Part III.—Bibliography and Epitome.

AN attempt is being made to provide as far as possible a complete bibliography compiled from the specialist journals dealing only with Psychiatry and Neurology (which are really inseparable) and their ancillary subjects, psychology, anatomy of the nervous system, criminology, etc.

A number of titles may appear to have a very remote relation to psychiatry, but they are included for the sake of completeness.

If any reader can add the names of journals to the following list, which it is hoped to publish each year in the January number, the addition will be gratefully received and acknowledged.

Those journals which are available in the Library of the Royal Medico-Psychological Association are marked " 1," those available in the Library of the Royal Society of Medicine are marked " 2," those in the Library of the British Psychological Society are marked " 3," and those in the Library of the British Medical Association are marked " 4."

The titles of these journals are mostly in the form given by the Board of Editors of Publications of the American Psychological Association, January, 1939. Contributors are requested to use the exact form given below.

PSYCHIATRIC JOURNALS.

Abh. Neur. Psychiat.
Abh. Psychother.
Acta Espanola Neur. y Psiquiat.
2, 4 *Acta Psychiat. et Neurol.*
3 *Acta Psychol., Hague.*
Acta Psychol., Keijo.
Aliéniste Français.
2 *Allg. Ztschr. f. Psychiat.*
Altersprobleme.
Am. Imago.
Am. J. ment. Def.
2, 3 *Am. J. Orthopsychiat.*
1, 2, 3, 4 *Am. J. Psychiat.*
2, 3 *Am. J. Psychol.*
An. Bras. Hig. Ment.
An. Inst. Psicol. Univ. B. Aires.
Anal. Istit. Neurol. Montevideo.
Analele Psihol (Rumania).
Anales de psicologia, Buenos A.
2, 3 *Année Psychol.*
2 *Ann. Méd. Psychol.*
2 *Ann. Osp. psichiatri. Perugia.*
Arb. Psychiat. Inst., Sendai.
Arch. Anthrop. crim.
2 *Arch. Argent. de Neurol.*
Arch. Argent. Psicol. norm. pat.

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2 *Arch. Bras. de Neur. e Psiquiat.*
Arch. Chilenos de Crim.
Arch. Ital. di Studi Neuropsich.
1, 2 *Arch. Neurobiol.*
4 *Arch. Neurol. Paris.*
Arch. de Neurol. de Bucarest.
1 *Arch. de Neurol.*
2 *Arch. di Antropol. Crim.*
Arch. di Criminol. Neuropsiquiatria y Disciplina Conexas, Quito.
2, 4 *Arch. f. Psychiat.*
2, 3 *Arch. ges. Psychol.*
Arch. Internationale de Neurol.
Arch. Ital. Psicol.
Arch. Krim. Anthrop.
1, 2, 3, 4 *Arch. Neurol. Psychiat.*
Arch. Neur. Psychiat., Méx.
2, 3 *Arch. Psicol. Neurol. Psichiat. e Psicoter.*
2, 3 *Arch. Psychol. Genève.*
3 *Arch. Psychol., N.Y.*
Arch. Relig. psychol.
Arch. Speech.
Arquivos da Assist. a Psicopatas de Pernambuco.
3 *Austr. J. Psychol. Phil.*

Beih. Z. angew. Psychol.
Beih. Zbl. Psychother.
Bol. Inst. Psiquiatria, Rosario.
2, 4 *Brain.*
3 *Brit. J. Educ. Psychol.*
2, 4 *Brit. J. Inebriety.*
2, 3, 4 *Brit. J. Med. Psychol.*
2, 3, 4 *Brit. J. Psychol.*
3, 4 *Brit. J. Psychol. Monogr. Suppl.*
Bull. Canad. Psychol. Ass.
2, 4 *Bull. de la Soc. de Psychiatrie de Bucarest.*
2 *Bull. de la Soc. Roumaine Neur. Psychiat., Psychol., Endocrin.*
Bull. du Groupement Français d'études de neuro-psychopathologie infantile.
2 *Bull. Los Angeles Neur. Soc.*
Bull. Menninger Clin.
Bull. Soc. Psihol. med. Sibiu.

4 *Canad. Journ. Occup. Ther.*
3 *Cath. Univ. of Amer. Studies in Psychol. and Psychiat.*
2 *Cervello.*
2, 3, 4 *Character and Per.*
2 *Child Develpm.*
Child Develpm. Abstr.
Child Develpm. Monogr.
Child Study.
Chin. J. Psychol.
3 *Comp. Psychol. Monogr.*
2 *Confinia Neurol.*
Contr. del Lab. di Psichologia.
Contr. psychol. Theor.

2 *Deutsche Ztschr. f. Nervenh.*
Dis. Nerv. Syst.

https://doi.org/10.1192/bjp.88.370.147 Published online by Cambridge University Press

Educ. psychol. Measmt.
1, 2, 3, 4 *L'Encéphale.*
2 *Epilepsia.*
Evolut. Psychiat.

Fiziol. Th. S.S.S.R.
2 *Folia Neuropath. Esthon.*
2 *Folia Psychiat. et Neurol. Japonica.*
2 *Fortsch. Neur. Psychiat.*

3 *Genet. Psychol. Monogr.*
Giornale di Psich. e di Neuropat.

4 *Hum. Factor.*
2, 3, 4 *Hyg. Ment.*

Index Neurol. y Psiquiat, Buenos Aires.
3 *Indian J. Psychol.*
Industr. Psychol.
Industr. Psychotech.
1, 2, 3, 4 *Int. J. Psychoanal.*
2, 3 *Int. Z. Psychoanal. u. Imago.*

Jap. J. appl. Psychol.
Jap. J. Exp. Psychol.
Jap. J. Psychol.
1, 2, 3 *J. Abnorm. Soc. Psychol.*
J. Am. Soc. Psychic Res.
3 *J. App. Psychol.*
2, 4 *J. Belge Neur. Psychiat.*
2 *J. Comp. Neur.*
1, 3 *J. Comp. Psychol.*
J. Consult. Psychol.
J. Crim. Law and Criminol.
J. Crim. Psychopathol.
J. de Psychiatrie Infantile.
3 *J. Educ. Psychol.*
J. Except. Child.
3, 4 *J. Exp. Psychol.*
2 *J. f. Psychol. u. Neurol.*
3 *J. Gen. Psychol.*
J. Genet. Psychol.
J. Juvenile Res.
1, 2, 3, 4 *J. Ment. Sci.*
1, 2, 3 *J. Nerv. Ment. Dis.*
1, 2, 3, 4 *J. Neurol. Psychiat.*
J. Neuropath. and Psychiat. Leningrad.
2, 4 *J. Neurophysiol.*
J. Neuropsychiatrique du Pacifique.
J. Parapsychol.
J. of Psychical Research.
J. Psihoteh.
2 *J. Psycho-Asthenics.*
3 *J. Psychol.*
J. Psychol. Moscou.
J. Psychol. Neurol. Leipzig.
2 *J. Psychol. Norm. Path.*

https://doi.org/10.1192/bjp.88.370.147 Published online by Cambridge University Press

J. Soc. for Psychical Research.
3 *J. Soc. Psychol.*
J. Speech Disorders.

Kriminalistik.
3 *Kwart. Psychol.*

Mag. psychol. Szle.
Ment. Health.
Ment. Health Obs.
2, 4 *Ment. Hyg., Lond.*
Ment. Hyg., N.Y.
Ment. Hyg. Rev.
3 *Mind.*
Mschr. Krim. Biol.
2 *Mschr. Psychiat. Neurol.*

Ned. Tijdschr. Psychol.
2 *Neopsichiatrica.*
2 *Nervenarzt.*
3 *Neue psychol. Stud.*
Neurobiol., Pernambuco.
Nevrasse.
Nevropath. i. Psikhiat.
Note e Riv. di Psichiat.
Nowiny Psychjaryczne.
Nuova Riv. di Clin. ed Assistenza Psichiatrica.

Obshch. Klin. Nevropat.
3 *Occup. Psychol.*
2 *Occup. Ther. and Rehabil.*
2 *Onderzoekingen Psychiat-Neur. Klin. Utrecht.*
2 *Ospedale Psichiatrico.*

Person. J.
Pisani.
Polsk. Arch. Psychol.
Prace Psychol.
Proc. Amer. Assoc. Stud. Ment. Def.
Proc. A. Research Nerv. and Ment. Dis.
Psichotec.
Psicoterapia (*Cordoba*).
Psyche.
Psychiat. Monogr.
2 *Psychiat. en Neurol. Bl., Utrecht.*
2 *Psychiat. et Neurol. Japonica.*
2 *Psychiat. Neurol. Wchnschr.*
Psychiatry.
1, 2, 4 *Psychiat. Quart.*
2, 3 *Psychoanal. Quart.*
1, 2, 3 *Psychoanal. Rev.*
2, 3 *Psychol. Abstr.*
3 *Psychol. Bull.*
Psychol. Clin.
Psychol. Exch.
3 *Psychol. Forsch.*
Psychol. Index.

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Psychol. Monogr.
Psychol. Rec.
3, 4 *Psychol. Rev.*
3 *Psychol. Rev. Monographs.*
Psychol. Stud. Univ. Bp.
Psychol. wychow.
3 *Psychometrika.*
Psychometr. Monogr.
Psychosom. Med.
Psychosom. Med. Monogr.

Quart. J. Speech.
Quart. J. Stud. Alcohol.

