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Emotions and Biochemical Findings in Alcoholism.

In a combined psychiatric-biochemical study of patients suffering from chronic alcoholism, emotions were determined by one investigator (O. D.) and biochemical studies were carried out simultaneously by the other (M. F. F.). In anxiety the biochemical substance is apparently nor-epinephrine, while in tension cholinergic substances are present. The substance found in the presence of resentment cannot be defined, but it is definitely not acetylcholine. It was found that the alcoholic patients had varying degrees of resentment when an urge to drink was present. Alcohol relieved the resentment and the corresponding substance in the blood disappeared. In a few patients, tension and correlated biochemical substances were also present and were affected by alcohol. Anxiety was somewhat decreased but not completely abolished.

There are no indications that the resentment in alcoholic patients is different from that presented by other subjects. (Authors' abstr.)

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Inheritance of Manic-Depressive Psychosis.

1. The diagnosis of manic-depressive psychosis is shown statistically to be less common than formerly, and the definition of the psychosis can be assumed to be less inclusive than before.
2. Figures on discharges and readmissions confirm the cyclical nature of the psychosis.
3. Evidence that women are more severely affected than men is to be found in the earlier age of onset and of first admission and in the greater proportion of affected women.
4. Data on twins show conclusively that heredity is involved in the etiology of the psychosis.
5. The high incidence of the manic-depressive psychosis among the relatives of persons with this psychosis and the difference in frequency of the psychosis in different populations are further evidence for the role of heredity.
6. The frequency of the psychosis is about the same among the parents, sibs, fraternal twins, and children of patients with manic-depressive psychosis. The best genetic explanation for the data is that of a single autosomal dominant gene with incomplete penetrance.
(Author's abstr.)

The Supplementary Motor Area of the Cerebral Cortex : A Clinical and Experimental Study.

1. In a relatively small zone of each hemisphere, anterior to the motor area for the lower extremity, there exists an area which yields characteristic responses to stimulation. This area, which we have called the supplementary motor area, is situated almost altogether within the median longitudinal fissure and anterior to the primary motor foot area.
2. The threshold for stimulation of a supplementary motor area in both human subjects and monkeys is a little higher than that for the precentral and post-central regions, and yet the effect is clearly not due to spread of excitation across the cortex to those regions.
3. The results of experimental studies in monkeys are as follows :
 - (a) Stimulation of this region has revealed a motor representation of the contralateral extremities. There is a definite topographic organization which it has not been possible to reproduce in man, perhaps owing to the conditions imposed upon clinical exploration.
 - (b) Inhibition of spontaneous grasping in the opposite hand has been produced by stimulation of the supplementary motor area and removal of the area has resulted in forced (or "reflex") grasping. Reflex grasping is a specific sign of removal of this particular cortical area in the monkey.
4. In man the results of cortical stimulation are as follows :
 - (a) Vocalization, of a more variable and complex character than that elicited from the lower Rolandic cortex, results from stimulation here.
 - (b) Inhibition of voluntary activity (the test situation was oftenest speech) has been the most frequent effect of stimulation of this area. The patients' descriptions indicate that, although conscious, they were unable to carry out or to continue the prescribed activity.
 - (c) Synergies resulting in the assumption of characteristic postures and in the performance of complex manoeuvres have been produced by stimulation of the supplementary motor area.
 - (d) Pupillary dilation and, less often, cardio-acceleration have been observed. On one occasion arrest of breathing was recorded.
 - (e) A few sensory experiences have been produced, usually a general bodily sensation or one related to viscera.
 - (f) Excision of the supplementary motor area has produced no permanent deficit in maintenance of posture or capacity for movement.
 - (g) Local seizures may be produced by stimulation in this region. These attacks may be considerably more complicated in pattern than simple turning to the opposite side.
 - (h) In general, the supplementary motor area differs from the pre-Rolandic motor area in that stimulation has an effect upon the limbs of the ipsilateral, as well as the contralateral, side of the body.
 - (i) Although each supplementary motor area may exert some motor influence upon all four extremities and the trunk in the maintenance of postures and the carrying out of manoeuvres, the most frequent motor effect of each is to produce contraversion and movement of the contralateral arm.
(Authors' abstr.)

Antidepressive Action of 5-(1,3-Dimethylbutyl)-5-Ethylbarbituric Acid.

The problem was to determine whether a barbiturate whose action was primarily that of stimulation of the central nervous system had an antidepressive or a euphorogenic effect in patients with pathologic depression. The stimulating barbiturate chosen for study was the sodium salt of 5-(1,3-dimethylbutyl)-5-ethylbarbituric acid. This drug was given in doses of 50 to 150 mgm. by mouth to 10 patients who were severely depressed.

1. Four of the 10 patients responded with temporary disappearance of the symptoms and signs of depression or became euphoric. Two other patients responded with considerable improvement of their mood. The remaining four patients failed to respond.

2. The antidepressive response to the drug began between one and one and a half hours after its administration. The duration of the response persisted throughout the day and into the evening or the following morning.

3. The drug produced undesirable side actions in six patients. The commonest manifestation was intense itching and flushing of the skin, with considerable perspiration. In addition, there occurred on occasion a fine punctate rash, cyanosis, nausea and vomiting, vertigo and ataxia, tremors and paresthesias, and a probable abortive seizure.

The undesirable side actions preclude the further study of this drug, but its antidepressive and euphorogenic action suggests that other, closely related stimulating barbiturates may be worthy of study. (Author's abstr.)

Central Nervous Action of Hydantoins, Oxazolinediones and Thiazolidones.

1. The 5-alkyl- or aryl- and 5-phenyl-hydantoins are active agents against electroshock convulsions. An additional phenyl or thienyl radical at the 5-position is more effective than a methyl or an ethyl group in enhancing anti-electroshock activity. The introduction of a methyl group at the 3-position results either in no change in anticonvulsant activity with a reduction in hypnotic action or in a decrease of both. The 1-alkyl-5-phenyl compounds are potent hypnotics. A maximal hypnotic and anaesthetic activity is attained with a propyl or an allyl chain at the 1-position.

2. The 2,4-oxazolinediones are active anti-metrazol^R, but weak anti-electroshock agents. In contrast with the hydantoins, the presence of a methyl group at the 3-position increases greatly the anti-metrazol^R activity of some of the 5,5-substituted 2,4-oxazolinediones. In these compounds the phenyl group at the 5-position lends only a slight increase in effectiveness in prevention of electroshock convulsions.

3. The 2-phenyl-3-ethyl-4-thiazolidione and its sulfone are as effective as the active, 2,4-oxazolinediones against metrazol^R and are more effective against electroshock convulsions. (Authors' abstr.)

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Analysis of Prognostic Factors in Insulin Therapy.

Seventeen factors are subjected to statistical analysis in an attempt to discover prognostic criteria in insulin therapy.

Thirteen factors, some with certain limits, appear unimportant. These are race, marital status, previous course of electric-shock therapy, religion, number of treatment days, number of coma days, total hours of coma, average daily dose of insulin, highest dose of insulin given, number of insulin convulsions, somatotype, diagnosis, and age of onset of psychosis.

