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The Association of Hereditary Microphthalmia with Mental Deficiency.

1. Probably for the first time observation has been made, and description is offered, of a bilaterally anophthalmic sibship which in addition to two single-borne trait-carriers includes a concordant pair of identical twins.

2. The accumulation of four cases of anophthalmos in one sibship, the consanguinity of the parents and the absence of secondary cases in the direct ancestry of the B. family described confirm Waardenburg's theory that the plain form of congenital microphthalmia including anophthalmos is based on a recessive genetic factor.

3. Psychometric testing indicated a similar degree of mental retardation in both twins, with the exact level of development indeterminable, while the surviving

* A number of abstracts in this section are reproduced from *Chemical Abstracts* and *Psychological Abstracts*. To the Editors of these two Journals we extend our grateful thanks.

sister showed normal mentality in spite of her anophthalmos. This finding is in agreement with the hypothesis of Roberts that the frequent association of microphthalmia with mental deficiency is most probably attributable to an increased prenatal susceptibility of the trait-carriers to non-genetic influences during the critical stages of cerebral development.

4. Electroencephalograms of the twins revealed equally abnormal records with numerous slow potentials on both sides.

While the diagnostic significance of these records, though indicative of some kind of electro-cortical disturbance, is not yet clear, it is of interest to note that the alpha activity was well developed in both cases despite their congenital blindness.

(Authors' abstr.)

Brain Metabolism in Mongolian Idiocy and Phenyl Pyruvic Oligophrenia.

Significant diminution of cerebral metabolism has been noted both in mongolian idiocy and in phenylpyruvic oligophrenia. This diminution is evidenced by a decreased cerebral oxygen uptake and confirmed by a lessened utilization of blood sugar by the brain. It is suggested tentatively that the lowered cerebral metabolism bears a causal relationship to the development of these two forms of idiocy.

(Authors' abstr.)

The Central Nervous System in Mongolism.

In a study of eighteen cases, not one was found to indicate an agenesis of the central nervous system. In dividing the material into different age groups, the pathology of the age group between six and fifteen years consisted of aplasia of the brain, the growth and development of which seems to have stopped in the second or third year of life. The convolutional and fissural patterns were found to be distorted, the convolutions flattened and many sulci fused. The leptomeninges were fibrotic. The internal structure of the brain revealed marked diffuse loss of nerve cells, thinning out of the first layer with marginal gliosis and marked patchy demyelination with underdevelopment of the white matter. In two patients of twenty and thirty years respectively, the brain showed marked cortical atrophy and degenerative changes. In a third group of cases, in infants below one year of age, those aplastic and degenerative alterations were not recognizable. The development of the external and internal structure of the brain corresponded to the age of the infant. However, some distortion of the frontal, temporal and occipital lobes was present and beginning fusion of fissures was recognized in the most distorted areas. In this age group a different set of pathological changes was conspicuous. There was marked oedema of nerve cells with vacuolation and watery dissolution of protoplasm, dropping out of nerve cells and patchy demyelination of the white matter. The perivascular spaces appeared enlarged, the perivascular tissue necrotic. Fat and calcium deposits were seen. In the other age groups, the same pathological processes were recognizable but to a less extent. The combination of the various alterations appears so characteristic of mongolism that the pathological diagnosis may be made with almost as much certainty as the clinical diagnosis.

The study of the central nervous system in mongolism indicates the presence of extrinsic factors which act upon the brain. The author goes further and states that the oedema and the strict dependency of the alterations upon the vascular system indicate that the noxious agent is to be sought within the blood stream.

Of the four factors which have to be considered—vascular diseases, anaemia, avitaminoses and hormonal deficiencies—there is not sufficient evidence for any one of the first three, but evidence that a hormonal deficiency is a causative factor in the production of the physical symptoms in mongolism has accumulated through various clinical and pathological observations. They point toward a deficiency of the pituitary gland. The character of the lesions in the brain is compatible with such an etiology. Whether the deficiency is due to a primary disorder of the

gland, or to inefficiency of its action through interference by noxious metabolic factors, is a question at present under investigation. (Author's abstr.)

The Effect of Benzedrine on Mentally Deficient Children.

1. Medication by small doses of benzedrine sulphate did not show much, if any, significance in effect on mental reactions of mentally retarded children, as measured by the Stanford and Terman-Merrill, Form M revisions of the Binet, the Grace Arthur Point Performance Scale, the New Stanford Achievement, Vineland Social Maturity, Tapping and Cancellation tests.

2. The stimulation given by benzedrine did not measurably improve test achievement during a period of six months after the medication had ceased.

3. There were no changes in behaviour, either favourable or unfavourable, to be observed in the group which received benzedrine in small doses, as compared with a matched group for control.

4. Benzedrine, given as sudden stimulation, affected favourably the outcome of the following tests: Knox Cubes, Seguin, Ferguson Form Boards, Healy II Pictorial Completion, Tapping and Porteus Maze. It is possible to interpret these results by assuming that benzedrine stimulates particularly the psychomotor activity, which is involved to a greater extent in these performance tests. It tended also to effect the utilization of learned material in the academic field, as shown by the New Stanford Achievement Test. Whether this was a direct or indirect effect of change in the emotional attitude is an open question.

5. The method presented in this study, matching as far as possible an experimental with a control group of mentally retarded children of the moron and borderline classification, should be considered in further research studies aiming at the evaluation of the effect of benzedrine sulphate.

Further research should be directed toward greater dosage during longer periods and combining benzedrine with other pharmacological products tending to stimulate mental activity. (Authors' abstr.)

A Study of a Group of Subnormal Girls Successfully Adjusted in Industry and the Community.

This investigation has shown that many subnormal girls, 55 per cent. of the group studied, were capable of successful and steady employment in industry. Many factors contributed to this success. The more important of these factors were:

1. A stable home in which the girl is not rejected to any marked degree.
2. Ambition and self-respect.
3. Careful placement in a job commensurate with interest, ability and training.
4. Guidance and encouragement and being treated with patience, especially during the initial work period.
5. "Luck" in securing an adequate initial job.

If the bridge of success is crossed by the second year, then the subnormal girl has a good chance of becoming a good and steady worker. She continues in her adjustment in the third year as well as in the second, because she is willing to stick to a routine monotonous job and has no aspiration to advance to superior positions as floorlady or dressmaker and milliner in her own right. In addition, she feels attached to her place of work and becomes identified with it.

(Author's abstr.)

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Hallucinations in Children.

Many American psychologists feel that the child's use of his capacity to fantasy is essentially malicious. However, workers who have made specific studies of fantasy life and hallucinations in the child are less prone to emphasize their negative value. The authors here present 16 cases of non-psychotic children with hallucinatory experiences and analyse a questionnaire on experiences on awakening and falling asleep and auditory and visual hallucinations, put to 81 children with behaviour disorders. They conclude that childhood fantasizing is a normal process of development of the personality. Hallucinations "indicate an immature super-ego due to unsatisfactory relationships since infancy between the child and its parents, which may be further increased by greater needs in a constitutionally or organically inferior child, and finally released by a completely unsatisfactory reality. They are the child's effort to bridge the discrepancy and to experience a satisfying reality."

R. E. PERL (Psychol. Abstr.).

Runaway Children.

Children who repeatedly run away from home show certain characterological abnormalities including antagonism, impulsiveness, distrustfulness, and, paradoxically enough, an occasional attitude of sheepish docility which often has a trigger-like swing to full negativism. Detailed studies of such children often reveal similar early, extremely traumatic experiences. Cruel treatment in the first year of childhood, severe physical trauma, poverty or death of one or both parents are prominent in the milieu of these children. Running away is a defence attitude hiding a helpless, begging type of personality. The runaway, with his extreme negativism and his compulsive running away from reality, displays a severe narcissistic disorder.

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Chronic Rheumatic Brain Disease as a Possible Factor in the Causation of Some Cases of Dementia Praecox.

Nine per cent. of dementia praecox patients who were examined at autopsy showed signs of a chronic rheumatic infection, involving the brain as well as the heart valves. The rheumatic alterations in the brain consisted of a recurrent vascular process of an obliterating endarteritic type, affecting in the dementia praecox group mainly the meningeal and cortical vessels with subsequent degeneration in the cortex. The process as a whole has been termed chronic rheumatic brain disease. Its evolution occurs in terms of years and decades and not of weeks or months as in the acute period of infection. When lesions develop they are, with rare exceptions, no longer acute and actively inflammatory, but are slowly proliferative. After years of symptomatic quiescence, progression of the disease from the latent stage to subacute activity may take place. (Author's abstr.)

Respiratory Plateaux in "Day-dreaming" and in Schizophrenia.

A change in respiration herein termed "respiratory plateaux" has been noted in states of "day-dreaming" in normals and a similar tendency has been observed in schizophrenic patients. These periods of apnoea appear to be more striking and more frequent in the latter. It is obviously difficult to be certain that experimental subjects are actually day-dreaming. Nevertheless certain individuals when instructed to day-dream manifested breathing characterized by recurrent periods of apnoea. Periods of apnoea or "respiratory plateaux" were relatively numerous among schizophrenic patients. Several college students with pronounced "respiratory plateaux" exhibited evidence of maladjustment. The findings are to be regarded as preliminary until repeated with a larger series of cases.

(Authors' abstr.)

Prognostic Criteria in Hebephrenia. The Importance of Age, Sex, Constitution and Marital Status.

1. Males developed the disorder at a younger age than females. The number of men who became schizophrenic declined more rapidly than that of the females. The earlier the age of onset the less favourable the prognosis. The cases beginning at an early age also gave evidence of a progressive course more frequently than those commencing later in life.

2. The data concerning the constitution of the patients reveal that individuals of asthenic habitus tend to run a progressive course and as a rule do not get well. Patients of athletic habitus show a greater possibility of recovery in the ratio of one recovery to every three cases. Patients of pyknic and dysplastic habitus as a rule develop an atypical form of hebephrenic schizophrenia and show a tendency to improvement or recovery. (Author's abstr.)