Rass. Neurol. Veget.
Rass. Studi Psichiat.
Rev. Argent. Neurol. Psiquiat.
Rev. di Neur. e Psychiat., S. Paolo.
Rev. di Psiquiatria, Chile.
Rev. di Psiquiatria y Crim.
3 *Rev. Franç. Psychoanal.*
Rev. Ibero-Amer. de Anal. Biblio. de Neurol. y Psiquiat.
Rev. Mex. Neurol. Psiquiat.
1, 2, 4 *Rev. Neurol.*
Rev. Neurol. di Buenos-Aires.
Rev. Neurol. Psychiat., Praha.
Rev. Neuro-psiquiatr., Lima.
Rev. Neuropsiquiatr.
Rev. Psicol. Pädag.
Rev. Psihol.
Rev. Psiquiat. Crim., B. Aires.
Rev. Psiquiat., Uruguay.
Rev. Psiquiat. y Disc. Con., Chile.
Rev. Sudam. Psicol. Pedag.
Rev. Tchèque de Neurol. et de Psychiat.
La Ricerca Psichica.
2, 3, 4 *Riv. di Neurol.*
Riv. di Neuro-psiquiatria, Peru.
3 *Riv. di Psichologia.*
Riv. Ital. di Endocrin. e Neurochir.
2 *Riv. Patol. nerv. ment.*
Riv. Psichol. Norm. Pat.
2, 4 *Riv. Sper. Freniat.*
1 *Rocznik Psychjatryczny.*
Rorschach Res. Exch.

1 *Schizofrenie.*
2 *Schweiz. Arch. Neurol. Psychiat.*
Skand. Arch. Psychol.
Sovet. nevropatol., psichiatri, psichoguoguia.
Sovet. Psichoneurol.
Sovet. Psikhotekh.
Speech Monogr.

Tohoku Psychol. Folia.
Tr. Am. Neurol. A.
Tr. Beritov. Inst. Tiflis.

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Tr. Kostchenko Ment. Hosp. Moscow.
Trud. fiziol. Lab. Pavlova.
Trud. tsentral. psikhonevrol. Inst.

Univ. Calif. Publ. Psychol.
Univ. Iowa. Stud. Psychol.
Untersuch. Psychol. Phil.

3 *Z. angew. Psychol.*
Z. Arb. Psychologie u. praktische im Allgemeinen.
Z. Berufsbildung des Pflegepersonals.
Z. Individ. Psychologie.
2, 4 *Z. ges. Neurol. Psychiat.*
3 *Z. Pädag. Psychol.*
Z. Parapsychol.
Z. Psych. Hyg.
Z. Psychoanalyse (Tokyo).
3 *Z. psychoanal. pädag.*
2, 3 *Z. Psychol.*
Z. Psychother. med. Psychol.
Z. Tierspsychol.
2 *Zbl. Neurochir.*
1, 2 *Zbl. ges. Neurol. Psychiat.*
Zbl. Psychotherap.

ACTA ESPAÑOLA NEUR. Y PSICHIAT.

VOL. I. NO. 1. SEPTEMBER, 1940.

A Subacute Fatal Type of Disseminated Encephalomyelitis. *Albuca Lorenti, R.* 1
*Disturbances of Libido in Cases of Cerebral Trauma. *Ibor, L.* 30
Some Notes on Military Psychiatry in the Spanish Civil War. *Ballesteros, L. R.* 35
*On the Value of the Method of Dynodal Examination in the Differential Diagnosis of Extramedullary Tumours. *Tolozo, E.* 49
*A Year of Cardiazol Therapy. *Villocian, J. M.*, and *Sanchez Garcia, A.* . 60

Disturbances of Libido in Cases of Cerebral Trauma.

The author disbelieves in the existence of localization of the sexual function in the cerebrum, whilst admitting its influence on sexual activity.

On the Value of the Method of Dynodal Examination in the Differential Diagnosis of Extramedullary Tumours.

A case of fusimedullary tumour is described in which a radiological picture was obtained pointing to the existence of a typical intramedullary tumour. Operation revealed an extramedullary tongue-shaped neurinoma, which was fused with the pia throughout its whole length, thus giving the appearance of a fusiform enlargement of the cord.

A Year of Cardiazol Therapy.

Twenty-seven cases of schizophrenia were treated. Twelve cases with a history of less than six months' duration gave five complete remissions. No complete remissions were obtained in the remaining fifteen with a history of more than six months.

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NO. 2.

*Convulsion Treatment of Schizophrenia by Ammonium Chloride and Camphorated Oil in Ether. *Martinez, P., and De la Vega, P.* . . . 79
*The Permeability of the Meninges to Bromides in Mental Disorders. *Salinas, E. P.* 84
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The Role of the Neurogliomata in Peripheral Trophic Disturbances. *Galligo, L. F.* 125

Convulsion Treatment of Schizophrenia by Ammonium Chloride and Camphorated Oil in Ether.

Twenty-one cases of schizophrenia were treated by fits produced by ammonium chloride injections. A 10 per cent. solution of ammonium chloride was used, and 5 to 8 c.c. were injected intravenously. The fit was preceded by a momentary sensation of suffocation, followed by loss of consciousness. This is accompanied by a phase of general muscular hypotonia, lasting ten to twenty seconds, followed by a convulsive phase lasting about thirty seconds.

Fifteen of the 21 cases had more than three years' hospital treatment and the remaining six had been under care for less than three months.

No complete remissions were observed; three of the acute and five of the chronic cases showed some improvement.

The strength of the ether solution of camphor was 70 per cent., and 2 c.c. were injected intravenously. The resultant fits closely resembled those from cardiazol.

Forty-three schizophrenics were treated; 31 were chronic cases with more than three years' hospital treatment, and twelve had been in hospital less than three months. Two of the chronic cases and five of the acute had remissions. Nine of the chronic and five of the acute were improved.

The Permeability of the Meninges to Bromides in Mental Disorders.

Control cases gave a lumbar permeability coefficient (CPL) of 3 to 3·3, and a cisternal (CPC) of 3·5 to 3·9.

In manic-depressive psychosis CPL is normal in 50 per cent., and shows a slight elevation in remainder.

The majority of senile dementias have a normal CPL, but in some cases of arteriosclerotic dementia there is an increase of CPL. In some cases of schizophrenia both CPL and CPC are diminished. Post-encephalitic psychoses give a definite reduction of both quotients.

The majority of epileptics showed normal permeability quotient; some, however, show a diminution, more marked for the cisternal quotient, bearing no relation to the clinical condition. General paralysis shows an increase of permeability, which becomes less intense with the progress of the dementia. In tabo-paresis lumbar permeability is increased, while cisternal remains normal. Schizophrenics show a diminution of permeability most markedly in the lumbar fluid, and the change is most marked in those cases exhibiting rapid progress of the disease.

NO. 3.

Extra-pyramidal or Striatal Epilepsy. *Di Gispert Cruz, I.* . . . 139
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The Psychosis of Pellagra: its General Psychopathology. *Llopis, B.* . . 174

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On the Erotic Effects of Cardiazol Treatment. *Sabane, A.* 241
The Chemical Transmission of the Nervous Impulse. *Rodriguez-Candela, J. L.* 242

Liver Function in Diseases of the Extrapyramidal System.

In cases exhibiting symptoms due to a lesion of the corpora striata, urobilinuria was never found. The blood content of bilirubin was normal. The Takata Ara reaction was negative.

The author also uses a test devised by Althausen, in which 20 minutes after an injection of 20 units of insulin, 50 grammes of glucose in a litre of water is given, and the resultant blood-sugar curve is followed. This test gave abnormal reactions in all his cases of striatal syndrome. He considers that in the absence of other signs of hepatic involvement we are only entitled to say that lesions of the corpora striata are responsible for abnormal carbohydrate metabolism.

On Crises of the Vegetative Nervous System.

This paper deals with the crises manifested only by symptoms referable to the central nervous system, for which Wilson proposed the designation of paraventricular epilepsy. These include three groups: Firstly, those termed vasovagal attacks by Gowers; secondly, attacks of yawning followed by vertigo, headache, and vomiting; and thirdly, attacks of hyperthermia without somatic cause. The author discusses these and similar forms of crises of the vegetative nervous system in their relation to the epileptic syndrome.

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VOL. XV. 1940.

*Encephalographic Examination of 125 Institutional Epileptics. *Larsby, H., and Lindgren, E.* 337

Encephalographic Examination of 125 Institutional Epileptics.

The investigation of 125 epileptics by encephalographic examination indicates:

(1) Cisternal puncture is to be preferred to lumbar puncture, since it insures a better filling of the ventricular system without having given (in this material) a less adequate filling of the convexity.

(2) Anatomical changes occurred, both in the form of dilated ventricles (59 cases), and in the form of enlarged sulci on the convexity (17 cases), while in 30 cases there were no demonstrable encephalographic changes.

(3) With prolongation of the disease there is a tendency for a higher percentage of pathological cases.

(4) No connection exists between mental changes and the encephalogram. The procedures for estimating encephalograms are given.

R. K. MEISTER (Psychol. Abstr.).

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VOL. CXVI. 1940.

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*Disturbance of Coloured After-Images in Hypoglycaemia. *Vujič, V., and Ristič, J.* 265

Disturbance of Coloured After-Images in Hypoglycaemia.

The duration of the after-image is reduced by 68 per cent. on the average. In addition, the complementary colour is lost in special cases. Temporary complete loss of after-images is found in 50 per cent. of cases.

P. L. KRIEGER (Psychol. Abstr.).

AM. IMAGO.

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AM. J. PSYCHIAT.

VOL. XCVII. MARCH, 1941.

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*Therapy in Involutional Melancholia. *Palmer, H. D., Hastings, D. W., and Sherman, S. H.* 1086
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*Psychobiological Studies Following Section of the Corpus Callosum. *Akelaitis, A. J. E.* 1147
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*The Internal Environment and Behavior: Blood-Sugar Variations and Brain Function. *Gelhorn, E.* 1204
Psychiatric Facilities in Virginia and Some Neighboring States. *Barrett, J. E.* 1219

The Pharmacological Shock Treatment of Schizophrenia.