The value of combined therapy could not be determined because of choice exerted in selection of cases.

The response to insulin therapy decreases with age at the time of therapy because of increasing length of the time sick.

Patients who gain over 30 lb. (13.5 kgm.) in weight will do approximately twice as well as those who gain under 30 lb. A hypothesis is advanced to explain this.

Patients sick under one year will do approximately twice as well as those sick over one year. It is suggested that insulin therapy will be given as early as possible in the first year of illness. (Author's abstr.)

Studies on the Blood-brain Barrier with Radioactive Phosphorus.

Radioactive phosphorus was given to one group of rabbits intravenously in the amount of 20 μ c. per kilogram of body-weight, and intracisternally to another group in the amount of 1 μ c. per kilogram of body-weight. The animals were killed from 10 minutes to 24 hours after the injections, and the P³² content of various parts of the central nervous system was determined.

A maximum concentration of the isotope was reached in the brain 12 to 24 hours after intravenous injection and 30 to 60 minutes after intracisternal administration. After its

injection into the cistern, P³² penetrated the cortex and the lining of the ventricles with equal rapidity and accumulated in the brain substance to its entire depth.

The P³² deposit in the brain, as compared at the times of maximum concentration, was 20 to 50 times as high after intracisternal as after intravenous administration.

More P³² concentrated in the pituitary gland after intravenous than after intracisternal injection.

The role played by the blood-brain and blood cerebrospinal fluid barriers in the distribution of phosphorus is discussed. (Author's abstr.)

Cytology of Rabbit Neurons After "Malononitrile" Administration.

Experiments were performed on rabbits to determine the effect of "malononitrile" on nerve cells. Histological comparison of control and experimental animals failed to reveal any changes in Nissl pattern of neurons of the spinal ganglia, spinal cord, and various parts of the brain after administration of "malononitrile" when adequate precaution against post-mortem and fixation artefacts was observed. No change could be detected by ultra-violet photomicrography at a wave length of 2,537 Å. (Author's abstr.)

Unilateral and Bilateral Lobotomy: A Controlled Evaluation.

In order that the importance of the psychologic influence of operative intervention in the therapeutic efficacy of frontal lobotomy might be evaluated, 33 chronically psychotic patients were studied. These patients received either a unilateral or a bilateral lobotomy by chance selection under conditions in which the extent of the operation was unknown to the personnel responsible for the patients' postoperative care.

Of the 16 patients with bilateral operations, beneficial results were obtained in 11 (68.8 per cent.) six months after operation.

Of the 17 patients with unilateral operations, beneficial results were obtained in only three (17.6 per cent.) six months after operation.

Fourteen of the patients with unilateral operation were subjected to a second-stage contralateral operation. Six months later beneficial results were observed in 11 of them (78.6 per cent.).

It is concluded that (a) the psychic trauma of operative intervention is not an important factor in determining the therapeutic benefits derived from a frontal lobotomy, and (b) except in rare instances, bilateral operation is necessary for beneficial results in the patient with chronic schizophrenia. (Authors' abstr.)

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Thalamic Activity in Stupor.

(1) Thalamic electrograms were recorded in 2 patients who had clinical signs of a mesencephalic lesion. Records were made when they were akinetic, and mute, and on recovery.

(2) Spindles of electrical rhythms were recorded from the postero-lateral region of the thalamus during stupor only.

(3) These episodic discharges, which have not been recorded from the human thalamus in other conditions including coma, were associated with episodic waves in the cerebral cortex.

(4) Spindles were more frequent and their rhythmic character more evident under pentothal anaesthesia, but this abolished the associated cerebral cortical disturbances.

(5) Similar changes have been found by other workers in the thalamus and cortex of cats in which the reticular substance of the mesencephalon has been divided.

(6) The present observations have been related to the results of animal experiment and to the present knowledge of thalamo-cortical mechanisms.

(7) On the basis of this work it is suggested that in akinesia with mutism (stupor), the inactivity results from disturbances in the ascending reticular system, which is concerned in the integration and activation of afferent impulses. (Authors' abstr.)

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Clinical Trial with Cortisone in the Treatment of Chronic Schizophrenia.

Six long-term patients with schizophrenic illnesses who had been previously treated with electroshock, insulin and lobotomy manifested improvement and in some cases a complete remission after treatment with cortisone. This study indicates that cortisone and electroshock therapy are synergistic in action, and both result in an adrenal response which seemingly is proportional to the improvement in the patient's mental status. Further basic studies in the relationship between the adrenals and the psychotic illnesses seem warranted as a result of this investigation. (Authors' abstr.)

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Electrocorticography in Psychomotor Epilepsy.

1. Current concepts of the origin of psychomotor epilepsy are discussed.
2. Indications and contra-indications for electrocorticography and for surgical intervention in the management of patients with psychomotor seizures are suggested.
3. A simple and efficient method of electrocorticography, which can be used in un-screened operating rooms, is described.
4. Focal spiking from the anterior 4 cm. of the temporal cortex was observed during sleep in 19 of 23 patients. Anterior temporal lobectomy eliminated seizures of psychomotor type in 12 of these cases.
5. The clinical evidence points to a bilateral anterior temporal-subcortical circuit in man, comparable with that already confirmed in lower animals.
6. It is suggested that seizures of psychomotor type may be fired from an area of neuronal injury either within the anterior temporal cortex or within its subcortical connections. In the latter, the contra-indications for anterior temporal lobectomy are illustrated and analyzed in the authors' unsuccessful cases. (Authors' abstr.)

The Electroencephalogram in ACTH and Cortisone-treated Patients.

1. In 40 courses of therapy (of 37 patients treated with A.C.T.H. or cortisone) E.E.Gs. were evaluated before and during treatment.
2. The E.E.G. was unchanged in 19 or 47.5 per cent. and showed questionable improvement in 9 or 22.5 per cent. for a total of 70 per cent.
3. The E.E.G. showed marked or definite improvement during treatment in 7 of 12 patients in this series who had abnormal control electroencephalograms. Thus, 32.4 per cent. of the patients had abnormal pre-treatment records and 58.7 per cent. of these showed definite improvement.
4. E.E.G. abnormalities progressed or developed in only four of 37 patients, and in one the abnormal changes were attributed to the progression of the disease process, and not the effect of the hormone.
5. There was no specific E.E.G. correlation with electrolyte changes and mental changes during the treatment.
6. The occurrence of abnormal E.E.Gs. in some patients with rheumatoid arthritis, lupus erythematosus and periarteritis nodosa is noted. (Authors' abstr.)

The Slow Voltage Variation of Cortical Spreading Depression of Activity.

classifications suggests that children as a whole seek and need the tension-releasing experience of radio programmes containing light entertainment and humour, as well as the tension-creating experiences offered by crime drama programmes.

7. Children are less interested in exciting programmes with an openly expressed "crime does not pay" approach than they are in the straight murder-mystery drama. This interest in real mystery programmes on the part of children seems comparable to the great appeal of mystery stories among adults.