An Improvement in Convulsive Therapy with Metrazol by Premedication with Scopolamine Hydrobromide.

1. The dosage of metrazol does not have to be increased in order to produce a convulsion when scopolamine hydrobromide is used.

2. Fear of metrazol therapy should be eliminated or lessened if possible because it adds to the difficulties of treating patients and the factor of fear has, so far as the authors can ascertain, no influence on the processes producing remissions.

3. The administration of scopolamine hydrobromide, $\frac{1}{100}$ to $\frac{1}{50}$ gr., not longer than one hour before metrazol injection, almost wholly eliminates this fear of treatment. Tension for the patient, nurses and attendants is thus definitely decreased; relatives are co-operative and show less desire to take the patient home too soon; the physician is thus offered a longer period for observation before parole is requested.

4. Patients under the influence of scopolamine will lie quietly for the injection of

metrazol and may be placed in the most suitable positions, thereby lessening or eliminating the possibility of fractures and dislocations that may tend to discourage the use of metrazol. (Authors' abstr.)

A Study of the Central Action of Metrazol.

The effects of metrazol on 10 curarized dogs were studied with the aid of the electroencephalograph. The electrical changes of the cortex, hypothalamus and medulla with metrazol, uncomplicated by asphyxia and muscular movements are described. The effects of a minimal convulsive dose could be prevented from developing by the injection of an appropriate amount of histamine. The mechanism for this inhibition is discussed. In the curarized (artificially respiring) animals, cerebral electrical changes appear with metrazol in the absence of any anoxaemia. It is therefore suggested that a comparative study of the effects of metrazol in curarized and uncurarized patients could be used to determine the importance of anoxia in the therapeutic mechanism of metrazol treatment.

(Authors' abstr.)

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Quantitative Sex Hormone Studies in Homosexuality, Childhood, and Various Neuropsychiatric Disturbances.

1. Six hundred colorimetric determinations of androgens and estrogens were performed on the urines of 200 individuals.
2. A standard curve for the daily excretion of androgens and a norm for the ratio male : female hormones was established.

3. Of 29 overt homosexuals 25 show a very characteristic staircase sign, namely, male hormones relatively lower and an excess of estrogens.
4. Other sexual abnormalities, especially transvestism, do not show this staircase sign.
5. Of 12 patients with impotence, 8 cases on a neurotic basis show a very low excretion of androgens and estrogens; the remaining 4 cases show special problems.
6. Another characteristic finding appears in masturbators in whom 6 out of 7 patients show a very high excretion, both in androgens and estrogens.
7. In castration and eunuchism excretion is low; in a case of eunuchism of 25 years' duration, half of the amount of excreted androgens was present in the form of androsterone.
8. In certain endocrine conditions, sex hormone findings appear consistently; high excretion in adrenal tumours; low excretion in pituitary disease; and severe damage to the genital and extra-genital sites of formation of male sex hormones in chronic cases of hypo- and hyperthyroidism. In other endocrine conditions, such as in the undescended testicle and hirsutism, the findings are not uniform.
9. Various neurological diseases, such as epidemic encephalitis, Simmond's cachexia, diabetes insipidus and scleroderma show a diminution of hormones which demands further study.
10. Our findings in the major psychoses are still incomplete. There is no pathogenetic relationship between hormone excretion and involuntional melancholia.
11. In children there is a gradual increase of androgens and estrogens according to age and general physical development, reaching in puberty a level even higher than that in the middle-aged adult. There is, however, no evidence of active sexual hormones in very young children, and there is nothing in their urine which can be compared to the typical findings in homosexuality or other types of sexual disturbance.
12. Ultraviolet irradiation is a physiological method of restoring a disturbed hormone balance and, therefore, may play a role in treatment of certain neuropsychiatric conditions. (Authors' abstr.)

Human Brain Metabolism. Normal Values and Values in Certain Clinical States.

The metabolism of the brain was studied in normal, schizophrenic, parietic and senile subjects, and the effect of alcohol, paraldehyde and morphine was studied. Arterio-venous differences for oxygen, carbon dioxide, glucose and lactic acid were determined by means of internal jugular puncture. The observations support the following conclusions:

1. The O_2 arterio-venous difference of the brain in schizophrenics, both before and after insulin therapy, is normal.
2. In general paresis the O_2 arterio-venous difference of the brain shows a slight diminution of questionable significance.
3. The O_2 arterio-venous difference of the brain in patients with cerebral arteriosclerosis is normal, but their systemic circulation is somewhat slow. This would indicate a reduced brain metabolism.
4. The O_2 arterio-venous difference in chronic alcoholism tends to be higher than normal and is associated with an elevated arterial glucose level.
5. Alcohol and morphine diminish the O_2 arterio-venous difference of the brain.
6. In therapeutic doses paraldehyde did not diminish the O_2 arterio-venous difference of the brain of chronic alcoholic patients. (Authors' abstr.)

Oxygen Consumption in the Psychoses of the Senium.

1. Twenty-three patients suffering from psychoses occurring within the senium were investigated with regard to their cerebral oxygen consumption.
2. The arterial oxygen was low (16.31 vol. per cent.). It is suggested that this is in part due to the emphysema and increase in residual air frequently found in aged persons; it may be due in part to failure of diffusion from the capillary alveolar walls.

3. The oxygen-carrying power of the blood was reduced, as indicated by an erythrocyte count of 4,220,000 and a haemoglobin of 87 per cent. (Sahli).
4. The arm to carotid circulation time was increased (25.6 seconds).
5. If the cerebral circulation time is reduced, then the normal cerebral A-V difference in patients would indicate a diminished oxygen consumption by the cerebral tissues.
(Authors' abstr.)

The Clinical Significance of Bisulphite Binding Substances (B.B.S.) in the Blood and Cerebro-spinal Fluid.

The levels of bisulphite binding substances (B.B.S.) in the blood and cerebro-spinal fluid were studied in 222 patients with neuropsychiatric and medical disorders and the following conclusions reached :

1. The usual range of B.B.S. in the spinal fluid is 1.00-2.25 mgm. per cent., which is usually 35-60 per cent. of the amount found in an equivalent blood sample.
2. The B.B.S. may or may not be elevated in cases of clinical vitamin B₁ deficiency (peripheral neuropathy, beri-beri—possibly Korsakoff and Wernicke's syndromes), but this is also true for conditions in which there is no clinical evidence of vitamin B₁ deficiency. Eight cases of peripheral neuropathy in alcoholics were studied. This syndrome in alcoholics is the result of vitamin B₁ deficiency. Four cases showed an elevated B.B.S. in the blood or cerebrospinal fluid or both, and the other four had normal figures. These variations obtained in both acute and chronic cases. Hence the B.B.S. in the blood and cerebrospinal fluid cannot be used as an indication of vitamin B₁ deficiency.
3. A comparatively large group of psychiatric disorders, including alcoholic psychoses, schizophrenia, manic-depressive psychoses, miscellaneous psychoses and neuroses and behaviour and conduct disorders in children were studied. No constant deviation from the normal was found. Uncontrolled diabetes with marked acetonuria shows a marked elevation in B.B.S.
4. Paraldehyde causes an elevation of B.B.S. in the blood for 24 hours. It is suggested that the method employed causes a partial hydrolysis of paraldehyde to acetaldehyde, which latter binds bisulphite and thereby increases the total B.B.S.
5. The B.B.S. is not an accurate indication of the pyruvic acid levels in the blood or cerebro-spinal fluid. Mention is made of several cases of peripheral neuropathy in alcoholics, with elevated pyruvic acid levels in the body fluids and a normal total B.B.S. Similarly, mention is made of several cases with marked elevation of B.B.S. in the blood and cerebro-spinal fluid and a normal pyruvic acid level.
6. In cases of elevated B.B.S. in the blood or cerebro-spinal fluid, the factors which may contribute to that total must be individually analysed. Pyruvic acid is only one of these factors.
(Authors' abstr.)

The Treatment of the Parkinsonian Syndrome with Bulgarian Belladonna Root and Amphetamine (Benzedrine) Sulphate.

1. A series of 25 patients with Parkinsonian syndrome, including 15 of the post-encephalitic type and 10 of the arterio-sclerotic or idiopathic type, have been treated with the combination of Bulgarian belladonna root (rabellon) and amphetamine (benzedrine) sulphate. Of the post-encephalitic cases, 11 showed some improvement. Of the other types, 5 were beneficially influenced.
2. Experience indicated that this therapy is superior to other forms of treatment.
(Authors' abstr.)

Histamine in the Treatment of Psychosis.

A. The administration of histamine was followed by slight improvement both in the clinical picture and Rorschach test for the group, particularly in the characteristic catatonics. While histamine may be able to influence the psychosis in certain cases, cases of long duration and resistant to metrazol were refractory material for eliciting improvement, and cautious administration precluded the

effects of a truly profound vascular shock. For future trials, a sharper increase in dosage and even cautious intravenous administration should be considered. Comparison of post-histamine tests with metrazol prognosis studies suggests that these patients are somewhat more likely candidates for metrazol improvement than they were before histamine.

b. Following histamine, the catatonics showed psychological test changes identical in direction with the changes observed after metrazol. In the depressive cases the changes differed from those of the catatonics, as was also the case with metrazol. Although control series with water injections and without injection were not carried out, the essentially uniform test changes serve to validate the findings. Similarity in psychological response to widely different pharmacodynamic agents without discernible physiological similarity seems to permit formulation of a therapeutic moment in terms of "non-specificity." The psychological effects of histamine as of metrazol appear to depend on the personality and illness structure of the patient. The fact that psychological changes following histamine, as shown in the Rorschach test, are in the same direction as those elicited by metrazol and sodium amylal, suggests a non-specific action of the drugs on psychoses. This non-specific action might perhaps be explained by the hypothesis that these drugs interfere with the homeostatic equilibrium, which was shown to be rigid in schizophrenia. There is no clear reason as yet to consider even the profound disturbances of cerebral oxidation by metrazol or insulin as other than more potent exemplars of this principle.

c. The method applied in this experiment is suggested as a means of investigating the psychological effects of drugs capable on proper application of a degree of objectivity and quantitative measurement which seems to the authors otherwise unattainable at the present time. (Authors' abstr.)

