as they may be reflected in body-size and proportions, are present between deteriorated epileptic patients and non-deteriorated ones. (Author's abstr.)

The Results of Eighteen Months of Benzedrine Sulphate Therapy in Psychiatry.

(1) During a period of 18 months benzedrine sulphate has been administered to 145 patients with psychiatric conditions, including organic psychoses, functional psychoses and psychoneuroses, as well as to a number of non-psychotic individuals with organic disease and to normal persons. Longer-continued observations of a larger series of patients correlated with adequate control studies will be necessary before the exact value of the drug can be determined.

(2) Investigations to date indicate that the drug has a place in the treatment of certain forms of mental illness and merits further study.

(3) Benzedrine sulphate is of greater benefit in certain of the organic psychoses than in the functional states or psychoneuroses. In the psychoses, benzedrine sulphate appears to be of value in those cases of recent onset due to intoxication, particularly alcohol; to be of some benefit in the psychoses of recent onset due to infection and trauma; and to be of limited usefulness in the self-absorbed schizophrenic states of recent onset. In organic non-psychotic conditions of psychiatric interest the drug appears to be of most value in narcolepsy, of considerable worth in acute alcoholism, and of some usefulness in post-encephalitic Parkinsonianism.

(4) Benzedrine sulphate appears to be of greater value in organic states where no psychosis co-exists and where deterioration or personality alterations are minimal and non-progressive. (Author's abstr.)

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Theory and Principles of the " Total Push " Method in the Treatment of Chronic Schizophrenia. *Myerson, A.* 1197
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The Electro-encephalograms of Psychotic Patients.

Electro-encephalograms of 232 patients in mental hospitals, including 180 unselected cases at McLean Hospital and 52 chronic schizophrenics at Metropolitan State Hospital, have been studied since October, 1936. The fundamental patterns of these patients cannot be distinguished from those of our control series of 500 " normals ". There is, however, a large proportion of patients whose records show variations outside of the normal range of variability (see Figs. 3 and 10). The abnormalities which break into the pattern, rather than the type of pattern itself, constitute the significant difference between the electro-encephalograms of these patients and of normal individuals.

The quality of the atypical variations resembles that of the changes which occur in the electro-encephalograms of persons known to have brain-lesions, or who suffer from the various forms of epilepsy (Fig. 9), or of normal persons during sleep (Fig. 5), or when breathing an inadequate supply of oxygen (Fig. 4).

All the patients clinically diagnosed as having epilepsy or " psychosis with associated cerebral arterio-sclerosis " showed abnormal variations, but it is significant that equally abnormal variations are distributed throughout all the other diagnostic groups. (Author's abstr.)

The Inadequacy of the Evidence for Hereditary Predisposition in Epilepsy.

(1) The old dictum that epilepsy complicates brain-lesions infrequently has been shown to be inaccurate in the face of modern statistics. To the contrary, convulsions are a frequent manifestation in cases of brain injury and tumours, and particularly so if the lesions are in the anterior portions of the cerebral hemispheres. These facts do away with the necessity of assuming an hereditary predisposition to explain why certain lesions of the brain are associated with convulsions and others not.

(2) Evidence arising from the familial incidence of epilepsy is called in question on the grounds of statistical accuracy. Controls are shown to be selected from different social strata and information secured from them in a manner different from that in the patients. Attention is called to the fact that epileptics know their family-trees much better than do normal controls. Finally, it is indicated that many environmental factors may produce an increased familial incidence of a disease, e.g., tuberculosis, and hence, even if definitely established as a fact, an increased familial incidence of epilepsy would not, in itself, be conclusive proof of its hereditary origin.

(3) Twin studies in epilepsy show a greater degree of involvement of both members of monozygotic twins than dizygotic twins. This concordant preponderance in the identical twins may be due to acquired factors as well as genetic influences, and hence is not proof for an hereditary ætiologic factor. The validity of the method of twin study is questioned in the face of so difficultly identifiable an entity as epileptic predisposition, and because heredity is only one of a number of other factors instead of the sole ætiologic agent. Here, too, in an acquired illness, such as tuberculosis, the statistics from twin studies are the same as those in epilepsy.

(4) It is definitely stipulated that the entire discussion herein of the evidence for an hereditary predisposition is not proof of the absence of such a factor. The contention is fostered that the present-day evidence is inadequate to establish heredity as a significant contributing ætiologic element. The burden of proof still must rest on those who contend that heredity is of importance in this pathologic condition.

(5) Finally, although no definite or direct evidence has been advanced to show that there is no hereditary predisposition, attention might be called to the field

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of experimental convulsions. In the laboratory the universal efficacy of various experimental procedures, such as electric current, convulsant drugs, and methods inducing cerebral anæmia, tends to indicate that hereditary predisposition is not a necessary element in the production of seizures and that if it exists at all it must be present as a minor factor. (Author's abstr.)

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Variation in Vascularity and Oxidase Content in Different Regions of the Brain of the Cat.

The archicortex is generally of low vascularity, the least vascular area is the lamina radiata of the hippocampus. In the basal ganglia the globus pallidus is of very low vascularity ; the lateral geniculate body was the most highly vascular area examined. In the parietal neocortex, laminæ III and IV are the most vascular, the other laminæ being of approximately equal vascularity. The cerebellar cortex has a range of vascularity approximately equal to that of the parietal neocortex, the granular layer being the more vascular. The oxidase content is parallel to the vascularity and serves as an index of metabolic activity.

G. W. T. H. Fleming.

Studies in Mongolism. II. The Thyroid Gland.

Examination of the thyroid in Mongolism invariably shows involutional changes —distension of the acini filled with colloid and composed of low epithelium, folding and confluence of acini, diffusion of the colloid in surrounding spaces, overgrowth of epithelium in thick piles, like an adenomatous growth without formation of new vesicles, changes in the form and shape of the epithelium, increase in stroma and degeneration of glandular tissue. These changes suggest a temporary stage of hyperfunction and resemble those seen in cases of pituitary disease.

G. W. T. H. Fleming.

Cerebral Circulation. II. Reaction of Pial Arteries to Increase in Blood-pressure.

It appears that changes in intravascular pressure cause changes in the physiological state (tonus) of the walls of the pial arteries—a fall in pressure causing relaxation and a rise in pressure contraction of the arterial muscle-fibres.

This tonic regulation persists immediately after bilateral section of the cervical portion of the sympathetic trunk and bilateral section of all the vaso-sensory nerves from the aorta and carotid sinus. The mechanism by which the tonus of these vessels is regulated is not yet established. (Author's abstr.)

Connections of the Pulvinar.

A case of long-standing aphasia and dementia is reported in which the right temporal lobe had been largely destroyed. The medial and lateral geniculate bodies were reduced on the same side, in correspondence with loss of the acoustic and optic radiations. The right tectum opticum was partly demyelinated. A large part of the parieto-pontile tract was degenerated. The outstanding defect was total absence of the right pulvinar, absence of fibres between the pulvinar and the medial nucleus and atrophy of the lateral large-celled part of the medial nucleus of the thalamus. This case and two similar cases suggest that there is an extensive transthalamic connection between the posterior association cortex and the frontal polar cortex through the medium of the pulvinar and the medial nucleus.

(Author's abstr.)

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Syncope, Convulsions and the Unconscious State.

Among 1,000 patients in the wards and in the out-patient department of a hospital for patients with epilepsy, the hyper-irritable carotid sinus reflex was demonstrable in 9 patients, or 0·9% of those tested.

Four patients presented a vagal and depressor response; three patients showed a vagal, depressor and cerebral response, and two patients showed a purely cerebral response.

A hyper-irritable carotid sinus reflex seemed to be the sole mechanism underlying all seizures in five cases. Three patients exhibited a hyper-sensitive carotid sinus reflex and also were known to have an additional convulsive mechanism. The ninth patient with a hyper-irritable carotid sinus reflex probably had an additional convulsive mechanism.

The ages of the 1,000 patients tested ranged between 4 and 82 years. The ages of the patients with the sinus syndrome ranged between 14 and 71 years. All but one were males.

Benzedrine sulphate prevented syncope when the hyper-irritable carotid sinus reflex exhibited a vagal and depressor response. (Author's abstr.)

Progressive Confusional Syndrome Accompanying Injuries of the Cervical Portion of the Spinal Cord.

After fracture of the cervical portion of the spine with injury to the cord, mental symptoms sometimes appear, as in a case cited. Such symptoms are often attributed to a cerebral injury, delirium tremens or other cause.

A series of six cases is reported in which a fairly consistent psychiatric syndrome, consisting of forgetfulness, disorientation, hallucinations, delirium and often death from cardiac failure, has supervened in cases of injury to the spinal cord without cerebral trauma. It is suggested that the symptoms may be due to a mixed type of anoxia, in which embarrassment of respiration, moderate in itself, may limit compensation for anæmia, low blood-pressure or cerebral vascular disease. The term " progressive confusional syndrome " is suggested for the condition. (Author's abstr.)

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Pathologic Picture of Thujone and Monobromated Camphor Convulsions : Comparison with Pathologic Picture of Human Epilepsy.

Seventeen cats and seven rabbits were convulsed with monobromated camphor or with thujone.

In general, the extent of the resulting cerebral lesions was not dependent on the number and intensity of the seizures.

A definite correlation between the recency of the last series of convulsions and the amount of morphologic change in the brain could be demonstrated. Old lesions were not frequently demonstrable because of the reversibility of many of the acute changes.

Lesions were largely confined to the cerebral cortex. The cornu ammonis was spared and the cerebellum was rarely affected.

Strikingly like the pathologic changes in human epilepsy were the necrobiosis, the sclerosis of the gnaglion-cells, the petechial hæmorrhages and the chroma-tolysis of the nerve-cells.

Many of the lesions suggested, but did not prove, a pathogenesis similar to that which is embodied in Spielmeyer's " vascular " conception of epilepsy.

Histologic study of the pathologic changes which resulted from the experi-mentally induced convulsions failed to reveal significant species differences between rabbits and cats. (Author's abstr.)

" Silver Cells " and " Spirochæte-like " Formations in Multiple Sclerosis and other Diseases of the Central Nervous System.

(1) " Silver cells " should be spoken of as " silver granules ", for they are probably not definite formations.

(2) Silver granules are prominent not only in multiple sclerosis but in subacute combined degeneration of the cord, Friedreich's ataxia, myelomalacia, cerebral carcinoma and other conditions in which degeneration is an essential pathologic feature.

(3) The granules are situated mainly between the axon and the myelin ; they

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are probably lipoids and denote a metabolic disturbance of the central nervous system—an early stage of neural degeneration.

(4) The granules are not artefacts, nor do they originate from spirochætes, but when arranged in chains they may assume a corkscrew spirochæte-like appearance.

(5) Such spirochæte-like formations mixed with silver granules are seen in subacute combined degeneration of the cord, multiple sclerosis, myelomalacia and other degenerative or inflammatory-degenerative conditions.

(6) The silver granules are present mainly in areas of extensive breaking-up of the myelin, and their presence in multiple sclerosis confirms the view that this disease is one of degeneration and not of inflammation.

(7) Steiner's method is a valuable aid in demonstrating early stages of degeneration of the central nervous system. (Author's abstr.)

Return of Cognitive Conscious Functions after Convulsions Induced with Metrazol.

The return of the cognitive conscious functions in the period following convulsive seizures is reported. The studies were carried out on schizophrenic patients during metrazol therapy. It was found that the cognitive functions reappear in a characteristic temporal order indicating the dependence of a given function on preceding ones. The functions of æsthesia, prosexia, gnosia, praxia and mnesia reappear in the order given. It is suggested that these studies be extended, since they have bearing on the general problem of the nature of consciousness. Furthermore, it appears that metrazol offers a safe and convenient means for the study of the interruption and normalization of the stream of consciousness.

(Author's abstr.)

Action of Metrazol (Pentamethylenetretazol) on the Hypothalamus of the Cat.

The effects of the intravenous or the intradiencephalic injection of a 10% solution of metrazol on the spontaneous behaviour and the hypothalamic reactions of 15 cats were studied in separate series of anæsthetized and survival preparations. The results indicate :

(1) The rapid intravenous injection of 0·6 c.c. or more of a 10% solution of metrazol in survival preparations causes tonic and clonic convulsions associated with apnœa and evidences of widespread stimulation of the vegetative nervous system.

(2) In animals anæsthetized with ether, the blood-pressure either falls or remains unchanged for 10 or 15 seconds after the intravenous injection of metrazol, but vascular tension invariably mounts during the ensuing convulsion.

(3) The intravenous administration of 1 c.c. of 10% solution of metrazol does not affect the electrical reactions of the hypothalamus to a degree detectable by our methods.

(4) The injection of from 0·05 to 0·1 c.c. of the solution of metrazol into the hypothalamus of a recovery preparation induces loud vocalizations, manifestations of marked vegetative stimulation, great motor restlessness and vicious combative reaction to manipulation ; however, convulsions of the skeletal musculature do not occur.

(5) In animals anæsthetized with ether, the intra-hypothalamic injection of from 0·05 to 0·1 c.c. of the solution of metrazol induces similar skeletal motor and vegetative discharges, definitely lightens the anæsthesia, and causes an increase in the intensity of the responses to both homolateral and contralateral faradic stimulation of the hypothalamus.

Metrazol therefore stimulates the vegetative and emotional mimetic functions of the hypothalamus when applied directly to this region of the diencephalon.

(Author's abstr.)

Cardiac Activity during Epileptic Seizures.

Electrocardiographic tracings were obtained during 54 epileptic seizures of various types (excluding autonomic diencephalic epilepsy). In none of these was

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there any evidence of a systole, even though in many of the attacks there was simultaneous disappearance of the pulse at the wrist and in the cerebral cortex during operation. Disappearance of the pulse at the wrist is explained by increased muscular movement or tension interfering with palpation of the radial artery, or actually occluding the subclavian artery in the neck.

The heart rate during an epileptic seizure may show no change or may show acceleration, depending on the severity of the attack. Occasional temporary changes are seen in the T wave, apparently secondary to deficient oxygenation of the myocardium during the seizure. Changes in the blood-pressure during convulsions are variable and perhaps are produced by various mechanisms. Disappearance of cerebral pulsation during convulsions cannot be due to cardiac asystole or changes in the general blood-pressure; hence it must be due to other general or to local factors. (Author's abstr.).

Electro-encephalography in Clinical Neurology: Its Value in Routine Diagnosis.

The electro-encephalogram has been used in the routine investigation of patients in a large neurologic and neurosurgical service over a period of ten months. The site and character of foci of abnormal cortical rhythms were determined in these cases by means of a method of localization described by Walter. In this method the abnormally slow frequencies produced by the damaged cortex in the neighbourhood of a lesion are used. Their focus of discharge is determined by studying their relative voltages and phase relationships in three independent and simultaneous records led from the intact skull. The method has been described in detail.

In 105 cases in which intracranial lesions were suspected, there was a close correlation between the actual position of the lesions and that predicted by the electro-encephalogram in the 50 cases in which the pathologic process was demonstrated. The characteristics of the electrical discharge were used to deduce the nature of the cerebral lesions in some cases.

In 41 cases in which no cerebral lesion was demonstrated by electro-encephalogram, subsequent clinical investigation gave negative results.

In the remaining 14 cases the position of predicted cerebral lesions could not be confirmed through lack of clinical and pathologic data. (Author's abstr.).

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Vascular System of the Human Spinal Cord.

(1) The blood-supply of the human spinal cord depends on from 6 to 8 anterior radicular arteries, from 5 to 8 posterior radicular arteries, from 6 to 11 anterior radicular veins, and from 5 to 10 posterior radicular veins, the largest always being an artery and vein in the lumbar region, the arteria and the vena radicularis magna.

(2) The physiologic, clinical and pathologic significance of this observation is discussed with reference to its surgical implications.

(3) The intramedullary vessels are classified according to order of magnitude.

(4) The plane of distribution of larger intramedullary vessels is predominantly transversal in the sacral and lumbar regions and predominantly longitudinal in the thoracic region, while the slant of the vessels in the cervical region is halfway between the two.

(5) While by injection from the large arteries the intramedullary arterial system, the capillary network and the venous system can be filled easily, by injection from the large veins filling only of the large intramedullary venules of the fourth order is complete and that of veins of the third order is incomplete. The venules of the second order, the capillary network and the arterial system cannot be reached by venous injection, presumably owing to the presence of valves. The morphologic characteristics of these peculiar monocuspid valve-like structures are described.

(Author's abstr.).

Sulcal and Intrinsic Blood-vessels of Human Spinal Cord.

(1) The anterior sulcal arteries supply only one side of the spinal cord at any given level (Fig. 2), while most anterior sulcal veins drain both sides (Fig. 6). A few sulcal veins, however, drain only one side.

(2) The controdorso-lateral venous anastomosis, a wide anastomosing branch between the paracentral vein and one of the large dorso-lateral surface veins is described. In view of the fact that it has comparatively few significant tributaries, it is assumed that one of the functions of this venous anastomosis is to allow a quick exchange between these two large reservoirs of blood for the equalization of venous pressure.

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(3) The anterior radicular arteries and the anterior spinal arterial trunk supply the anterior horns, the central grey matter, the lateral horns and Clarke's columns and the anterior and lateral tracts, including the anterior and lateral pyramidal tracts.

The posterior radicular arteries and the postero-lateral arterial trunks supply the posterior columns and the posterior horns.

(4) The anterior spinal venous trunk, by means of the anterior sulcal veins, drains the septomarginal white and the anterocentral grey matter. The same trunk, by means of its transverse meningeal branches and their tributary individual straight intraspinal veins of the fourth order, drains the anterior and anterolateral grey horns, the lateral grey horns and the anterolateral and lateral white matter, including the lateral pyramidal tracts, with the exception, in some places, of a narrow strip of white matter laterally adjacent to the posterior horn (containing a small part of the lateral pyramidal tract), which may be drained both through the anterior and through the posterior venous system by way of the centrodorso-lateral venous anastomoses.