8. The high percentage of listeners in the quiz and drama classifications indicates that children do not reject informational and educational matter in programme offerings. When the lack of popularity of educational and news programmes is considered in the light of the popularity of quiz and drama programmes, the conclusion that method of presentation influences popularity seems justifiable. These findings seem to substantiate the conclusion of Katz and Eisenberg that people do not object to educational material if it is presented as entertainment.

9. The very low percentage of listeners found in the classical music classification suggests that pupils in Grades 5-8 inclusive are too immature to have developed an interest in this type of programme. A change in presentation might bring about different results among children.

10. Analysis of the data revealed that in some programme classifications listeners were superior to non-listeners in the observed behaviour and in test performance, while in other classifications they were inclined to be inferior. No differences were revealed in a third group of programme classifications.

11. The most significant and consistent differences between listeners and non-listeners, favouring listeners, were found in the following programme categories: Educational, drama, quiz, comedy-variety, and to a more limited extent, news.

12. Listeners to anti-crime, daily adventure, modern music and soap opera programmes obtained lower scores than non-listeners in several of the areas measured, but the differences between listeners and non-listeners were not as significant as those found in the programme classifications showing desirable relationships. The most that can be said about these programmes is that while they do not seem to contribute anything positive to the listening groups, neither are they harmful to children in general.

13. No differences of any import were found in the sports and crime drama classifications.

14. The test variables revealing the greatest number of reliable differences between listeners and non-listeners were: IQ (as measured by a verbal test), general scholastic achievement, reading, vocabulary, literature, history-civics, science and geography. The number and location of these differences varied with the different programme classifications.

15. Fewer significant differences were found in the following test variables: law attitude, happiness, personal-social adjustment, nervous habits, fears, daydreaming, frustration reactions, and imagination.

16. No important differences between listeners and non-listeners to crime drama, anti-crime and daily adventure programmes were found in measures of nervous habits, fears and daydreaming. This finding suggests that the contention of those who claim that these programmes develop tics, fears and daydreaming in most children who listen to such broadcasts has no basis in fact.

17. The age and sex of the children considered determined to some extent the existence or non-existence of differences in behaviour and test performance between listeners and non-listeners in the specific programme classifications. The implication is that radio programmes have different meanings to children depending upon their age and sex. These findings suggest the need for concentrated studies at specific age levels and for longitudinal studies which might reveal the changing influence and meaning of specific types of radio

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The Effects of Electroshock Therapy on Mental Functions as Revealed by Psychological Tests.

A group of 35 hospitalized cases of depression were subjected to an extensive battery of psychological tests both before and after the administration of a series of electroshock treatments. The significant findings may be summarized as follows:

1. Improvement in visual perception, verbal concept formation, and judgment.
2. Improved mental organization, powers of integration, with a diminished preoccupation with details.
3. Improved intellectual control, lessened constriction, and greater efficiency in mental function, i.e., with relation to capacity.
4. Patients seem better able to receive and react to external stimulation, and more likely to be able to handle their external environments with their *intellectual* resources.
5. The treatment effected rather little change in the basic and composite structure of the personality of these patients. The relationship of this finding to the probable incompleteness of the supportive psychotherapy is discussed.
6. The marked body-image disturbances in evidence before shock therapy cleared up as a result of the treatment, with noteworthy recovery of reactivity to heterosexual impulses.
7. Increased strength of grip in both hands.
8. Very little memory impairment noted at all; if anything, many of the patients showed improved memory scores.
9. Vastly improved visuo-motor co-ordination, both under normal conditions as well as under an experimental condition of visuo-motor conflict.
10. Heightened activity of the motor discharge channels, especially by the criterion of speed. Associated with this was the fact that once they got started they found it more difficult to control their motor impulses after shock than they did before shock therapy.
11. Improved capacity to mobilize the emotional resources towards the end of adjustment rather than suffer complete blockage and disorientation under emergency conditions, as was apparent before the therapy.
12. The necessity for adequate follow-up studies, both for clinical and research value, was discussed in the light of the possible effectiveness of the Thematic Apperception Test for prognostic purposes at the conclusion of a course of electroshock treatment.

In conclusion, electroshock therapy, when applied to cases of psychotic depression.

serves to restore intellectual efficiency and orientation as well as render the patient more susceptible to external stimuli, both favourable (therapeutic), and unfavourable (traumatic factors in the home or job situations). This fact, together with their improved sensitivity, affective release and ability to use their emotional energies more adaptively once again, all add up to the clear need for follow-up psychiatric case-work. The Thematic Apperception Test, administered after the patient's recovery from the psychotic episode, lends itself as the most effective psychological device to expose the predominant unconscious conflicts that were probably at work in the pre-psychotic personality. Since the basic personality structure is not materially altered, it is further suggested that the released intellectual and emotional energies must be channelized through satisfying work or avocation and psycho-social adjustment if these individuals are to continue to remain adjustable to the demands of life in the community. (Authors' abstr.)

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Adrenergic and Cholinergic Properties of Blood: An Investigation of the Blood of Psychiatric Patients.

Neither adrenergic nor cholinergic substances are present in the peripheral venous blood of psychiatric patients in sufficient amounts to be demonstrable with an isolated strip of rabbit intestine. This investigation casts doubt on previously published findings that the peripheral venous blood of individuals in certain emotional states contains characteristic and predictable adrenergic and/or cholinergic properties. (Author's abstr.)

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*An Investigation of the Psychiatric Aspects of Disseminated Sclerosis. <i>Pratt, R. T. C.</i>	326

The Localization of Some Acid Phosphatases in Brain Tissue.

The histological distribution of acid phosphatase activity has been studied in rapidly frozen and vacuum-dehydrated brain tissue. The main site of enzymatic phosphate liberation from glycerophosphate was in the cytoplasm of neurons. Glial and neuronal nuclei were the main site of adenosine triphosphate cleavage, and adenosine monophosphate was split mainly in nerve fibres. (Authors' abstr.)

Efferent Connexions of the Human Prefrontal Region, with Reference to Fronto-Hypothalamic Pathways.

Efferent connexions of the frontal pole have been studied by the Glee's silver impregnation method in a case of topectomy of area 10/FE. The findings have been contrasted with a case of rostral leucotomy, aimed at undercutting areas 9/FDm and 10/FE.

Efferent fibre systems arising from the extreme frontal pole are very few. They are confined to a distinct projection upon the dorso-medial thalamic nucleus, some short association fibres to adjacent prefrontal cortex, a few callosal fibres, and a weak contribution to the superior longitudinal fasciculus. There is no connexion with the hypothalamus or any other subcortical centres.

A direct cortico-hypothalamic pathway has been demonstrated originating anterior to the agranular frontal cortex and terminating in the ventro-medial and lateral hypothalamic nuclei. Whether this tract arises from the medial orbital or dorsal frontal cortex cannot be determined from the present material. (Authors' abstr.)

Cessation of Dreaming After Brain Injury.