Migraine Equivalents.

1. The importance of migraine equivalents has been indicated with regard to problems of diagnosis in medicine and to the understanding of the nature of migraine.
2. Equivalents may replace migraine entirely and be episodic or continued in form, or may alternate with migraine attacks in episodic form.
3. In a series of 169 migrainous patients, equivalents occurred in 30.8 per cent. over the period of observation.
4. The equivalents lend support to the theory that migraine is the result of an imbalance between processes of excitation and capacities for external "discharge." Whereas the former is dependent on constitutional factors, the latter is determined largely by factors of training and experience affecting the organization of the nervous system.
5. Equivalents occur in migraine in relation to alterations in intensity of the nervous processes involved, as dependent on external factors of stress or to changes in the affector-effector balance.
6. The specific form of some equivalents is presumably dependent on constitutional factors. (Authors' abstr.)

Consequences of Metrazol Shock Therapy.

Some 320 schizophrenic patients were surveyed physically, neurologically and psychiatrically at least twelve months after the completion of their treatment, in order to establish in so far as possible just what are the risks involved in metrazol shock therapy. Fifty-one patients in all were thought to show present damage, some of which "damage" might very possibly have occurred without the intervention of this treatment. The evident damages suffered were for the most part confined to three large groups.

Vertebral fractures were numerous in the past, possibly 20-30 per cent. However, 50 patients checked after their treatment in 1940 show no fractures. Inquiry indicates that thus far at least, spinal compression fractures, though highly undesirable, have not proved to be serious complications.

Pulmonary tuberculosis developed in 25 patients, 8 per cent. of all those treated, as contrasted with a 3.0 per cent. incidence in non-metrazol-treated schizophrenics during the same period.

Myocardial damage and a tendency to hypertension occurred in a relatively small number of patients.

Defects of memory were not obvious enough to be reported upon.

Clinical evidences of damage to the central nervous system were suggestive but questionable. Elsewhere in the literature histological evidence of brain damage in experimental animals and in human subjects following the use of metrazol has been presented.

The percentage of mental improvements obtained, including those in out-patients reported upon by social workers, was less than that claimed for "spontaneous" remissions. However, more than 43 per cent. of those with a psychosis duration of less than three years had improved greatly, whereas in the group of longer duration only 13.2 per cent. improved.

Many patients showed improvement by psychological tests who apparently had not improved in adjustment to their life-situation as a whole.

Many of the findings discussed in this report represent conclusions rather than facts, and that upon the whole trends are indicated rather than exact data.

As a result of this investigation, the Elgin staff feels justified in the use of metrazol convulsive shock-therapy—principally in the frankly affective disorders—after careful consideration in each case of possible resultant damage as related to the possibility of improvement. (Authors' abstr.)

Nitrous Oxide Anoxia in the Treatment of Schizophrenia.

1. Nitrous oxide anoxia has given good results in the treatment of early cases of schizophrenia.

2. Chronic cases, whose illness was over two years in duration, were unchanged.

3. It is a relatively safe method in the hands of a skilled anaesthetist. The dangers of respiratory failure and irreversible damage to the brain must be remembered.

4. Nitrous oxide anoxia is less time-consuming than hypoglycaemia, and therefore is available to a larger group of patients.

5. The treatment is less strenuous on the patients and most of them enjoy the daily bout.

6. No accidents or untoward effects have been experienced in our series.

7. Whereas the number of cases treated so far is too small to have much statistical validity, we feel that results are sufficiently good to warrant treating early cases by this method first. If they fail to improve after a fair trial, they can be transferred to insulin treatment.

8. This technique might be used in general hospitals in treating early cases of schizophrenia. (Authors' abstr.)

Further Experiences with Picrotoxin as a Convulsant in the Treatment of Mental Illnesses. A Method of Combining Picrotoxin with Metrazol.

1. A report is given of 102 patients treated with picrotoxin as convulsant. 64 of the patients received a combination of picrotoxin with metrazol.

2. The combined treatment reduces nausea and vomiting to a minimum. Multiple convulsions occurred in two instances only. Terror was absent, and the paroxysm was induced in a conveniently short time.

3. Complications were approximately the same in type and frequency as when picrotoxin or metrazol alone were used. (Authors' abstr.)

Involitional Melancholia.

1. The recovery rate of patients having uncomplicated involitional melancholia treated with theelin is above 90 per cent.

2. Larger dosages than were originally used are more efficacious and are recommended.

3. In view of these results, other severe forms of treatment, such as metrazol shock, do not seem justified in uncomplicated involuntional melancholia, unless adequate estrogenic treatment fails to give relief. (Authors' abstr.)

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A Form of Familial Presenile Dementia with Spastic Paralysis.

(1) The clinical features, together with the post-mortem and histological findings, of an unusual case of presenile dementia with spastic paralysis are described.

(2) The pathological changes found include widespread demyelination of the brain and the presence of peculiar perivascular structures which occurred chiefly around the smaller blood-vessels of the subcortical white matter, the molecular layer of the cerebellum and the cornu ammonis.

(3) The condition of a sibling exhibiting clinical features identical with those found in the previous case is also described.

(4) The family history of these cases is reviewed and eight clinically similar cases are mentioned.

(5) The relationship of the disease we describe to allied disorders is discussed.

(6) The opinion is expressed that the aetiology of the disease probably lies in a disturbance of the smaller blood-vessels of the nervous system which, in turn, is attributable to the absence of some specific factor or is the result of an abiotrophic manifestation. (Authors' abstr.)

Experimental Lesions in the Basal Ganglia of the Cat.

(1) Electrolytic lesions have been made in the basal ganglia of cats, 26 in number.

(2) The leading physical sign of such lesions is slight but persistent hypertonia of extensor muscles in the contralateral limbs. The hypertonia is not evident in the gait, and does not become so unless the animal is mentally at rest, and is held up so that the limbs hang freely.

(3) Other physical signs are: (i) Delayed flexor reflex; (ii) defective placing

reactions ; (iii) flexor hypertonia on the ipsilateral side ; (iv) defective closure of the contralateral eyelid.

(4) De-afferentation appears to give some temporary reduction of the extensive hypertonia.

(5) Control experiments consisting of the passage of electrodes into the basal ganglia without electrolysis (7 in number) and of lesions elsewhere than in the basal ganglia (10 in number) were unproductive of permanent physical signs.

(Authors' abstr.)

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The Functional Relations of the Primary, Secondary and Tertiary Visual Cortical Areas.

An arteriosclerotic male, aged 58, suddenly developed complete blindness, headaches and mental confusion. Unable to recall doctors' names (loss of auditory memory), he could describe correctly routes for travel within San Francisco (retention of visual memory) six days after the accident. There was gradual recovery of 5° of macular vision including colour discrimination and reading. When the patient died two years later, autopsy revealed (1) bilateral destruction of area 17, except for a small intact portion at each occipital pole, (2) bilateral destruction of area 18 on the mesial surface, (3) slight destruction of area 18 on the inferior surface of the left hemisphere, (4) some subcortical involvement in the upper part of the lesion. It is suggested that the retention of visual memory is due to the integrity of areas 19 and 39. D. K. SPELT (Psychol. Abstr.).

The Unsolved Problems in Aphasia. I. Amnesic Aphasia.

Amnesic aphasia has been reported accompanying lesions of the temporal lobe, the angular gyrus, and the parietal lobe. Analysis of seven cases from the literature shows that amnesic aphasia results from lesions of the "posterior temporo-occipital region or its superior connection with the rest of the brain through the temporal isthmus" (Brodmann's areas 21, 22 and 37).

D. K. SPELT (Psychol. Abstr.).

The Unsolved Problems in Aphasia. II. Alexia Resulting from a Temporal Lesion.

Analysis of 21 cases of temporal lobe lesion indicates that (1) involvement of the posterior end of the (major) superior temporal convolution results in failure to interpret reading matter, although recognition is intact ; (2) injury to the angular gyrus destroys recognition of printed matter, although comprehension of spoken language is not involved ; (3) the angular gyrus may also function in comprehension of reading matter in conjunction with Wernicke's area.

D. K. SPELT (Chem. Abstr.).

Orientation.

Orientation is "a state of psychological preparedness for the next act." Factors involved in orientation include: (1) consciousness, alertness of attention, instinctive motivation; (2) appreciation of time; (3) comprehension of the physical, tri-dimensional environment; (4) concept of the body-scheme; (5) familiarity with society and social relations; (6) possession of a personal philosophy; (7) synthesis of all factors in a situation into a concept of its significance. The first four factors are discussed and inferential relationships established between these processes and the function of various brain parts.

D. K. SPELT (Psychol. Abstr.).

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Studies of Abnormal Behaviour in the Rat. V. The Inheritance of the "Neurotic Pattern."

In order to study the influence of heredity upon the "neurotic pattern" in rats, the offspring of animals of known history were subjected to a specific test situation. The situation selected was the exposure to jingling of keys while the rat was confined in a given enclosure. This test was used because of its effectiveness and simplicity.

It was found that the abnormal reaction to keys was inherited. The evidence suggests that it is transmitted as a dominant trait and that the trait is unitary. A subsequent report will be given when these data are more complete.

(Authors' abstr.)

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Cortical Autonomous Rhythms and the Excitatory Levels of Other Bodily Tissues.

Electroencephalograms were recorded concurrently with palmar skin resistance and muscle action potentials when both the internal preparation and external stimulation varied. During conditions of rest and of experimentally induced tension, changes in the excitation level of skeletal and autonomic tissues appeared at the same time as the alpha rhythm. The introduction of external stimuli (electric shocks and light flashes) tended to increase or decrease the activity of the cortical cells, depending upon whether the excitation level of the postural or preparatory tissue activities was enhanced or depressed.