The results of treatment of dementia praecox by means of insulin may be summarized as follows: Approximately 65 per cent. of the patients so treated were in an improved condition following the termination of such therapy. Those recovered constituted 13 per cent. of the total under treatment. Approximately

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one year after the termination of treatment, the percentage of patients showing some degree of improvement had fallen from 65 to 48. The rate of recovery remained practically constant. Two years after the termination of treatment the results were rapidly stabilized: 45 per cent. of the original total were in a condition of some degree of improvement, compared with 48 per cent. at the close of the first year. The rate of recovery was still 13 per cent. These percentages are in significant excess of corresponding results for patients with dementia praecox who had received other forms of therapy in the New York civil state hospitals. Also in favour of the insulin-treated group was the percentage able to live in the community away from the hospital, after treatment. The authors found that the percentage of patients treated with insulin who were in the community after two years in a condition of recovery or of much improvement was greatly in excess of that of the general run of patients with dementia praecox. Finally, all of the results were highly correlated with the duration of the disease prior to treatment, those patients who had been ill for less than six months showing exceptionally good results. They, therefore, urge that the treatment of dementia praecox by means of insulin shock be continued and extended, and that every effort be made to encourage the application of appropriate treatment in the early stages of the disease.

It would appear that their experience with the insulin treatment definitely established it as the best single therapeutic measure for dementia praecox so far available. It produces an improvement rate significantly in excess of that obtained by any other means, and after two years almost 75 per cent. of the patients who were benefited have retained their improved states. If properly administered, and in conjunction with other procedures of proved value, particularly early in the disease, its effectiveness will be greatly enhanced. (Authors' abstr.)

Continued Follow-up Results in Insulin-shock Therapy and in Control Cases.

At Pennsylvania Hospital there have been immediate and important gains in one-half of all the patients, and in two-thirds of acute cases (less than 18 months in duration).

After two years these gains remained in only one-fourth of all patients, but in one-half of the acute cases.

Control cases in the same hospital were found to show similar gains, two years from the time of admission, in one-sixth of all cases. These gains were without important relation to the previous duration of illness.

The experience of one hospital indicates that insulin shock is a strikingly effective agent in schizophrenia. It also indicates a need for supportive measures to hold more firmly the gains that come quickly, but which often tend to disappear. (Author's abstr.)

Curare: A Preventive of Traumatic Complications in Convulsive Shock Therapy.

1. The principle of preliminary curarization before induction of metrazol shock has proved successful in eliminating all traumatic hazards.

2. A uniform standardized curare preparation has now been perfected that is non-toxic in physiologic doses and has proved to be a safe treatment.

3. The physiologic and pharmacologic effects of the drug have been discussed. The technique of this combined therapy is described.

4. Roentgenographic evidence and electro-encephalographic evidence are presented to show that the curare protects from traumatic complications, yet leaves the therapeutic effectiveness of metrazol undisturbed.

5. The results of previous metrazol therapy in affective psychoses are compared with curare-metrazol results to show that the same therapeutic results are obtained without complication. Other investigators have confirmed the results with this new treatment.

6. A series of cases of depressive psychoses complicated with severe organic

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diseases are shown that widen the scope of usefulness of this modified therapy. A number of cases can now be salvaged that formerly could not have taken the treatment.

7. A synthetic curare-like drug, quinine methochloride, has been prepared that has been shown to have a strong curare-like action. After intravenous injection it produces effective motor paresis sufficient to prevent traumatic complications of convulsive shock therapy. Further experimentation will be necessary, however, to determine the safety factor, before its use can be recommended.

8. If a continued, sustained supply of pure curare or a safe synthetic curare-like drug can be obtained, it will soon be illegitimate to administer convulsive shock therapy without this safeguard against the all too frequent and serious traumatic accidents. (Author's abstr.)

Regression Neuroses and Schizophrenia.

1. An attempt has been made to contrast the symptoms and signs observed in 10 cases of schizophrenia and in 30 cases of regression neuroses.

2. All cases occurred in university students.

3. The impressions resulting from a statistical study would indicate that the following symptoms and signs occurred twice as frequently in the schizophrenics as in the regression neuroses: (*a*) rigid personality, (*b*) extreme deficiency in good social attitudes, (*c*) narrow interests, (*d*) poor design for living, (*e*) tendency for suicidal ideas, (*f*) unsatisfactory school work, and (*g*) lack of insight.

4. While no conclusions are attempted it is suggested that combinations of three or more of the above symptoms and signs might be regarded as suggesting a schizophrenic reaction. (Authors' abstr.)

Therapy in Involutional Melancholia.

1. The endocrine factors incident to change of life are not the important aetiological or precipitating factors in the psychosis. In only 24 per cent. of 53 women did there seem to be any relationship between the onset of menopause and the onset of psychosis.

2. Life-long restrictions of the personality and traits deeply rooted in the psychobiology of the individual are more significant than physiological factors in the aetiology of the involutional melancholia. The psychosis appears to be the culmination of many forces operating throughout the life history of the patient.

3. Metrazol therapy, which in nearly 73 per cent. brings about favourable change classifiable as " recovery " or as " social remission," is the most successful treatment thus far developed. Unmodified metrazol therapy with its serious hazards probably cannot continue as a standard method. Because of the poor prognosis in involutional melancholia (30 per cent. in 300 cases at the Pennsylvania Hospital) some form of convulsive shock therapy seems justifiable, especially if the newer modifications of metrazol treatment or electric shock prove helpful in reducing the traumatic risk without interfering with the effectiveness of the treatment. Although brilliant recoveries are occasionally recorded in long-standing cases of involutional melancholia, the results indicate that promptness is an important factor in the success of the treatment.

4. Prolonged narcosis has been helpful in a small number of cases and has given rise to no serious complications. It should be tested further in a larger number of cases.

5. Estrogenic therapy in female involutional melancholia patients has no favourable effect on the course of the psychosis. Stilboestrol is a potent estrogenic substance, and when administered orally is capable of producing oestrin saturation as evidenced by the changes in urinary APH and oestrin values, by the induced uterine bleeding, and by other clinical signs of oestrin effect.

6. Testosterone administered by intramuscular injection in male involutionals is capable of producing sexual stimulation, a general improvement in physical well-being, and may reduce symptoms arising from benign prostatic hypertrophy.

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Its beneficial effect in the psychotic stages is questionable, but some improvement has been noted in two men with early involutional melancholia.

7. Parathormone administered hypodermically in twice daily doses of 50 and 100 units together with calcium and ammonium chloride increases serum calcium levels. This therapy has no effect on the clinical course of the disorder.

8. Mental hygiene efforts to dislodge the fixed, unwholesome, personality patterns at the moment of recognition may do much to prevent the development of involutional melancholia. Time favours the mental hygienist, since even after the appearance of prodromal symptoms there is a period of long germination, shown in the studies to be six months or more in 86 per cent. of cases.

(Authors' abstr.)

Psychobiological Studies following Section of the Corpus Callosum.

In a study of seven patients with partial and in three with complete section of the corpus callosum, psychobiological changes were noted in only two. In both of these evidence of involvement of the right cerebrum was present.

Consequently it appears that surgical section of the corpus callosum in epileptics does not result in the marked psychological changes noted by those investigators who have based their studies upon degenerative, vascular and neoplastic lesions in and about the corpus callosum. (Author's abstr.)

The Bulgarian Treatment of Parkinsonism, with Special Reference to its Effect on Mental Symptoms.

The authors have used belladonna root extract in the treatment of Parkinsonism over a sufficient length of time and in a series of cases sufficiently large to draw these conclusions:

1. The mild mental symptoms in most of these patients were materially benefited.

2. The most striking results were obtained in several bedridden cases, who by the use of the drug were enabled to walk, dress and feed themselves.

3. In all patients there was a return of symptoms when the drug was withdrawn.

4. In this larger series the results were not quite as good as they were in cases previously reported.

5. The degenerative type of the disease did not respond to the treatment as well as the post-encephalitic variety, nor did that type tolerate the drug so well.

6. The authors' opinion is that this drug is decidedly more efficacious as a palliative treatment than the single alkaloids or other drugs which have been used in this disease. (Authors' abstr.)

The Internal Environment and Behavior.

1. Hypoglycaemia leads to a general decrease in cortical activity, measurable by a delay in and an inaccuracy of mental functions. This condition is accompanied by typical changes in the electro-encephalogram and in the electro-corticogram which indicate a diminution in the oxidative state of the cortex (Hoagland).

2. Insulin hypoglycaemia produces a state of increased excitability of sympathetic centres. This is shown by an increased blood-pressure response to anoxia and to CO_2 at low blood-sugar levels. It is further indicated by the increased blood-pressure rise on raised intracranial pressure during the hypoglycaemic state. Since the increased response to CO_2 and to the increased intracranial pressure persists after elimination of the chemoreceptors of the carotid sinus area and of the arch of the aorta, it follows that low blood sugar increases sympathetic responses not only in response to reflex stimuli, but also to stimuli acting directly on the centres. Another indication of increased excitability of the sympathetico-adrenal system in hypoglycaemia is the fact that the blood-sugar rise observed during a brief period of anoxia is more marked in the hypoglycaemic animal than it is at a normal blood-sugar level.

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3. This increased sympathetico-adrenal discharge occurring in insulin hypoglycaemia tends to lead to a restoration of normal conditions (homeostasis) not only by the glycogenolytic action of adrenalin on the liver, but also by its depressing action on the sympathetic centres via the carotid sinus.

4. If hypoglycaemia and anoxia are combined for several hours a condition results in which homeostatic regulations break down by the failure of adrenalin to produce glycogenolysis. Under these conditions the excitability of the brain is altered, since the animals do not respond with convulsions to extreme degrees of hypoglycaemia.

5. The excitability of the autonomic system is not altered by an increased blood-sugar level resulting from the injection of glucose. However, a rise of blood sugar resulting from reflex stimulation of autonomic centres by painful stimuli or by injection of metrazol or adrenalin is accompanied by a generally increased excitability and a fall in the CO_2 tensions of the arterial blood.

(Author's abstr.)

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The Influence of Visual and Auditory Stimuli on the Electro-encephalographic Tracing of Petit mal.