Three cases are briefly reported in which cessation of dreaming was spontaneously described as an after-effect of occipito-parietal brain injury. The locus of the lesion was right-sided in two cases (one of which was a left-handed man) and bilateral, though predominantly left-sided, in one. This loss appeared to be permanent in two cases and temporary in one. Depression of dreaming was associated with impaired visual imagination and memory in the waking state and with residual topographical loss. All three patients were of good pre-traumatic intelligence, and reasonable confidence could be placed in their testimony.

Kindred observations from the literature of visual agnosia are mentioned. It is tentatively suggested that dreaming is likely to be affected only in those agnostic states in which there is appreciable impairment of visual imagery.

Reduction of dreaming as an early sequel of prefrontal leucotomy and the dreamlike states which may be induced in certain cases of epilepsy by temporal lobe stimulation are briefly discussed.

It is tentatively suggested that depression of dreaming and visual imagery in consequence of brain injury may be regarded as a dissolution in some respects analogous to aphasia. (Authors' abstr.)

An Investigation of the Psychiatric Aspects of Disseminated Sclerosis.

The findings in a selection of previous reports on various psychiatric aspects of disseminated sclerosis are reviewed. The causes of the discrepancies between these findings are considered.

An investigation was made of 100 patients with disseminated sclerosis and of 100 control patients attending a department for nervous diseases, with regard to premorbid personality, emotional antecedents of the illness, and psychiatric, emotional and intellectual changes following the illness.

No specific premorbid personality type was defined in patients suffering from disseminated sclerosis.

Emotional stress antedating the onset or relapse of disseminated sclerosis was considered to be occasionally of significance.

A significant number of patients with disseminated sclerosis stated that an emotional stress, often of a specific nature, led invariably within the lapse of a minute to an exacerbation of symptoms due to a pre-existing lesion.

Anxiety, hysteria and psychosis were found not to be features of disseminated sclerosis. Emotional lability and intellectual impairment were found in a significant proportion of patients with disseminated sclerosis, especially in those with marked neurological disability. (Authors' abstr.)

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Psychological Observations on Psychosurgery Patients.

Most of the changes which people feared would result if we did surgical operations on the frontal lobes did not happen. Second, the changes which did occur are rather general in nature and may be spoken of as decreases in vigilance, anguish and zeal. Third, we certainly need information as to what happens to these psychosurgery patients during the years after they have been restored to the community. (Author's abstr.)

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1. Biochemistry, Physiology, etc.

Hemicrania. Morris, Gordon. (Windsor, Ontario.) [*Can. Med. Assoc. J.*, **59**, 565-7 (1948).]

A discussion of migraine and of Menière's disease, with reference to the role of histamine and the physiological action of ergotamine tartrate (I), prostigmine, nicotinic acid, and thiamine. Dihydroergotamine is less toxic than (I), and produces less nausea and vomiting. W. C. TOBIÆ (Chem. Abstr.).

Effect of Hyperinsulinism on Brain Phospholipide. McGhee, Eva C., Papageorge, Evangeline, Bloom, Walter Lyon, and Lewis, George T. (Emory Univ., Ga.) [*J. Biol. Chem.*, **190**, 127-32 (1951).]

Massive doses of insulin were administered to 24 rabbits; 12 were given no further treatment; 6 were given 0.5 gm. of lecithin 1 hour after the insulin; and 6 were given sufficient glucose to maintain the blood-sugar above a convulsive level in spite of the insulin dosage; 12 untreated rabbits served as controls. Lipide P of the whole blood was not significantly affected by the administration of insulin. Insulin treatments produced a 10 per cent. decrease in the brain lipide P. The decrease was effected in about 6 hours and was not reversed by the administration of lecithin or glucose.

FELIX SAUNDERS (Chem. Abstr.).

Use of Positron-emitting Radioisotopes for the Localization of Brain Tumors. Wrenn, Frank R., Jr., Good, Myron L., and Handler, Philip (Duke Univ., Durham, N. Car.) [*Science*, **113**, 525-7 (1951).]

Administration of the anionic dye tetrasulfonated copper phthalocyanine prepared from metallic Cu⁶⁴ produced focal uptake in the experimentally produced brain injury of mice. Doses up to 100 mgm./kgm. were given to rabbits, mice, guinea-pigs, cats and dogs with apparent impunity. Although the biological half-life exceeds the 12.8 hr. physical half-life of the Cu⁶⁴, after 2 days only 6 per cent. of the injected radio-activity remained to injure tissue. The major route of excretion was via the biliary system. Since the 2γ quanta resulting from positron annihilation emerge simultaneously and oppositely directed, scintillation counters were designed to operate singly or for coincidence counting of oppositely directed annihilation quanta. A Geiger tube 9½ in. from the radio-activity source with a shield and 6-in. collimator with 1-in. slit gave a relative peak counting rate of 1; coincident scintillation counters with 6½ in. crystal-to-crystal distance and no shield gave a relative peak counting rate of 23; and a single directional scintillation counter 9½ in. from the radio-activity source with a 6-in. collimator with a 1-in. slit gave a relative peak counting rate of 47. Complete details of the apparatus and experiments will appear elsewhere.

WESLEY H. HARTUNG (Chem. Abstr.).

Post-mortem Changes in Acid-soluble Phosphorus Fraction of Central Nervous System. Maleci, A. (Univ. Padova, Italy.) [*Arch. fisiol.*, **50**, 18-28 (1950); cf. Kaplan and Greenberg, C. A., **39**, 962.³]

The acid-soluble P of rabbit brain was measured immediately upon death and 10 minutes later. There was, respectively, 76.0 ± 1.12 and 76.6 ± 1.56 mgm. per cent. of total acid-soluble P. This was subdivided into total Ba-pptd. P of 44.4 ± 0.83 and 44.2 ± 1.14 consisting of inorganic P, 18.0 = 0.76 and 37.5 ± 1.22; the two labile P atoms of adenosine triphosphate (A.T.P.) hydrolyzed off in 10 minutes, 13.8 ± 0.77 and 0.9 ± 0.50; the third P atom of A.T.P. hydrolyzed off in 100 minutes, 1.9 ± 0.12 and 1.7 ± 0.29; residual Ba-precipitated unaccounted for, 5.4 ± 0.80 and 4.1 ± 0.51; total Ba-soluble P of 28.0 ± 0.84 and 29.7 ± 0.96 consisting of phosphocreatine P, 7.5 ± 0.47 and 0 ± 0; Hg-precipitated Ba-soluble P, 5.7 ± 0.81 and 10.5 ± 0.31; and Hg-soluble Ba-soluble P, 15.3 ± 0.66 and 16.4 ± 0.63 mg. per cent. The inorganic P and adenylic P have increased at the expense of the A.T.P. and phosphocreatine P.

H. L. WILLIAMS (Chem. Abstr.).

Penicillin in the Cerebrospinal Fluid. Redfearn, Joseph W. T., Elithorn, Alick, Till, Kenneth, and Ibbott, Fank A. (Maudsley Hosp., London.) [*Lancet*, **257**, 652-7 (1949).]