H. W. KARN (Psychol. Abstr.).

An Improved Amplifier for Electro-encephalography.

The amplifier described in this report has the following features: (1) The output impedance matches the recording galvanometer. (2) The frequency range is restricted in order to keep the apparatus free from pick-up of outside interference. (3) The available gain of the amplifier is sufficient to record abnormal, as well as normal, voltages. (4) The amplifier is an A.C. operated device. (5) The apparatus is sufficiently compact and light to be portable.

H. W. KARN (Psychol. Abstr.).

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The Effect of Raised Intracranial Pressure on the Cerebral Blood Flow.

The arterio-venous oxygen and carbon dioxide differences of the arterial blood and of the venous blood coming from the brain have been investigated in a group of unanaesthetized human subjects suffering from intracranial tumour, and in cats in which artificial tumours had been inserted extradurally in the frontal and cerebellar regions about 3-6 weeks previously.

The arterio-venous blood gas differences indicated that an intracranial tumour produced a slowing of the cerebral circulation in some cases. An attempt to differentiate the group on the basis of the position of the tumour has been made. With moderate increase in intracranial pressure, tumours in the frontal or parietal regions have little effect on the total cerebral circulation, whereas tumours in the cerebellum or basal ganglia have a slowing effect. This applies to the experiments with cats as well as with man.

The difference observed in the two cases is explained by the local pressure effects of the tumour, a tumour at the base of the brain having a greater influence on the large venous channels as they converge towards the base of the skull than a tumour in the frontal or parietal cortex.

In a small group of cases, removal of the tumour in man has reduced the arterio-venous oxygen difference to normal where this was previously high.

A sudden large rise of intracranial pressure in man by mechanical pressure on a bony defect over the cerebellum, produced for decompression, showed a marked slowing of the cerebral circulation in some cases, whereas a similar rise of pressure caused by mechanical pressure in the fronto-temporal or parietal regions showed no change. (Author's abstr.)

The Metabolism of the Brain.

The results of the present series of experiments show that the respiratory quotient of the brain is very constant and approximately unity in all cases. The determinations of the blood sugars taken in correlation with the respiratory quotients and arterio-venous oxygen differences indicate that the brain is utilizing carbohydrate almost entirely. (Author's abstr.)

*Cerebellar Atrophy Associated with *État Marbré* of the Basal Ganglia.*

In the brain of a 33-year-old non-epileptic idiot bilateral *état marbré* of caudate nucleus, putamen, and, to a lesser extent, thalamus was found. There was demyelination of the central part of each globus pallidus. The cerebellum was considerably reduced in size, especially in the lateral lobes, where an atrophy of Purkinjé cells was present chiefly affecting the superior and inferior semilunar lobules. The inferior olives were grossly atrophied and demyelinated save in their most cephalad parts. The nuclei pontis and transverse fibres of the pons showed mild glial sclerosis only. The cerebral cortex showed no atrophic changes. It is

suggested that the element of hypoplasia shown by the cerebellum was due to the onset of atrophy prior to the full development of the organ. A peculiar feature of the case was the absence of clinical signs referable either to cerebellar or striate disorder. (Author's abstr.)

The Neuro-histological Basis for the Sensation of Pain Provoked from Deep Fascia, Tendon and Periosteum.

Pain of two main varieties can be aroused from deep fascia, peritendinous connective tissue and periosteum. The first is similar to the first main type of cutaneous pain described by Woollard *et al.* (1940); the second main variety corresponds to the second main type of cutaneous pain, but is different in quality and time relation to the stimulus.

From tendon substance pain can only be aroused near musculo-tendinous junctions; it is of only one variety, corresponding to the first main type of cutaneous pain.

The experiments and observations recorded suggest that there is an "accessory" innervation to neuro-tendinous endings of Golgi in man, and that stimulation of the "accessory" fibre or ending gives rise to pain.

There is a similar "accessory" innervation to encapsulated receptors recording touch, pressure, and cold.

The present findings lend support to a previous conclusion that the varieties of pain which can be aroused from definitive organs are determined by the morphological disposition at the periphery of the nerve fibres and endings subserving pain. (Authors' abstr.)

The Electro-encephalogram in Electrically Induced Convulsions in Rabbits.

Rabbits were subjected to convulsions induced by 60-cycle alternating current (25-35 volts, usually for $\frac{1}{10}$ second). Cerebral action potential changes were recorded from electrodes fixed in the bone of the skull, with all overlying muscle removed.

In the tonic phase of the convulsions, which came immediately after administering the current, the records showed large spikes, at first in a continuous run (3-10 per second). Then these became spaced farther apart, until one or more spikes appeared only at intervals, synchronous with the jerks of the clonic phase. Then all significant oscillations usually stopped ("silent period" of cortical activity). However, clonic contractions of the muscles, simultaneously recorded electrographically, not infrequently extended into this "silent period." The changes in cerebral action potential then returned after seconds or a few minutes and went through slowly swinging deflections, to arrive gradually at the usual pattern in the course of some minutes to about half an hour.

These phenomena are interpreted as indicating immediate, almost continuous, maximal discharges of cortical cells, then seriatim firing at longer intervals as the cells tire, followed by cessation of all demonstrable activity with exhaustion. The muscular action currents of the clonic twitches may continue into the "silent period" of cerebral exhaustion, so that at least some of the later muscular contractions may arise from discharges originating at lower levels of the nervous system than the cortex.

Preliminary runs were taken before giving each convulsion, and occasional records were obtained after the series of 16 convulsions had been completed. During the period of observation no appreciable change could be noted in the records of changes in cerebral action potentials obtained before and after the convulsion.

The main difference in convulsions induced electrically and those produced by metrazol consists in the absence of a latent period and the wider range of duration and severity which can be obtained in the former. Convulsions come immediately after closing the electrical circuit, and the effect may be made much shorter and milder than is possible in a metrazol convulsion. (Authors' abstr.)

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The Effects of 10 mgm. of Benzedrine Sulphate and Low Oxygen Tension on the Span of Attention for Letters and Other Factors.

The attention span for letters of 18 male subjects was measured under three conditions: (a) Normal air and blank pill, (b) simulated altitude of 16,000 ft. and blank pill, (c) simulated altitude of 16,000 ft. plus 10 mgm. of benzedrine sulphate. Each session lasted approximately one hour. The visual angle of the exposed material was seven degrees. Fifteen of the subjects filled out a subjective rating sheet at the end of each session. Under the conditions of the experiment, no significant difference was found among the three experimental conditions in the span of attention for letters. The subjective rating data provide evidence suggesting that the exposure to a simulated altitude of 16,000 ft. for a period of a little more than an hour causes a depression in mood which may be counteracted to some extent by 10 mgm. of benzedrine sulphate. The significance of the data is discussed and further experimental work suggested. (Authors' abstr.)

A Multiphasic Personality Schedule (Minnesota). II. A Differential Study of Hypochondriasis.

Differential study of groups of persons by a scale for hypochondriasis derived from the authors' multiphasic personality schedule reveals that:

1. Significant separation of hypochondriacal cases from normals can be demonstrated.
2. A sizeable proportion of the so-called normal population nevertheless overlaps the hypochondriacal group, as is often stated in medical and psychiatric opinion.
3. The presence of physical disorder does not greatly raise the scores over the normal distribution in the direction of hypochondriasis.
4. The distribution of the hypochondriacal scores of psychotic patients is only slightly higher than that of the normals. (Authors' abstr.)

Shock as a Preparation for Readjustment.

The normal person is able to give his interest and attention now to one problem and now to another. He is able to adjust his behaviour to the present problem by calling to his service only those aids which are relevant and to dismiss irrelevant factors. Such versatility is impossible for the schizophrenic patient. A mathematical problem, an insulting remark, the pain of a disease, social disapproval, all have about the same effect, namely, no effect at all. The patient has learned to adjust by doing nothing about any objective problem or situation; he is engrossed with himself. He is adjusted as an inanimate object is adjusted; that is, he settles down and manifests none of the kickback that the normal organism shows whenever it is stimulated.

If this loss of resiliency of the schizophrenic were due to an organic deterioration, such as occurs in senile dementia or in paresis, it certainly could not be restored by subjecting the patient to a violent shock. The stagnation of the schizoid is not dementia. It probably depends upon a combination of factors, but all these can be viewed as contributors to the main element, namely, the habit of emotional, intellectual, and physical inertness. When this habit is too long continued there probably is atrophy of those endocrines involved in emotional adjustments and the process then becomes irreversible. In the early stages, before such deterioration has gone far, the factor to deal with is the habit.

The common factor in the various forms of shock therapy is the overcoming of the inertia; it is essentially bringing the patient out of his complacency; it is disturbing his perfect adjustment and substituting for it a condition of non-adjustment. The essential effect is that it upsets the patient at a great variety of points, and makes possible a great number of discharges of the tension that is aroused at the same time. There is a disturbance of the balance in the chemical equilibrium of the body, an arousal of the autonomic mechanism, a disturbance of the endocrine system, and a violent disruption of motor co-ordinations. The widespread nature of the shock seems to be more important than its intensity.

With no guidance, most of the patients will adjust on a different basis. The shock will have taught them that their old hallucinations, delusions, autistic reaction and inertia are no longer the satisfactory defences they seemed to be. Some, however, may revert to their old patterns of living after the shocks are terminated, unless they are given some training in new methods of adjustment, and especially if they are thrown back in their old environments.

The types of re-education that these patients need after they have been given shock therapy and have had their old patterns of living broken is an important problem that is still to be solved. It would seem, however, that the talking techniques and the other procedures of the psycho-analysts are not exactly suitable. Such methods force the patient to confront again the personal problems which were previously too much for him and probably still are. Unable to adjust to these internal conflicts, the patient may find it easier again to retire to complacency. Instead, the patient's need is to adjust to the objective aspects of living. He needs to be directed toward an active adjustment to the external world, and he should be protected from any temptation to fall back into his old habit of retreat and regression. (Author's abstr.)