The posterior radicular veins and the posterior venous trunk drain the posterior horns, Clarke's columns and the posterior columns and, partly, the narrow strip of white matter laterally adjacent to the posterior horns. (Author's abstr.).

Treatment of Disturbed Patients with Sodium Chloride Orally and Intravenously in Hypertonic Solutions.

By the use of sodium chloride, either by mouth or by intravenous injection of physiologic or hypertonic solutions, and by forcing fluids we have been able to decrease the death-rate of excited and disturbed pateints with mental disease. Patients with both organic and functional disturbances were treated, including a special group with alcoholic delirium. It was also found that this method of treatment shortened the period of excitement in the patients so treated. We believe that fever due to dehydration can be prevented or successfully treated by this method. (Author's abstr.).

Tremor : Physiologic Mechanism and Abolition by Surgical Means.

(1) An essential part of the mechanism for the production of tremor, both at rest and on voluntary movement, lies in the precentral region, i.e., areas 4 and 6 of Brodmann. Whether tremor is mediated by the parapyramidal (precentral extrapyramidal) fibre systems alone or by the parapyramidal and pyramidal fibre systems together cannot be stated. Certainly, experimental data have demonstrated that the pyramidal system alone is not responsible.

(2) The remaining precentral region, i.e., the " leg " and " face " areas of the same hemisphere, is capable of integrating considerable crude and rather awkward movement in the upper extremity after the precentral " arm " area has been removed. Fine, well co-ordinated movements, however, are abolished.

(3) The precentral region exercises a certain degree of control over the vasomotor mechanism, since removal of the " arm " area of areas 4 and 6 results in temporary lowering of the surface temperature of the contralateral upper extremity.
(Author's abstr.).

Picrotoxin as a Convulsant in Treatment of Certain Mental Illnesses.

In a group of 38 patients convulsions were produced by means of intravenous injections of picrotoxin.

Because of the interval between injection and the first convulsion, on the one hand, and that between the first and subsequent convulsions, on the other, the action of both the drug and the convulsions can be conveniently studied.

Picrotoxin does not produce the terror incidental to metrazol.

The therapeutic results appear to be promising.

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Mandibular subluxation was infrequent. One patient suffered a fracture of the left scapula, two others dislocation of the shoulder. Restoration of function was prompt after orthopædic treatment. The fracture and the dislocations occurred in the early stage of our experience, when the patients were not watched with sufficient care during the interval between the injection and the convulsion. With the last 25 patients no complication was encountered. (Author's abstr.).

MAY, 1939.

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Physiologic Aspects of Thought and Emotion with Presentation of Illustrative Cases of Lobectomy and Lobotomy. *Brickner, R. M.* . . 1080

Histopathologic Changes in the Nervous System in Cases of Peptic Ulcer.

While in some instances of peptic ulcer the action of the nervous system may be efferent and productive of peptic ulcer, in all instances it is afferent, and the nervous system is the site of characteristic involvement once a severe irritative lesion in the stomach or duodenum is established. When the nervous syetem is considered in terms of the complete reflex cycle, many of the characteristic symptoms and signs of peptic ulcer, as well as the sequelæ, find an explanation. Striking indeed in many of these cases is the ascending pulse-rate, which becomes so rapid

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that it can no longer be counted ; here punctate hæmorrhage has occurred in the dorsal motor nucleus, implicating the cardiac neurons, destroying their inhibitory effect, and leaving the heart entirely to the accelerating effects of the sympathetic innervation. Most important, however, is the understanding of a probable reason for many of the sequelæ following recovery from a severe attack of peptic ulcer—the irritable pulse-rate, the increased sweating, the signs of " sympathetic imbalance " all point to injury in the parasympathetic centres of the dorsal motor nucleus of the vagus nerve, while quick fatigability, irritability, emotional changes and alterations in regulation of metabolism, sleep and temperature indicates injury to the thalamus and hypothalamus. To say that such manifestations are merely neurotic is frequently untrue, and injustice may be done by not recognizing an organic handicap. (Author's abstr.).

Remissions in Multiple Sclerosis.

(1) A clinical study of 133 cases of multiple sclerosis is reported. The proportion of error in diagnosis in thoroughly studied cases, as reviewed after a period of years, appears small.

(2) The report covers 1,095 " patient years " of the disease. During the period under consideration, 239 instances of improvement were reported by 92 of the 133 patients. In only 41 patients was the disease uninterruptedly progressive or stationary after a single attack.

(3) Ambulatory patients seen in " office " practice were found to have a significantly longer and milder course, with more remissions, than those seen in " hospital " practice.

(4) The course of individual symptoms was also considered. In general, symptoms evidently due to small lesions, such as diplopia, central scotoma or sensory disturbances of one extremity, tend to regress within a few months. Symptoms apparently due to large lesions, such as paraplegia, ataxia and mental deterioration are usually permanent.

(5) As a rule, isolated symptoms disappear in a far higher proportion of instances than do the same symptoms occurring in conjunction with others. First symptoms have a higher rate of recovery than the same symptoms occurring later in the course of the disease. Symptoms tend to grow more severe as the disease progresses.

(6) The results of this study suggest that most lesions of multiple sclerosis go through an acute stage, after which a variable number of fibres regain the ability to conduct impulses. Certainly, in most large lesions, and probably in all lesions, there is permanent destruction of the conductivity of some or many fibres.
(Author's abstr.).

The Extrapyramidal System.

(1) A method is presented whereby the effects of stimulation of the corpus striatum may be studied.

(2) Stimulation of the caudate nucleus, putamen or claustrum inhibits movements instead by cortical stimulation. The effect is most marked on movements initiating in the ipsilateral cortex.

(3) Stimulation of the globus pallidus imparts a factor of " plastic tonus " to cortically induced movements, exerts a " holding " effect on them, and prolongs their relaxation time. These effects are most marked on movements initiating in the ipsilateral cortex.

(4) Stimulation of the substantia nigra increases extensor (antigravity) tonus principally of the opposite side of the body, and imparts a factor of tremor to the cortically induced movements. The latter effect is most marked on movements initiating in the ipsilateral cortex.

(5) Stimulation of the corpus subthalamicum produces contraction of the dorsal midline musculature of the opposite side of the body.

(6) Stimulation of the region of the red nucleus produces contraction of the dorsal midline musculature of the same side of the body.

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(7) Stimulation of the centrum medianum produces contraction of the facial musculature of the opposite side of the head and directional clawing at the opposite side of the mandible. (Stimulation of the lateral thalamic nucleus also produces contraction of the facial musculature, but in this case it occurs on the same side as that of deep stimulation.) (Author's abstr.).

Experimental and Clinical Study of Effects of Metrazol Convulsions.

The occurrence of toxic myocarditis, dilatation of the aortic ring, and auricular fibrillation emphasizes the importance not only of a careful study of the heart before patients are considered eligible for metrazol treatment, but also the need for constant attention to cardiac function after active treatment has begun. This should include a preliminary electrocardiographic study, which should be repeated at intervals if the treatment is to be protracted beyond five convulsions or whenever clinical signs indicate the necessity of such studies.

Because of the possibility of clinical complications, it seems judicious to limit the total number of treatments in a single case to not more than ten convulsions. The importance of a thorough and exhaustive knowledge of the patient's physical status is apparent from a study of the three cases of death which have been reported. In the case of von Angyal and Gyárfás the patient had syphilitic myocarditis and aortitis, while in one of Briner's two cases death was from bilateral hypernephromas, and in the other from a pulmonary embolus arising from old thrombophlebitis of the pelvic veins. Somatic disease may, on occasion, escape detection in active and unco-operative psychotic patients, despite careful detailed study. However, a painstaking inquiry into the previous medical history and appropriate examinations, both physical and laboratory, will in the vast majority of cases determine the presence of somatic disease.

The brains of 7 monkeys which received a series of metrazol convulsions were examined histologically. Cellular changes as well as subarachnoid hæmorrhage occurred in 4 animals. No changes were seen in 3.

Of a group of 41 patients, cardiac complications occurred in 3, and exacerbation of bone disease in 1. (Author's abstr.).

JUNE, 1939.

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Disseminated Encephalomyelitis.

(1) The "encephalomyelitic reaction" may be defined as one consisting of a perivascular intra-adventitial and extra-adventitial accumulation of histiocytic and hæmatogenous cells, some of them phagocytic, with local degeneration of myelin sheaths (or of nerve cells) and local disseminated or diffuse glial proliferation, but without cyst formation or actual suppuration.

(2) Such a process occurs in conjunction with many types of disease of the nervous system. It is, however, more typical and widespread in the group of diseases known as " disseminated encephalomyelitis " than in any other.

(3) In the early stages of the reaction, congestion and thrombosis of vessels may be observed with considerable regularity. The appearance of these thrombi in various types of " encephalomyelitis " is described and illustrated.

(4) Since evidences of vascular occlusion are so common in relation to the " encephalomyelitic reaction ", since it is difficult to find instances of similar types of vascular occlusion without it, and since it may be produced experimentally by appropriate interference with the blood-supply of the brain, it seems reasonable to conclude that the vascular occlusion is primary to the histologic changes.
(Author's abstr.).

Influence of the Blood-sugar Level on the Wave and Spike Formation in Petit Mal Epilepsy.

(1) High blood sugar decreases and low blood sugar increases the 3 per second wave and spike activity of *petit mal* epilepsy.

(2) In cases of this type of abnormality an insulin reaction may produce amelioration of *petit mal*, which lasts for from 1 to 3 days, or possibly longer.

(3) On the other hand, a similar, but distinct type of abnormal activity—the 2 per second wave and spike of the *petit mal* variant—is not sensitive to variations in the level of sugar in the blood.

(4) The abnormal electrical activity of the brain which is characteristic of *grand mal* epilepsy, namely, a crescendo burst of fast waves, is not sensitive to variations in blood sugar.

(5) The abnormal activity which is characteristic of psychic epilepsy, namely, square waves and high voltage 6 per second waves, is insensitive to variations in the level of the blood sugar.

(6) If an abnormal formation is affected by variations in the level of sugar in the blood, it will respond to variations in the carbon dioxide of the blood ; if unaffected by variations in blood sugar it will not respond to variations in the carbon dioxide tension of the blood. (Author's abstr.).

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Arm to Carotid Circulation Time in Abnormal Mental States.

The arm to carotid circulation time was studied under basal conditions in 150 patients with various mental diseases; 72 were males and 78 females. The mean circulation time was 18·01 seconds. The range was from a minimum of 9·7 to a maximum of 47·8 seconds. The mean circulation time for 11 patients with slight arterio-sclerosis was 24·4 seconds, which was highly suggestive of significant slowing of the rate of blood-flow.

The mean circulation time for the 29 schizophrenics patient was 17·76 seconds, with a range from 13 to 27·7 seconds. This did not differ significantly from the mean circulation times of 17·21 seconds for the 20 patients with psychoneurosis and 18·05 seconds for the 20 patients with psychopathic personality. These values were considered within the normal range.

The mean circulation time for the 37 patients with manic-depressive psychosis was 19·8 seconds, which was highly suggestive of a statistically significant slower rate of blood-flow than that obtained for any other group except that with involutional melancholia. The range varied from 12·3 to 47·8 seconds. There was a progressive increase in the mean circulation time dependent on the attack of the psychosis: first attack, 17·24 seconds; second attack, 22·06 seconds; and third attack, 23·65 seconds.

The mean circulation time for patients suffering from involutional melancholia was 19·94 seconds, suggestive of being significantly slower than the value for any other group except that with manic-depressive psychosis.

The mean circulation time for the 19 patients with toxic and organic psychoses was 15·15 seconds, a significantly faster rate of blood-flow than that obtained for any other group.

The correlations between the circulation time and the pulse-rate were significant for the entire group, the schizophrenic group and the psychopathic personality group, but not for the manic-depressive, involutional psychoneurotic and toxic groups.

No correlations were obtained for the entire group or for any disease group between the circulation time and the age, height, weight, length of illness, permeability quotient, spinal fluid protein, blood sugar, blood non-protein nitrogen, psychic tension, psychomotor activity or contact with environment.

(Author's abstr.).

Effect of Benzedrine Sulphate and Phenobarbital on Behaviour-Problem Children with Abnormal Electro-encephalograms.

The effect of benzedrine sulphate and phenobarbital has been studied on 12 behaviour-problem children with abnormal electro-encephalograms. A fairly homogeneous clinical and electro-encephalographic entity has been described and called epileptoid. About one-half of these patients were distinguished by marked improvement in behaviour with benzedrine therapy and by the presence of a prominent 6-cycle rhythm in the electro-encephalogram. Phenobarbital is definitely contra-indicated in the treatment of these children. Changes in the electro-encephalogram were not observed to correlate with the clinical changes produced by these drugs. (Author's abstr.).

Conscious Inability to Synthesize Thought in a Case of Right Frontal Tumour and Lobectomy. Anatomic Considerations Concerning the Neurons of Intellect.

(1) A new case of unilateral (right) frontal lobectomy (that of E. A. Q.) is reported.

(2) A new symptom of injury to the frontal lobe presented by E. A. Q. is described. The symptom is of conscious inability to synthesize recognized separate thoughts.

(3) The theory of the synthetic role of the frontal lobes in intellectual function is discussed, as is the support given that theory by the new symptom.

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(4) The slight effects of unilateral frontal lobectomy are contrasted with the panoramic ones following bilateral lobectomy or other bilateral injury. In the light of this comparison, it appears that the caudofrontal pathways of intellect undergo partial decussation. (Author's abstr.).

ARCH. PSYCHOL. N.Y.

OCTOBER–NOVEMBER, 1939.

*Psychological Changes Associated with Head Injuries. *Conkey, R. L.* No. 232.
A Quantitative Study of the Visual After-Image. *Feinbloom, W.* No. 233.

Psychological Changes Associated with Head Injuries.

By means of a battery of tests the author was able to estimate the psychological effects of head injury. It was possible to estimate when the patient stopped showing improvement. Simple mental functions showed recovery earlier than more complex ones. Performance involving memory lagged behind other behaviour recovery. There was found a loss of power to sustain attention, which may be related to Goldstein's " catastrophic " behaviour. The recovery of psychological processes lagged behind physical recovery and affected the performance of the patient after all apparent physical symptoms had disappeared.

Patterns of disability in the feeble-minded and in head-injury patients were found to be similar. The impairment of the ability to perceive abstract relationships characterized the performance of the head-injury patient.

G. W. T. H. FLEMING.

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*Studies in the Application of Mental Tests to Psychotic Patients. *Davidson, M.* 44
*A Reply to Recent Criticisms of Intelligence Testing. *Stephenson, W.* . 53
The Word Pictures of Children: A Method of Recording and Studying Them. *Lowenfeld, M.* 65

Mental Disease and Crime.

A sociological investigation is described in which the statistics of crime and insanity in a number of different countries have been collected and compared. It is concluded that there is a definite incompatibility between the development of mental health services and the need for accommodation in prisons. The results

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of the survey also suggest that attention to mental health may help to prevent the occurrence of serious crimes, particularly deliberate homicide. The need for providing beds in mental hospitals, however, depends to some extent upon the age grouping of the population, and this, in its turn, is dependent upon the birth rate. S. M. COLEMAN.

The R.E.C.I. Series of Perceptual Tests.

A series of perceptual tests was given to children between the ages of 4 and 14 in a small urban area, and also to other selected groups of subjects. It has been possible to cover practically the whole range of mental development from the age of 2½ to 14 years. Norms and standard deviations were computed and an analysis of component tests was made. Causes of erroneous responses have been studied.

Subjects whose scores were more than twice the standard deviation above or below the normal could not be differentiated. Insufficient data were obtained for conclusions to be drawn concerning subjects over 14 years of age. The scores of the adults who were tested suggested that the series would differentiate subjects over the age of 14 into five classes, according to whether the individual were mentally defective, dull, normal, bright or of university standing, but would fail to differentiate between individuals within these groups. A revised series of 60 tests has been prepared on the basis of this survey. S. M. COLEMAN.

Physically and Mentally Defective Children and Perceptual Tests.

A group of physically defective children were classified according to the nature of their defects and according to their teachers' estimates of their mental ability; their standard scores on the R.E.C.I. perceptual tests were compared with these classifications. Mentally defective children were classified according to the nature of their defects or their progress in school work. Their perceptual test scores and Binet I.Q. were compared.

The physically defective children, on the average, differ little from the normals in spite of the fact that teachers rated many of them as backward or dull. The mean scores of the physically defective children were slightly below the normal on the group test; the scores were slightly above the normal on the board form of the test, but it is doubtful whether any of these differences are significant. The mentally defective children, on the other hand, had mean scores which were consistently and significantly lower than the normal, though their mean scores showed a regular increase with age on the perceptual tests, as is usual on the Stanford-Binet tests.

Perceptual tests of eduction can be used to differentiate between children who are backward because of loss of schooling and those who are backward because of mental impairment. S. M. COLEMAN.

Application of Mental Tests to Psychotic Patients.

The results of this study throw some light on the processes of thought in schizophrenic patients. The schizophrenics were able to succeed on the vocabulary tests, that is to say, they were able to give sufficient associations with the words to show familiarity with them. Their relative failure on the other tests on the Stanford-Binet scale showed that they were not able to use words adequately in the solution of new problems. The schizophrenic separates words from the objects and ideas which they commonly represent, and ascribes to them a private, personal significance. Words become objects in themselves which are manipulated, combined and systematized. In a non-verbal test, this desire to systematize, which may be related to perseverative tendency, is shown by the effort to find an alternative which combines all the elements in the matrix. If the results of perceptual tests are carefully analysed, they reveal differences between clinical groups of patients, and they might thus serve to distinguish between mental defect and abnormal mental functioning. S. M. COLEMAN.

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A Reply to Recent Criticisms of Intelligence Testing.