A modification of the capillary-tube serial-dilution method (cf. Fleming and Smith, C. A., **43**, 6687g) was used to assay 152 samples of cerebrospinal fluid from 111 patients including some with parenchymatous neurosyphilis. A single dose of 0.5 megaunits of penicillin (I) produced a bactericidal-cerebrospinal fluid (I) level in 70 per cent. of the patients. The normal blood-cerebrospinal barrier was permeable to (I). Diseases causing excess protein in the cerebrospinal fluid also caused greater permeability of the blood-cerebrospinal fluid barrier to (I). High concentrations of (I) were found in 3 cerebral gliomatous cysts. Barrier permeability tended to be higher in the aged.

BARBARA R. MURRAY (Chem. Abstr.).

Changes in the Cerebrospinal Fluid during Pneumo-encephalography. Bickerstaff, Edwin R., (United Birmingham Hospitals, Engl.). [*Lancet*, **259**, 683-5 (1950).]

The only frequent biochemical change was a decrease in the protein content probably due to dilution of lumbar cerebro-spinal fluid.

BARBARA R. MURRAY (Chem. Abstr.).

The Presence of Cholinergic and Noncholinergic Neurons in the Central Nervous System. Feldberg, W., Harris, G. W., and Lin, R. C. Y. (Univ. Cambridge, Engl.). [*J. Physiol. (London)*, **112**, 400-4 (1951).]

Acetone-dried tissue saline extracts were made, incubated and assayed for synthesis of acetylcholine by the method of F. and C. Vogt (*C. A.*, **43**, 747h) for a number of tracts and regions of the dog brain and spinal cord, as well as the retina and optic pathway of *Sepia officinalis* (I). Results obtained from the dog brain agreed with the concept that the central nervous system is built up of cholinergic (II) and noncholinergic (III) neurones and that the (II) neurones comprise a considerable portion of the secondary ascending neurones. Results from (I) suggested that in the retina the primary neurones of the cones and rods are (III), and that the choline acetylase of the retina is located in the secondary neurones. The data obtained suggest that (II) and (III) neurones may alternate with each other in some instances.

MORRIS ROCKSTEIN (Chem. Abstr.).

Interaction of Aneurine with Some Drugs on the Neurovegetative System. Dessi, Pietro, and Labo, Guisepppe (Univ. Bologna, Italy). [*Ricerca sci.*, **20**, 1831-42 (1950).]

Synergism between aneurine (I) and dl-benzedrine (II) 0.08, d-(II) sympatol (III) 0.5, veritol (IV) 0.25, tyramine 0.13, ariline (V) 0.10, aleudrine (VI) 0.10, and mescaline (VII) 0.10, all as gm./kgm. given intraperitoneally (i.p.), was studied in white mice and rats. (II), d-(II), and (V) alone caused intense excitement in a few minutes; the remainder showed no action, and none alone caused death. Combined with (I), all caused death in 15 minutes, (II) and (VI) in 5 minutes. (I) 0.27 with d-adrenaline (VIII) 0.0055, d (II), 0.65, stenamine 0.06, or (VII) 0.042, all as gm./kgm. given subcutaneously, gave no deaths in 60 minutes, but (I) 0.27 subcutaneously with d-(II) 0.066, (III) 0.5, ephedrine 0.11, 1-(VIII) 0.003, d-(VIII) 0.0054, (IV) 0.25, or phenethylamine 0.1 given i.p. caused 100 per cent. mortality in 30 minutes. (I) 0.2 gm./kgm. i.p. with tetramethylenediamine 0.88 i.p. caused no fatalities. Cocaine 0.050, yohimbine 0.0166 and ergotamine 0.02 had no effect on the toxicity of (I) and (II). Eserine 0.01 i.p. given 16 minutes before (I) and (II) reduced mortality 52 per cent., but prostigmine 0.00055 had no effect. A sublethal amount of d-tubocurarine 0.00075 with (II) gave 90 per cent. mortality in 10 minutes, and tetramethylammonium formate 0.0178 i.p., nontoxic alone, gave 100 per cent. mortality in 5 minutes with (II) 0.08 i.p., with 0.04 i.p. 70 per cent. mortality. Sparteine methiodide 0.05 likewise gave 90 per cent. mortality in 5 minutes. The use of (I) with quaternary compounds may prove useful in curarization, particularly when eserine is used as an anticurare agent.

WILLIAM F. BRUCE (Chem. Abstr.).

Relations between Vitamin B₁ and Acetylcholine. IV. The Influence of Acetylcholine on the Thiamine Content of the Viscera. Itô, Shinji, and Iwai, Satoko (Nagoya Univ.). [*Vitamins (Japan)*, **3**, 130-2 (1950); cf. *C. A.*, **45**, 1659de.]

When 100γ of acetylcholine (I) was administered by hypodermic injection to healthy mice, the thiamine (II) content of the viscera was not changed. When (II) was injected into mice by the same manner the (II) content of the liver was rapidly increased; it was highest after 20 minutes and then gradually decreased. The change of (II) in the brain and in the muscle was less than in the liver, and these increases showed their maximum 30 minutes after the injection and the decreases of (II) in the brain and in the muscle were slower than in the liver. When (I) and (II) were injected simultaneously, the (II) content after 60 minutes was higher than after the injection of (II) alone.

S. KAWAMURA and HIROYASU FUKUBA (Chem. Abstr.).

Corn Causes Pellagra. Rudolph, W. [*Med. Monatsschr.*, **2**, 23 (1948); *Chem. Zentr. (Russian Zone Ed.)*, 1948 (11) 1317.]

A review of the occurrence of substances in corn (3-acetylpyridine and indolyl-3-acetic acid) which act as antivitamin to nicotinic acid, and the possible role these substances may play in the development of pellagra in persons whose diet consists largely of corn.

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

Clinical and Experimental Studies of Intracranial Tumors with Fluorescein Dyes with an Additional Note Concerning the possible use of Potassium⁴² and Iodine¹³¹ Tagged Human Albumin. Moore, G. E., Caudill, C. M., Marvin, J. F., Aust, J. B., Chou, S. N., and Smith, G. A. [*Am. J. Roentgenol. Radium Therapy*, **66**, 1-8 (1951).]

Na fluorescein has proved to be valuable clinically for the identification of brain-tumor tissue at operation. In experimental animals fluorescein has been used in studies of

disruption of the blood-brain barrier. Radio-active diiodofluorescein can be used to localize brain tumors pre-operatively. Radioactive iodinated albumin and K^{42} have been used as tracer agents; their merits and disadvantages are briefly discussed. Improved instrumentation such as the adaptation of scintillation counters to clinical use should increase the validity of the radio-active dye test. Use of radio-active diiodofluorescein in experiments concerned with disruption of the blood-brain barrier is suggested.

G. L. CLARK (Chem. Abstr.).

The Glucides of Nervous Centers. Baudouin, A. (Univ. Paris). [*Exposés annuels biochem. méd.*, **2**, 46-62 (1939); cf. *C. A.*, **34**, 1697^b.]