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The Use of Histamine in the Treatment of Neuro-vascular Headache.

The author considers that neuro-vascular headache is due to a periodic and transitory involvement of the autonomic nerves accompanying certain intracranial and extracranial blood vessels producing vasodilatation, causing a fall in arterial blood pressure and a rise in the cerebro-spinal fluid pressure. As the dilatation of the smaller vessels subsided, then large vessels become dilated and the stretching of their walls causes the pain; when these vessels are relaxed, the pain is relieved. It has been found that small subcutaneous injections of histamine will in some cases cure neuro-vascular headaches, provided an intracranial pathological lesion has been first excluded.

An intradermal injection of 0.075 mgm. histamine is first of all given, and if there is an increase in size of the wheal during the ensuing 5-15 minutes with a large erythematous flare round the wheal, the test is considered a positive one. In these cases a course of graduated injections of histamine is then given.

The solution used for injection consisted of 1 mgm. of histamine dissolved in 10 c.c. of normal saline solution, constituting a 0.01 per cent. solution. On the first and second days 0.05 mgm. of histamine (0.5 c.c. of the solution) was injected subcutaneously twice a day. On the third and fourth days 0.075 mgm. (0.75 c.c. of the solution) was injected twice a day. Thereafter, up to the end of the third week, subcutaneous injections of 0.1 mgm. (1 c.c. of the solution) were given twice a day. When this course was finished each patient was given one injection of 0.1 mgm. of histamine once a week. If the patient remained free from symptoms during the next two or three months, an attempt was made to decrease the dose by spacing the injections out to one in two weeks and later to one in three weeks, and so on. This was done with the object of eventually discontinuing the injections altogether. If the symptoms recurred after the dose was diminished, the injections were again increased to one per week.

G. W. T. H. FLEMING.

PSYCHIAT. ET NEUROL. JAPONICA.

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The Density of Blood Vessels in the Brains of Criminals.

From 150 brains of criminals the author took small pieces from nine regions and measured microscopically the number of blood vessels per given area. The number found was regarded as an indicator for the density of blood vessels. The density in the brain of criminals was greater than that of normal individuals in every region of the brain. In violent offenders it was smaller than in frauds, and was markedly great in excessive recidivists. R. KURODA (Psychol. Abstr.).

Studies on the Brains of Criminals with Special Reference to Nerve Cells and the Size of Their Nucleus.

The author measured the size of nerve cells and their nuclei in the brain of larcenists and impostors, and found that it was smallest in intellectual offenders. Their form in criminals in general was of a small or a short type. The results were the same as those Nagasawa found in schizophrenic patients. From the fact that they did not show any atrophy the author concluded that they are of immatured form. R. KURODA (Psychol. Abstr.).

Studies on the Brains of Criminals with Special Reference to the Thickness of Each Layer of the Cerebral Cortex and the Density of Nerve Cells.

In 63 cases of larcenists and impostors the author measured the thickness of each layer of the cerebral cortex and the density of nerve cells. The results show that the density of nerve cells in the brain of criminals was greater than that of normal controls, and it was the smallest in violent offenders and the greatest in intellectual ones. The thickness of each layer was thinner in the criminals than in normal individuals. R. KURODA (Psychol. Abstr.).

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1. Pathology, Biochemistry and Physiology.

Faulty Detoxication in Mental Disorder. Davies, D. R., and Hughes, T. P. E. [*Lancet*, *i*, 403-5 (1940).]

Excretion of hippuric acid after oral administration of Na benzoate was low in 40 out of a total of 75 patients with mental disorder and in 15 out of the 17 cases with catatonia. While faulty detoxication is more readily demonstrated in catatonia than in any other mental condition, it does not seem to be specific for this disorder.
E. R. MAIN (Chem. Abstr.).

Faulty Detoxication in Schizophrenia. Abnormal Excretion of Hippuric Acid after Administration of Sodium Benzoate. Quastel, J. H., and Wales, W. T. [*Lancet*, *i*, 402-3 (1940); *cf. C.A.*, **33**, 3000⁸.]

The delayed excretion of hippuric acid in catatonic patients is due to diminished ability to detoxicate BzH and not to delayed absorption of BzH from the gut, since similar results were found after intravenous injection of Na benzoate. Catatonic patients who were improved mentally after metrazole treatment showed improvement in ability to detoxicate BzH.
E. R. MAIN (Chem. Abstr.).

Significance of Spinal Fluid Changes in Neurologically Otherwise Normal Luetics. Spiegel, Ernest A., and Spiegel-Adolf, Mona. [*Urol. Cut. Rev.*, **44**, 531-2 (1940).]

An increased INE/IE ratio (IE = interferometric value of electrolytes, INE = interferometric value of non-electrolytes) over that of the luetic patient without involvement of the central nervous system (0.31), may be the only indication in the spinal fluid of the existence of pathological changes in the central nervous system. The method of determining the ratio was described previously (*C.A.*, **34**, 3348⁸).
J. PINCHACK (Chem. Abstr.).

Albumin-Globulin Ratio and Colloidal Gold Curve in Syphilitic Cerebro-spinal Fluid. Stowe, W. Parker. [*Urol. Cut. Rev.*, **44**, 527-31 (1940).]

It is demonstrated that the colloidal Au curve of Lange is a function of the ratio of albumin to globulin (A : G) in the spinal fluid. When A : G is 4.3 or less, a strong zone I curve results. As this ratio increases the zone I curve becomes shorter and lower and then shifts into zone II. A : G above 5.0 gives uniformly neg. colloidal Au curves. Several distinct patterns were found with reference to serological reactions of the blood and spinal fluid and the A : G of the fluid. The euglobulins comprise about half of the total globulins in fluids with low globulin content, but much more than half in those with high globulin values.

J. PINCHACK (Chem. Abstr.).

A Rapid Flocculation Test for Syphilis Adapted to Cerebro-spinal Fluid. Lorenz, F. W. [*Am. J. Clin. Path.*, **10**, 527-39 (1940).]

By applying the phenomenon of adsorption to different volumes of cerebro-spinal fluid (up to 3 and 4 c.c.) it was possible to recover minute traces of reagin from large volumes which could not be detected by icebox complement fixation. Add titrated amounts of a highly sensitive cholesterinized Kahn antigen containing a trace of dye to varying amounts of spinal fluid in small tubes. Shake 4 minutes and centrifuge. Draw off all but about 0.15 c.c. of the supernatant fluid, transfer the sediment to a slide and examine microscopically.

JOHN T. MYERS (Chem. Abstr.).

Ketonaemia in Hemiplegic Individuals. Golber, L. M., and Feldman, E. A. [*Bull. biol. med. expil. U.R.S.S.*, **5**, 107-8 (1938); *Chem. Zentr.*, **1**, 2231 (1939); *cf. C.A.*, **32**, 9217¹.]

In agreement with the observations of Leibovich regarding the biological asymmetry in the composition of the blood flowing from the sound side and that

from the paralysed side of hemiplegic individuals, it was found that the blood returning from the paralysed extremities showed a content in ketonic substances which was about 7.39 mgm. per cent. higher than that of the blood from the other side of the patient. The question is raised as to whether this is due to reduced oxidation as a result of the decreased glutathione content.

M. G. MOORE (Chem. Abstr.).

The Pathway of the Pituitary Colloid through the Hypothalamus. Popjak, George. *J. Path. Bact.*, 51, 83-9 (1940).]

After surgical removal of the upper cervical sympathetic ganglion in dogs, there was a heavy inundation of the hypothalamic vegetative centres by pituitary colloid. The colloid impregnated the ganglion cells of the basal nucleus of the tuber cinereum, the supra-optic and paraventricular nuclei and the nerve fibres of the supra-optico-hypophyseal tract and supra-optico-paraventricular fasciculus. The pathway of the colloid into the hypothalamus is mostly along the nerve fibres. The origin of the colloid was not definitely determined.

JOHN T. MYERS (Chem. Abstr.).

The Haemato-encephalic Barrier. Shtern, L. S. [*Trudy Nauch.-Issledovatel. Inst. Fiziol.*, NKP 2, 12-26.]

A general discussion of this term, which signifies a barrier to the passage of certain substances from the blood to the cerebro-spinal fluid, from the morphological and physiological standpoints.

The Chemical Basis of the Alteration of Periods of Sleeping and Waking (Role of the Haemato-encephalic Barrier). [*Ibid.*, 27-38.]

The assumption that a special toxic substance is formed, the accumulation of which causes the individual to go to sleep, is shown to be unnecessary since by the introduction of small amounts of CaCl_2 or of KCl into the cerebral ventricle both a condition of sleep with complete relaxation of the muscle tone and a condition of more or less pronounced excitement can be produced. The alternation between periods of sleeping and waking is therefore due essentially to concentration changes in the normal products of metabolism or changes in the ratio between different ions (as, e.g., with K or Ca ions) present in the fluid bathing the nerve centres. Actually, changes in the chemical composition of cerebro-spinal fluid are found under different physiological and pathological conditions. Thus, after long-continued sleeplessness and during narcosis there is a decrease in the K content of the fluid and an increase in the Ca content—i.e. a reduction in the K/Ca quotient. Since the interchange of substance by the haemato-encephalic barrier, the functioning of this barrier and the factors affecting its functioning are of great importance in the bringing about of sleep or the maintenance of the waking state.

M. G. MOORE (Chem. Abstr.).

The Influence of Muscular Fatigue on the Condition of the Haemato-encephalic Barrier. Kassil, G. N., Plotitsina, T. G., and Romel, E. L. [*Trudy Nauch.-Issledovatel. Inst. Fiziol.*, NKP 2, 67-80; *Chem. Zentr.*, 1, 1789 (1939).]

Muscular fatigue produces definite functional changes in the haemato-encephalic barrier, which are to be explained as a disturbance of the regulatory function of this barrier. Moderate fatigue is accompanied by an accumulation of Ca and extreme fatigue by an increase in the K in the cerebro-spinal fluid. Resting quickly restores the original composition of the fluid. These functional changes in the haemato-encephalic barrier occur later and develop more slowly after muscular training than in the case of untrained animals.