In a previous paper (*Journ. Med. Psych.*, 1938) Hill brought forward evidence, based upon his experience with backward children, to show that the I.Q. can, in many cases, be considerably raised when gross affective disabilities have been remedied. He refuted the view that general intelligence (Spearman's " g " factor) exists. In this paper the author makes use of the usual mathematical and statistical evidence in support of the " g " factor and then proceeds to argue as if this evidence were equally valid for his psychological and clinical interpretations.

S. M. COLEMAN.

BRIT. J. PSYCHOL. (GEN. SECTION).

VOL. XXIX. APRIL, 1939.

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Apraxia and Aphasia. *Brock, S.* 321
Nocturnal Epilepsy in Patients with Brain Tumour. *Spillane, J. D.* . . 328

Cerebral Activity including Conscious Sensation as a Physico-chemical Process with Evidence to Indicate that many Vital Processes can be Expressed in Simple Mathematical Relationships.

Investigations of the refractory periods of vision and of olfaction showed that n both instances the relation between intensity or duration of a stimulus and response could be expressed by similar equations based on square roots and cube roots or their multiples. By means of these equations it is possible to calculate the results obtained by varying any of the factors, and therefore, from one experiment, to foretell the results.

These equations were found to be applicable to a large number of reactions in the vital processes of animals and plants determined by other investigators.

Since the equations are similar to those which govern many reactions and

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physical relations in the inorganic world, we were led to suspect that vital processes, including conscious reactions to visual and olfactory stimuli in the human being, are based upon physico-chemical processes. As all of these processes appear to be physico-chemical and can be expressed in terms of mathematical equations, the equations may be called approximations of laws which govern the activity of both animate and inanimate matter.

It is suggested that in these processes the cube root and square root relationships are due to volume and surface reactions, and that ionic activity may be concerned in them. (Author's abstr.).

[This journal has ceased publication.]

CONFINIA NEUROLOGIA.

VOL. II. NOS. 1–2.

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Meningioma in a Dog. *Arnig, C. D., and Mayfield, F. H.* 59
The Mammillary Body and Korsakov's Symptom-complex. *Grünthal, E.* . 64

Cerebro-spinal Fluids in Lues.

The author combined conductivity and interferometry measurements to form a ratio, the non-electrolyte/electrolyte ratio INE/NE. This ratio was estimated in 30 cases of neurolues. The average ratio in the luetic cases ·35, was higher than in non-luetic—·31. The highest values (average ·41) were shown by cases of general paresis, central nervous system syphilis and tabes coming next with ·37 and ·34. In several cases, clinical complications were accompanied by an increase in the ratio, while an improvement was accompanied by a decrease in the INE/NE ratio. G. W. T. H. FLEMING.

The Therapeutic Action of Saline.

The intravenous injections of hypertonic solutions of sodium chloride has a sedative action due to dehydration of the nerve-cells. Hypotonic solutions excite the centres by hydration. In epilepsy the attacks become less frequent in the first days of treatment with hypertonic saline. Excitation in schizophrenia and mania are also calmed. In Parkinsonianism the author found an improvement after hypertonic saline. Hypotonic saline had a favourable influence in melancholia.
G. W. T. H. FLEMING.

INT. J. PSYCHOANAL.

VOL. XX. JANUARY, 1939.

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*The Relations Between Clinging and Equilibrium. *Schilder, P.* . . . 58
*Regression of Ego-orientation and Libido in Schizophrenia. *Bak, R.* . . 64
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If Moses was an Egyptian.

Having, in a previous contribution, postulated that Moses was an Egyptian, in this paper Freud further elaborates his analysis of the Hexateuch. He brings forward evidence to suggest that within the personality of the Moses of the Bible

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two actual individuals have been compressed. First there is Moses the Egyptian, who brought the Jews out of Egypt, gave them their laws and the monotheistic religion of Akhenaton. He was probably killed during one of the revolts against his authority and the cult of Aton. The second person within the legendary figure is an anonymous priest of Jahve, the blood-thirsty volcano diety of the Midianites, whose religion largely replaced and debased that of Aton. This is considered to have taken place after the Egyptian Jews had mixed with related tribes in the country between Egypt and Canaan. The anomalous character of Moses and his God, the evidence that within the ritual of Jahve worship were volcano attributes, the ritual of circumcision and the curious position of the Levites among the tribes are some of the material used in support of this thesis. The psychological motives responsible for such distortion in the myth are fully discussed.

S. M. COLEMAN.

Preliminary Notes upon the Problem of Akhenaten.

From a survey of recent Egyptological discoveries it is concluded that Akhenaton had an unusually large feminine component in his constitution. The founding of the monotheistic religion of Aton, which he imposed upon his subjects, is regarded as a reaction formation to his own personal problems along paranoid lines.

S. M. COLEMAN.

The Relations Between Clinging and Equilibrium.

In the original sucking-clinging function, clinging serves to secure the child's equilibrium (protection against being dropped) and physical warmth (proximity to the mother's body), especially when absorbing nourishment. At a later stage clinging helps to preserve an upright posture. In either case it helps to counter the forces of gravity, against which it is one of the functions of the mother to safeguard her child. Children react with anxiety and panic whenever they feel uncertain of being able to maintain their position. Schilder then traces the significance of clinging and equilibrium in the ætiology of the anxiety neurosis. He shows how this neurosis may be derived from a conflict between the desire to be independent of others in preserving the equilibrium and the desire to retain the libidinal gratification afforded by support and contact with the mother. Where independence is not achieved, dependence will sooner or later be felt as a compulsoin, as an obstacle to the subject's freedom of movement. It is pointed out that death wishes towards the person to whom one looks for support are often unmistakable.

S. M. COLEMAN.

Regression of Ego-orientation and Libido in Schizophrenia.

Thermic orientation is considered to be the genetic psychological prototype of projection and of identification, that is of exchange of cathexis between ego and object. An object becomes warm when another object in contact with it gives up a part of its own quantum of heat and becomes cold. In this way the various qualities of the objects are interchanged, a " flowing-over " into each other takes place. A special form of thinking is associated with thermic orientation, which has this character of " flowing-over ". Case-material from schizophrenics is adduced to show that during the regression to early ego-situations these forms of orientation and thinking are present.

This pattern of thought is traced back to the trauma of birth, more particularly the sudden drop in temperature. Against this the infant is defenceless, and one of the principle impulses of the undifferentiated organism is to regain its lost warmth. At this level of orientation the concepts body-temperature, identity with the outside world, flowing-over and diffuse narcissism are one. The author points out how the psychotic cases cited are all bound to the lost objects of their love by various forms of radiation.

S. M. COLEMAN.

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Hippocampus and Relations to Corpus Callosum.

In this monograph the comparative anatomy and embryology of the hippocampus are studied with special reference to its relations to the corpus callosum. The author tells us that his chief aim in these descriptions is to disclose the unitary structural nature of the archipallium among the mammals, and thus to establish a new basis for discussing the functions of the hippocampus. The investigation is limited to mammals. Embryological studies were confined to closely-placed series of six species, including the opossum, rat, guinea-pig, common pig, cat and man. Serial sections of a number of adult mammalian brains, stained by the Pal-Weigert method, were also studied and in several instances reconstructed. These adult brains included the kangaroo, mole, rat, cat, dog, giraffe, tapir, horse, lemur, marmoset, South American monkey, macacus, baboon, gibbon, orang-outang, chimpanzee, gorilla and man. The consideration of further details in the human hippocampus together with a critical review of the literature on the hippocampal formation and the corpus callosum was to have appeared in Part II, but the illness and death of Dr. Tilney prevented its completion.

S. M. COLEMAN.

Somatic Correlations with the Unconscious Repudiation of Femininity in Women.

In this paper evidence is brought forward which suggests that a certain aspect of self-destruction, a deep unconscious rejection of femininity, may be reflected

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in the appearance, bodily function and structure as well as in the celibacy and neuroticism of certain women. S. M. COLEMAN.

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*Attitude of Psychoneurotics towards Scientific Contraceptive Advice. *Friedman, J. H.* 672
*Genoscopolamine: Its Uses in Parkinsonism. *Scharf, J. H., and Manong, S. T.* 682

Hemiatrophy of the Brain.

A case of cerebral hemiatrophy is presented showing all the usual features—hemiplegia, convulsions and mental deficiency. It is regarded as a "primary" hemiatrophy, since the child was not normal from birth. Ætiological factors were (1) the illness of the mother during pregnancy; (2) icterus neonatorum; (3) pertussis at 10 months. Brain studies revealed a practically complete cerebral hemiatrophy. An unusual feature was the retention of the Betz-cells and the relatively intact pyramidal tract even in the presence of a hemiplegia. Demyelination was present everywhere in the cortex. The basal ganglia were secondarily atrophied and the opposite cerebellar hemisphere was atrophied. S. M. COLEMAN.

Psychoneurotics and Scientific Contraception.

A follow-up of 30 psychoneurotic cases referred to the birth-control clinic was made. It was found that 14 patients had refused to use approved contraception, and 9 of those who availed themselves of scientific contraception discontinued it for various reasons. Of the remaining 7, who continued scientific contraception, it was found that: Two became pregnant; two were already pregnant; one patient's neurotic state remained unimproved; two could be said to have improved; but in one the improvement was attributed to insight into the neurosis. Of the 30 cases only one could be said to have benefited by the scientific contraception.

It is concluded that where anxiety and other neurotic symptoms in regard to contraception exist they are part of a more deep-seated conflict in regard to sexuality as a whole. This being the case, the blunt proposal of contraceptive advice to such individuals is not apt to relieve the cause of the anxiety or other neurotic symptoms, and that unless preparation is given through a careful approach to the topic and consideration of all the factors (sociological, religious and psychological) involved, the patients are likely, consciously or unconsciously, to evade application of the knowledge given them. S. M. COLEMAN.

Genoscopolamine in Parkinsonism.

Genoscopolamine, having been used in the treatment of a group of long-standing cases of Parkinsonism, has been found to be a desirable and efficacious substitute for scopolamine, atropine and stramonium. Used in conjunction with small doses of atropine it is especially effective. Its comparatively low toxicity makes it a most suitable drug to use in cases which have required large doses of other drugs. It permits of raising the dose without incurring toxic symptoms.

In a group of 22 cases treated, genoscopolamine had a beneficial effect upon a number of the distressing symptoms, especially upon the rigidity, the tremor, the muscular weakness, the salivation and upon the oculogyric crises. Polyuria occurred in a number of cases. S. M. COLEMAN.

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JUNE, 1939.

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*Cystic Hydrops of the Pineal Gland. *Liber, A. F.* 782
*Genealogical Studies in Huntington's Chorea. *Stone, T. T. and Falstein, E. I.* 795
*Treatment of Schizophrenia with Cardiazol in Convulsant Doses (Part II). *Delgado, H.* 810

Cystic Hydrops of the Pineal Gland.

While small, multiple cavities which do not enlarge the organ are almost the rule in the pineal gland, cystic hydrops which distends the gland has rarely been reported. In the case presented the cyst was lined by fibrous glia and partially by a single layer of pineal cells with a collagenous basement membrane. The cyst contents seemed to be an albuminous fluid.

The quadrigeminal plate was flattened and the mesocœliac recess narrowed, but the aqueduct of Sylvius was not compressed. The veins of Galen adhered closely to the cyst, but were not narrowed. It is suggested that in an operation on a case of this sort evacuation of the cyst would be sufficient.

The central situation of the cyst and the presence of a glial tractus diverticularis obliterating the pineal recess are in favour of Krabbe's theory that pineal gliosis and cysts result from an altered pineal diverticulum. The accumulation of fluid and enlargement of the pineal gland have not, as yet, received a satisfactory explanation. S. M. COLEMAN.

Genealogical Studies in Huntington's Chorea.

Fifty-two cases of Huntington's chorea from the state hospitals in Illinois were studied genealogically; ten families are described in detail, representing more than half of the cases with positive family history. Regarding nationality, there was a surprising prevalence of Germans. About four times as many patients were admitted from urban as from rural districts. The age incidence as far as onset of symptoms was concerned included every decade up to the ninth, except the first, with the largest number occurring in the fifth. Regarding sex, there were slightly more female than male admissions.

Various biotypes of chorea were observed, each with some dissimilar symptomatology; in some families the disease came on early and in some late; in some the mental symptoms preceded the choreiform movements, while in others the latter initiated the disturbance. Anticipation occurred, but was not a constant characteristic. The most reliable case-histories revealed typical Mendelian dominance. It is suggested that the heredity-free cases could be better explained by incomplete records than by the assumption of a recessive factor in such cases.

As a social and eugenic problem at the present time, about 300 years after the introduction of the disease into America, the affection appears to be out of control. Prospects of its eradication are considered to be remote without adequate legislative methods of the type exemplified by legalized sterilization.

S. M. COLEMAN.

Treatment of Schizophrenia with Cardiazol.

Fifteen non-selected cases were treated by von Meduna's method. Of 8 cases of under 18 months' duration, 7 showed a complete remission and 1 an incomplete remission. Of the 7 more chronic cases, 2 showed complete remission, 1 incomplete remission and 4 no remission. The treatment produced a considerable improvement in the physical state of all the patients, with increased weight. In some cases it was found necessary, and not dangerous, to produce more than thirty convulsions.

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It is admitted that, having only practised the method over a period of eight months, the time of observation subsequent to the end of therapy is very brief.

S. M. COLEMAN.

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*Anatomy, Physiology and Surgical Considerations of the Spinal Tract of the Trigeminal Nerve. *Walker, A. E.* 234
Time Constant of Excitation and Velocity in Supernormal Phase of Nerve. *Blair, H. A.* 249

Ablations of Frontal Cortex in Cats with Special Reference to Enhancement of the Scratch Reflex.

(1) Ablation of frontal cortex around the cruciate sulcus in cats produced in the bilateral experiments the behaviour described by previous investigators, including the absence of the placing reactions. In the unilateral experiments the behaviour was unchanged, but the placing reactions were destroyed in the contralateral extremities.

(2) The " climbing discharge ", groping and grasping, the licking and biting response, exaggeration of purring, and the " under-or-over-fence " reaction were correlated with the observations of previous investigators.

(3) Marked enhancement of the scratch reflex, which occurred 2 to 6 weeks after bilateral frontal ablations, persisted throughout survival periods up to 162 days.

(4) Unilateral ablation of frontal cortex effected no enhancement of the scratch reflex, but only transient abolition in the contralateral extremities.

(Author's abstr.)

Temperature Regulation in Cats with Thalamic Lesions.

Damage to the thalamus causes no obvious disturbance of temperature regulation.

The caudodorsal portion of the thalamus does not form an essential part of the mechanism responsible for panting.

At the level of, and just caudal to, the mammillary bodies the descending paths from the hypothalamus which are concerned with temperature regulation lie near the ventral surface of the brain. (Author's abstr.)

Effects of Frontal Lobe Lesions on Temporally Organized Behaviour in Monkeys.

The effects of removal of the frontal association areas of the cerebral cortex were studied in four monkeys with three types of behavioural tests, alike in the respect that differential cues were absent from the external situation, but different in respect of the degree of influence exercised by repeated training in the establishment of their corresponding habits. The tests were: (i) A temporal discrimination maze in which available sensory cues were mediately associated with the briefer

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detention of the correct pathway; (ii) a shuttle-box which required response to be made within a fixed interval after the onset of a signal stimulus, and in which, again, the cues necessary to correct performance must be supplied by the subject itself; (iii) the delayed response test in which the cues representative of immediately previous stimulation also had to be contributed by the animal.

The results are summarized as follows: Unilateral lesions of the frontal areas caused no impairment in performance on any of the three tests. Bilateral ablation of the frontal areas affected performance in different ways: (i) The ability to perform in a shuttle-box was retained without impairment; (ii) retention of the maze test was not impaired, nor was the capacity to learn this task for the first time reduced; (iii) the capacity to respond correctly in the delayed response test was totally and permanently lost by the same subjects.

It is concluded that, although the frontal areas are essential to one type of centrally controlled behaviour, these regions are not essential to other types of equally "representative" behaviour investigated in this study. The concept of immediate memory is accordingly further qualified: (i) In terms of "associative" and "non-trial-and-error" learning; and (ii) in terms of discrete neural mechanisms underlying the two kinds of behaviour. (Author's abstr.)

Relation of Stimulation Time of Receptors to Recovery Time in the Nervous System: Visual, Olfactory and Auditory Senses.

(1) For the special senses of vision, smell and hearing, there is the same simple mathematical relationship between the duration of stimulation of the peripheral receptors and the duration of the recovery period.

(2) This relationship indicates that the duration of the recovery period is proportional to the 2/3 power of the duration of stimulation.

(3) This relationship is limited by certain factors.

(4) The relationship may be based upon a neural factor common to all of the senses that were investigated. (Author's abstr.)

Anatomy, Physiology and Surgical Considerations of the Spinal Tract of the Trigeminal Nerve.

(1) The anatomical characteristics of the spinal tract of the trigeminal nerve are discussed. Its functional divisions are correlated with its anatomical structure.

(2) The sensory disturbances over the face in two cases of thrombosis of the posterior inferior cerebellar artery are presented.

(3) Trigeminal tractotomy is an operation which, under exceptional conditions, is indicated for the relief of trigeminal pain. The technique of the operation is discussed.

(4) The sensory findings in two cases of trigeminal tractotomy are presented.

(5) Analysis of the above cases and similar ones in the literature suggest that the spinal tract of the fifth nerve carries sensations of pain, heat, cold, deep pressure pain and, to a slight degree, touch. These sensibilities are probably isolated to some extent in the tract. (Author's abstr.)

Time Constant of Excitation and Velocity in Supernormal Phase of Nerve.