Chemical composition and metabolism are discussed.

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

The Relationship of the Autonomous Nervous System and Lipide Metabolism. Action of Dibenamine and Atropine upon Fat Deposits in the Liver in Partial Hypophysectomy. Ardy, Cesare, and Montini, Tullio. [*Atti accad. nazl. Lincei, Rend. Classe sci. fis., mat. e nat.*, **10**, 174-8 (1951).]

Adult male rats weighing 180-220 gm. were partially hypophysectomized. Crandall and Drabkin's technique was used (*C. A.*, **41**, 1741^d). One lot was used as controls; the other received every second day up to the operation 10 mgm. of *dibenamine* per kgm. body-weight; a third lot received daily until the day of operation an injection of 20 mgm./kgm. of atropine sulfate. Five animals of each lot were sacrificed after 2 and 4, 6 and 10 days respectively. The animals receiving *dibenamine* showed an increased respiratory quotient with values of 0.99-1.07 after 2 days. They did not show a greater oxidation of fats than the controls. Effects opposite to *dibenamine* were obtained with atropine. An inhibition of the lipotropic action of choline took place. Similar results were reported by Cedrangalo and Conte Marotta (*Arch. sci. biol. (Italy)*, **22**, 570 (1936)).

A. H. KOFFLER (Chem. Abstr.).

Effect of Potassium and Ammonium Ions upon Glycolysis Catalyzed by an Extract of Rat Brain. Muntz, John A., and Hurwitz, Jerard. (Western Reserve Univ., Cleveland, O.). [*Arch. Biochem. Biophys.*, **32**, 124-36 (1951); cf. *C. A.*, **42**, 2052^e.]

The stimulatory effect of NH_4^+ and K^+ upon glycolysis as catalyzed by an extract prepared from a Me_2CO extract of rat brain is most pronounced when small amounts of adenosine triphosphate (A.T.P.) are used, and it becomes progressively less as the A.T.P. concentration is increased. Glycolysis by the extracts is not inhibited by Na^+ , apparently because of the low apyrase content of the extracts. NH_4^+ and K^+ have direct stimulatory effects which are not due to antagonism between Na^+ and NH_4^+ or K^+ ; the same concentration of NH_4^+ is required for stimulation whether or not the concentration of Na^+ is reduced by substitution of trihydroxymethylaminomethane buffer for $NaHCO_3$. Apparently NH_4^+ and K^+ maintain A.T.P. in these systems by initiating or accelerating phosphorylation reactions, and preventing the formation of adenylic acid.

The Effect of Ammonium Ions upon Isolated Reactions of the Glycolytic Scheme. [*Ibid.*, 137-49.]

In the glycolytic system derived from rat brain Me_2CO powder, NH_4^+ stimulates three different reactions: (a) the transphosphorylase reaction from phosphoenolpyruvate, (b) the phosphohexokinase reaction, and (c) the hexokinase reaction. The transphosphorylases are affected differently, depending upon whether adenosine diphosphate or adenylic acid is the phosphate acceptor; in the case of the latter the dependency is particularly marked. A highly active myokinase is present in these extracts, and its activity influences the transphosphorylase reaction to a considerable extent. The phosphohexokinase reaction is stimulated to a greater extent by NH_4^+ than is the hexokinase reaction. Triose phosphate oxidase activity is uninfluenced by the presence of NH_4^+ .

F. SAUNDERS (Chem. Abstr.).

Neuromuscular Action of Acetaldehyde. Sánchez, Félix Sanz, and Bertrán, E. Castelló (Vet. Faculty, Univ. Madrid). [*Anales facultad vet. univ. Madrid y inst. invest. vet.*, **2**, 79-89 (1950).]

AcH intravenously injected (at 0.1 to 0.2 mgm./kgm.) had a marked anti-convulsive effect in dogs against electric stimulation, acetylcholine and strychnine injections. Duration of effect was about 30 minutes. Rabbits were protected against cariazone convulsions by 0.2 mgm. of acetaldehyde per kgm. of body-weight.

GEORGE K. DAVIS (Chem. Abstr.).

An Atypical Case of Phenylketonuria. Cowie, Valerie A. (Fountain Hosp., Tooting Grove, London). [*Lancet*, **260**, 272-3 (1951).]

In 553 patients examined phenylketonuria was diagnosed in 15, of whom 14 were idiots or imbeciles. The remaining child was normal neurologically, dark in complexion, and had a relatively high mental level. His average daily output of phenylpyruvic acid was about 500 mgm.—only half that usual in phenylketonurics. B. R. M. (Chem. Abstr.).

Cerebral Blood Flow and Metabolism in Neurosyphilis. The Effects of Penicillin, Induced Fever, and Other Therapeutic Measures. Heyman, Albert, Patterson, John L., Nichols, Fenwick T., Jr., and Jones, Rudolph W. (Grady Memorial Hosp., Atlanta, Ga.). [*Am. J. Syphilis, Gonorrhea, Venereal Diseases*, **35**, 301-11 (1951).]

The N_2O method of Kety and Schmidt (*J. Clin. Invest.*, **27**, 476 (1948)) was used to study cerebral blood-flow (I) and metabolism. The mean (I) and cerebral O consumption (II) were decreased from a normal of 58 and 3.1 c.c./100 gm./min. respectively to 40 and 2.4 in untreated dementia paralytica (III), and to 42 and 2.3 in untreated meningovascular syphilis (IV). The values were within normal range in asymptomatic neurosyphilis (V). There appeared to be a definite correlation between the degree of mental deterioration and the reduction of (II) in patients with (III). (II) increased in (III) following penicillin and fever therapy which was associated with an improved mental state. There was little change in (I) and (II) in patients with (V) during fever induced with typhoid bacterial pyrogen, but patients with (III) showed a mean increase in both. There was little or no change in (I) and (II) during the Jarisch-Herxheimer reaction following penicillin therapy. Nicotinic acid and cytochrome c produced no alteration in (I) and (II) in patients with (III) or (IV). A. DIETZ (Chem. Abstr.).

The Oxygen Supply of the Brain and the Mechanism of Deficiency Effects. Optiz, Erich, and Schneider, Max (Univ. Kiel, Ger.). [*Ergeb. Physiol., biol. Chem. exptl. Pharmacol.* **46**, 126-260 (1950); cf. *C. A.*, **44**, 2626b.]

A review discussing the O supply of cells, intracellular O pressure, hypoxia, reversible and irreversible effects of O deficiency and their mode of action. J. H. WEISBURGER (Chem. Abstr.).

A Hexokinase Inhibitor in Nerve. Abood, L. G., and Gerard, R. W. (Univ. of Chicago). [*Proc. Soc. Exptl. Biol. Med.*, **77**, 438-41 (1951).]