M. G. MOORE (Chem. Abstr.).

The Influence of Hunger on the Haemato-encephalic Barrier. Kassil, G. N., Plotitsina, T. G., and Tolmaskaya, E. S. [*Trudy Nauch.-Issledovatel. Inst. Fiziol., NKP* 2, 81-94; *Chem. Zentr.*, 1, 1789 (1939); cf. *C.A.*, 34, 523¹, and preceding abstr.]

Long-continued hunger leads to a disturbance of the functioning of the haemato-encephalic barrier. From the 7th to 10th day on, it becomes permeable to the passage of $\text{Na}_4\text{Fe}(\text{CN})_6$, of I, and of trypan blue from the blood to the cerebrospinal fluid. This is regarded as an injury to the so-called protective function of this barrier while the regulatory function (measured in terms of the permeability to Ca, K, and sugar) is less definitely disturbed.

M. G. MOORE (Chem. Abstr.).

Action of Glucose on Cerebral Metabolism. Noyons, A. K. M., and van Goor, H. [*Acta Brevia Neerland. Physiol., Pharmacol., Microbiol.*, 10, 32-7 (1940).]

The metabolism of cerebral cortex slices was measured by means of the diaferometer. The CO_2 output of cat cortex is not changed by the addition to the suspension fluid of 0.18 per cent. of glucose; that of chicken cortex is markedly increased.

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

Studies on the Relation of Neuritis Axialis to Beri-beri in Japan. I. Kagawa, Syozo. [*Japan. J. Med. Sci., VIII. Internal Med., Pediat. Psychiat.*, 5, 1-16 (1938) (in English).]

Mainly clinical and statistical. Two forms of the disease are described, A and B. Most patients with the A form showed symptoms of beriberi. Only 22 per cent. of the patients with the B form showed symptoms of beriberi.

II. [*Ibid.*, 17-41.]

Changes in the blood cells and in the blood pressure in the A and B forms of neuritis axialis are described. In the A form the sugar in the blood and cerebrospinal fluid was usually slightly increased; in the B form it was rarely increased. In both forms the blood catalase was not significantly lower than normal but showed an increase upon recovery, after treatment with vitamin B. In more than 50 per cent. of the B cases the basal metabolism was increased. In both forms the pressure of the spinal fluid tended to be higher than normal. Spinal puncture improved the vision. In some cases of the disease motor ataxia was observed.

III. [*Ibid.*, 43-60.]

Extensive clinical data are given on the curative action of vitamin B (B_1), administered as an oryzanin extract. Most of the work was done in 1928-29.

W. C. TOBIE (Chem. Abstr.).

Nutrition and Nervous Excitability. Marks, Louis, and Necheles, H. [*J. Lab. Clin. Med.*, 25, 1177-9 (1940).]

The effects of various foods on the neuromuscular system were studied on Chinese in China and on Westerners in the United States to explain the differences in their basal metabolic rates (Earle, *C.A.*, 22, 4593; Necheles, *C.A.*, 22, 4594; 24, 4819). The skin resistance of Chinese in Peiping apparently decreased after a protein meal, while that of the Occidentals in Chicago did not.

H. W. ROBINSON (Chem. Abstr.).

The Differentiation of Vagotonic and Sympathicotonic Individuals by a Serum Test. Manoiloff, E. O. [*Wien. klin. Wochschr.*, 53, 387-8 (1940).]

Mix ten drops of non-haemolysed serum with 10 ml. of physiological salt solution. Add one drop of water blue, shake, add one drop of diluted HCl and shake again. Then add 3-5 drops of 1 per cent. KHMnO_4 . If the blue colour is unchanged the

individual is classed as vagotonic, otherwise sympathicotonic. Of about 2,500 tested, two-thirds of the males and one-third of the females were vagotonic.

D. B. DILL (Chem. Abstr.).

The Degradation Radiation of the Central Nervous System. Gurvich, A. G., and Gurvich, A. A. [*Arch. sci. biol. (U.S.S.R.)*, **45**, No. 2, 53-7 (1937); *Chem. Zentr.*, **1**, 3196 (1939).]

A number of animal and plant tissues which show no radiation under normal conditions showed a comparatively intense radiation, which was reversible, when suddenly cooled to 3°-5° or when under the influence of light narcosis. This radiation is designated as degradation radiation, since its cause was traced to a decomposition of definite constellations in the plasma with high energy levels to lower energy levels. Degradation radiation in the frog could be observed only in the cerebral cortex and not in the spinal cord.

M. G. MOORE (Chem. Abstr.).

Resting Currents and Thermal Paralysis of Nerve. Titeca, Jean. [*Compt. rend. soc. biol.*, **133**, 675-9 (1940).]

No correlation was found between the effects of hypertonic and hypotonic solutions of various salts on the excitability of frog sciatic nerve and their effects on the temperature at which thermal paralysis of the nerve occurs.

Narcosis and Thermal Paralysis of Nerve. [*Ibid.*, 680-2.]

For the series of primary alcohols containing 1-8 C atoms no correlation was found between their narcotic power, ability to lower surface tension of water, and ability to lower the temperature at which thermal paralysis of frog nerve occurs. No relation was found between the narcotic action of CH₂Cl₂, CHCl₃, CC₄ and di-, tri-, tetra- and pentachloroethane and their effects on the temperature of thermal paralysis.

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

Epilepsy Complicated by Uncontrollable Diabetes Mellitus. Ross, Alexander T., and Dickerson, Willard W. [*Endocrinology*, **27**, 200-5 (1940).]

Convulsions occurred regardless of the diabetic status. Neither hypoglycaemia nor ketosis had a consistently significant effect on the convulsive manifestations.

FELIX SAUNDERS (Chem. Abstr.).

Spontaneous Hypoglycaemia in Simmond's Disease. Mogensen, Erik. [*Endocrinology*, **27**, 194-9 (1940).]

Intense treatment with gonadotropic hormone did not improve the condition of the patient. Treatment with estradiol benzoate resulted in a certain degree of improvement.

FELIX SAUNDERS (Chem. Abstr.).

The Bromine and Iodine Metabolism in Dementia Praecox. II. Kulkov, A. E., and Kakusina, B. E. [*Bull. biol. med. exptl. U.R.S.S.*, **3**, 653-6 (1937); *Chem. Zentr.*, **1**, 1593 (1939); *cf. Arb. Klin. I. Moskauer Med. Inst.*, **3**, No. 6 (1936).]

In cases of dementia praecox the Br-ion concentration of the blood appears to be lowered. However, variations do not occur in direct relation to the condition of the individual. The average normal Br-ion concentration in the blood in man is 5547 per cent., that in the cerebro-spinal fluid is 2337 per cent.; both undergo variations. The concentration of I appears to be somewhat increased in cases of dementia praecox. An antagonism between Br ions and I ions could not be definitely proved.

M. G. MOORE (Chem. Abstr.).

Chemical Factors of Nerve Stimulation in Human Pathology. Alpern, D. E., and Zomaya, P. D. [*Bull. biol. med. exptl. U.R.S.S.*, **3**, 562-3 (1937); *Chem. Zentr.*, **1**, 1198 (1939).]

After preliminary injection of 1 mgm. of eserine salicylate to inhibit the activity of acetylcholinesterases, the vagus substance acetylcholine could be detected in the blood of patients suffering from *ulcus ventriculi* or duodeni, asthma and colitis spastica. The blood of hypertonic individuals appeared to contain the sympathetic substance. M. G. MOORE (Chem. Abstr.).

Cholinesterase in the Skeletal Muscle after Degeneration of the Motor Nerve. Ryabinovskaya, A. M. [*Compt. rend. acad. sci. U.R.S.S.*, **27**, 97-8 (1940) (in German).]

In 11-12-day-old rabbits the right ischiadic nerve was cut. After three months the gastrocnemius muscle of the normal and the denervated limb were studied for their cholinesterase activity. The determination was carried out in the apparatus of Van Slyke according to the method of Rinkel (*cf. C.A.*, **33**, 665⁶). After the muscle extract was placed in the apparatus 50 mgm. of acetylcholine dissolved in water was added, and every 5 minutes for 20 minutes the quantity of CO₂ formed was determined as a measure of the cholinesterase activity. Results showed that cholinesterase activity of the denervated muscle, even more than two months after cutting of its nerve, is considerably higher than the corresponding normal muscle of the same animal. The content of CO₂ formed from the AcOH coming from the hydrolysis of acetylcholine in the course of 20 minutes was on the average 2.67 and 3.03 per cent. for normal and degenerated muscle respectively.

MAURICE M. RATH (Chem. Abstr.).

The Importance of the Sympathetic Nervous System for the Secretion of the Gastric Glands of Frogs. Timofeev, N. V., Belova, S. N., and Muger, R. E. [*Ibid.*, **24**, 1114-21 (1938).]

Bilateral severing of the 4th, 5th and 6th sympathetic rami communicantes in the frog shortened the latent time of gastric secretion. Stimulation of the sympathetic nerve with an induction current produced a persistent inhibition of the secretion of the gastric juice which could last for 37 hours and even longer. The blood of animals so treated acquired the power to check gastric secretion in the controls for periods of 6-8 hours. Retardation of the gastric secretion was also produced by stimulation of the spinal cord while sympathetic innervation was maintained. The checking of the secretion produced by excitation of the sympathetic fibres was connected with an excitation of the peripheral neurons since the effect disappeared when the peripheral sympathetic neurons were rendered ineffective by coating with nicotine. The opposite effect of stimulation of the gastric secretion, however, did not occur, so that it was not possible to demonstrate the presence of spinal parasympathetic nerve fibres for the secretion of the gastric juice.