1. Light stimuli affect the alpha rhythm according to the " all or none " law.
2. Light stimuli have a delayed reaction time in short *petit-mal* attacks.
3. Light stimuli are not perceived in long *petit-mal* attacks.
4. Both light and sound stimuli tend to terminate moderately severe *petit-mal* seizures—the sound being much more effective.
5. When both fail to provoke a response, unconsciousness may be presumed.
6. This method of determining the impairment of consciousness may be useful in estimating (*a*) the severity of *petit-mal* seizures, (*b*) the effectiveness of anti-convulsant therapy on the spell. (Author's abstr.)

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A Convenient Self-Administering Scale for Measuring Intellectual Impairment in Psychotics.

A quick, objective, self-administering scale for measuring intellectual impairment has been described. It requires but 20 minutes to give and two minutes to score, and is adapted to group as well as to individual use. It consists of a vocabulary and an abstract-thinking test which are used together. Impairment is measured in terms of abstract-thinking deficit taken in relation to vocabulary level. For convenience a special impairment index, the C.Q. (conceptual quotient), is employed; it represents the ratio of the patient's abstract-thinking ability to that of the average normal individual at his vocabulary level.

The scale was standardized on over a thousand normals for whom I.Q.'s were available; mental-age equivalents were established for the vocabulary and abstract-thinking tests, as well as for the two tests combined. This method of standardization rendered the scale useful as a measure of intelligence, as well as of intellectual impairment.

To test its efficacy the scale was given to several hundred mental patients from both private and state hospitals. Comparison of the C.Q.'s thus obtained with those of normals yielded the following significant findings: (1) Only 5 per cent. of the state hospital cases reached the median of the normals, while less than 1 per cent. of the normals fell as low as the state hospital median. (2) The private hospital median fell midway between that of the normals and state hospital cases. Analysis by diagnostic groups showed psychoneurotics and other non-psychotics to approach the normals, with the functional psychotics falling lower, and the organic psychotics lowest of all. This trend was both striking and consistent.

The evidence confirms the original tenets; the scale has been found useful in measuring intellectual impairment. It is best suited for work with relatively early cases of average or superior intelligence. It is not suited for use with markedly deteriorated cases, and its use with subnormals must await the establishment of further norms. (Authors' abstr.)

Rorschach Studies in Acute Experimental Alcoholic Intoxication.

1. The Rorschach findings in ten cases of acute mild alcoholic intoxication at a predetermined clinical level are given.

2. Rorschach findings at this level are experimentally shown to validate certain previous theoretical or empirical findings as regards the M : Sum C ratio, F per cent., Fc, S, CF, C naming and description, and theories are advanced regarding the evaluation of the (FM+M) : (Fc+c+C') and per cent. answers in VII, IX, X quotients.

3. The validation of the Rorschach method in its reflection of experimentally induced personality shifts as indicated clinically is shown.

4. No Rorschach findings of pathognomonic diagnostic value for this level of alcoholic intoxication are found, and no specific "Rorschach pattern" can be described for the diagnosis of acute mild alcoholic intoxication.

5. Personality shifts occurring at this level of intoxication are described and correlated with shifts in the Rorschach response patterns. (Authors' abstr.)

Neurometabolic Deficiency in Old Age (Senile Encephalomyelosis).

1. A series of observations carried out on clinical material seems to justify the delimitation of a clinical picture for which the name of senile encephalomyelosis is suggested.

2. The symptoms of senile encephalomyelosis are acute or subacute mental disturbances of the organic reaction type, usually associated with posterolateral sclerosis (rarely transverse myelitis or spastic spinal paralysis), sometimes associated with polyneuritis and very often associated with hyperchromic or hypochromic anaemia, with or without gastric anacidity (hypoacidity).

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3. Senile encephalomyelosis appears to be much more frequent in women than in men.

4. The relationship of senile encephalomyelosis to senile anorexia, primary cachexia, senile hypochromic achylic anaemia and pernicious anaemia can be established.

5. Hypervitaminization, particularly treatment with vitamin B_1, liver extract and nicotinic acid, seems to give very good results.

6. Every case of so-called senile delirium or of the apparent confusional and hallucinatory type of senile dementia should be examined from this point of view and tentative hypervitaminization should be instituted.

7. The pathogenesis of senile encephalomyelosis is unknown. A possible hypothesis, however, is that hormonal and, more especially, pituitary disturbances might be responsible. (Author's abstr.)

The Clinical Value of Hallucinations in Localizing Brain Tumours.

One or more types of hallucinations were experienced by 96 out of a group of 458 cases of supratentorial brain tumour. Formed auditory hallucinations were related predominantly to temporal lobe lesions, though the parietal and frontal were also involved. Unformed auditory hallucinations were related predominantly to frontal and temporal lesions, though all the lobes were involved, as well as midline lesions, notably the pituitary: in lobe lesions the hallucinations were usually on the side of the lesions. Although pure occipital lobe lesions gave rise only to visual hallucinations, either formed or unformed, or xanthopsia, formed and unformed visual hallucinations were related to lesions in all the lobes of the brain in almost equal distribution, the temporal showing a slight predominance. Xanthopsia seemed related to occipital lobe lesions. Olfactory hallucinations were related to lobe lesions throughout the entire brain, though mainly to the temporal, with frontal and parietal next in descending order. Tactile hallucinations appeared with lesions of the frontal, parietal and temporal lobes. Although the parietal lobe gave rise to the widest variety of types of hallucinations, pure parietal lobe lesions gave rise to a relatively high incidence of tactile hallucinations. Gustatory hallucinations tended to appear together with olfactory hallucinations and to be related to temporal lobe lesions. It was noted that the temporal was the lobe most frequently involved by all tumours, and that the parietal and temporal are the two centrally located lobes in the brain. The occipital lobe seems most restricted to only visual hallucinations.

Though there are tendencies for certain types of hallucinations to be predominantly related to certain lobes of the brain, these hallucinations also tend to be caused by adjacent or distant lobes. (Author's abstr.)

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Self-inflicted Bullet Wound of Frontal Lobes in a Depression with Recovery.

A 49-year-old female suffering from a depression complicated by alcoholism had made several unsuccessful suicidal attempts. In 1937 she became acutely depressed and shot a ·25 calibre bullet through both frontal lobes. The bullet is still lodged in the left supra-orbital region, the patient having a rhinorrhoea and pneumoventricle for several months. Neurological findings were uncertain and transitory, with the exception of a series of severe convulsions which occurred two years after the shooting. The patient's alcoholism has persisted, but her depression, which cleared up directly after the shooting, has remained absent for over three years. Psychological tests indicate childishness, facetiousness and extroversion with no evidence of any organic change in her intellectual status.

(Author's abstr.)

The Syndrome of Internal Frontal Hyperostosis.

There is a syndrome occurring almost exclusively in females, whose pathognomonic sign is internal frontal hyperostosis, and which is generally accompanied by truncal obesity and frequently by facial hirsutism. Certain other metabolic and physiologic disturbances are more or less commonly observed. Considerable experimental, morphologic and pathophysiologic evidence now exists to point to the aetiologic importance in this disease of dysfunction of the anterior lobes of the pituitary gland. Neurologic and mental sequelae, as a consequence of the presence of the hyperostoses, appear to be quite infrequent. In the series of cases here presented it was felt that the neuropsychiatric signs and symptoms were not to be attributed to the effect of the hyperostosis on the underlying brain tissue, but were the result of other factors, such as cerebral arteriosclerosis, hypertension, etc.

(Author's abstr.)

Histopathological Changes in Experimental Metrazol Convulsions in Monkeys.

In five monkeys studied after a number of metrazol-induced convulsions it was observed that—

1. Histopathological changes in the central nervous system are not always present. When they occur they are not proportional to the number of convulsions, to the dosage of the drug or to the duration of the seizures.

2. The alterations, if found, are very mild, considerably milder than the ones described after insulin treatment. They consist of small groups of cells which present acute degenerative changes or at times the severe type of degeneration described by Nissl.

3. In two cases examined with the Pickworth method anaemia of external

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cortical layers, anaemic and hyperaemic foci in the inner areas or generalized breaking up of the capillary blood columns network were observed.

4. These vascular modifications appear to be of functional character and do not seem to be responsible for the cellular lesions inasmuch as they are not generally accompanied by nerve-cell changes.

5. Interstitial and parenchymatous nephritis was always found, and the question of its possible relationship to some pre-existing pathological conditions aggravated by the metrazol is raised.

6. A pigment which gives no Prussian blue or Gmelin reaction was noted in the liver in four of the five cases examined. (Author's abstr.)

The Comparative Effects of Coma Doses of Amorphous Insulin Administered Intravenously and Subcutaneously to Psychotic Patients.

1. In a group of 13 schizophrenic patients the blood sugar fell more promptly in response to coma doses of amorphous insulin given intravenously than to those given subcutaneously.

2. The fall in blood sugar in response to coma doses of insulin given intravenously occurs at about the same rate as in response to small doses—e.g. 10 units. In the latter case the blood sugar returns to normal values rapidly, whereas in the former it stays low for a prolonged time, so that coma ensues.

3. The only practical advantage of the intravenous administration of insulin is the shortening of the pre-coma period.

4. There was no appreciable difference in the coma doses required between the two methods of administration.

5. There was no significant difference in the complications resulting from the two methods of injection.

6. Spontaneous emergence from coma produced by intravenous insulin is rare. (Authors' abstr.)

The Effect of Nicotinic Acid in Stupor, Lethargy and Various other Psychiatric Disorders.

Thirty-eight patients in stuporous states or in active psychoses without evident cause showed prompt and often very impressive improvement after treatment with nicotinic acid.

The usual criteria for the clinical diagnosis of pellagra or of other deficiency syndromes were absent.

This experience leads to the belief that many patients whose psychiatric status suggests the diagnosis of toxic psychosis or exhaustion delirium may be relieved of their symptoms by the administration of nicotinic acid. It is believed that in such cases and in cases who show unexplained clouding of consciousness a therapeutic trial of nicotinic acid is the only means available by which it can be determined whether or not the psychosis is due to avitaminosis.