Comparison of normal voltage capacity curves from the frog's sciatic nerve with those taken during the supernormal phase of recovery shows that the time constant of excitation is decreased (chronaxie is increased) during the supernormal phase by as much as 15% when the supernormality is more than 30%. Therefore, a complete description of the recovery in nerve must take variations of the excitability into account as well as the other excitation parameters. Also the supernormal phase will be greater in depth, as determined by stimuli of long than of short duration, since the latter tend to ignore changes in the time constant. A method is described for testing the validity of Rashevsky's electrical self-excitation theory of nerve impulse propagation by relating the altered excitation parameters to the

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altered velocity during the recovery cycle. A single set of data by Graham lends support to the hypothesis. (Author's abstr.)

JULY, 1939.

*Cerebral Blood-flow during Induced Epileptiform Seizures in Animals and Man. *Penfield, W., von Sántha, K., and Cipriani, A.* 257
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*Factors for Facilitation and Extinction with Central Nervous System. *Dusser de Barenne, J. G., and McCulloch, W. S.* 319
*Control by the Central Nervous System of Rectal Smooth Muscle. *Longworthy, O. R. and Rosenberg, S. J.* 356

Cerebral Blood-flow During Induced Epileptiform Seizures in Animals and Man.

Increased blood-flow of the area of brain involved seems to be the invariable accompaniment of experimental convulsions in animals and of epileptic seizures in man. This change in blood-flow does not apply to the whole brain, and is, therefore, not a phenomenon secondary to changes in general circulation or respiration. The circulatory increase begins a little time after the onset of local neuronal discharge and may be interpreted as the direct result of increased ganglionic activity.

The evidence of our present communication indicates that vasospasm plays no role during a seizure, nor is there evidence of widespread anæmia following it. Vascular spasms and anæmias may be concerned in the pathological background of epilepsy, but at all events they play no role in the actual mechanism during a seizure. (Author's abstr.)

Role of the Sympathetic System in Reflex Dilatation of the Pupil.

The role of parasympathetic inhibition and that of sympathetic excitation in reflex pupillary dilatation in cats was analyzed by recording the pupillary changes in the normal, the parasympathectomized, and in the sympathectomized eye. It is shown that:

(1) After section of the third nerve and local application of eserine, the threshold of the cephalad end of the cervical sympathetic remains unchanged; indicating that such a pupil may be used as an indicator of sympathetic impulses.

(2) On reflex stimulation, which evokes struggle and vocalization, the parasympathectomized pupil remains unchanged or shows a very slight dilatation (not more than 1 mm.), whereas the normal pupil may dilate 7 mm.

(3) After sensitization with metrazol the sympathetic reflex response of the pupil increases.

(4) During metrazol convulsions the parasympathectomized and eserinized pupil dilates to 7 or 8 mm.

It is concluded that under normal conditions the pupillary dilatation in response to pain is almost exclusively due to parasympathetic inhibition, but that under conditions which increase the excitability of the cilio-spinal centre, sympathetic discharges may contribute materially to the dilatation. (Author's abstr.)

Effects of Hypoglycæmia and Pentobarbital Sodium on Electrical Activity of Cerebral Cortex and Hypothalamus (Dogs).

(1) Electrograms have been recorded from the dog cortex (18 dogs) and from anterior and posterior hypothalamus (14 dogs) both with and without anæsthetic under varying conditions of insulin hypoglycæmia.

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(2) The effect of hypoglycæmia on the cortical activity is similar to that in man, the alpha rhythms are slowed and the delta waves increase in prominence. In more prolonged hypoglycæmia the cortical responses fail completely and are restored only an hour or so after injection of glucose. Both posterior and anterior hypothalamus show much stability compared to the cortex. No changes are noted until some time after failure of electrical activity of the cortex, when a short period of hyperactivity of the hypothalamic centres may develop, followed later by failure just before death. Injected glucose restores hypothalamic activity some time before that of the cortex.

(3) Nembutal, which reduces cortical respiration *in vitro*, produces cortical changes similar to those of hypoglycæmia except that it considerably enhances the amplitude of alpha waves at the same time that it slows their rhythm. In contrast to this, no differences were seen in hypothalamic rhythms before and after nembutal anæsthesia.

(4) Our results show independence of responses from cortex, from a region near the supra-optic nucleus, and from the mammillary body region. The latter two grid-leads were approximately 1 cm. apart. The anterior hypothalamic response, recorded directly by our method, gives records indistinguishable from those obtained by the Grinker technique in which a grid-lead is embedded in the bone at the roof of the pharynx.

(5) Changes (as much as 16-fold) in hydrostatic pressure of the cerebro-spinal fluid are, *per* se, without effect on the cortical electrogram. (Author's abstr.)

Cortical Action Potentials During Anæsthesia.

(1) Seventeen anæsthetic agents—nitrous oxide, cyclopropane, ether, divinyl ether, ethylene, trichlorethylene, ethyl alcohol, ethyl chloride, ethyl urethane, chloroform, amylene hydrate, tribromethanol, " evipal ", paraldehyde, sodium barbital, chloralosane, and " nembutal "—have been studied in the cat. Following exposure of the right posterior sigmoid gyrus of the cortex, recording electrodes of the concentric type were placed on the sensory area, in all cases. Factors compared were pattern, frequency, and voltage of the cortical action potentials, as well as the response of these factors to sciatic stimulation at the several levels of anæsthesia. Simultaneous spinal activity was recorded by means of the flexion reflex. Two levels of anæsthesia were considered in particular: (*a*) Light—the lightest anæasthesia it was possible to work with without producing a disturbing generalized muscular response on stimulating the sciatic nerve; (*b*) deep—the level at which the flexion reflex just disappeared.

(2) The frequency per second for each agent at both light and deep levels of anæsthesia has been determined, and the mean with its standard deviation listed in all cases. For a given agent within the range of anæsthesia depth employed clinically the frequency is remarkably constant, being relatively characteristic for a given agent and little changed by alterations of depth over a wide range of anæsthesia and unaffected by peripheral stimuli (sciatic). When the frequencies are tabulated in order of size it is apparent that, in general, high frequencies are associated with highly-volatile agents and low frequencies with non-volatile agents. Attention is called to the fact that the pattern and frequencies associated with the non-volatile agents are similar to those found during natural sleep. The generalization can be made that frequency of the total cortical waves is a relatively stable characteristic during anæsthesia.

(3) During light anæsthesia under " Group I " agents (nitrous oxide, cyclopropane, ether, divinyl ether, ethylene, trichlorethylene, ethyl alcohol, ethyl chloride, ethyl urethane, chloroform and amylene hydrate), sciatic stimulation greatly increases the voltage of the cortical waves. It is also apparent there that even under light anæsthesia, at least of the level used in this study, central sciatic stimulation has no effect on the voltage of the cortical waves under the " Group II " agents (tribromethanol, " evipal ", paraldehyde, sodium barbital, chloralosane, and

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" nembutal "). Group I consists of volatile agents (excepting the urethane), and Group II of non-volatile.

Stimulation has no effect on the voltage of the typical cortical waves under any agent at a deep level of anæsthesia. Attention is called to the fact that failure of stimulation to alter the voltages of any of the waves under the non-volatile agents is not due to failure of impulses to reach the cortex, for " secondary discharges " occur here in response to stimulation even (and usually) at deep levels of anæsthesia. This indicates that pathways remain open. There is a close linear relationship between voltage of cortical waves and depth of anæsthesia as measured by the magnitude of the flexion reflex following central sciatic stimulation. The cortical voltages are a fundamental general characteristic of the cortex and not simply phenomena arising from isolated centres. The voltage of cortical waves under anæsthesia is a labile characteristic, easily affected in certain given cases by peripheral stimuli, but not affected in others—a characteristic uniformly altered by changes in depth of anæsthesia.

(4) Records showing typical action potentials for each agent at both light and deep levels of anæsthesia are shown. Here again it is apparent, on the basis of pattern, that the anæsthetics studied fall into the two groups. The cortical waves are fine under Group I agents, fairly uniform in size, and of a frequency per second greater than 26 in all cases. In Group II small fine waves are superimposed on large slow waves. The large waves tend to come in bursts (except chloralosane). Consistency of pattern is a fundamental characteristic of the behaviour of the electrical activity in the cortex during anæsthesia.

(5) The seventeen agents studied show a tendency to fall into two groups when tested by several criteria. The composition of the groups is strikingly similar whenever any of the characteristics is considered, viz., molecular size, volatility, frequency per second of the cortical waves (fast or slow), voltage, pattern, presence or absence of secondary discharge following sciatic stimulation, type of flexor response to sciatic stimulation, ability of sciatic stimulation to alter the voltage of cortical waves under light anæsthesia. (Author's abstr.)

The Cerebral Acoustic Area of the Cat.

(1) The boundaries of the area giving responses to auditory stimuli as determined by Kornmüller in the cat have been confirmed. These boundaries correspond to definite cytoarchitectonic boundaries. The whole area giving responses, although similar in structure, may not prove to be a uniform field when more rigid criteria for division are applied.

(2) This area includes the upper part of the sylvian gyrus, the posterior part of the anterior ectosylvian gyrus, and the middle ectosylvian gyrus. It is thought that this region represents the auditory projection area in the cat.

(Author's abstr.)

Factors for Facilitation and Extinction in the Central Nervous System.

Facilitation and extinction are alterations induced in the response to test stimulation by antecedent stimulation. Underlying facilitation and extinction are changes in the activity and threshold of the parts of the central nervous system involved in the response to test stimulation. These changes, initiated by antecedent excitation, differ in kind and vary in intensity from time to time and from place to place.

For facilitation the factors are : (i) Hyperactivity yielding increased summation, (ii) negative voltage drift associated with decrease of threshold in neurones previously involved, (iii) probably increase of pH (alkaline shift) decreasing the threshold of all neural structures in the region involved. For extinction the factors are : (i) Hypoactivity resulting in less summation, (ii) positive voltage drift associated with increase of threshold in neurones previously involved, (iii) decrease of

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pH (acid shift), increasing the threshold of all neural structures in the region involved.

The effects of choice of the parameters of antecedent and test stimulation and of the interval between them upon latency, threshold and amplitude of response are explicable in terms of the modes of action of these factors.

The findings presented in this paper offer an approach to the problem of reciprocal innervation, for they compel now verified prediction of (i) the conditions for apparent reversal of a cortical focus, and (ii) the changes in the knee-jerk following facilitating or extinguishing stimulation of a cortical focus for extension or flexion at the knee. Inhibition in reciprocal innervation is explicable in terms of the more discrete factors for extinction.

The " waves " of cortical excitability, previously described, are referable to the more remote and prolonged factors for facilitation and extinction.

(Author's abstr.).

Control by the Central Nervous System of Rectal Smooth Muscle.

There is a tonic mechanism in the midbrain controlling the smooth muscle of the rectal wall. After transection of the brain-stem just cephalic to the acoustic colliculi, the smooth muscle of the rectal wall becomes hyperactive to stretch stimuli and strong waves of contraction occur, which expel the balloon from the rectum. After a lower section through the medulla, the stretch responses are lost, no contractions occur, the wall accommodates to a larger volume than normal, and the balloon is not expelled. (Author's abstr.)

L'ENCÉPHALE.

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The Senile Choreas.

A review of the literature on chorea in general is followed by a detailed study of the condition as it occurs in persons of 60 or over. The following forms of senile chorea are isolated :

The choreas of adult life prolonged into the senilium. Here are included Huntington's chorea and generalized or localized symptomatic chorea. Chorea, commencing in the senilium, may be chronic, acute or intermittent. The chronic form may be a Huntington's of late onset, or a symptomatic form, usually arteriosclerotic, sometimes syphilitic. Acute Sydenham's chorea occurring after 60 has been described. The intermittent form commences with evidence of acute infection, is subject to remittance and relapse, and tends to become chronic. There is a detailed report of a case of this type. It is the author's opinion that the intermittent form is due to a neurotropic virus comparable to, if not identical with, that of epidemic encephalitis. S. M. COLEMAN.

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Confusional Episodes in Manic-Depressive Psychosis.

Of a series of 12 manic-depressive psychotics, 3 exhibited confusional syndromes. The confusional state was sometimes concurrent with and sometimes preceded or followed the manic or depressive attack. Evidence is brought forward to show that endogenous intoxication, a direct result of the physio-pathological complex of the manic-depressive psychosis, is responsible for the confusional syndrome.

S. M. COLEMAN.

Parkinsonism and Epilepsy.

Report on a man whose illness commenced at the age of 16 with convulsions and symptoms of epidemic encephalitis. No infective, toxic, traumatic or other cause was found to explain the onset of the epilepsy. Seven years later Parkinsonism with oculo-gyric crises developed. It is believed that both the Parkinsonism and the epilepsy are due to the same cause—epidemic encephalitis. The Parkinsonism has had no influence on the evolution of the epilepsy. S. M. COLEMAN.

Anorexia Nervosa.

Report of a case of anorexia nervosa of two years' duration successfully treated by three series of injections of gonadotropic anterior pituitary hormone. The girl was not isolated from her family or subjected to any special nursing supervision. As a result of treatment alimentation returned to normal, the menses recommenced, the arterial tension augmented and there was a marked increase of weight within five months. S. M. COLEMAN.

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Occupational Therapy and its Bearing on Shock Therapy.

Previously occupational therapy had as its sole aim the prevention of deterioration in the chronic mental patient. Now, with the introduction of new methods of treatment, progressively-improving patients give rise to the problem of how to deal with them, how to prevent boredom or even relapse. The writer deplores the attitude that the new chemotherapy is self-sufficient, stressing the importance of such auxiliary methods as psychotherapy and occupational therapy.

S. M. COLEMAN.

An Occupational Therapy Programme for Patients under Metrazol and Insulin Treatment.

In planning occupational therapy for these patients close co-operation between physician, nurse and therapist is essential. The therapist should first make herself thoroughly acquainted with the medical treatment, the reactions of the patient and the possible dangers. For occupation the patients should be segregated in a separate group if possible and not incorporated in a ward or workshop. The programme should be elastic and tempered to the reaction of each individual. The period 2 to 4 p.m. should be devoted to the therapy and divided roughly into two, one hour of recreation, including walks, and one hour of occupation. A most important factor is the socializing effect of the group. S. M. COLEMAN.

The Duties of the Therapist in a Programme of Occupational Therapy at a Psychiatric Hospital.

It is the therapist's first duty to carry out the physician's prescription. This will indicate the craft, project, work or other activity considered best for the individual being treated. The therapist will be aided in understanding the illness if he has data concerning the case history with the possible precipitating factors. The therapist should be free to suggest modifications in the prescription which may

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appear to him desirable from time to time. He should further make reports on his patients at stated intervals and so aid the physician in his follow-up. It is advised that some line of study or research should be encouraged in the occupational department. S. M. COLEMAN.

The Relation of Occupational Therapy and Psychiatry.

Having shown that normal people do not differ from the mentally ill in the type or quality of their reactions, but only in their degree or depth, the various motives and mechanisms underlying psychotic states are gone into and the methods by which such conditions may be aided by the occupational therapist reviewed. It is pointed out that the therapist may be content merely to use his profession as a salve or anæsthetic to help the patient to forget his difficulties. The best type of therapist, on the contrary, should be alert to the opportunities to reawaken in the patient the joy to be found in creative work and so give him confidence to face again the real difficulties of life. S. M. COLEMAN.

Mental Hygiene Aspects of Occupational Therapy.

A brief review of the chief considerations that are pertinent to the problem of the mental health of those persons with whom the occupational therapist comes into contact, her own relationship to and participation in that problem, and her particular opportunities in constructively exploiting her contact with and relationship to the patient. S. M. COLEMAN.

Shock Treatments for Psychotic Patients and their Relationship to Occupational Therapy.

A brief outline of insulin and cardiazol treatment, in so far as they are of importance to the occupational therapist, is given. It is also shown how the introduction of shock treatments has brought about a reorientation of the occupational therapy programme with increased emphasis on its social and recreational aspects. S. M. COLEMAN.

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The Prognostic Possibilities of the Rorschach Method in Insulin Treatment.

The Rorschach method gives a clue to the patient's personality structure much quicker than clinical observation does. The agreement between final clinical diagnosis and Rorschach diagnosis is remarkably close. By means of the Rorschach test it is possible to differentiate between two types of intellectual confusion which indicate opposite prognoses. The type with the better prognosis has a rather accurate visual perception of the ink-blot and a rather fantastic elaboration of these perceptions. The other, which has a bad prognosis, has only very vague perceptions. G. W. T. H. FLEMING.

Testosterone in Male Inovlution Melancholia.

Testrosterone propionate had no effect on the five cases treated. One case showed some sexual stimulation, but this was merged into his delusional system and there was no improvement. G. W. T. H. FLEMING.

Uronic Acids in Schizophrenia and Epilepsy.

Glycuronic and galacturonic acids have been known as detoxifying agents for a long time. Their production is dependent on carbohydrate stored in the liver which is increased by insulin. In patients treated with metrazol a decrease in uronic acids in the blood was found immediately after the convulsion, the rise in uronic acids appears on the day following injection of metrazol. The author thinks that possibly uronic metabolism plays some part in epilepsy. There is an increase of saliva with increase of its mucin both in epilepsy and in hypoglycæmic shock.
G. W. T. H. FLEMING.

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Some Factors in Brightness Discrimination. *Bantly, S. H.* . . . 337
The Concept of the Individual. *Carr, H. A., and Kingsbury, F. A.* . . 359
Environmental Determinants in Psychological Theories. *Heider, F.* . . 383

On Solution-Achievement.

The authors consider that learning consists of the two processes of achievement and retention and that thinking is " achievement " in working out solutions to problems.

Problem-solving behaviour consists of a reduction of a general range or means-and-readiness to a more specific functional solution and hypothesis and then to still more specific solutions or specific hypotheses until the solution is achieved. A differentiation is made between two types of problem-situations, the meaningful and the arbitrary. The former contains general relationships, i.e. relationships independent of, but applicable to, the given situation, while the latter demand specific experiences with the specific problem-situation before such relationships can be known. G. W. T. H. FLEMING.