Homogenates of nerve, but not of muscle or liver, inhibit brain glycolysis; the inhibition is a linear function of the amount of nerve. Two-thirds of the inhibitor activity of rat leg nerve is in a protein and lipide fraction precipitated at pH 5.3-5.5. From 200 mgm. of fresh nerve, 3 mgm. of the protein and 3 mgm. of the lipide are obtained. This semi-purified fraction loses activity slowly in the cold and almost at once upon heating. The inhibition is specific for brain hexokinase. The enzyme from yeast or liver is not inhibited, and glycolysis of hexose phosphates by brain is not inhibited. Fructose utilization is inhibited half as strongly as that of glucose. Crystallized insulin counteracts the nerve inhibitor. This and its other properties are similar to those of the inhibitor from the anterior pituitary. L. E. GILSON (Chem. Abstr.).

The Physical Chemical Basis for the Action of Calcium during Nervous Activity. Monnier, A. M. (Sorbonne, France). [*Arch. sci. physiol.*, **3**, 177-87, discussion, 187-91 (1949); cf. *C. A.*, **43**, 1475b.]

The inhibitory action of Ca^{++} towards nerve action is discussed in terms of Ca^{++} fixation through complex formation by proteins and lipides, and the effect of such fixation on cell permeability and in arresting enzyme carboxylase activity. The reactions are reversible and in constant equilibrium. Removal of Ca is through formation of compounds such as the phosphates. GEORGE K. DAVIS (Chem. Abstr.).

Glycolysis in the Brain. Lenti, C., and Cafiero, M. [*Boll. soc. ital. biol. sper.*, **26**, 157-8 (1950).]

Anaerobic glycolysis in nervous tissue extracts is affected by the presence of cozymase and by adenosine triphosphate, but is almost completely inhibited by toluene, whether or not these two activating agents are present. B. A. (Chem. Abstr.).

2. Pharmacology and Treatment.

Treatment of Adults for Epilepsy. (I) Toxic Effect of 5-Ethyl-3-methyl-5-phenylhydantoin. Bailey, Allan A., and Worden, Ralph E. (Mayo Foundation, Rochester, Minn.). [*Proc. Staff Meetings Mayo Clinic*, **24**, 483-6 (1949).]

The pharmacological and therapeutic properties of various drugs, especially mesantoin (5-ethyl-3-methyl-5-phenylhydantoin) (I) are discussed. Although (I) is useful in epilepsy,

it must be used with such precautions as blood-counts and differential counts. Serious toxic reactions may occur months after epileptic subjects have apparently adjusted satisfactorily to (I).

(II) *General Principles.* Bailey, Allan A. [*Ibid.*, 486-9.]

The adjustment of the use of anticonvulsive drugs to the pattern of seizures of the individual epileptic is discussed. W. C. TOBIE (Chem. Abstr.).

Excretion of the Methonium Compounds. Milne, G. E., and Oleesky, Samuel (*Univ. Manchester, Engl.*). [*Lancet*, 260, 889 (1951); cf. *Zaimis, C. A.*, 45, 2863g.]

In persons with normal renal function, most of a 95-mgm. intramuscular dose of hexamethonium compounds was excreted in the urine. After an oral dose of hexamethonium bromide, urinary excretion was only 2.3 per cent. Much of the dose was not absorbed, and some could be recovered from the faeces. Absorption from the alimentary tract varied widely in the same person. In renal failure the drug sometimes accumulates in the blood, and should not be administered to persons with poor renal function. There appear to be no important destructive agents in the body. Destruction in the bowel may occur, but gastric juice and trypsin do not affect the compounds.

BARBARA R. MURRAY (Chem. Abstr.).

Relationship of Calcium and Magnesium to Effects of Phenobarbital on Oxygen Consumption of Brain Slices. Westfall, B. A. (*Univ. of Missouri, Columbia*). [*Am. J. Physiol.*, 166, 219-22 (1951).]

A low concentration of phenobarbital (0.3 mgm. per cent.) in Krebs-Ringer-phosphate medium without Ca decreased the rate of O consumption, while the same concentration of phenobarbital in media containing Ca and Mg caused an increase in the O consumption. Omitting Mg from the medium prevented this increase. A greater concentration of phenobarbital (20 mgm. per cent.) decreased the rate of O consumption of the brain slices. This was unrelated to the presence or absence of Ca or Mg.

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

Further Studies of the Cerebral Chemoreceptor Buffers as Influenced by Vasoconstrictor and Vasodilator Drugs and Veratrum Viride. Taylor, Robert D., and Page, Irvine H. (*Cleveland Clin. Foundation, Cleveland, O.*). [*Circulation*, 4, 184-9 (1951).]

Tests were made of the effects of pressor and depressor substances upon the peripheral blood-pressure when the substances were acting upon cerebral chemoreceptors of dogs. The drugs were perfused through the isolated brain when the carotid sinus was inactivated and the vagus nerves sectioned. 9.0 mgm. BaCl₂ and 0.15 mgm. nicotine caused hypotension and respiratory stimulation. 0.1 mgm. histamine phosphate caused a pressor reaction in more than three-quarters of the experiments, the rise often being preceded by a slight fall. In the remaining experiments the response was depressor. In some experiments histamine ceased, causing a pressor reaction owing to exhaustion of the chemoreceptor mechanism or to tachyphylaxis; however, ischemia caused a sharp rise in blood-pressure. 0.25 mgm. mecholyl (acetyl-β-methylcholine) produced a rise in blood-pressure. 3.0 mgm. Veratrum viride (Veriloid) reduced blood-pressure when injected into the isolated circulation if the vagi were intact; there was no effect if they were sectioned. Veratrum injected into the brain circulation caused a marked fall of peripheral blood-pressure that lasted 2 to 4 hours and blocked the chemoreceptors, so no other drugs injected into the brain circulation influenced peripheral blood pressure, although cerebral ischemia still caused it to rise.

THERESA MCKEE (Chem. Abstr.).

Action of Adrenaline and Hydergin on Cerebral Circulation. Rothlin, E., and Taeschler, M. (*Sandoz A.-G., Basel, Switz.*). [*Helv. Physiol. et Pharmacol. Acta*, 9, C37-9 (1951) (in German).]

In narcotized cats and dogs, adrenaline (5-20 γ/kgm.) increased the blood-flow through the artery supplying the brain. Hydergin (7-30 γ/kgm.) decreased peripheral blood-flow, but did not affect or only slightly decreased cerebral blood-flow. It weakened the effect of adrenaline injected immediately afterwards.

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

The Symptomatic Treatment of Paralysis Agitans with Benadryl. Owyang, Edwin. [*Calif. Med.*, 72, 57-8 (1950).]

There is no specific cure for paralysis agitans or Parkinson's disease, but benadryl is beneficial *per se* (probably because of an atropine-like effect), and acts synergistically with parasympathetic-inhibitory drugs.

J. DUFRENOY (Chem. Abstr.).

Treatment of Migraine. Results with Dihydroergocornine Methanesulfonate (DHO-180) and Other Ergot Derivatives. Bercel, Nicholas A. (Cedars of Lebanon Hosp., Los Angeles, Calif.). [*Calif. Med.*, **72**, 234-8 (1950).]