M. G. MOORE (Chem. Abstr.).

Pharmacological Analysis of Physiologically Active Substances which are Formed during Excitation of the Brain. Markosyan, A. A. [*Bull. biol. med. exptl. U.R.S.S.*, **5**, 277-80 (1938); *Chem. Zentr.*, **1**, 1390 (1939).]

By the method of crossed perfusion it was shown that during stimulation of the brain of a dog substances were formed which changed the chronaxy (quickness of reaction) of the brain of a second dog in the same manner as acetylcholine.

M. G. MOORE (Chem. Abstr.).

Biochemistry of the Nervous System. I. Protein Metabolism of Central Nervous System of Rabbit. Pokrovskii, A. A. [*Biochem. J. (Ukraine)*, **14**, 397-416 (in Russian) (in English, 416-17) (1940).]

Five phylogenetically different parts of the central nervous system of the rabbit were investigated—the oldest, the spinal cord, medulla oblongata and corpora

quadrigemina, the thalamic region, cerebellum and, the youngest member, the cortex, of which the neocortex was used for analysis. The values for H₂O, total and residual N, calculated on the dry weight, but not on the basis of fresh matter, rise in the phylogenetic order, the youngest members giving the highest values. The proteolytic activity follows the same order, both on wet and dry bases, rising with the decrease in age. The values for the autolytic index may be divided into three groups, each representing a different level of transforming afferent impulses into efferent, with various degrees of complexity. Spinal cord gives the lowest value, and the highest is in the cerebellum and cortex. These values, in the same substrates, vary considerably for different animals of the same age, sex and breed, but all follow the same general order. The proteolytic activity has a tendency to diminish with age.
B. GUTOFF (Chem. Abstr.).

Chemical Nature of Nervous Stimulation in Man. Alpern, D. E. [*Ukraine Inst. Exptl. Med., Kharkov*, 5-232 (1939).]

Reflex stimulation of the vagus centre is followed by liberation of cholinergic substance (almost certainly acetylcholine) into the cerebral fluid; it may be detected in the fluid obtained by suboccipital, but not lumbar, puncture. This substance may also be detected in the blood and blister fluid of persons suffering from spastic disturbances, such as bronchial asthma, gastric and duodenal ulcer, or spontaneous gangrene, and these diseases are directly attributable to local and generalized overproduction of acetylcholine. Other allied conditions are ascribed to cholinesterase and adrenaline, and in these cases the symptoms are of intermittent occurrence (Jacksonian epilepsy, manic-depressive psychosis, essential hyper-tony). In the normal subject increase in acetylcholine production is balanced by increase in cholinesterase activity and in adrenaline production. Blister fluid from vagotonics has a beneficial effect in cases of overactivity of the sympathetic system, and vice versa. The application of these observations to the diagnosis and treatment of disorders of the autonomic nervous system is discussed and illustrated.

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

Occurrence of Action Currents in Nerves Unaccompanied by Heat Transfer. Lehmann, Hermann. [*Enzymologia*, 7, 325-6 (1939).]

The first stage in the breakdown of phosphagen (transfer of PO₄ ions from creatine phosphate to adenylic acid) is accompanied by pH change (shift to the alkaline side) but by no measurable liberation or absorption of heat. Possibly this reaction is the cause of the electrical changes which occur in the course of nerve stimulation.

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

Cathepsin Activity in the Brain and Muscles During C Avitaminosis. Romanyuk, N. M. [*Biochem. J. (Ukraine)*, 14, 341-53 (in Russian, 353-4; in English, 354-5) (1940).]

The increase in the cathepsin activity of the kidney and liver tissues during C avitaminosis was also observed in muscle, but not brain tissues. Control experiments with incomplete avitaminosis showed that this activity could not be attributed to starvation during the final stages. Guinea-pigs were used.

B. GUTOFF (Chem. Abstr.).

Investigation of the Vitamin C Metabolism of Asylum Patients. Broch, Ole Jacob. [*Nord. Med.*, 1, 525-8 (1939); *Chem. Zentr.*, 1, 3020 (1939); cf. *C.A.*, 34, 2891⁶.]

No ascorbic acid was found in the serum of most of the experimental persons. After the administration of vitamin C (10 mgm. ascorbic acid per kgm. body weight given at night and tests made the next morning) a saturation value of 0.3-0.4 mgm. per cent. in the serum was found. This value was not raised by increasing the dose of vitamin C. In general it was necessary to give 2010 mgm. ascorbic acid before the saturation value was reached. A lower serum value in itself does not

afford a measure of the vitamin C deficiency. Further investigation indicated that a diet supplying 20 mgm. of vitamin C daily is not sufficient for the normal individual.

M. G. MOORE (Chem. Abstr.).

Vitamin C Therapy in Experimental Poliomyelitis. Jungeblut, C. W. [*J. Exptl. Med.*, **70**, 315-32 (1939).]

Ascorbic acid renders poliomyelitis virus nonparalytic if mixed in vitro prior to intracerebral injection in monkeys. The effect is not demonstrable in animals heavily infected by nasal instillation, but better results occur with the less severe droplet infection.

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

2. Pharmacology and Treatment.

The Action of Quinine Methochloride on Neuromuscular Transmission. Harvey, A. M. [*Bull. Johns Hopkins Hosp.*, **66**, 52-9 (1940).]

This compound had a strong curare-like action. It blocked transmission at the neuromuscular junction and at the synapses in the superior cervical ganglion without interfering with the normal discharges from the respiratory centre in the medulla. Its action was like that of curarine in causing a depression of the response of the ganglion cell to nerve impulses and to acetylcholine, without interfering with the normal liberation of acetylcholine from the preganglionic nerve endings. This compound was active when given orally.

E. W. SCOTT (Chem. Abstr.).

Distribution of Potassium in the Central Nervous System. II. Influence of Pyretics and Antipyretics on Distribution. Hasimoto, Satokiti. [*Japan. J. Med. Sci.*, *IV, Pharmacol.*, **12**, 101-11 (1939).]

Tests were made on rabbits, with methods developed by Hasimoto. Tetrahydro- β -naphthylamine was injected in a dose 12 mgm./kgm., typhoid vaccine 1 c.c., histamine 0.25 mgm./kg. and peptone 1 gm./kgm. Tetrahydronaphthylamine and typhoid vaccine caused an increase in Ca and a decrease in K ion in the brain stem. There was a slight increase in Ca and a slight increase in K in the cerebrum. Peptone and histamine caused a similar chemical change. Ca ion and K ion are liberated either by stimulation or by depression of the cerebrum.

III. The Effect of General Narcotics. [*Ibid.*, 113-20.]

Chloretone and Na luminal decreased Ca and increased K ions in various parts of the brain and central nervous system. In the midbrain, however, Ca ions increased and K ions decreased. Sleep does not develop from direct paralyzing action of the liberated Ca ions in the midbrain.

IV. Effect of Basal Narcotics. [*Ibid.*, 121-7.]

Paraldehyde and chloral hydrate injected into rabbits caused various types of alterations in the Ca- and K-ion contents of the central nervous system. In general the Ca-ion changes showed no relationship to fluctuations in the K-ion content.

JAMES C. MUNCH (Chem. Abstr.).

The Excitability of the Skeletal Muscles under the Influence of the Action of Potassium and Calcium on the Central Nervous System. Serebrennikov, S. S. [*Trudy Nauch.-Issledovatel. Inst. Fiziol., NKP* **2**, 426-34 (1936); *Chem. Zentr.*, **1**, 1795 (1939).]

The excitability of the skeletal muscles of frogs fluctuates widely during the spring of the year. After the introduction of CaCl₂ into the cerebral ventricle the chronaxie of the skeletal muscles is reduced; KCl has the opposite effect.

M. G. MOORE (Chem. Abstr.).

A Comparison of Analeptics. Sinha, H. K. [*Indian J. Pharm.*, **2**, 114-16 (1940).]

From experiments on dogs it is concluded that carditone (Na camphosulfonate) is an analeptic for pure cases of circulatory failure, that metrazole is an analeptic for cases of respiratory failure not involving a very low blood pressure, and that coramine is the least valuable of the three.

COLIN W. WHITTAKER (Chem. Abstr.)

The Depth of Narcosis Produced by Hypnotics, Sedatives, Antipyretics and such Combinations. Kobayasi, Tatu. [*Chiba Igakkai Zasshi*, **16**, 244-73 (1938); *Japan. J. Med. Sci., IV., Pharmacol.*, **12**, No. 1, Abstracts, 15 (1939).]

Urethan (I) and paraldehyde (II) show very slight or no change in blood pressure, while chloral hydrate (III), veronal (IV) and luminal (V) cause definite decrease. The action of IV and I combinations in producing sleep is sedative. IV and II show synergistic effects in which the blood pressure lowering is less than with IV alone. The combination of III with I or II decreases the depressor response of III and synergizes the sleep-producing action of I; it is additive for II. Combination of IV or V with antipyrine or pyramidone increases the blood-pressure fall and the sleep-producing action. The addition of caffeine-sodium benzoate to this combination checks the sleep-producing action as well as the depressor response. IV or V in combination with morphine produces a definite decrease in blood pressure and increases its depth of sleep.

JAMES C. MUNCH (Chem. Abstr.)

The Effect of Tobacco Smoke on the Vegetative Nervous System. Rozin, Ya. A., and Skulov, D. K. [*Trudy Nauch.-Issledovatel. Inst. Fiziol., NKP* **2**, 357-74; *Chem. Zentr.*, **1**, 2027 (1939).]

The experiments were carried out on dogs, the tobacco smoke being administered either by causing the animals to breathe it or by intravenous injection of solutions of the smoke. The effect of the smoke can be divided into four phases:

During the initial stage the blood pressure dropped sharply and the pulse became slower. This phase corresponded to a sharp stimulation of the parasympathetic nervous system. Soon after this the blood pressure increased again while the pulse remained slow. In addition to the parasympathetic nervous system the sympathetic nervous system was also stimulated during this stage. Both of these stages lasted only a few seconds. During the third stage an acceleration of the pulse occurred in addition to the increase in blood pressure. This stage lasted 15-20 minutes and was combined with a general inhibition of the vegetative nervous system. Pressor and depressor reactions were absent. In the fourth and last phase the blood pressure and pulse frequency slowly returned to normal and the pressor and depressor reactions were again established. The most important principle in the tobacco smoke was nicotine.