PSYCHOANAL. QUART.

VOL. VIII. JANUARY, 1939.

*Notes on Identification in a Case of Depression Reactive to the Death of a Love Object. *Peck, M. W.* 1
*Character and Symptom Formation. *Dunbar, F.* 18
*Observations on World Destrutcion Fantasies. *Spring, W. J.* . . . 48
*Problems of Psycho-analytic Technique, Part II. *Fenichel, O.* . . . 57
Schopenhauer and Freud : A Comparison. *Bischer, W.* 88
Contributions of Psycho-analysis to the Education of the Adolescent. *Zachry, C. B.* 98

Identification in a Case of Depression.

Report on a bereaved husband suffering from melancholia, analysis being carried out partly during the wife's illness and partly after her death. The wife's death reactivated his mother fixation and still deeper regressive levels ; he clung to the lost object with attempts at anal and oral incorporation. Suicidal ideas represented destruction of the object as well as his own punitive self-destruction. The case bears out the theories of Freud on the identification mechanism in the depressions. S. M. COLEMAN.

Character and Symptom Formation.

This investigation is based on psychological examination of some 1,300 cases, of somatic disorder. The case material is divided into the following groups : Accident, cardio-vascular, asthmatic and arthritic. The author concludes that there are differences in the constellation—constitution, focal-conflict, character resistances—for each of the groups studied and for subdivisions of the cardio-vascular group. This is illustrated in the present paper with special reference to the cardio-vascular syndromes. S. M. COLEMAN.

Observation on World Destruction Fantasies.

It is concluded that the idea of world destruction is the fulfilment of a destructive wish which was originally directed towards individual objects. As an expression of aggression turned away from objects it has a motivation similar to that of suicidal impulses, an idea which is confirmed clinically by the frequent co-existence of the two phenomena. S. M. COLEMAN.

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Problems of Psycho-analytic Technique, Part II.

In this chapter the practical details of the psycho-analytic process are discussed and commented upon. Among the subjects considered are the recumbent position during the analytic session, abstinence while under treatment, the transference situation and the various types of resistance. Much of the chapter is devoted to advice on interpretative procedure. Interpretation should commence at the surface and should at first deal with immediate conflicts. As a general rule interpretation of resistance should precede interpretation of content. As the analysis continues care should be taken to avoid too superficial or too deep an interpretation. Lastly it is advised that dream interpretation should be avoided until the character resistance has been dissolved. S. M. COLEMAN.

RASS. STUDI PSICHIAT.

VOL. XXVIII. MAY-JUNE, 1939.

*The Behaviour of Gastric Secretion, External Biliary and Pancreatic Secretions in Dementia Præcox. *Sani, C.* 193
A New Pathogenic Conception in Mental Disease. An Investigation of a "Neuropsychiatric" Hormone in the Urine of Children and its Therapeutic Effect in Mental Diseases. *Di Frisco, S.* 254
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The Modern Cure and Spontaneous Remissions in Schizophrenia. *Ventra, C., and Rossi, D.* 451
Antiluetic Treatment in General Paralysis. *Vuga, D.* 509

The Behaviour of Gastric Secretion, etc.

The writer investigated biliary secretion and the antitoxic function of the liver, using the indigo-carmine red test. In two-thirds of the cases he found the liver function normal. In the remaining third of the cases there was evidence of disturbance. He concludes that there is no evidence of relationship between any liver or gastric disturbance and the mental illness. G. W. T. H. FLEMING.

REV. FRANÇ. PSYCHANAL.

VOL. X. No. 4. 1938.

*The Structure of the Personality and its Deviations. *Morgenstern, S.* . 591
"Reality" before M. Laforgue. *Pichon, E.* 669
The Work Entailed in Mourning. *Lagache, D.* 693
*A Contribution to the Study of Ideas of Homosexual Infidelity in States of Jealousy. *Lagache, D.* 709

The Structure of the Personality and its Deviations.

Commencing with a review of the literature, it is shown that for orthodox psychiatry the constitution is a most important factor in the shaping of the

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personality. Psycho-analysts, on the contrary, consider that the circumstances under which the individual's instinctive life develops and the affective trauma he experiences are the decisive elements in the organization of the personality. It is shown how seriously the normal development of the personality may be interfered with if there is libido fixation at a pre-genital level. Such instinctive perversion due to pre-genital fixation will greatly modify the personality structure. Cases are brought forward which indicate that these perversions result from affective trauma, the anomalies in the personality being due to the resultant disorder of libidinal evolution. On the contrary, these same pathogenic elements when they are present in more moderate intensity, may produce strong and harmonious personalities. S. M. COLEMAN.

Ideas of Homosexual Infidelity in States of Jealousy.

Freud is of the opinion that jealousy as a whole is more frequent in women than in men and the author supports this view, finding that the idea of homosexual infidelity occurs more readily in the female. Heterosexual interest in her masculine rival is not considered a satisfactory explanation of this complex. Again, it is regarded as too vague to explain it as a projection of unconscious homosexuality. From his analysis of a series of cases he concludes that the idea of homosexual infidelity in the woman is due to " penis envy ", from which proceed fantasies of sexual agression. S. M. COLEMAN.

REV. DI NEUR. E PSYCHIAT., S. PAULO.

VOL. IV. JANUARY, 1938.

*Meningeal Neoplasms. *Maffei, W. E.* 1

Meningeal Neoplasms.

A study of 34 cases based on the classification of Bailey and Bucy. The meningiomas are most common on the brain convexity. The olfactory groove and the sella tubercle are the most selective places.

APRIL, 1938.

Transition Forms between Friederich's Ataxia and Heredo-cerebellar Ataxia. *Valente, A.* 63

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RIV. DI PSICHOL.

VOL. XXXIV. OCTOBER–DECEMBER, 1938.

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SOV. PSICHONEVR.

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*Experimental Results of the Inoculation of Pappatacci Fever in the Treatment of Schizophrenia. *Posnyansky, P. B., and Vunder, M. A.* . . . 5
*Results of the Treatment of Schizophrenia by "Gravidan". *Mebel, M. I.* 33
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*Glutathione Reaction in Schizophrenia. *Vunder, M. A.* 79
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Psychopathological Data from the Study of Different Forms of Schizophrenia at the Age of Puberty. *Kononova, N. P.* 279

Experimental Results of the Inoculation of Pappatacci Fever in the Treatment of Schizophrenia.

The authors treated 110 cases of schizophrenia with pappatacci fever. Of 61 chronic cases, 7 showed a complete remission and 15 considerable improvement. There was no result in 27 cases. Of 49 recent cases, 51% showed considerable improvement. G. W. T. H. FLEMING.

Results of the Treatment of Schizophrenia by Gravidan.

The author treated 197 cases with gravidan. A stable remission was obtained in 45 cases, and marked improvement in 44. The best results were obtained with catatonics. Paranoid cases were made worse. With mental improvement there was always physical improvement. Intramuscular injection was mostly used, but occasionally enemata were given. G. W. T. H. FLEMING.

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Treatment of Schizophrenia by Prolonged Narcosis.

The writer used dial in the treatment of 23 cases. Catatonics provided the best results. Of the 23 cases, 7 provided a prolonged remission. Calcium given for some considerable time beforehand produced calmer and more even sleep. In long-standing cases narcosis may make the condition worse. Prolonged narcosis may change the structure of the schizophrenic process from one type to another, or may merely modify the clinical symptoms. G. W. T. H. FLEMING.

Glutathione Reaction in Schizophrenia.

The author examined 35 acute schizophrenics and 24 chronics. He found that the content of both reduced and oxidized glutathione in the blood of schizophrenics, was within normal limits with a slight tendency towards the upper limit. The glutathione content does not depend on the number of erythrocytes.
G. W. T. H. FLEMING.

1. Biochemistry, Pathology and Physiology.*

Cholinesterase Activity of Venous Blood during Direct and Indirect Excitation of Muscles. (*Compt. Rend. Soc. Biol., vol. cxxx, pp.* 236–40, 1939.) *Croxatto, H., Huidobro, F., Croxatto, R., and Salvestrini, H.*

The excitation of the motor nerves of the crural or lumbar plexus of the cat by a tetanizing current causes an increase in the cholinesterase of the venous blood of the affected muscles. This increase is not due to sympathetic excitation. The direct excitation of the muscles after nerve degeneration or curarization causes a decrease in the blood cholinesterase. L. E. GILSON (Chem. Abstr.).

Acetylcholine and Shivering. (*Compt. Rend. Soc. Biol., vol. cxxx, pp.* 1,307–9, 1939.) *Tournade, A., Raynaud, R., and Chardon, G.*

In the dog set to shivering by chilling, the intravenous injection of acetylcholine temporarily suppresses the shivering regardless of whether hypotension or hypertension is produced. Atropine does not modify the action.
L. E. GILSON (Chem. Abstr.).

Is Nerve Leprosy Ætiologically Uniform? The Treatment of Nerve Leprosy with Vitamin B_1. (*Arch. Schiffs- u. Tropen-Hyg., vol. xlii, pp.* 1–13, 1938.) *Keil, Ernst.*

The uniform ætiology of nerve leprosy is questioned. The syndrome is not attributed solely to the action of the leprosy bacilli and their metabolic products on the nervous tissue; these symptoms are overshadowed by the typical appearance of a vitamin B_1 deficiency. Experimental rat leprosy is made more severe and the incubation time is shortened by vitamin B_1 deficiency. The treatment of nerve leprosy with vitamin B_1 is urged. RUTH BERGGREN (Chem. Abstr.).

Sensitization of the Central Nervous System to the Pyrimidine Component of Aneurin (Vitamin B_1) by Administration of a Certain Diet Adequate in Every Respect. (*Klin. Wochenschr., vol. xviii, pp.* 171–2, 1939.) *Abderhalden, Rudolf.*

Although rats fed on mixed grains showed no reaction to 2-methyl-4-amino-5-bromomethylpyrimidine or 2-methyl-4-amino-5-hydroxymethylpyrimidine, injection into rats fed on a diet of 20 parts casein, 60 parts rice starch, 15 parts peanut oil, 5 parts McCollum's salt mixture, 0·4 grm. dry yeast and 0·1 grm. liver extract

* A number of abstracts in this section are reproduced from *Chemical Abstracts* by kind permission of Prof. Crane, of Ohio University, to whom the Editors wish to express their thanks.

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resulted in severe convulsions and death. Uracil had no such effect. The effect was prevented by addition of corn sprouts or more yeast to the food.

H. L. MASON (Chem. Abstr.).

Physiological and Chemical Studies of Neuromuscular Disorders. (*Trans. Amer. Neurol. Assoc., vol. lxiv, pp.* 120–4, 1938.) *Russel, Colin K., Odom, Guy, and McEachern, Donald.*

No evidence of increased blood acetylcholinesterase could be demonstrated in patients with myasthenia gravis. However, this does not exclude the possibility that the symptoms of this disease are due to increased muscle acetylcholinesterase activity. Experiments on patients with temporarily blocked circulations demonstrated that the beneficial effect of prostigmine on myasthenia is peripheral in origin. Prostigmin abolishes the twitch with which myasthenics characteristically respond to high-speed electrical stimulation of the type which produces tetanic contraction in normal individuals. In rabbits, cats and normal individuals prostigmin caused fibrillations which were not affected by atropine.

MARION HORN (Chem. Abstr.).

Evidence for Adrenaline in Adrenergic Neurones. (*Amer. Journ. Physiol., vol. cxxv, pp.* 765–77, 1939.) *Cannon, W. B., and Lissák, K.*

Extracts of adrenergic fibres, whether from mesenteric nerves or from an organ containing such fibres, are like adrenaline in raising blood-pressure, in being sensitized by cocaine, in causing a fall of blood-pressure after ergotoxine, in producing a dilatation of the pupil, a contraction of the nictitating membrane and a relaxation of the non-pregnant cat uterus, in making the frog heart beat more rapidly and more vigorously and in responding to a special chemical test for adrenaline. It is inferred that adrenaline is distributed throughout adrenergic neurones.

E. D. WALTER (Chem. Abstr.).

The Influence of Neuro-vegetative Drugs upon the Processes of Infection and Immunity. (*Schweiz. med. Wochenschr., vol. lxviii, pp.* 1,398–9, 1938.) *Frei, W., and Hess, E.*

The resistance of guinea-pigs to infection with the bacillus of malignant œdema was decreased by repeated injections of ephetonine. The reaction of tuberculous guinea-pigs to tuberculin was intensified by ephetonine. On the other hand, guinea-pigs which had been inoculated with vaccine against gangrene and malignant œdema, treated with acetylcholine-physostigmine and then infected with the bacillus of malignant œdema or with the gangrene bacillus were more resistant than were the control animals not treated with the drug combination. Conclusion: Chronic parasympathetic stimulation aids immunity to infection; sympathetic stimulation does not.

MAURICE M. RATH (Chem. Abstr.).

A Metabolic Explanation for Irritation and Coma Produced by Rise in Intracranial Pressure. (*Nature, vol. cxliii, p.* 380, 1939.) *Dixon, K. C.*

In the absence of O_2 the catabolism of carbohydrate by both rabbit and human cerebral cortex is increased. It is suggested that the convulsions and cerebral irritation which follow rise in intracranial pressure and other processes producing cerebral anæmia are due to this increased metabolism of the brain cells associated with stimulation of the nerve centres.

E. D. WALTER (Chem. Abstr.).

Action of Xanthine Derivatives on the Autonomic Nervous System. (*Arch. Intern. Pharmacodynamie, vol. lx, pp.* 423–55, 1938.) *Fredericq, Henri, and Bacq, Z. M.*

Caffeine, theobromine and theophylline have a marked sympatholytic action, reducing the effects of electrical stimulation of the cervical sympathetic in cats.

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The action is peripheral. These drugs have no definite action on the effect of injected adrenaline. It is suggested that the action is caused by an inhibition of the production of the chemical mediator of the adrenergic nerves. Caffeine in small doses increases the effects of excitation of the vagus in the tortoise and in large doses decreases them. The effect of vagus stimulation in the cat is increased, and in the dog the vasodilator action of acetylcholine is increased. The action is peripheral and not the result of inhibition of the cholinesterase.

M. L. C. BERNHEIM (Chem. Abstr.).

Central Regulation of the Pigment-excreting Function of the Liver. I. The Influence of the Piqûre of Medulla Oblongata. (*Japan. Journ. Gastroenterol., vol. x, pp.* 11–16, 1938.) *Mizuta, Nobuo, and Nariyama, Ainosuke.*

Marked promotion of the pigment excretion was observed in the cases where the position of piqûre was situated slightly aside the median line, macroscopically seen, and slightly backward from the calamus scriptorius and coinciding with the dorsal nucleus of the vagus. Elevation of blood sugar was marked. Secretion of bile increased after the piqûre, attained the maximum after 3 days and fell rapidly after 7 days. Excitation by the piqûre of the medulla oblongata might be transmitted to the liver by the vagus nerves, since on sectioning of bilateral vagi the effect of the piqûre disappears.

The protein-free serum fraction obtained half an hour after the piqûre of medulla oblongata had no influence upon the pigment excretion of the liver when injected into the rabbit, while the fraction obtained one day after the piqûre promoted the pigment excretion of the liver and also the secretion of bile. The alcohol and ET_2O fraction of the serum stimulates the pigment excretion slightly. The residual fraction increases the pigment excretion of the liver and increases the amount of bile.

II. *The Influence of the Piqûre of the Intermediary Brain.* (*Ibid., pp.* 17–24.)

The piqûre of the intermediary brain, particularly the tuber cinereum and the grey substance of the wall of ventriculus tertius, stimulates the pigment-excreting function of the liver. The excitation by the piqûre is transmitted through the vagus nerves and the visceral nerves. Certain substances are found in the blood obtained one day after the piqûre of the intermediary brain, which stimulate the pigment-excreting function of the liver and the bile secretion and are soluble in H_2O, but not in alcohol or Et_2O. The substance promoting pigment excretion is resistant to heat, while the substance stimulating bile secretion is unstable with heat at 100° for half-an-hour. BENJAMIN PRESCOTT (Chem. Abstr.).

The Influence of Piqûre of the Regio Hypothalamica upon the Pigment-excreting Function of the Liver. (*Japan. Journ. Gastroenterol., vol. x, pp.* 1–3, 1938.) *Mizuta, Nobuo, Kubo, Masao and Imai, Yataso.*

Injury to the tuber cinereum, especially the paraventricular nucleus, promotes an increase in the pigment-excreting function of the liver and an increase in the amount of bile excreted. The concentration of the pigment in the bile is influenced by the amount of bile, but the amount of pigment excreted does not rely directly on the alteration of the bile amount. The above injury also causes a rise in the blood-sugar level. BENJAMIN PRESCOTT (Chem. Abstr.).

Mechanism of the Formation of Chemical Mediators of Nerve Impulses. (*Compt. Rend. Acad. Sci. U.S.S.R., vol. xix, pp.* 315–18, 1938; cf. *C. A.* 32, 9,278[9]). *Koshtoyants, Kh. S.*

The effects of blocking the carbohydrate metabolism of nervous tissue of frog heart muscle by NaF on the response to vagus stimulation are recorded. The first phase of the action depends on inhibition of hydrolysis of acetylcholine by

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cholinesterase and its consequent accumulation. After removal of accumulated acetylcholine by saline, NaF exerts a second-phase action in inhibiting further synthesis of acetylcholine-like substances. B. C. P. A. (Chem. Abstr.).

The Influence of Drugs on the Heat Production of the Brain. (*Arch. Intern. Pharmacdynamie, vol. lxi, pp.* 255–70, 1939; cf. *Arch. Exper. Path. Pharmakol., vol. clxxvii, p.* 276, 1935.) *Feitelberg, Sergei, and Lampl, Hans.*

Ether, paraldehyde and phenobarbital reduce the heat production of the whole brain in cats. The two former act on the cortex more than on the brain-stem, but with phenobarbital the effect is reversed. In general, narcotics cause more reduction of temperature in the cortex than in the brain-stem. Cardiazol causes more heat production in both cortex and brain-stem. It acts first on the brain-stem and the effect spreads to the cortex with the onset of convulsions.