In some exceptional cases, even when clinical evidence of pellagra is absent, extremely large amounts of nicotinic acid are necessary to obtain satisfactory results. (Authors' abstr.)

Pneumo-Encephalography in Epilepsy.

The author has presented a partial review of the literature dealing with encephalographic studies of groups of epileptics, together with a summary of his experience with encephalography in 286 institutionalized epileptic patients. From his studies he believes that we may draw the following conclusions:

1. Encephalography is a valuable and relatively safe procedure in the study of epileptic patients.

2. The value of this procedure has been considered from the standpoint of diagnosis, prognosis and treatment.

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A. There is no lesion characteristic of epilepsy as revealed by encephalography. The structural changes revealed by this method cannot be differentiated with regard to aetiologic agent, nor from similar changes in non-epileptic individuals. These changes in themselves are not an essential part of the convulsive disorder, but may be regarded as concomitant or as a result of the same process giving rise to the epileptic manifestations. Encephalography has revealed the presence of lesions in some patients which were not indicated from the history or by the physical and neurological examinations. The relatively frequent occurrence of incomplete drainage and failure of the ventricles to fill with air in the symptomatic groups may indicate that this phenomenon may be of more significance as evidence of abnormality than was formerly believed.

B. The most valuable aspect of encephalography is that of prognosis. The presence of irreversible changes in structure is convincing evidence that often little can be done for the patient other than to render his existence as comfortable as possible. (Author's abstr.)

ANAL. PSIHOL.

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The Psychology of Creative Imagination.

The research based on numerous experiments, including the Wartegg test, attempts to determine the character and types of imagination. The internal processes of imagination develop in accordance with three determining factors: intellect, affect, and unconscious factors. The following phases in the development of imagination are distinguished: Up to the age of 3 imagination remains mainly receptive; between 3 and 6 years it manifests itself most and is characterized by animalism; after the age of 6 the child differentiates freely between dream and reality. Between 12 and 13 years the critical spirit appears. At puberty imagination functions as much about things in the past as of those in the future. The years that follow direct the imagination towards creativity. Imagination assumes different types: artistic, scientific, practical; each of these is subdivided into numerous degrees of a general or particular static or dynamic objective or subjective type. Among abnormals imagination exists according to the degree of abnormality. Idiots lack it completely and imbeciles evidence it sporadically.

S. M. STRONG (Psychol. Abstr.).

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APRIL.

*Precocious Puberty and Tumours of the Hypothalamus. *Weinberger, L. M., and Grant, F. C.* 762

Effect of Liver Therapy on Pathways of Spinal Cord in Subacute Combined Degeneration.

The cases of ten patients who had pernicious anaemia with subacute combined degeneration of the cord and who received liver therapy were studied clinically and histologically.

The subjective neurologic symptoms improved in all cases except one. Improvement in the objective neurologic signs was observed in only three cases.

The pathologic process in these instances was not as noticeable and the myelin sheaths and axis-cylinders were not as extensively destroyed as in cases of untreated or mildly treated patients. In five of these ten cases the degeneration, instead of involving the posterolateral tracts, was limited to the posterior columns and rarely invaded the pyramidal pathways. Even in the other five cases the pathologic changes were most marked in the posterior columns. In all instances there was progressive glial change (gliosis), which was most pronounced in the posterior columns. This type of gliosis was not observed in patients with subacute combined degeneration who did not receive liver therapy.

By the early administration of adequate liver extract parenterally, cessation and reduction in the swelling of the myelin sheath can be accomplished, thus preventing further destruction of the axis-cylinders. The function of the axis-cylinders can thus be restored, provided they are not completely destroyed. This form of treatment also induces glial productivity. (Author's abstr.)

Precocious Puberty and Tumours of the Hypothalamus.

When the pathologic evidence is summarized regarding the occurrence of precocious puberty with lesions in the third ventricle, several facts become evident. First, tumours or other lesions predominantly involving the hypothalamus may be associated with precocious puberty even though the pineal body is unaffected. Second, because of the anatomic position of the pineal body, tumours arising either from it or in its neighbourhood almost invariably destroy or compress the posterior portion of the hypothalamus. There is, further, no unequivocal evidence, pathologic or experimental, proving that the pineal body has a secretion or that its extracts have any effect on sexual development. In view of the long-known effects of pathologic and experimental lesions of the hypothalamus on sexual functions, the proposal is submitted that precocious puberty, when occurring under the conditions indicated, is purely a hypothalamic syndrome. The authors believe that it is a rare variant of sexual disorder, the opposite of the sexual dystrophies so commonly witnessed in the hypothalamic lesions. There is, moreover, a large body of evidence showing that true pubertas praecox may be produced in both man and animals by extracts of the anterior lobe of the hypophysis. There is also considerable experimental work demonstrating the functional relationship between the hypothalamus and the pars distalis with respect to many sexual activities. The bulk of the experimentation indicates that the hypothalamus controls the release of the gonad-stimulating substances from the pars distalis. Investigations pursued with the purpose of locating the portion of the hypothalamus which serves to integrate or initiate the several varieties of sexual activity have shown that the posterior portion of the hypothalamus, at least, contains the mechanisms controlling oestral behaviour and mating. Ovulation has been produced by direct stimulation of the hypothalamus, some authors again producing it by stimulation of the posterior portion of the hypothalamus. Many of these mechanisms are, therefore, located precisely in the area usually affected by tumours which in man result in precocious puberty. Other lesions, such as certain inflammations or ventricular distension which may affect chiefly the grey matter lining the third ventricle, also cause precocious puberty.

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A tentative theory of the pathophysiologic basis of precocious puberty when associated with hypothalamic tumours is as follows: Tumours in the mechanism or neural pathways which normally serve to control or inhibit the rate, character, or intensity of the nerve impulses passing to the pars distalis. Whether this transmission is directly through neural connections or through indirect neurohumoral intermediation is still uncertain. The pars distalis released from its normal inhibiting control produces or releases excessive amounts of gonadotropic substances. These, in turn, stimulate the ovaries or testicles in hyperactivity. The result of this ovarian or testicular excitation is the production of oestrogenic or androgenic substances which are immediately responsible for the development of the secondary sexual characteristics. The presence of adult quantities of oestrogen or androgen in the urines of the patients in the few cases that have been studied from this aspect is indirect proof of hyperactivity of the pars distalis. The endocrine estimations, therefore, support the contention that precocious puberty is due to uncontrolled release of pituitary substances as a consequent manifestation of hypothalamic disturbance, rather than to any hypothetic, and as yet unproved pineal secretion. Unfortunately there have been no experimental lesions placed in the posterior portion of the hypothalamus of young animals in an attempt to produce precocious puberty. The final and conclusive link of evidence is yet to be gathered. It is hoped that investigators will turn their interests in this direction.

(Authors' abstr.)

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Electroencephalography on Cats after Removal of the Neopallium.

The E.E.G. recorded no alpha waves in cats after complete removal of the neopallium. Only beta waves appeared. The electrodes were placed on the skin of the head dorsal to the neopallium. In cases of unilateral extirpation, with recordings on the unoperated side of the head, records were quite normal. From these results the authors conclude that the alpha waves arise in the part of the neopallium from which the records are taken. More or less clear alpha waves could be obtained directly from subcortical areas after decortication. Their amplitude was very small, however, and they differed in other respects from the E.E.G. of normal cats. The authors discuss the possibility of the transmission

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of alpha waves from the new and the old brain to other subcortical tissues. Moreover, they raise the question as to whether these subcortical areas actually produce an alpha rhythm. C. P. STONE (Psychol. Abstr.).

Note on Electroencephalography of the Brain Stem and Cerebellum of Cats.

E. E. G. obtained by placing the electrodes in various parts of the mesencephalon and the cerebellum were totally lacking in alpha waves. The waves obtained resemble in every respect the beta wave as obtained from the intact brain of the cat. C. P. STONE (Psychol. Abstr.).

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Clinical Trial of Beta Erythroidine Hydrochloride in Hypertonic and in Hyperkinetic States.

Clinical experience with beta erythroidine hydrochloride, a drug possessing a curare-like pharmacologic action, indicates that it exerts a slight, inconstant and transient lissive (loosening) action on the skeletal musculature in hypertonic states. These effects are accompanied by such constant and undesirable side effects as to militate against its clinical use.

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Observations in the cases of chronic encephalitis with Parkinsonism indicate that the drug has no value in the treatment of tremor.

Beta erythroidine hydrochloride apparently possesses a small margin of safety and is not to be recommended for clinical trial. (Authors' abstr.)

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Neuropathologic Changes Associated with Experimental Anaphylaxis in the Monkey.

The pathological changes in the central nervous system of monkeys in which anaphylactic shocks had been produced in various ways are described.

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In brains of animals in which the experimental conditions for the occurrence of the Arthus phenomenon were realized, extensive foci of haemorrhagic necrosis were observed at the site of the injection of the shocking dose. These lesions showed essentially the same features as those observed in the Arthus phenomenon in other tissues.

A second type of lesions was observed in ten monkeys which were given either a varying number of intracerebral and intravenous injections of antigen or only intracerebral injections. These lesions were scattered throughout the central nervous system and consisted of foci of demyelination, often perivascular in character. Within the foci, scavenging cells, lymphocytes and peculiar giant cells were observed. In discussing the pathogenesis of this type of lesion, the hypothesis is advanced that the damaged tissue in combination with the foreign protein produces brain-specific antibodies, which bring about the pathologic changes. (Author's abstr.)

Altered Concept of Therapy of Involutional Melancholia with Oestrogen and Androgen.

Twenty-four patients exhibiting depressive psychosis associated with or following the menopause were given large quantities of oestrogen and androgen. The patients were divided into two groups, the first of which, consisting of 14, presented the classic picture of involutional melancholia, while the remaining 10 had involutional psychosis with atypical features. In the group with the true melancholia the rate of improvement was but little greater than that which usually occurs spontaneously. However, 70 per cent. of the other or atypical group of patients improved to the extent of being able to return home and carry on a fairly normal social existence. Further, laboratory data indicated that treatment with oestrogen and androgen produced basic physiologic alterations in nearly all of the patients, regardless of the psychiatric result. (Authors' abstr.)