M. G. MOORE (Chem. Abstr.)

The Use of Magnesium Sulphate in the Psychiatric Clinic. Shpak, V. M. [*Sovet. Vrachebnyi Zhur.*, **41**, 360-5 (1937); *Chem. Zentr.*, **1**, 2239 (1939).]

Treatment of dementia praecox by injection of hypertonic MgSO₄ solutions (5 gm. of 20 per cent. solution) is recommended, especially when used in combination with scopolamine.

M. G. MOORE (Chem. Abstr.)

The Pharmacological Action of Some So-called Extra-pyramidal Poisons. I. The Effect of Substances Found in Rabbit Urine. Aoyama, Tutomu. [*Mitt. med. Ges. Okayama*, **50**, 2085-6 (1938); *Chem. Zentr.*, **1**, 2026 (1939).]

Small and average doses of bulbo-capnine had a stimulating effect on the small intestine of rabbits *in situ*; larger doses produced either an inhibiting effect or an initial inhibiting effect followed by a stimulating effect. The stimulating effect was due to the action on the parasympathetic fibres and the musculature; the

inhibiting effect was due to the action on the sympathetic centres. Small and average doses of harmine and harmaline likewise stimulated the small intestine, while larger doses had an inhibiting effect. The stimulating effect of these preparations was due to the action on the musculature; the inhibiting effect to the action on the sympathetic centres. The effect of harmine and harmaline on the small intestine was not weakened by bulbocapnine. M. G. MOORE (Chem. Abstr.).

The Action of Adrenaline and of Pituitrin on the Chronaxy of the Motor Centres of the Cerebral Cortex. Kovyrev, I. G., and Markosyan, A. A. [Bull. biol. med. exptl. U.R.S.S., 4, 32-4 (1937); Chem. Zentr., 1, 4804 (1939).]

Intravenous injection of adrenaline or pituitrin produced a definite reduction in the excitability of the cerebral cortex. M. G. MOORE (Chem. Abstr.).

The Sedative and Anticonvulsant Action of Azo Dyes Containing the Sulphamide Group. Ronchetti, Vittorio. [Gazz. ospedali clin., 61, 9-11 (1940).]

Two cases of chorea are reported which resisted treatment with sedatives, but were cured by treatment with prontosil. Tentative theory: Sulphanilamide compounds cause acidosis. The effect must be similar to that of a ketogenic diet in epilepsy. A. E. MEYER (Chem. Abstr.).

Local Effects of Sulphonamides on the Rabbit Brain. Russell, Dorothy S., and Falconer, Murray A. [Lancet, ii, 100-1 (1940).]

No appreciable damage to the tissues is produced by local application of a 3.3 per cent. solution of soluseptasine, solid sulphanilamide and solid sulphapyridine. The use of solutions is preferable, but if the use of powder is necessary, minimal quantities should be used to avoid foreign-body reactions.

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

Treatment of Migraine. Bandler, Paul. [Schweiz. med. Wochschr., 70, 190-2 (1940).]

Migraine was diagnosed in a series of patients as resulting from a vitamin B₁ deficiency. Parallel symptoms (such as peripheral and central nervous disturbances, disturbance in carbohydrate metabolism, in extra-renal water metabolism and gastro-intestinal function) observed in typical vitamin B₁ avitaminosis and beri-beri were found. Treatment with vitamin B₁ in large doses was successful in clearing up the condition. MAURICE M. RATH (Chem. Abstr.).

A New Parasympatholytic Substance—Platyphyllin. Babskii, E. B. [Compt. rend. acad. sci. U.R.S.S., 27, 83-5 (1940) (in English).]

Perfusion of the isolated heart of the frog with 1 : 50,000-1 : 200,000 solution platyphyllin totally removed the effect of excitation of the vagus nerve. Before perfusion faradic stimulation of the nerve caused vagal arrest of the heart. Injection of 0.01-0.04 gm. of platyphyllin in the dog resulted in the disappearance of the effects commonly observed after excitation of parasympathetic nerves (chorda tympani and vagus). Experiments show that this drug inhibits the transmission of excitation in the terminations of parasympathetic nerves, and that the dose required for this purpose is 20-25 times greater than the corresponding dose of atropine. Injection of platyphyllin resulted in drop of blood pressure lasting 12-15 min., in most cases this influence disappearing after the spinal cord was cut below the medulla oblongata. Results of various experiments show that platyphyllin does not hinder the formation of the parasympathetic mediator in the nerve endings, but prevents its action upon the heart. The drug totally removes the muscarine effect of acetylcholine. Massive doses of acetylcholine (0.2-0.25 mgm./kgm. body weight in dogs) do not effect either a drop of blood pressure or slowing of the heart after injection of platyphyllin. Platyphyllin does not prevent the nicotine effects of acetylcholine. MAURICE M. RATH (Chem. Abstr.).

Use of Sodium Pentobarbital for Repeated Anaesthesia in the Rabbit. Kinsley, V. Everett. [*J. Am. Pharm. Assoc.*, **29**, 292-8 (1940).]

As a result of several daily intraperitoneal injections of 44 mgm. per kgm. of nembutal, dissolved in 0.7 c.c. of 0.9 per cent. NaCl containing 10 per cent. EtOH, the sleeping time of rabbits decreases abruptly from about 3.5 to 1.25 hours; when the EtOH is omitted from the solution, the first one or two sleeping times only are shortened. The use of nembutal given intraperitoneally for long-repeated anaesthesia in rabbits is practical if some degree of care is used in adjusting the dosage to the requirements of the individual animal. There is no evidence of habituation of rabbits to nembutal even when the drug is given repeatedly over a period of one year. To obtain anaesthetics in rabbits of 1-2 hours' duration, with minimal risk, it is necessary to give repeated small doses of the drug. An average initial dose of 40-44 mgm. per kgm. given intraperitoneally is satisfactory for this type of anaesthesia in rabbits. The sex of the rabbits does not alter the sleeping time for either single or repeated injections of nembutal. The liver, heart and kidney appear to suffer mild, but not irreparable, injury as a result of long-repeated anaesthesia.

A. PAPINEAU-COUTURE (Chem. Abstr.).

Electrocardiographic Studies in Metrazole (Shock). Levine, H., Piltz, G. F., and Reznikoff, L. [*Am. J. Med. Sci.*, **199**, 201-4 (1940).]

Electrocardiogram tracings taken before and after metrazole shock in healthy adults revealed no permanent changes. Heart rate was frequently increased after therapy in 50 schizophrenic patients. This is attributed to emotional factors. Shortening of S-T (and less commonly of P-R) intervals is also commonly observed and is associated with the increased rate. Transient inversion of T waves in leads 2 and 3 following therapy occurs occasionally. The changes are possibly correlated with anoxaemia.

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

Studies in Convulsant Therapy. IV. The Effects of Metrazole (Pentamethylene-tetrazole) on the Eye. Dean, S. R. [*Arch. Ophthalmol. (Chicago)*, **24**, 316-25 (1940); cf. *C.A.*, **33**, 4322.]

Metrazole stimulates all the components of the nervous system, but sympathetic manifestations overshadow parasympathetic. Metrazole applied locally to the eye acts adrenergically, producing mydriasis by direct stimulation of the sympathetic nervous system.

EDWARD EAGLE (Chem. Abstr.).

Coma Resistance and Adrenalinaemia in Insulin Treatment of Schizophrenia. Jones, M. S. [*Proc. Roy. Soc. Med.*, **32**, 958-63 (1939).]

Insulin resistance was present in a schizophrenic clinically suggestive of anterior pituitary overactivity but with no evidence of a glycotropic factor in the blood. A second case showed "coma resistance," i.e. despite prolonged hypoglycaemia coma was never achieved. No clear evidence of the appearance of adrenaline in the blood during hypoglycaemia was obtained, even when the clinical picture suggested its presence.

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

Action of Albucid in Epidemic Meningitis. Frohlich, R. [*Munch. med. Wochschr.*, **86**, 1555-6 (1939).]

The mortality rate in 23 cases of epidemic meningitis treated with serum was 52 per cent.; in 23 cases treated with serum and oral or intravenous administration of albucid, 30 per cent. (6 out of 7 deaths occurred in infants under two years of age). The albucid level in the cerebro-spinal fluid five hours after intravenous injection of 3 gm. and oral administration of 2 gm. was usually 3-4 mgm. per cent. Three patients with pneumococcal and haemolytic staphylococcal meningitis recovered under treatment with albucid.

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

Actions of Procaine on Neuromuscular Transmission. Harvey, A. M. [*Bull. Johns Hopkins Hosp.*, **65**, 223-38 (1939).]

Procaine depresses the response of the cat tibialis anterior muscle to nerve stimulation without affecting that due to direct stimulation. Like curarine, it reduces the response of tetanic stimulation of the nerve and the contraction produced by acetylcholine injection and it abolishes the eserine potentiation. It abolishes the responses of the superior cervical ganglion of the cat to stimulation of the preganglionic nerve fibres and to acetylcholine injection. The action of procaine in myasthenia gravis is discussed. B. C. P. A. (Chem. Abstr.).

Comparative Effects of Benzedrine Sulphate, Paredrine and Propadrine on Blood Pressure. Loman, J., Rinkel, M., and Myerson, A. [*Am. Heart J.*, **18**, 88-93 (1939).]

Injected intravenously in man, benzedrine, paredrine (p-hydroxyphenylisopropylamine) and propadrine (phenylpropanolamine) raise blood pressure rapidly with concomitant bradycardia but no disturbance of rhythm. 10-15 mgm. of paredrine correspond in effect with 20-30 mgm. of benzedrine and 50 mgm. of propadrine. B. C. P. A. (Chem. Abstr.).