M. L. C. BERNHEIM (Chem. Abstr.).

The Action of Amines and Acetylcholine on the Heat Production of the Brain. (*Arch. Intern. Pharmacodynamie, vol. lxi, pp.* 447–74, 1939; cf. *preceding abstr.*) *Feitelberg, Sergei, Pick, Ernst P., and Warsberg, Alexander v.*)

Ephedrine and benzedrine subcutaneously cause an increase of heat production in the brain. Adrenaline is also active, but sympathol and veritol are not. Acetylcholine produces a marked fall in brain temperature, but when given after adrenaline increases the effect of the latter drug.

M. L. C. BERNHEIM (Chem. Abstr.).

Cardiovascular Action of Urea. Excitation of the Cardio-moderator Centre of the Medulla. (*Compt. Rend. Soc. Biol., vol. cxxx, pp.* 1,323–7, 1939.) *Popesco, Marin.*

When injected intravenously urea acts directly on the sympathetic centres of the medulla and not through the reflexogenic cardio-aortic and sinocarotid centres. At first it produces a slight slowing of the heart and an intense general vasodilation and hypotension with decrease in kidney and spleen volumes and transient anuria. This is followed in a few minutes by a prolonged period of moderate hypertension with increases in organ volumes and urine flow. Atropine does not sensibly modify the picture. L. E. GILSON (Chem. Abstr.).

Mechanism of the Formation of Chemical Mediators of Nerve Impulses. (*Compt. Rend. Acad. Sci. U.S.S.R., vol. xix, pp.* 315–18, 1938.) *Koshtoyants, Kh. S.*

The effects of blocking the carbohydrate metabolism of nervous tissue of frog heart muscle by NaF on the response to vagus stimulation are recorded. The first phase of the action depends on inhibition of hydrolysis of acetylcholine by cholinesterase and its consequent accumulation. After removal of accumulated acetylcholine by saline, NaF exerts a second-phase action in inhibiting further synthesis of acetylcholine-like substances. B. C. P. A. (Chem. Abstr.).

Electrical Studies on the Pharmacology of Autonomic Synapses. II. The Action of a Sympathomimetic Drug (*Adrenaline*) *on Sympathetic Ganglia.* (*Journ. Pharmacol., vol. lxv, pp.* 395–404, 1939.) *Marrazzi, Amedeo S.*

Adrenaline in large or small doses causes depression of the response of the superior cervical sympathetic ganglion of the rabbit to repetitive stimulation of its pre-ganglionic trunk by constant submaximal shocks. The action is direct and independent of any decrease in blood-supply caused by vaso-constriction.

L. E. GILSON (Chem. Abstr.).

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The Relation Between the Thyroid and the Vegetative Nervous System. I. The Effect of Extracts of the Thyroid Epithelium and Thyroid Colloid Substance on the Blood-pressure, Pulse-rate and Rate of Respiration as well as on the Pharmacodynamic Reactions of the Rabbit. (*Folia Endocrinol. Japon., vol. xiv, pp.* 93–4, 1939 [*in German*].) *Sayama, S.*

Adult male white rabbits received one injection daily for 21 days of a saline extract of the colloid substance or epithelium of the thyroid, each dose corresponding to 0·01 mgrm. I. On injection of the epithelium extract the body weight decreased, while the pulse-rate, rate of respiration, blood-pressure and sensitivity to adrenaline increased. The sensitivity to pilocarpine remained unchanged. On injection of the colloid extract the body weight and sensitivity to pilocarpine increased, while the blood-pressure, pulse-rate and rate of respiration decreased; the sensitivity to adrenaline remained unchanged. The extract of the thyroid epithelium is believed to stimulate the sympathetic nerves, the colloid extract the parasympathetic nerves.

II. The Effect of the Alcoholic Hydrochloric Acid Extract of the Bovine Thyroid, of the Saline Extract of the Residue after Alcoholic Hydrochloric Acid Extraction and of the Saline Extract of the Bovine Thyroid. (*Ibid., pp.* 94–5.)

The daily dose of alcoholic HCl extract injected corresponded to 0·001 mgrm. I. The rest of the experimental procedure was the same as above. On injection of the alcoholic HCl extract of the thyroid the body weight and sensitivity to pilocarpine increased, while the blood-pressure, pulse-rate and rate of respiration decreased; the sensitivity to adrenaline remained unchanged. On injection of the saline extract of the residue after alcoholic HCl extraction the body weight decreased, while the blood-pressure, pulse-rate, rate of respiration and sensitivity to adrenaline increased; the sensitivity to pilocarpine was unchanged. On injection of the saline extract of the thyroid the body weight decreased, while the blood-pressure, pulse-rate, rate of respiration and sensitivity to adrenaline and pilocarpine increased. The alcoholic HCl extract of the thyroid is believed to stimulate the parasympathetic nerves, the saline extract of the residue the sympathetic nerves. The saline extract of the bovine thyroid stimulates both parasympathetic and sympathetic nerves, the former more so than the latter. RUTH BERGGREN (Chem. Abstr.).

The Relation Between the Anterior Lobe of the Pituitary and the Vegetative Nervous System. I. The Influence of the Anterior Pituitary Extract on the Blood-pressure, Pulse-rate and Rate of Respiration and on the Pharmacodynamic Reactions of the Rabbit. (*Folia Endocrinol. Japon., vol. xiv, pp.* 81–2, 1939.) *Sayama, S.*

Adult male white rabbits received one injection daily for 5 days of a saline extract of bovine anterior pituitary equivalent to 0·35 grm. of the anterior pituitary powder which had been washed with Me_2CO and dried. The decrease in body weight and increase in pulse-rate and rate of respiration after treatment with the extract may be attributed to the increased metabolism, while the increase in adrenaline sensitivity (intensified adrenaline hypertension and tachycardia) may be due to an increase in tonus of the sympathetic nervous system. The lowering of the blood-pressure after simple injection of the anterior pituitary extract may be caused by the presence in the extract of some unknown substance. The extract exerted no influence on the blood-pressure variation normally observed on injection of pilocarpine, acetylcholine or pituitrin.

II. The Effect of Thyroidectomy on the Blood-pressure, Pulse-rate and Rate of Respiration as well as on the Pharmacodynamic Reactions of the Rabbit and the Action of Anterior Pituitary Extract on this Effect in Thyroidectomized Rabbits. (*Ibid., pp.* 83–4.)

In adult male white rabbits thyroidectomy resulted in an increase in body

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weight, a lowering of the blood-pressure and a decrease in the pulse-rate, rate of respiration and sensitivity to adrenaline and pilocarpine. The increase in body weight and decrease in rate of respiration are attributed to the lowered metabolism, while the decrease in adrenaline hypertension and pilocarpine hypotension are caused by the lowering of excitability of the vegetative nervous system after thyroidectomy. From the 15th day after thyroidectomy the rabbits received once daily for 5 days an injection of a saline extract of bovine anterior pituitary equivalent to 0·35 grm. anterior pituitary washed with Me_2CO and dried. This treatment caused a further gradual lowering of the blood-pressure, but did not appreciably affect the body weight, pulse-rate, rate of respiration or sensitivity to adrenaline and pilocarpine. The decrease in body weight and increase in pulse-rate, rate of respiration and adrenaline hypertension observed on the administration of anterior pituitary extract require the intermediary action of the thyroid.

RUTH BERGGREN (Chem. Abstr.).

Further Facts Concerning the Chemical Pathology of Nervous and Mental Diseases. (*Trans. Amer. Neurol. Assoc., vol. lxiv, pp.* 110–14, 1938.) *Ludlum, Seymour DeW., and Zozaya, Jose.*

On the bases of serum and immunological studies, the authors classify mental diseases into four types: (1) " normal "—normal serum protein ratios (chronic dementia, hysteria, psychoneurosis, manic-depressive psychosis); (2) " hyperreactive "—increased proportion of euglobin, fever, high leucocyte count (many of the acute insanities produced by infections, " toxic psychosis "); (3) " intoxications "—increased proportion of pseudoglobulin, immunological reaction to " atoxin "; (4) " non-reactive "—increased proportion of albumin, no abnormal immunological reactions (schizoid type). Physicochemical abnormalities tend to be found in acute rather than chronic insanities. It is suggested that " there is a chemical-colloidal-physiological pattern in every individual which corresponds in a certain way to the well-known psychological types ".

MARION HORN (Chem. Abstr.).

Changes in the Colloidal-Gold Curve of Normal and Pathologic Spinal Fluids after Ultra-violet Irradiation. (*Journ. Lab. Clin. Med., vol. xxiii, pp.* 1,146–50, 1938.) *Warren, Joel.*

Normal cerebro-spinal fluids show no significant change in the colloidal-Au reaction after ultra-violet irradiation. Fluids giving paretic curves show a decrease in the amount of Au precipitated in the highest concentrations. Fluids giving syphilitic curves show decreased precipitation in the middle concentrations and increased precipitation in the highest concentrations.

E. R. MAIN (Chem. Abstr.).

Microchemical Determination of Alcohol in the Cerebro-spinal Fluid. (*Arch. Psychiat. Nervenkr., vol. cviii, pp.* 279–300, 1938.) *Gabriel, E., and Novotny, S.*

Widmark's method was used. In 42 patients with general paresis and schizophrenia 0·25 l. of a 15% alcohol solution was given. The cerebro-spinal fluid alcohol concentration was higher in general paralysis than in schizophrenia, but the blood concentrations were identical. When alcohol (0·5 grm.) was injected intravenously the maximum concentration in the blood was found after 10–20 minutes and in the cerebro-spinal fluid after 25–35 minutes. When alcohol was given by mouth the maximum concentration was found in the blood after 25–35 minutes and in the cerebro-spinal fluid after 45–65 minutes.

B. C. P. A. (Chem. Abstr.).

The Effect of Harmine on Decerebrate Rigor. (*Rec. Trav. XXXV Annivers. Activité Méd. Sci. Pédagog. Sociale I. I. Fainschmidt,* 1937.) *Shmel'kin, D. G.*

One hour after the operation (on cats) 0·2–1·0 c.c. of harmine (concentration not given) injected subcutaneously had no specific effect on the lower nerve centres.

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The therapeutic effect of harmine in Parkinsonism is probably due to its action on the cerebral cortex and subcortical ganglia. T. LAANES (Chem. Abstr.).

The Effect of Harmine on the Lactic Acid Content of Blood in Chronic Encephalitis. (*Rec. Trav. XXXV Annivers. Activité Méd. Sci. Pédagog. Sociale I. I. Fainschmidt*, 1937.) *Lyubarskaya, T. E.*

Subcutaneous injections of 1–2 c.c. of a 0·2% solution of hydrochloride of harmine had a beneficial effect on voluntary movements, which lasted for 45-60 minutes. Blood samples taken 15 minutes after the injection showed a slight rise in lactic acid content, which might have been due to the increased activity of the patients. T. LAANES (Chem. Abstr.).

Comparative Chemical Research (*Chloride, Glucose, Alkali Researve*) *on the Blood and Spinal Fluid in Poliomyelitis.* (*Acta Pædiat., vol. xxii, pp.* 475–7, 1937.) *Moschini, S., and Biddau, I.*

The albumin in the spinal fluid generally varied between 0·025 and 0·040% (Nissl method), with an average maximum value of 0·041% in the 3rd week; higher values (0·070–0·1%) were only rarely found. The plasma Cl was normal in 86·9% of the cases. The cell Cl was increased in 31·1% and decreased in 11·5% of the cases. The cell Cl : plasma Cl ratio was frequently increased, especially during the first two weeks of the disease. The Cl in the spinal fluid varied from 0·68 to 0·76%; it was normal in 79% of the cases, slightly increased in 5% and decreased in 16%. The fasting blood sugar was practically normal. The spinal-fluid sugar varied considerably; it was increased (0·070–0·091%) in 15 out of the 36 cases. This increase was usually observed in the encephalic or high-medullar forms during the first two weeks. In the encephalic and pontile forms the average values in the 1st, 2nd, 3rd and 4th weeks were 0·071, 0·066, 0·070 and 0·055% respectively, while in exclusive medullar localization the corresponding values were 0·063, 0·060, 0·057 and 0·057%. On the 4th day of a very severe meningo-encephalic form a low value (0·037%) was observed with simultaneous hypoglycæmia (0·067%). The alkali reserve varied markedly; the average values were 50 vols. % CO_2 in the plasma and 43 vols. % CO_2 in the spinal fluid.

RUTH BERGGREN (Chem. Abstr.).

The Respiratory Metabolism of Infant Brain. (*Amer. Journ. Physiol., vol. cxxv, pp.* 601–6, 1939.) *Himwich, H. E., Baker, Zelma, and Fazekas, J. F.*

The respiratory processes of infant brain of rats, like adult brain, are dependent on added carbohydrate. The infant brain has a metabolic rate lower than that o the adult. The low protein content of the infant brain suggests that the difference between the infant and adult metabolism is not due to the development of new enzyme systems in the adult, but rather to an increased concentration of those already present. This is in accord with the ability of infant brain tissue to oxidize the same substrates (glucose, fructose, lactate, pyruvate and succinate) but at a slower rate. E. D. WALTER (Chem. Abstr.).

Cholesterol in the Spinal Fluid in Tuberculous Meningitis. (*Bull. Mém. Soc. Méd. Hôp. Paris, vol. liii, pp.* 1,203–7, 1937.) *Germain, A., and Babin, R.*

In 8 cases of tuberculous meningitis the average cholesterol (I) in the spinal fluid varied from 5 to 15 mgrm.% (normal value 0·114 mgrm.%). It increased progressively with the disease, while the blood I was usually low (average, 125 mgrm.%) and the cholesterolytic power generally negative (average, 6%). The large amount of I in the spinal fluid was considered evidence of a disintegration of the nervous parenchyma. The spinal fluid I was increased to a smaller extent in certain other cerebral diseases in which disintegration of the nerve tissue was apparent. The estimation of spinal fluid I in tuberculous meningitis has a diagnostic and prognostic value. RUTH BERGGREN (Chem. Abstr.).

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Biochemical Study of Blood and Cerebro-spinal Fluid of the Newborn. II. Calcium Content. (*F. Oriental Med., vol. xxix, pp.* 95–109.) *Okuda, Sigeo.*

In 26 cases of the newborn, blood Ca varied from 8·32 mgrm.% to 12·17 mgrm.%, the average being 10–11 mgrm.% ; it stays constant after a month. Ca of the cerebro-spinal fluid averages 7 mgrm.%, but decreases gradually to 5·0 mgrm.% after a month. S. TASHIRO (Chem. Abstr.).

Lipase Content of the Cerebro-spinal Fluid. (*Deutsch. Zeitschr. Nervenheilk., vol. cxlvi pp.* 187–92, 1938.) *Seuberling, O.*

The lipase content of the cerebro-spinal fluid depends on the interval between meal and puncture. A pathological increase was observed only in post-operative arachnoiditis between the second and eighth day after the operation.
B. C. P. A. (Chem. Abstr.).

Action of Pituitrin, Pitressin and Pitocin on the Pressure and Volume of the Cerebro-spinal Fluid with Reference to Blood Circulation in the Brain. (*Mitt. Med. Ges. Nagoya, vol. xlvi, p.* 481, 1937.) *Kawaguti, Koiti.*

Pituitrin injected intravenously into rabbits causes a momentary rise, followed by a fall in volume and pressure of cerebro-spinal fluid. The effect is caused by similar changes taking place previously in the blood. If the blood-pressure is held constant, the fall in volume and pressure of cerebro-spinal fluid occurs at once. The effect is due to pitressin (vaso-pressin), not pitocin (oxytocin).
W. C. TOBIE (Chem. Abstr.).

The Changes in the Cerebro-spinal Fluid in Animals after Short-wave Treatment of the Brain. (*Strahlentherapie, vol. lviii, pp.* 286–94, 1937.) *Glauner, R., and Schorre, E.*

Short-wave treatment of the brains of rabbits resulted in a significant increase in the total protein and sugar of the cerebro-spinal fluid, which lasted up to 30 weeks and apparently depended upon the dosage. The changes were probably caused by a disturbance in the blood-spinal fluid barrier as the result of changes in the vegetative centres. RUTH BERGGREN (Chem. Abstr.).

The Passage of Sorbitol from the Blood into the Aqueous Humour and Cerebro-spinal Fluid. (*Amer. Journ. Physiol. vol. cxxv pp.* 652–7, 1939.) *Rosner, Lawrence, and Bellows, John G.*

A modification of the micromethod of Silberstein, *et al.* (*C. A.*, 32,2, 163[3]) for sorbitol determination is presented. Sorbitol injected into the blood-stream of a dog passes into the aqueous humour and cerebro-spinal fluid in relatively small amounts. Sorbitol in the blood is rapidly eliminated, very little remaining after 3 hours. It gives rise to a temporary increase in the blood-glucose value.
E. D. WALTER (Chem. Abstr.).

pH of the Cerebral Cortex and Arterial Blood under Insulin. (*Amer. Journ. Physiol., vol. cxxv, pp.* 680–2, 1939.) *Marshall, Clyde ; McCulloch, Warren S., and Nims, Leslie F.*

One to 1½ hours after intravenous injection of insulin into the curarized animal under constant artificial respiration fluctuations of pH of the cortex appear, without corresponding fluctuations of pH of the arterial blood. Intravenous injection of buffered dextrose solution lowers the pH of both arterial blood and cortex and stops the recurrent fluctuations of pH of the cortex.
E. D. WALTER (Chem. Abstr.).