The Peripheral Nerves in Cases of Nutritional Deficiency.

Peripheral nerves from pellagrins and from persons who had no evidence of nutritional deficiency were compared microscopically.

It was found that the myelin sheaths were reduced in number in eight of ten persons with pellagra. The axis-cylinders were involved in the process, usually with the same severity as the myelin sheaths. The myelin sheath loss was extreme in the pellagrin who was addicted to alcohol. One person addicted to alcohol and free from signs of neuritis had a comparatively low myelin sheath content of the peripheral nerve.

The study of the morphologic changes in peripheral nerves leaves much to be desired in the analysis of the syndrome of neuritis. Mild clinical signs may appear in the face of an apparently normal myelin sheath content of the nerve. It is conceivable that a small sample of the nerve may not indicate the condition of the whole nerve, from its origin in the anterior horn to its termination.

At present, the accurate diagnosis of minimal neuritis is difficult and should be made with care. Deviation of the tendon reflexes from normal is probably the most reliable sign of peripheral neuritis. Spontaneous pain and muscle tenderness in the limbs may be present when the myelin sheath content of the nerve is normal. (Authors' abstr.)

Dullness as an Epileptic Equivalent.

A group of cases of "epilepsy" is reported in which periods of dullness, mental retardation, apathy and mild confusion occurred, lasting hours to days, in addition to definite attacks of typical *grand mal*, *petit mal* or psychomotor type.

Such periods are to be distinguished from neurosomatic deterioration, from the results of medication with sedatives, from the usual type of psychomotor attacks and from psychologic reactions to the disease by several criteria. First, careful anamnestic study will reveal the intermittency of the symptom, its relation, if any,

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to sedative medication, its precise nature (usually without striking affective disturbance), and the patient's attitude toward it. Second, electroencephalographic records may demonstrate a correlation between the patient's reaction time, or his subjective awareness of retardation, and the presence of an abnormal rhythm. Third, the effect of a non-sedative anticonvulsant on the symptom may be determined. (Authors' abstr.)

Pick's Disease.

A case of Pick's disease has been diagnosed on the basis of psychologic examination supplemented by encephalographic observations.

On the basis of the tests administered it is concluded that a unitary explanation of the available psychologic data is indicated, namely, that inability of the patient to understand a concept is in inverse proportion to the complexity of the concept.

Progressively developing dementia without focal signs, such as aphasia or apraxia, may be the sole manifestation of this morbid condition.

The histologic changes are not circumscribed but are diffuse, and involve both the parenchyma and the white substance as well as the glia of the entire brain, including the basal ganglia, the cerebellum, the pons and the medulla and probably the entire spinal cord.

The glial changes overshadow those of the parenchyma, where they are generally mild and may even be absent.

The cerebral changes are in some features analogous to those of sclerotic (parenchymatous) atrophy of the cerebellum and may be combined with it.

The changes bear also great resemblance to those occurring as the result of prolonged administration of metrazol and are probably due to a chronic intoxication. (Authors' abstr.)

The Electroencephalogram of Children with Focal Convulsive Seizures.

A series of cases of so-called focal cortical seizures has been studied by electroencephalographic, pneumoencephalographic and clinical neurologic methods.

In none of these cases did electroencephalographic studies show that purely focal cortical disturbances were responsible for the seizures. The abnormal rhythms were diffuse in all cases, but there was a definite tendency for these waves to be more prominent on the side opposite that of the convulsions. No one type of pathologic waves was found exclusively. Focal cortical seizures and generalized convulsions differ from each other only in the fact that in the former, electroencephalographic abnormality tends to be present more on one side of the brain than on the other, and sometimes to be even more closely localized.

The clinical neurologic and the electroencephalographic findings bore closer relationship to each other and to the laterality of the convulsions than did the pneumoencephalographic changes, which gave little contributory data in most cases.

Only those cases in which the results of all three methods of investigation agree as to the location of a focal lesion are suitable for surgical exploration. (Authors' abstr.)

Changes in Retinal Arteries before Convulsions Induced by Electric Shock.

These observations may be summarized as follows:

The electric shock *per se* has no prolonged effect on the artery, and any immediate effect is one of dilatation, as indicated by the two observations made in three to four seconds after the passage of the current.

In all cases in which a sufficiently prolonged period of unconsciousness precedes the active convulsive state the retinal arteries constrict prior to the onset of the convulsion.

In the majority of cases in which no retinal constriction occurs during the period of " absence," no convulsion occurs. Three observations out of 13 tended to refute this as a general rule.

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From the preceding observations one may conclude that in cases of convulsions following electric shock a spasm of the retinal arteries, during the " absence," usually precedes the generalized convulsion, and that as a rule a spasm does not occur if the effect of the shock is to give only a " *petit mal* " seizure of an " absent " state. In addition, if one can infer that the appearance of the retinal artery accurately reflects the condition of the smaller cerebral arteries one may conclude that the arterial spasm does not cause the convulsion, but is itself an early part of the process sent into action by something else—in this case, the electric shock.

(Author's abstr.)

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Electro-encephalographic Classification of the Epilepsies.

Definite abnormalities of a paroxysmal character were observed in the electro-encephalograms of 468 of a total of 496 epileptic patients examined, or 95 per cent. A total of 936 records, taken mostly between clinical seizures, were analysed and the various forms of abnormality classified without reference to other clinical data. The pattern of clinical attack was then related to the electro-encephalographic findings, as were also possible aetiologic agents. The principal results are summarized in tabular form.

1. Sudden outbursts of high voltage waves, called paroxysmal hypersynchrony, were the distinguishing feature of electro-encephalograms obtained from epileptic patients. This excessive cortical discharge may occur without abnormal frequencies (dysrhythmia).

2. Localization was found to be the most satisfactory basis for classification of electro-encephalographic records. The three principal kinds were (*a*) localized unilateral cortical, (*b*) bilaterally synchronous from homologous areas, and (*c*) diffuse.

3. Wave forms and patterns were important for the detailed analysis of each

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case. They were divided into random waves and paroxysmal rhythms. Three types of random waves were spikes, sharp waves and delta waves. The six forms of paroxysmal rhythm were 3 per second waves and spikes, 3 per second waves, 6 per second waves, 10 per second waves, 14 per second waves, and 25 per second waves.

4. Abnormality localized to a discrete area of one hemisphere was found in about one-half of the cases studied. The principal localized forms were random spikes, random sharp waves, random delta waves and paroxysmal rhythms. The random spike was the best indication of superficial local cortical epileptic discharge. Seizures with focal cortical onset and gradual march were most common in patients with this pattern, the specific type of onset being related to the function of the cortical area primarily involved.

5. Bilaterally synchronous abnormality, observed in 35 per cent. of cases, appeared chiefly bifrontal or bitemporal and occasionally bi-occipital. The principal forms were the 3 per second wave and spike pattern, sharp waves, 3 per second waves and 6 per second waves. The 3 per second wave and spike rhythm and the 3 per second waves were usually bifrontal and were often present in the same patient, with minor attacks usually of the *petit mal* form and major attacks which become generalized, with initial loss of consciousness at the onset. Sharp waves usually appeared as bitemporal, and were present in patients with onset of major seizures and minor attacks referable to structures lying within or deep to the temporal lobes. Many had visceral auras with complex disturbances of thinking or behaviour (automatisms; psychomotor attacks). Six per second waves appeared as either bifrontal (often associated with 3 per second waves) or as bitemporal, when associated with the sharp wave forms. Visceral auras and epileptic automatisms were often prominent.

6. Diffuse abnormality, without bilateral synchrony, was found in about 15 per cent. of the cases. Three principal forms were diffuse multiple spikes, diffuse multiple sharp waves and diffuse multiple delta activity. Patients with diffuse multiple spikes and diffuse multiple sharp waves most commonly had major generalized seizures with no consistent focal cortical onset.

7. The pattern of clinical seizure shows a close relationship to the form of the electro-encephalogram, particularly with regard to localization. The localization of specific groups of neurons, the excessive discharge of which marks the onset of an epileptic seizure, and existing relations between these primary foci and the rest of the brain, may determine both the form of the electro-encephalogram and the pattern of clinical seizure, independent of the nature of the aetiologic factor in each case. (Authors' abstr.)

Involutional Melancholia.

1. Treatment of 68 patients having involutional melancholia with oestrone led to social readjustment in 88·2 per cent. of the patients.

2. As a result of experience over a period of years in treating patients having involutional melancholia and from knowledge of the experience of others, the authors are impelled to believe that their original observation is correct, namely that involutional melancholia is an exaggerated form of the climacteric syndrome.

3. From their own experience and that of others, they are convinced that oestrogenic substances are very efficacious in relieving involutional melancholia and in assisting patients to social readjustment.

4. Larger doses of oestrone than they first recommended should be administered. Instead of 1,000 or 2,000 international units every other day, doses of 10,000 to 20,000 units should be used until the patient shows improvement.

(Authors' abstr.)

The Human Pyramidal Tract.

There is a great variability in the size of the large motor or so-called Betz cells in area 4 of man.

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Of the cells measuring between 900 and 4,100 square microns, there is a somewhat gradual and uniform decrease in numbers from the smallest to the largest.

In each third of the motor region there is a mixture of cells of various sizes, but all have a preponderance of the diminutive type.

The upper third has more cells of all sizes than in the middle portion, and the latter has more cells of all magnitudes than the lower third.

The average size of the cells measured in the upper third is 1,978 square microns, in the middle third 1,702 square microns, and in the lower third 1,592 square microns.

The term Betz or giant cell is non-specific. Therefore, it cannot be said with assurance that these cells give sole origin to the pyramidal tract fibres.

The author considers that the large motor cells of area 4 may be concerned with conveying speedy impulses to the lower motor neurons.