Relief of migraine obtained with parenteral injections of dihydroergotamine (DHE-45) is as effective as that obtained with the much more toxic ergotamine tartrate. Toxicity of the latter is lessened by the presence of caffeine (as in EC-110). Migraine headaches can be prevented by daily ingestion of 10-15 drops of a preparation containing 1 mgm. dihydroergocornine methanesulfonate per ml. J. DUFRENOY (Chem. Abstr.).

The Effect of Hexamethonium (C6) as Compared to Procaine or Metycaine Lumbar Block on the Blood-flow to the Foot of Normal Subjects. Schnaper, Harold W., Johnson, Robert L., Tuohy, Edward B., and Freis, Edward D. (Georgetown Univ., Washington, D.C.). [*J. Clin. Invest.*, **30**, 786-91 (1951).]

Ten normal young male subjects in a constant temperature room were subjected on alternate days to 50 or 100 mgm of hexamethonium (C6). Five of the subjects showed a greater increase in foot blood-flow after C6, while 5 others had a greater flow after regional block. These doses of C6 produce a more marked, and in some cases more complete blockade of the sympathetic outflow to the foot. JOHN T. MYERS (Chem. Abstr.).

Molecular Structure and Anticonvulsant Action. Influence of Ring Substitution in Barbituric Acid and Hydantoin. Mercier, Jacques (Univ. Marseille, France). [*Compt. rend. soc. biol.*, **144**, 1677-81 (1950).]

5, 5-Diphenylhydantoin, 20 mgm./kgm., protected rats against audiogenic seizures, 5, 5-Dipiperidyl- and 5, 5-dianisylhydantoin had no protective action in much larger doses. For effects of substituted barbituric acids see *C. A.*, **45**, 5809f.

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

Production of Cerebral Changes in Insulin Poisoning. Töbel, Friedebert and Maier, H. (Univ.-Klinik, Würzburg, Ger.). [*Z. ges. expl. Med.*, **117**, 319-30 (1951).]

Daily subcutaneous injection of 4-8 units insulin/kgm. body-weight to dogs of 3 to 12 weeks caused increasingly violent epileptic fits, finally killing the animals; in the later stages luminal moderated the seizures. Vitamin B complex or percorten had no effect. At death considerable liver and brain damage was found.

J. H. WEISBURGER (Chem. Abstr.).

Acetaldehyde Content of Blood from Ethyl Alcohol Administration, after Treatment with Tetraethylthiuram Disulfide (Antabuse) in Normal Subjects and Alcoholics. Zubiani, A., and Papo, I. [*Rass. studi psichiat.*, **39**, 526-48 (1950).]

Twenty normal persons (I) and 60 alcoholics (II) were treated by 0.015-0.03 gm. tetraethylthiuram disulfide (antabuse) (T.T.D.) (pharmaceutical preparations) per kgm. body-weight daily and given wine (1 gm. EtOH per kgm. body-weight daily). The AcH content of blood, determined 0.5, 1.2 and 4 hours after the wine administration (by the methods of Massera, Stetz and Steep-Fricke), was 0.15-0.18 mgm. per cent. in (I) (maximum after 0.5 hours), and 1.55-2.60 mgm. per cent. in (II) (maximum after 0.5, 1 and 2 hours respectively in 14, 46 and 38 per cent. of patients). In 51 of (II) the liver-function tests revealed liver affections. In 25 of (II) treated by the Lecoq-Magnoni therapy, the AcH content of blood, after T.T.D. and wine administration, was found to decrease from 0.53-1.85 (before the therapy) to 0.20-0.70 mgm. per cent. C. SCANDURA (Chem. Abstr.).

The Role of the Liver in the Detoxification of Tetraethylthiuram Disulfide (Antabuse). Boyd, Eldon M., and Kingswill, Carloine J. (Queen's Univ., Kingston, Ont., Can.). [*Am. J. Med. Sci.*, **221**, 444-7 (1951).]

Tetraethylthiuram disulfide (I) given by stomach-tube was more toxic to subtotally hepatectomized rats than to laparectomized, but not hepatectomized, controls. It is concluded that the liver plays a role in (I) detoxication.

MARION HORN PESKIN (Chem. Abstr.).

Convulsions in Adult and Young Dogs after Cardiazole Administration. van Bork, J. J., Dalderup, L. M., and Hirschel, M. I. (Univ. Amsterdam). [*Acta Physiol. et Pharmacol. Neerland.*, **1**, 533-9 (1950) (in French).]

The dose of pentamethylenetetrazole required to produce convulsions in dogs and cats a few days after birth (intraperitoneal injection of a 10 per cent. solution) was about 70 mgm./kgm. The threshold dose progressively decreased with increasing age of the animals until a fairly constant level of about 35 mgm./kgm. was reached in the adult. After bilateral removal of the neopallium in the adult dog the threshold dose was doubled.

W. DONALD GRAHAM (Chem. Abstr.).

Changes of the Copper Content of Blood after Electro-shock. Ferroni, A. (Univ. Catania, Italy) and Indovina, I. [*Acta neurol. (Naples)*, **5**, 291-9 (1950).]

The copper content (I) of blood increased from 79-178 to 101-196 γ per cent. in 8 and decreased from 70-183 to 26-152 γ per cent. in 6 of 15 patients with schizophrenia 5 minutes after the electro-shock treatment, while after 1 hour there was a decrease in 9 cases. No clear relationship between (I) and the hemoglobin or water content of blood or the Takata-Gross reaction could be found (8 cases). C. SCANDURA (Chem. Abstr.).

Action of Potassium in Insulin Coma and in Electroshock. Cicardo, V. H., and Fontana, A. E. (Univ. Buenos Aires). [*Rev. soc. argentina biol.*, **26**, 217-26 (1950); *Compt. rend. soc. biol.*, **145**, 434-6 (1951).]

In dogs in insulin coma the intravenous injection of KCl causes a transient recovery provided that the coma is not of the irreversible type that would not respond to injection of glucose. Electroshock convulsions and hypoglycemic convulsions ameliorate insulin coma and increase the K concentration of the plasma. L. E. GILSON (Chem. Abstr.).

Distribution of Thiopental in the Central Nervous System. Hubbard, Theodore F., and Goldbaum, Leo R. (Army Med. Center, Washington, D.C.). [*J. Lab. Clin. Med.* **36**, 218-23 (1950).]

In various areas of the brain and spinal cord of dogs with low plasma levels of thiopental (I) there were no significant differences in (I) concentration. As the plasma level of (I) was raised over 17 γ /c.c., increasing differences were found. The tissues, in decreasing order of their contents of (I) were: thalamus, cerebral cortex, medulla, cervical cord and lumbar cord. The distribution patterns were directly related to the plasma concentration of the drug, and were dependent on route of administration, dose and time after injection only in so far as these affected the plasma level. The concentration of (I) in the spinal fluid was lower than in the lumbar cord. It rose almost linearly with increasing plasma concentration, and averaged about 10 per cent. of the plasma level.

M. E. DEUTSCH (Chem. Abstr.).