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A Chemical Study on Fluids Obtained from Cerebral Cysts: Report on Fifty-six Cases. (*Brain, vol. lxii, pp.* 88–95, 1939.) *Stern, K.*

Estimation of various constituents of cyst fluids shows that its protein content is constantly lower than that in blood and the chloride content always higher. This is explained on the basis of the Donnan equilibrium. The Ca, urea and glucose values either correspond to that of blood or are somewhat lower. These findings are analogous to those obtained by previous authors in transudates from blood other than cyst fluids and support the assumption that the cyst fluid is derived essentially from blood. The comparatively high amounts of protein which resemble those of inflammatory exudates are explained by the high permeability of pathological vessels and by mesodermally reactive processes. After the initial necrosis of tumorous tissue the essential process is that of transudation from the blood into the liquefied area. There is no relation between the chemical nature of the fluid and the site or histological nature of the cyst on the other. A comparatively high Ca level (11·4 mgrm.%) is found in a cystic oligodendroglioma. This is interesting because of the frequency with which Ca deposits are found histologically in these tumours. From the survey of the present cases it appears that there is no certain relation between the age of the cyst and the protein content. Munro and Merritt (*Arch. Neurol. Psychiat.*, vol. xxxv, p. 64, 1936) showed that in subdural hæmatoma the chemical picture of the fluid depends on the age of the cyst. MAURICE M. RATH (Chem. Abstr.).

Permeability of Blood-Central Nervous System Barrier to Sodium Bromide in Experimental Poliomyelitis. (*Amer. Journ. Dis. Child., vol. lvi, pp.* 756–63, 1938.) *Lennette, Edwin H., and Campbell, Dan H.*

The permeability to NaBr of the barrier between the blood and central nervous system was increased in experimental poliomyelitis. In normal monkeys and in monkeys convalescent from poliomyelitis the permeability quotient, NaBr in serum/NaBr in spinal fluid, was about 1·8. A quotient of about 1 was associated with typical symptoms in both preparalytic and paralytic stages of the disease. In inoculated monkeys which showed no definite symptoms the quotients were 1·15–1·21. In controls which received cerebral trauma the quotient was 1·2.
E. R. MAIN (Chem. Abstr.).

A Study of Calcium and Phosphorus in Cerebro-spinal Fluid. (*Journ. Lab. Clin. Med., vol. xxiv, pp.* 609–16, 1939.) *Cohn, D. J., Kaplan, I., and Levinson, A.*

The Ca content of normal cerebro-spinal fluid is 4·5–5·5 mgrm.%; the P content, 1·0–1·5 mgrm.%. Both are consistently elevated in tuberculous meningitis, usually elevated in hydrocephalus and brain lesions and occasionally in purulent meningitis. E. R. MAIN (Chem. Abstr.).

The Pathogenesis of Arsenobenzene Erythrodermia. Rôle of the Vegetative Nervous System. Rôle of Vitamin C. (*Ann. Derm. Syph., vol. x, pp.* 139–45, 1939.) *Daïnow, I.*

In the treatment of erythrodermia due to arsenobenzene, good results were obtained with atropine sulphate and with ascorbic acid. Since atropine inhibits the parasympathetic nervous system, it is postulated that erythrodermia is due to parasympathetic excitation under the influence of arsenobenzene. Such toxic accidents are observed only in patients depleted of vitamin C and are prevented by administration of this vitamin. Evidence is cited from the literature in support of the theory that vitamin C regulates the parasympathetic nervous system.
MARION HORN (Chem. Abstr.).

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The Vitamin C Content of the Human Brain with Particular Reference to the Vegetative Centres. (*Klin. Wochenschr., vol. xviii, pp.* 418–22, 1939.) *Diehl, Friedrich, and Neumann, Hermine.*

Parts of the brain not directly related to the vegetative functions have the least amounts of ascorbic acid, 1·2 to 10 mgrm.%, average about 6 mgrm.%. The tubero-infundibular region and the medulla oblongata have an average of about 12 mgrm.%. Values for other parts of the brain lie between these quantities. The ascorbic acid content of the various parts of the brain decreases with advancing age. H. L. Mason (Chem. Abstr.).

Central Control of the Blood-sugar Level. (*Magyar Bil. Kutatóintézet Munkái, vol. x, pp.* 286–98, 1938.) *Méhes, Gyula.*

In rabbits the sugar level of the blood seemed to be decreased for several hours after injection of 0·2–0·5 c.c. of 0·2–1·0% glucose solution. Glucose solutions stronger than 5% caused hyperglycæmia. The sugar centre seemed to be affected also by the cerebro-spinal fluid ; intra-cisternal glucose injections caused an increased production of insulin. S. S. de Finláy (Chem. Abstr.).

Studies of the Vitamin C Content of the Cerebro-spinal Fluid. IV. The Vitamin C Content of the Cerebro-spinal Fluid in Experimental Poliomyelitis. (*Zeitschr. ges. Neurol. Psychiat., vol. clxii, pp.* 671–2, 1938.) *Kasahara, Mitio, and Gammo, Ituo.*

The vitamin C content of the cerebro-spinal fluid of 8 apes showed no significant alteration during experimental poliomyelitis.

V. The Influence of Anæsthesia on the Vitamin C Content of the Cerebro-spinal Fluid. (*Ibid., pp.* 673–4.)

In apes and rabbits, anæsthesia by ether or $CHCl_3$ had no significant effect on the vitamin C content of the cerebro-spinal fluid. The vitamin C values for rabbits ranged from 2·5 to 7·7 mgrm.%, and those for apes from 3·0 to 6·3 mgrm.%. Marion Horn (Chem. Abstr.).

The Action of the Vegetative Nervous System on the Vitamin C Content of the Plasma. (*Arch. ges. Physiol.* [*Pflüger's*], *vol. ccxli, pp.* 263–7, 1939.) *Ludány, G. v.*

Asphyxia, adrenaline injections and splanchnic stimulation increase the ascorbic acid content of the blood. The latter is thus probably under control of the vegetative nervous system. Arthur Grollman (Chem. Abstr.).

Determination of the Protein Content of the Cerebro-spinal Fluid. (*Rev. facultad cienc. quím.* (*Univ. nacl. La Plata*), *vol. xiii, pp.* 67–71, 1938.) *Sagastume, Carlos A., Vucetich, Danilo, and Nico, Raúl.*

A simple, exact and practical technique (for clinical purposes) for determining the quantity of albumin and globulin in cerebro-spinal fluid by means of a reagent of the following composition : Phenol (crystallized, melted) 3 ml., 40% HCHO (Merck) 3 ml., sulphosalicylic acid 3 g., distilled H_2O 100 ml. With albuminous liquids this reagent produces a precipitant which, on being stirred, shows a uniform and stable turbulence. A simple method of establishing a turbidimetric scale is also outlined. An amount of 0·5 ml. of cerebro-spinal fluid suffices. A. H. Krappe (Chem. Abstr.).

Vitamin C in Relation to Experimental Poliomyelitis with Incidental Observations on Certain Manifestations in Macacus rhesus *Monkeys on a Scorbutic Diet.* (*Journ. Exper. Med., vol. lxix, pp.* 507–15, 1939.) *Sabin, Albert B.*

Both natural and synthetic preparations of vitamin C had no effect on the course of experimental poliomyelitis induced by nasal instillation of the virus.

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Monkeys on a scorbutic diet died of spontaneous acute infections, chiefly pneumonia and enterocolitis, while those receiving an adequate diet remained well.

C. J. WEST (Chem. Abstr.).

Neutrophilic Leucocytosis in Spinal Fluid Associated with Cerebral Vascular Accidents. (*Arch. Int. Med., vol. lxiii, p. 848, May,* 1939.) *Townsend, S. R., Craig, R. L., and Braunstein, A. L.*

The authors describe 6 cases with a great excess of polymorphonuclear leucocytosis in the spinal fluid. This they think is due to an aseptic meningeal reaction to adjacent areas of necrosis in the brain. Deep-seated lesions cause no reaction. The cells appear within several hours after the infarction and gradually disappear within the next five or six days. The number of cells varies from 50–3,000. If the leucocytosis is great there may be clinical signs of meningeal irritation and care has to be taken in diagnosis. G. W. T. H. FLEMING.

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2. Pharmacology and Treatment.

The Action of Magnesium on the Central Nervous System and its Antagonism by Calcium. (*Journ. Pharmacol., vol. lxv, pp.* 318–21, 1939.) *Bryant, G. W., Lehmann, G., and Knoefel, P. K.*

In the spinal dog the central narcotic action of Mg proceeds to complete loss of the flexion reflex of the leg, while skeletal muscle still responds with contraction to stimulation of its motor nerve. At a higher level of blood Mg the response to motor nerve stimulation also disappears. Ca has an antagonistic action on the same mechanism. The Ca–Mg antagonism occurs over a wide range of concentrations. It is the Mg/Ca ratio which is important for the functioning of the central and peripheral nervous mechanisms. L. E. GILSON (Chem. Abstr.).

Experimental Convulsions in the Rat. (*Journ. Pharmacol., vol. lxv, pp.* 275–80, 1939.) *Sampson, W. L., and Fernandez, L.*

The rat is as satisfactory as the rabbit or cat for the production of experimental convulsions. Of the three convulsants, picrotoxin, camphor and thujone, thujone is the most satisfactory, since its convulsant dose (100 mgrm./kg. given intraperitoneally) is well below its m.l.d., and its effects rapidly wear off. NaBr, Na phenobarbital and chloretone decrease or abolish the convulsant action of thujone. Bulbocapnine is without effect on thujone convulsions.

L. E. GILSON (Chem. Abstr.).

The Action of Pentamethylenetetrazole (Metrazole) on the Circulatory System. (*Journ. Pharmacol., vol. lxv, pp.* 227–34, 1939.) *Haury, Victor G., and Gruber, Chas. M.*

In dogs and cats small doses (5–10 mgrm./kg.) of pentamethylenetetrazole produce an increase in organ volume (kidney and spleen) with a simultaneous fall in blood-pressure. Doses of 20 mgrm./kg. cause the organ volume first to increase and then to decrease. Blood-pressure falls during the splanchnic dilatation and rises during the constriction. In spinal animals large doses produce only splanchnic dilatation and a fall in blood-pressure. In intact animals the heart-rate was not significantly affected. Cutting the vagi did not modify the action on blood-pressure and splanchnic volume. The action is independent of the adrenals. The splanchnic dilatation is produced by a peripheral action and the constriction by a central action. Large doses produce convulsions in normal dogs and decerebrate cats.

L. E. GILSON (Chem. Abstr.).

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Therapeutic Experiments with a Centrally Active Analeptic (Pervitin) in Mental Diseases. (*Wien. med. Wochenschr., lxxxviii, pp.* 1,227–30, 1938.) *Warstadt, Dr.*

Pervitin, 1-phenyl-2-methylaminopropane, is a highly active compound which is nearly as effective on peroral as on subcutaneous administration. In addition to a peripheral action similar to that of ephedrine, pervitin has an extremely marked and lasting central analeptic action. It was used in the alleviation of fatigue and weakness in mentally normal persons. It was also effective in slightly inhibited apathetic psychopaths and in depressions of a milder type of partly reactive, partly constitutional character. Catatonic stupor was regularly, though not always favourably, influenced by pervitin. Pervitin exerted an unfavourable action in severe depressions and in an arteriosclerotic Parkinsonism, but had a favourable effect in encephalitic Parkinsonism, especially when combined with scopolamine. RUTH BERGGREN (Chem. Abstr.).

The Action of Pyridine-β-Carboxydiethylamide (Coramine) on the Melanophores and Nervous System of the Frog and Turtle (Vagus). (*Arch. Intern. Pharmacodynamie, vol. lx. pp.* 270–84, 1938.) *Burton, Andrew F.*

In frogs coramine in large doses acts on the central nervous system, the autonomic ganglia and the voluntary nerve-endings, causing stimulation and then paralysis. It causes paralysis of the sensory nervous system, which precedes the motor paralysis. It resembles nicotine in causing melanophore dispersion. The toxicity of coramine increases with temperature, the coefficient being about 1·9 for every 5° rise. The lethal dose for frogs is 2·0 mgrm./grm.
M. L. C. BERNHEIM (Chem. Abstr.).

Insulin Therapy in Mental Diseases. (*Endocrinol., vol. xxiii, p.* 767, *Dec.*, 1938.) *Conwell, D. V., and Kunth, C. J.*

The authors found insulin shock therapy of value in the treatment of schizophrenia in the following order: Paranoid, simple, hebephrenic and catatonic types. It was of equal value in the treatment of patients with the manic phase of manic-depressive insanity. It was helpful in psychasthenia. Its value was doubtful in melancholia. Part of the danger encountered in insulin shock therapy can be controlled by a low carbohydrate diet. There appeared to be prolonged adrenal hyperfunction or hypofunction of a minor character. There was a tendency to modified gonadal function. G. W. T. H. FLEMING.

Effect of Large Doses of Insulin on the Proteins and the Colloid Osmotic Pressure of Blood Serum. (*Arch. Int. Med., vol. lxiii, p.* 156, *Jan.*, 1939.) *Butt., H. R., and Keys, A.*

The authors point out that the condition commonly described as insulin shock is no "shock" at all, as the total blood volume is at most only slightly altered and that the principal change in the blood concentration is a result of the addition of new red blood-cells to the active circulation. In man there is a rise in total serum protein averaging 4·7%, an increase in the colloid osmotic pressure of serum averaging 9·7%. The mean molecular weight of the serum protein is unchanged in acute insulin hypoglycæmia. In shock the venous blood often has a low oxygen saturation, whereas in insulin collapse the oxygen saturation of the venous blood is high and even approaches the arterial level. G. W. T. H. FLEMING.

Insulin Treatment and Course of Cure in Schizophrenia (Based on Catamnestic Investigations). (*Psychiat. en Neurol. Bladen, pp.* 5–6, 1938.) *Müller, M.*

The first part of this paper consists of a detailed description of the first 10 cases which were discharged as complete or social remissions from Münsingen at east 27 months before the publication of the paper. Of these 3 had relapses

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during the period under review and had another course of treatment. Only one of them benefited again. In 3 of his cases the author admits that doubts as to the " purity " of the schizophrenic picture are possible. He points out that of these, 2 relapsed, whereas the more definite cases showed a greater stability of their remissions. Müller feels convinced that the action on the cortex of the brain is one of the most important factors. In discussing the various physiological and psychological theories of insulin therapy he stresses the point that explanations have to be found for the curative effect of the mild hypoglycæmic states as well as for the coma proper. The remissions after insulin treatment are considered to be better and more complete than the spontaneous ones. S. L. LAST.

On the Tendency to Convulse in Hypoglycæmic Shock (Animal Experiments). (*Nervenarzt, vol. xi, pp.* 129–31, 1938.) *Wechsler, Z.*

During hypoglycæmia the minimal convulsive dose of cardiazol was 30·3% lower than normal in rabbits. On an animal which had had its skull trephined beforehand no vascular spasm could be observed during convulsions and a direct toxic action of the drug on the motor ganglion cells is assumed.

S. L. LAST.

"Azoman" in the Convulsion Therapy of Schizophrenia. (*Psychiat.-neurol. Wochenschr., p.* 45, 1938.) *Braunmühl, A. v.*

Azoman is another name for triazol 156. The author has used it without insulin and in combination with it. He thinks that better results are obtained if the doses are adjusted to body-weight. For intravenous injections he uses ·023 c.c. of the 5% solution per kg. in men and ·021 c.c. in women. If intramuscular injections are given his dosage is ·039 c.c. in men and ·037 c.c. in women. The author is especially impressed with the use of this drug for its " symptomatic " value in excited catatonics and hebephrenics. Even cases that do not remit show an improved behaviour. S. L. LAST.

Changes of the Sugar Level in the Cerebro-spinal Fluid during Insulin Shock Treatment of Schizophrenia. (*Klin. Wochenschr., vol. xvii, pp.* 769–773, 1938.) *Dussik, K. Th.*

After administration of insulin the sugar in the cerebro-spinal fluid falls more slowly than the blood sugar. The occurrence of coma coincides with a more rapid drop of the cerebro-spinal fluid sugar. In one case the sugar in the cerebro-spinal fluid rose while the blood sugar continued to fall, and this the author connects with a synchronous " reactivation " of the psychosis. In a case which did not rouse for some considerable time after the blood sugar had returned to normal, it was found that the sugar in the spinal fluid still remained very low. S. L. LAST.

Histopathology and Pathogenesis of Fatal Insulin Shock. (*Deutsch. Zeitschr. f. Nervenheilk., vol. cxlvii, p.* 217, 1938.) *Döring, G.*

The changes found in a case of schizophrenia which died during insulin coma are, according to the author, of vascular origin. He describes numerous petechial hæmorrhages which are often confluent, and ischæmic changes in the ganglion cells. S. L. LAST.

On Epileptiform Convulsions during Insulin Therapy of Schizophrenia. (*Nervenarzt, vol. xi, p.* 400, 1938.) *Gross-May, G.*

This study is based on 105 cases of schizophrenia treated with insulin, of whom 37 had fits. These fits differ from the spontaneous ones by the absence of an aura, the rarity of the epileptic cry, the absence of incontinence, the preponderance of the tonic phase and the absence of the post-paroxysmal sleep. The author

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never observed a convulsion during the first 50 minutes after injection. Fits occurring early are less serious than the ones occurring later on ; these are dangerous by virtue of the vascular collapse which frequently accompanies them and which should be treated with adrenaline. The therapeutic value of seizures seems doubtful although the author has observed cases in whom an improvement followed immediately upon a fit. Epileptiform manifestations can as a rule be suppressed by giving luminal ·1–·2 grm. 1–2 hours before the injection of insulin.

S. L. LAST.

"Cardiazol" Convulsion Therapy in the Psychoses. (*Med. Journ. Australia, vol. xxvi, p.* 497, *Apr.* 1, 1939.) *Dawson, W. S.*

The writer thinks that cardiazol treatment and possibly insulin shock therapy will be of more use in the treatment of melancholia than in schizophrenia.