(Author's abstr.)

Peripheral Blood Flow in Schizophrenia and Other Abnormal Mental States.

Studies of peripheral blood flow, using the venous occlusion plethysmographic method, were made on a series of 29 schizophrenic patients and on 23 subjects with other mental diseases, including psychoneurosis, mental deficiency, chronic alcoholism, manic-depressive psychosis and dementia paralytica.

In the great majority of the psychotic patients the peripheral blood flow was markedly or moderately diminished in the hand, whereas the readings for the forearm and the leg were either normal or increased. Exposure of the extremity to local heat, so as to cause maximal dilatation of the cutaneous vessels, resulted in an increased flow in the hand, which was now as great as that obtained in normal subjects under the same conditions.

Reactive hyperaemia, produced in psychotic patients by the application of an arterial occlusion pressure, was similar in all respects to that observed in normal subjects.

These studies demonstrate that there is no lesion of the arterial tree at the periphery in schizophrenia or in the other mental diseases studied. The reduced blood flow observed in the hand is probably due to an excessive vasoconstrictor tonus.

The conflicting results obtained in studies on circulation time in patients with schizophrenia can be attributed, in part at least, to the variable blood-flow in the hand observed in this state. (Authors' abstr.)

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Dietetic and Related Studies on Multiple Sclerosis.

An investigation was made of the lifelong dietary habits of 34 patients with multiple sclerosis. In general, patients with multiple sclerosis are poor eaters, the consumption of visible fat, particularly of dairy fat, being especially poor. In 17 patients these defects were quite obvious. In five others the material gave ground for strong suspicion that the defects existed. In eight there was suggestive, but uncertain, evidence, and in four there were no signs of abnormality.

Study of the relationship of food intake, weight, intercurrent events and course of the disease suggested a possible connection between nutritional inadequacy and the disease. (Authors' abstr.)

Multiple Primary Tumours of the Spinal Cord.

The clinical and pathologic features of two cases of multiple intramedullary tumours of the spinal cord are presented. Multiple intramedullary tumours are most frequently ependymomas, and they may be associated with Recklinghausen's disease of the central nervous system. The association of ependymomas with neurinomas and meningiomas is emphasized. The clinical course of such tumours may be greatly protracted and frequently many of the growths are asymptomatic. (Author's abstr.)

Prevention of Traumatic Complications in Convulsive Shock Therapy by Magnesium Sulphate.

1. Solutions of magnesium sulphate, a drug with a curare-like action, have proved to be satisfactory for prevention of traumatic complications in convulsive shock therapy.

2. The dosage of magnesium sulphate is more accurate and easier to gauge with relation to the patient than that of curare, as the margin of safety is much greater. The preparation of this drug is relatively simple and economical. (Author's abstr.)

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Prognostic Value of Intravenous Administration of Sodium Amytal in Cases of Schizophrenia.

One hundred patients suffering from schizophrenia who received sodium amytal intravenously have been followed from one to eight years.

Of the 70 patients treated by non-shock methods, ten had previously shown good reactions to sodium amytal and made either a complete or a social recovery. Of the 47 patients who had shown poor reactions to sodium amytal, 44 failed to improve or continued to deteriorate.

Of the 30 patients treated by insulin or mecholyl methods, five had shown good reactions to sodium amytal and made either a complete or social recovery. Of the 14 patients who had shown poor reactions to sodium amytal, nine were unimproved, while four made either a complete or social recovery.

Of the entire group of 100 patients forming the basis of this study, 15 had shown a good reaction to sodium amytal, and all of these patients made either a complete or a social recovery. Of the 61 patients who had shown poor reactions to sodium amytal 53 were unimproved.

Repeated intravenous injections of sodium amytal as indicated by the type of response are helpful in following the course of the psychosis.

(Authors' abstr.)

Histogenesis of Senile Plaques.

The great majority, if not all, of senile plaques arise primarily from nerve cells which have undergone degeneration ; in a great proportion of these cells the degeneration consists of Alzheimer's neurofibrillary change. The resulting necrobiotic focus (consisting of remnants of nerve cells, axons, dendrites and neurofibrils) attracts the microglia cells, which, while attempting to function in their physiologic role, may become a part of the plaque. The oligodendroglia cells most probably become involved in the plaque by mere coincidence. There is evidence that the astrocytes, at least at times, attempt glial repair of the plaque.

Methods of research are, as yet, not adequate enough to provide an explanation of the complex biochemical processes which cause degeneration of the nerve cells, and hence initiate formation of the senile plaque. (Author's abstr.)

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Analysis of One Hundred Cases of Schizophrenia with Recovery.

Prognosis for schizophrenia is fraught with difficulties, and the usual attempts are likely to be misleading. Long-term contact with schizophrenic patients reveals unexpected and unpredictable changes in course and recovery. Prognosis made in the cases under discussion went considerably amiss because of neglect of any specifically available items for the determination of outcome. It would appear that the clinical picture is not a valid criterion, since such patients often show the disturbances in content of delusional ideas, hallucinations, motor over-activity and oddities and state of puzzle and panic which are commonly seen in all parergasic patients. Many factors play a role in recovery, some of which are largely unpredictable. It becomes imperative, therefore, to search for the available assets in every case, as well as to evaluate the severity or the characteristic features of the psychosis itself. Aside from the psychotic picture, one must bear in mind the complexity of components presented by the patient and the nature of the environment to which the patient returns.

From a review of the cases of these 100 recovered patients, certain conclusions are possible. The outcome would seem to be slightly better for women than men. The hereditary factor is outstanding, a larger number having a family history of schizophrenic and affective psychoses. This would seem to mean that these patients are more susceptible to the development of schizophrenia, which of itself is of less significance than a comparable development in a better organized personality. These patients show a more characteristic schizoid personality make-up. Disturbing environmental factors are prominent, and acute disrupting precipitating events are common. The role of innate intelligence and education does not seem significant.

The most favourable age of onset appears to be between 21 and 30. Thirty-four per cent. of the persons in this age group had shown previous disturbances. Acute onset is the rule, and a short period of hospitalization is characteristic. Rapid recovery within six months seems to characterize the patients who have remained well. Recurrences are rare, and in no case did more than two relapses occur.

The psychosis itself commonly occurs in the presence of somatic disturbances. The affect is for the most part well preserved throughout the psychotic picture. A third of all the patients showed no hallucinations. The hallucinatory occurrence is predominant in the auditory field. Half the patients showed the capacity for establishing contact and maintaining rapport at some time during their illness. States of panic and fright are common. The thinking abilities are relatively intact. The presence of actual delusional content does not seem ominous. It is usually allopsychic in projection, but was predominantly autopsychic in 13 of the patients. Delusional hypochondriacal ideas occurred frequently, but, interestingly, hypochondriacal concern prior to the psychotic episode was relatively rare. Insight is more commonly absent, and its preservation does not seem important as a criterion for recovery. Recovery may occur after discharge from the hospital.

The most striking single factor for recovery seems to be a long term contact

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with a physician or a clinic. These patients are capable of accepting guidance and of resolving personal conflicts with the help of the psychiatrist. Important, also, are the presence of a favourable and understanding environment to which the patient can be returned and the help to be obtained from co-operative families in carrying out recommendations. Removal of the precipitating strains is important, as is the person's own ability to utilize advice for resynthesis of the personality.
(Author's abstr.)

Fibre Connections of Corpus Striatum as seen in Marchi Preparations.

The authors believe that the internal division of the globus pallidus gives rise to most, if not all, of the fibres of the ansa and fasciculus lenticularis. After destruction of these bundles within the hypothalamus, the cells of the internal division disappear, while those of the external division remain normal. Lesions involving chiefly the internal division caused degeneration of the ansa and fasciculus lenticularis, while a lesion confined to the external division did not. After lesions involving both divisions, degenerating fibres could be traced into the ansa and fasciculus lenticularis from the internal divisions only. None of the large fibres characteristic of these fascicles could be seen in the external divisions or in the internal medullary lamina.

The ansa and fasciculus lenticularis unite to form a bundle which is directed caudalward in the lateral hypothalamus. From this bundle a small fascicle runs medially and ventrally into the hypothalamus. This is the pallido-hypothalamic tract, and ends in the nucleus ventromedialis. There is some intermingling of the pallido-hypothalamic tract with fibres from Ganser's commissure, but the authors have not been able to trace any fibres from this tract across the midline.

The vast majority of the fibres of the ansa and fasciculus lenticularis run caudalward as far as the field H of Forel. They then turn dorsally and laterally in the fasciculus thalamicus to end in the nucleus ventralis anterior of the thalamus. The Vogts saw this looplike connection of the fibres of fields H_1 and H_2, but were unable to tell in which direction the fibres were running. Papez has recently recognized this loop and correctly assumed that the fibres run from the pallidum through fields H_2, H and H_1 to the thalamus. In our Marchi material this has been established beyond doubt, and it becomes clear that the number of fibres which reach the thalamus in this way is very large. Papez expressed the belief that some of the fibres end in field H, the impulses being relayed from this point to the red nucleus. We have no evidence bearing on this point. We could find no evidence in our Marchi material that fibres from the ansa or fasciculus lenticularis descend through the field H to enter the red nucleus, the subthalamic nucleus, the substantia nigra, the interstitial nucleus, or the posterior commissure. Some degenerated fibres from the caudal border of the fasciculus lenticularis which did not enter field H could be traced to the ventro-lateral part of the capsule of the red nucleus.

The external division of the globus pallidus gives rise to the pallido-subthalamic fibres. Arising from the cells of this division, these fibres run backwards for some distance before they turn medially and across the ventral end of the internal capsule and enter the subthalamic nucleus through its ventrolateral surface. None of these fibres could be traced to the substantia nigra or the red nucleus.

Fibres have been traced from the globus pallidus to the lateral habenular nucleus. Wilson saw these fibres in that part of their course in which they lie in the stratum zonale on the dorsum of the thalamus between the anterior nucleus and the tail of the caudate nucleus, and described them as degenerated fibres in the stratum subcaudatum.