G. W. T. H. FLEMING.

Studies in Convulsant Therapy. II. The Rôle of Alkalinization. (*Journ. Lab. Clin. Med., vol. xxiv, pp.* 256–9, 1938.) *Dean, Stanley R.*

No differences in size of initial convulsant dose, acquired tolerance, or duration and intensity of the metrazole episode were observed in patients who were given 2–3 months treatment with metrazole in conjunction with a diet of high alkaline ash content, as compared with similarly treated patients who received an ordinary diet. E. R. MAIN (Chem. Abstr.).

Anti-anæsthetic Effects of some Convulsants in the Albino Mouse. (*Journ. Pharmacol., vol. lxiii, pp.* 420–31, 1938.) *Hjort, Axel M., De Beer, Edwin J., and Fassett, David W.*

Mice were anæsthetized with propyl-o-tolylurea or Na ethyl-(1-methylbutyl) barbiturate and the anti-anæsthetics injected 15 minutes later. Picrotoxin and metrazole are the most effective anti-anæsthetics, followed closely by benzedrine. Caffeine and ephedrine are of lower potency and strychnine has no anti-anæsthetic action. Concurrent anæsthesia decreases the toxicity of picrotoxin, strychnine and metrazole 50% or more, does not affect the m.l.d. of caffeine, slightly increases the toxicity of ephedrine and increases the toxicity of benzedrine five-fold.

L. E. GILSON (Chem. Abstr.).

Respiratory Inhibitory and Paralytic Effects of some Barbital Hypnotics and Coal-tar Analgesics. (*Journ. Pharmacol., vol. lxv, pp.* 235–42, 1939.) *Lehman, A. J.*

Barbital, phenobarbital, amytal and evipan in dogs, cats and rabbits produced respiratory failure by central paralysis without demonstrable evidences of peripheral neuromuscular depression in the diaphragm, as has been reported for frogs and white rats in deep barbital anæsthesia. The doses required were within the so-called anæsthetic range except for Na barbital, which required a large dose. Evipan produced paralysis in the smallest dose and shortest time. Na salicylate, acetylsalicylic acid and cinchophen showed little or no direct depressant or paralytic effects on the central and peripheral respiratory mechanisms. Large doses caused cardiac arrest and respiratory failure due to asphyxia.

L. E. GILSON (Chem. Abstr.).

The Effect of Massive Intravenous Infusions on the Course of Barbiturate Narcosis. (*Arch. Intern. Pharmacodynamie, vol. lx, pp.* 395–409, 1938.) *Cutting, R. A., and Koppanyi, T.*

Massive intravenous infusion of glucose or saline (up to three-quarter body weight) in cats and dogs shortens the duration of narcosis and doubles the rate of excretion of Na barbital and Na phenobarbital in the urine. Treated animals receiving 3 m.l.d. show complete recovery. The treatment is effective for

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isobutyllalyl barbituric acid poisoning, but for isoamylethyl barbituric acid (amytal), metrazole must be used as well. The infused fluids dilute the poison, thus lowering the concentration in the nerve tissue.

M. L. C. BERNHEIM (Chem. Abstr.).

Antagonism between Barbituric Acid and Convulsive Poisons. (*Arch. Exper. Path. Pharmakol., vol. clxxxvii, pp.* 607–16, 1937.) *Kreitmair, H.*

Lethal doses of phenobarbital were antagonized by strychnine, caffeine and picrotoxin, but not by ephedrine. Narcosis caused by non-lethal doses of barbital was counteracted by these four alkaloids. Ephedrine had the widest therapeutic range. B. C. P. A. (Chem. Abstr.).

Potentiation of Sleep and Narcosis by Dyes. (*Arch. Exper. Path. Pharmakol., vol. clxxxviii, pp.* 349–59, 1938.) *Konzett, H.*

Experiments on rats showed that prior injection with small, non-toxic doses of fat-soluble dyes (alizarin blue-S, methylene blue, neutral red) strengthened considerably the effect of such narcotics as chloral hydrate, paraldehyde, phenobarbital and evipan, so that even sub-threshold doses of the latter were fully effective. In the rabbit, prior intraperitoneal injection of alizarin blue-S produced a marked potentiation of evipan action, so that sub-threshold doses were fully effective and complete doses resulted in marked prolongation of action. The potentiating action of these dyes likewise enabled the use of sub-threshold ether concentrations on frogs and mice. The potentiation of sleep and narcosis was only successful with fat-soluble dyes; lipoid-insoluble. Congo red was ineffective.

EDWARD EAGLE (Chem. Abstr.).

Comparative Toxicities of some Basic Narcotics of the Barbituric Series. (*Boll. Soc. Ital. Biol. Sper., vol. xiv, pp.* 3–5, 1939.) *Donatelli, Leonardo, and Abbate, Raffaele.*

The least toxic for rabbits was evipan, with increasing toxicity as follows: Narconumal, eunarcon, pernocton and rectidon. Lengthening of the alkyl radical in the 5-position or introduction of Br into the molecule increased the toxicity, while methylation of an N atom of barbituric acid diminished the toxicity.

Toxicity for Respiration and Effect on Blood-pressure of some Basic Narcotics of the Barbituric Series. (*Ibid., pp.* 5–8.)

Toxicity was manifested in the same order.

HELEN LEE GRUEHL (Chem. Abstr.).

Action of Hypnotics. (*Arch. Exper. Path. Pharmakol., vol. clxxxviii, pp.* 699–713, 1938.) *Sellei, C., and Mayer, G.*

With the Warburg appliance, cerebral cortex of the white rat showed decreased respiration after ether, $CHCl_3$ and EtCl; these substances had no effect on the thalamus or white matter. Evipan decreases respiration of white matter and thalamus, but has no effect on the respiration of cerebral cortex. $CHCl_3$ narcosis for 40 minutes reduces the respiration of rat liver; evipan and ether are without effect. Respiration of liver cells of animals poisoned by P is less than that of normal animals; this decreased activity is further depressed by $CHCl_3$, but is increased by ether and evipan. Respiration of renal cortex of the white rat is unaffected by ether, $CHCl_3$ or evipan narcosis.

EDWARD EAGLE (Chem. Abstr.).

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A Rapid and Easy Method for Determining Barbital and its Derivatives in the Urine. (*Diagnostica tec. lab.* (*Napoli*), *Riv. mens.*, *vol. x*, *pp.* 39–41, 1939.) *Cattabeni, C. Mario.*

Urine, slightly acidified, is shaken with charcoal and filtered. The charcoal is desiccated, extracted with 95% alcohol plus a drop of 10% tartaric acid and filtered. The filtrate is tested colorimetrically for the Parri reaction. Concentrations of barbital above 0·1% can be detected by this method.

HELEN LEE GRUEHL (Chem. Abstr.).

The Action of Barbituric Acid Derivatives on the Neuro-vegetative System: the Influence of Sodium Barbital on Adrenaline Hypertension. (*Arch. Intern. Pharmacodynamie*, *vol. lxi*, *pp.* 418–27, 1939.) *Marri, Rodolfo, and Martinetti, Renato.*

In rabbits and cats barbital accentuates the hypertensive action of adrenaline and attenuates the hypotensive action of acetylcholine. The modification of the inhibitory effect of adrenaline on respiration is in all probability due to a diminished carotid sinus reflex caused by the barbiturates.

P. F. METILDI (Chem. Abstr.).

Exaltation of the Anæsthetic Action of some Hypnotics. (*Compt. Rend. Soc. Biol.*, *vol. cxxx*, *pp.* 1,244–6, 1939.) *Olszycka, Laïa.*

In rats the action of ethylisoamylmalonylurea and isopropylallymalonylurea was greatly intensified by simultaneous administration of small doses of EtOH.

L. E. GILSON (Chem. Abstr.).

Some Associations of Hypnotics of the Barbiturate Series. (*Compt. Rend. Soc. Biol.*, *vol. cxxx*, *pp.* 1,242–4, 1939.) *Olszycka, Laïa.*

When butylethylmalonylurea (I) and isopropylallylmalonylurea (II) are given together the effects are additive and complementary. The same is true of I and ethylisoamylmalonylurea (III) together, and II and III together.

L. E. GILSON (Chem. Abstr.).

Detection of Barbiturate Poisoning. (*Compt. Rend. Soc. Biol.*, *vol. cxxx*, *pp.* 337–40, 1939.) *Griffon, Henri, and Le Breton, Roger.*

Human barbiturate poisoning in the early states cannot always be detected by examination of the urine; hence blood should be used. Triturate 20–25 c.c. of blood with 35–52 grm. anhydrous Na_2SO_4 to take up the water and then extract with Et_2O. Filter the Et_2O solution through a 0·2 grm. layer of MgO covered with a 0·2 grm. layer of activated charcoal. Evaporate to dryness and test the residue for barbiturates. The following test will detect 0·5 mgrm. of barbital or similar compound in the 25 c.c. of blood: To part of the above residue add 0·5 c.c. of a 0·3% solution of $Co(NO_3)_2$ in absolute EtOH, then 0·1 c.c. of a 1% solution of Et_2NH in absolute EtOH. A violet colour indicates a barbiturate.

L. E. GILSON (Chem. Abstr.).

Effect of Subcutaneous Injections of Benzedrine Sulphate on the Activity of White Rats. (*Journ. Exper. Psychol.*, *vol. xxii*, *pp.* 480–90, 1938.) *Searle, L. V., and Brown, C. W.*

Subcutaneous injections of 3 mgrm. per kg. produced a marked increase in spontaneous activity which lasted for 4 hours and was followed by a compensating decrease; the 24-hour drug day was not different from rest days or days in which salt was substituted for the drug. No tolerance was demonstrated for 10 injections of drug over 40 days.

B. C. P. A. (Chem. Abstr.).

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Bulbocapnine-Benzedrine Antagonism. (*Journ. Pharmacol., vol. lxiii, pp.* 438–41, 1938.) *Spiegel, E.*

The state of catalepsy produced by injections of bulbocapnine in rats and cats is abolished by injection of benzedrine, and the hyperkinesis ordinarily produced by the latter may develop despite the preceding bulbocapnine catalepsy. If the benzedrine is injected first the excited state it produces is only slightly affected by a succeeding bulbocapnine injection. L. E. GILSON (Chem. Abstr.).

Oxygen in Delirium Tremens. (*Journ. Nat. Med. Assoc., vol. xxxi, pp.* 111–13, 1939.) *Erwin, H. J., jun.*

Inhalation of O_2 for one day led to rapid recovery from delirium tremens in 6 alcoholic patients. The beneficial effects of the O_2 are attributed to its ability to counteract the anoxia arising from alcoholic inactivation of cytochrome.
MARION HORN (Chem. Abstr.).

The Pharmacology of the Vasomotor Reflexes of the Carotid Sinus. The Action on the Carotid Sinus Reflex of Adrenaline, Tyramine, Physostigmine, Ascorbic Acid, Picrotoxin, Gravitole and Ergobasine-ergometrine. (*Arch. Intern. Pharmacodynamie, vol. lx, pp.* 331–76, 1938.) *Donatelli, L., and Shen, T. C. R.*

The effect of these drugs was studied by varying the endovascular hydrostatic pressure of the sinus. Adrenaline injected intravenously has no demonstrable effect in dilution 1 : 1,000,000 to 1 : 500,000. Tyramine (1 : 100,000–1 : 50,000) has no effect and neither have large doses of ascorbic acid. Picrotoxin stimulates the vasomotor reflexes only when they are inhibited by barbiturates. Gravitole depresses the carotid sinus reflexes and ergobasine-ergometrine produces a complete paralysis and sometimes a marked diminution of the reflex. This action seems to depend on a simultaneous depression of the vasomotor centres and on the peripheral branches of the sympathetic. P. F. METILDI (Chem. Abstr.).

The Action of Insulin during Fever in the Decerebrate Cat. (*Quart. Journ. Pharmacol. vol. xii pp.* 39–44, 1939.) *Wien, R.*

In decerebrate cats the intravenous injection of insulin in a dose of 0·1 unit per kg. caused a fall in blood sugar. This hypoglycæmia action was destroyed in cats in which a fever had been produced. When the pituitary was removed, or when the adrenals were inactivated, the previous production of a fever had no antagonistic effect on the fall in blood sugar. Ten references.
W. O. EMERY (Chem. Abstr.).

Passage of Sulphanilamide into the Nervous System. (*Compt. Rend. Soc. Biol., vol. cxxx, pp.* 619–21, 1939.) *Riser, M., and Valdiguié, P.*

In dogs between 1 and 2·5 hours after ingestion of sulphanilamide the concentration in the spinal fluid varied in an irregular manner, but averaged a little less than half the concentration in the blood. The concentration of sulphanilamide in the muscles was nearly as high as in the blood. Brain contained a little less than muscle. Part of that in brain and muscle seemed to be fixed by the tissues and could not be extracted for determination until the diluted tissue pulp had been mixed with 1·5 vol. of NHCl and heated to 100° for 30 minutes.
L. E. GILSON (Chem. Abstr.).

The Permeability of the Blood Cerebro-spinal Fluid Barrier to Sulphonamides. (*Klin. Wochenschr., vol. xviii, pp.* 150–3, 1939.) *Vonkennel and Schmidt, W.*

Prontosil solution could not be detected in the cerebro-spinal fluid, and uliron and Na sulphanilate were found in very small amounts. Sulphanilamide and a hexose derivative of it and p-aminobenzenesulphonacetamide (albucide) have a pronounced ability to penetrate to the spinal fluid. H. L. MASON (Chem. Abstr.).

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3. Neurology and Psychiatry.

The Electro-encephalogram in Cases of Cerebral Tumours. (*Acta Med. U.S.S.R., vol. ii, p.* 185, 1939.) *Sankisov, S. A., and Penzik, A. S.*

The authors found with experimental tumours in rabbits that a paraffin tumour caused a sharp decrease of the electrical potentials in the affected spot. With muscle tumours the whole hemisphere was affected. Malignant tumours reduced the electrical potentials in the region of the tumour's site and caused large and relatively slow oscillation. The writers present encephalograms from a number of their cases of cerebral tumour. G. W. T. H. FLEMING.

Functional Connection of the Cerebral Cortex with the Viscera. (*Acta Med. U.S.S.R., vol. i, p.* 178, 1938.) *Bykov, C. M.*

The writer describes various experiments on conditioning. In one the secretion of urine was conditioned to the introduction of water into the rectum, so that mechanical dilatation of the rectum with a rubber tube caused diuresis. Later the secretion was conditioned to the sound of a trumpet. An inhibitory stimulus was also elaborated from a positive conditioned one. Similar results were obtained with the secretion of bile from the liver. Experiments were then carried out with the spleen, and here conditioned reflexes (changes in volume) to a whistle and a metronome were established. Vascular conditioned reflexes were obtained, by means of a plethysmograph on a man's arm, to the sound of a bell. This was further developed to the sound of a metronome and a flash of light. Rogov has established that fatigue due either to walking with a load or to cerebral work produces an inversion in the action of differentiation elaborated on the cold stimulus. Conditioned metabolic reflexes were also established to a metronome in man. Denervation of the kidney does not interfere with the kidney conditioned reflex unless the hypophysis is also removed. G. W. T. H. FLEMING.

Simmond's Disease and Anorexia Nervosa. (*Arch. Int. Med., vol. lxiii, p.* 1, *Jan.*, 1939.) *Richardson, H. B.*

The author describes six patients, three of whom were thought to have pituitary cachexia and all of whom proved to have anorexia nervosa. The differential diagnosis is very difficult. The symptoms, physical signs and laboratory findings differed in no essential from those reported in the literature. The value of the therapeutic test is not proven. G. W. T. H. FLEMING.

The Occurrence of the Rarer Demyelinating Diseases (*Neuromyelitis Optica, Schilder's Encephalitis, etc.*) *in South Australia.* (*Med. Journ. Australia, vol. xxvi, p.* 451, *Mar.* 25, 1939.) *Weston Hurst, E., de Crespigny, C. T. C., and Fry, H. K.*

Disseminated sclerosis is distinctly uncommon in South Australia. The three cases described all occurred in the course of a year. All showed (1) bilateral, more or less symmetrical lesions, usually with complete demyelination and often when not too advanced, only partial destruction of axones or nerve-cells; (2) considerable proliferation of large fibre-forming glial cells; (3) infiltration of the perivascular spaces with inflammatory cells; (4) evidence of a perivascular distribution of the demyelination. G. W. T. H. FLEMING.

Pre-psychotic Anorexia. (*Proc. Roy. Soc. Med., vol. xxxii, p.* 153, *Jan.*, 1939.) *Nicolle, G.*

The writer considers that anorexia nervosa is connected with primary ovarian failure. She noticed that when an anorexic regains normal weight she does so not with a graceful figure, but with a tendency to puffy lumpiness. This might

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suggest thyroid deficiency, but is quite unaffected by thyroid treatment. The writer considers that the hairiness is not a sign of masculinization but of degeneracy or animalization. G. W. T. H. FLEMING.

Personality Changes after Operations on the Frontal Lobes. (*Acta Psychiat. Neur.-Supp., pp. xx*, 1939.) *Rylander, G.*

The author found no difference between the sequels of excision in the right and left lobes. Restlessness was a very marked feature. The more automatic form of intelligence remained relatively well preserved whilst the more complicated processes, which included higher forms of reasoning, thinking in symbols and judgment, deteriorated. Emotional changes occurred in 30 out of 32 cases operated upon. These consisted of a diminished inhibition of affective responses in 25 cases, and a displacement of the habitual feeling level in 28 cases, in 20 towards euphoria and in 8 towards depression. Twelve patients showed deterioration of initiative and interest. Large excisions seemed to result in greater deterioration than small.
G. W. T. H. FLEMING.

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