The caudate nucleus gives rise to fibres which cross the internal capsule into the external division of the globus pallidus, within which many of them terminate. Some of them end in the internal division. In Marchi preparations following lesions of the caudate nucleus no degenerated fibres could be traced entirely through the globus pallidus. The putamen gives rise to fine fibres which are grouped in bundles that converge medially and enter the globus pallidus, where they end.

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None could be traced in Marchi preparations through the globus pallidus. After lesions in the caudate nucleus or putamen no degenerated fibres were seen in the ansa or the fasciculus lenticularis. Nor were any pallido-subthalamic or strio-nigral fibres degenerated.

Strio-nigral fibres, joining the corpus striatum with the substantia nigra, have been described by Papez and others. They are slender and take a peculiar light bluish-brown stain, so that they can be followed in sections of the normal brain stained by the Weil or the Weigert method. In Marchi preparations there was no evidence of their degeneration after lesions in any part of the corpus striatum. Perhaps this failure to stain was due to the small amount of myelin they contain. We must not overlook the possibility that they may be ascending fibres from the substantia nigra to the corpus striatum.

Fibre connection between the globus pallidus and the thalamus include the numerous pallido-thalamic fibres which run through fields H_2, H and H_1 to the nucleus ventralis anterior of the thalamus. In a decorticate brain, other fibres, crossing the degenerated internal capsule obliquely, were seen joining the nucleus ventralis anterior and the globus pallidus. Because none of these fibres degenerated after pallidal lesions in their monkeys, the authors think it probable that the direction of these fibres is from the thalamus to the pallidum. (Authors' abstr.)

Pathologic and Mental Alterations in a Case of Simmonds' Disease.

A case of Simmonds' disease is presented which appeared after childbirth and was associated early in the course of the illness with a manic-depressive psychosis. The pituitary gland showed a unique, progressive, non-specific granulomatous process resembling allergic necrosis. There was secondary atrophy of the thyroid, adrenals, parathyroids, ovaries, uterus and breasts. These atrophic processes were accompanied by the development of marked cachexia and microsplanchnia. Scattered focal lesions observed in the central nervous system are attributed not to the psychosis, but to the repeated attacks of hypoglycaemia. Degenerative lesions in the supraoptic and paraventricular nuclei of the hypothalamus are thought to be secondary to destruction of the anterior lobe of the pituitary gland.

(Authors' abstr.)

Influence of Locomotion on the Plantar Reflex in Normal and in Physically and Mentally Inferior Persons.

It has been shown that fatigue in the sense of diminution of excitability of the motor cortex is a specific factor in bringing about an extensor response under exertion. It is reasonable to assume that under sufficiently severe exertion potentially even a healthy and vigorous person may literally " turn up his toes." However, such an effect of exertion depends, other conditions being equal, largely on the history of the early development of the cortical mechanism of upright locomotion, for a gross delay in the differentiation of locomotor functions during infancy and childhood is significantly and consistently reflected in the occurrence of a Babinski sign under relatively moderate exertion. In this sense the behaviour of the plantar reflex under exertion may be looked on as a pertinent indicator of the constitutional stamina of the subject. It is in the field of military medicine that the observation presented should be especially useful. A recruit, who after a march of a few miles or at the end of a day of routine work shows a bilateral extensor response, regardless of his intellectual and physical status otherwise, is a poor choice for assignment to an active infantry unit or a scouting detachment, although he may be proficient in other military services. (Authors' abstr.)

ARCH. DI PSICOL. NEUROL. PSICHIAT.

NO. 3. 1940.

*The Influence Exercised by Muscle Tonus in the Judgment of Time. *Longlis, L.* . . . . . .

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The Influence Exercised by Muscle Tonus in the Judgment of Time.

The accuracy of the judgment of time in sleep, as is well known, enables the subject to wake at a given hour. Ehrenwald found that short intervals of time are accurately judged during hypnotic sleep. He considered that there exists a direct unconscious appreciation of time in sleep, whilst an appreciation of the temporal sequence of events overshadows this in the waking state. The facts of Korsakov's syndrome support this dual hypothesis, in that whilst there is a profound disturbance of the temporal orientation, the same patient may give extremely accurate estimations of time in the hypnotic state. There are a number of investigators who hold that there exists a primitive mechanism for time appreciation which becomes apparent in sleep, hypnosis, and certain pathological states. This time-appraising mechanism is unconscious, and is contrasted with that which allows the temporal spacing of successive events. In this latter function a number of sensations are involved—those of movement, muscular effort and fatigue, and muscular tone. The author attempts to evaluate the part played by muscle tonus. The subject is instructed to execute movements of flexion and extension of the elbow at determined intervals and the movements are recorded graphically. At the same time the head is rotated to one side or the other in order to elicit Magnus tone reflexes in the arm. It was found that when flexor tonus was increased in the upper arm, the rapidity of flexion of the elbow was increased, and extensor tonus caused increased rapidity of the elbow extension.

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VOL. CXII.

*Organic Brain Lesions and Degeneration of Moral Conduct. *Meyer, J. E.* . 368

Season and the Onset of Phases in Manic-Depressive Psychoses.

A review of the histories of male and female patients in the Munich Psychiatric Clinic from 1930–1935 shows a definite increase in the onset of depressions in October and a lesser increase in the spring. M. E. MORSE (Psychol. Abstr.).

Vegetative Reactions in Man and their Dependence from Various Stimuli.

Jurgen's question was whether the sympathetic system can respond differentially to specific stimuli, or only diffusely. The method consisted in simultaneous registrations of the finger plethysmogram, the galvanic skin reflex, electrocardiogram, and electro-encephalogram. The stimuli were deep breathing, a cry (fear), cold, and pain (prick). The skin and vasomotor reactions were not absolutely parallel, but depended on the quality of the stimulus. Stimuli having psychic meaning evoked both reactions, neutral stimuli only a vasomotor reaction. Vasoconstriction was the most pronounced and constant reaction. Pain and fear always produced a skin reaction and later vasoconstriction. A change in the heart rate occurred only in vagotonics, in whom pain, fear, and deep breathing

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produced an acceleration followed by slowing. Cold reversed this order. The electro-encephalogram showed an inhibition of the alpha rhythm, most marked with stimuli having the greatest effect on the vegetative functions (pain and fear). Differential responses occur only with weak stimuli; all strong stimuli which produce pain or psychic excitement evoke a total discharge.

M. E. MORSE (Psychol. Abstr.).

Contribution to the Pathophysiology of Attack Phenomena, Especially the Cataplectic Attack in the Narcolepsy Syndrome.

A report of a case having cataplectic attacks, preceded by sudden anxiety, sadness and weeping, and followed by narcolepsy. Electro-encephalograms were made during all phases of the cycle and during the patient's normal sleep. The electro-encephalograms of the attacks showed sudden and uniformly distributed loss of tension over the convexity, strikingly similar to physiological sleep. Those of the patient's normal sleep, clinically different forms of attacks associated with loss of tonus, and narcolepsy were indistinguishable. There was no special equivalent for anxiety. From these findings it appears that the changes in cortical activity are secondary to sub-cortical disturbances. The nature of the process is entirely different from idiopathic epilepsy. In the narcoleptic syndrome there seems to be an extension of a physiological function into the pathological.

M. E. MORSE (Psychol. Abstr.).

Organic Brain Lesions and Degeneration of Moral Conduct.

Meyer reviews the German literature and reports three clinical cases in young women, associated respectively with concussion, epidemic encephalitis, and probable tumour. Ethical conduct is composed of will, affectivity, intelligence, memory, and instinct, the integrity of which is largely essential to morality. These separate functions are localized in the cortex, and especially in the mid-brain. According to the significance of these factors within the clinical picture, the decline of moral behaviour is either focal for the entire personality or only a by-product.

M. E. MORSE (Psychol. Abstr.).

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Factors in Introversion and Extraversion.

In view of the error which is inevitably incorporated in the matrix, it seems unwise to treat as significant any saturation co-efficient less than 0·2, and for the purpose of defining a factor even higher co-efficients than this are desirable.

1. The first factor has a positive load in three of the variables, viz. 10 is persevering and stable, 9 prefers working with others, and 3 is not suspicious of motives. It has negative loads in 5, indulges in self-pity, 4, worries about possible misfortunes, and 2, is easily hurt. These factor loadings seem consistent with the conception of perseverance as described in a previous article. The quality is essentially emotional and conative stability.

2. The second factor has positive loads in 5, indulges in self-pity, 6, loses his head in excitement, 4, worries about possible misfortunes, 2, is easily hurt, and 9, prefers working with others. It has a negative load in 7, takes prominent part in social affairs. The qualities involved here do not overlap to any large extent the qualities, taken from Webb's list, by means of which the writers described the antithesis between serious-mindedness and light-heartedness in their previous article. But so far as can be seen, the two analyses are consistent with one another, and the factor may well be identical in the two cases. Moreover, the factor as it emerges seems virtually identical with Cattell's desurgency. Cattell has a wider range of epithets to describe the factor but, so far as it goes, the writers' analysis agrees with his, provided that the unsociable character of the desurgent subject which Cattell emphasizes is not identified with an inability to make friends, but merely with a dislike for the stir and confusion of social entertainments.

3. The third factor has only three definitely significant loads, viz., 9, prefers working with others, 7, takes prominent part in social affairs, and 1 makes friends easily. It may be called sociability.

4. The fourth factor is of interest. It is defined largely by the perseveration tests, which have a load of 0·48, the other two significant loads being in 8, is careful of the feelings of others, and 2, is easily hurt. These latter two traits obviously have an interconnection, some of which is due to the second factor ; most, however, is due to this fourth factor which they have in common with perseveration. This result appears to be new. In the literature " p " appears as a small persistent but elusive factor, the functional importance of which has not been clearly determined. The present analysis does not contain sufficient data to provide a decision, but the suggestion it offers should be followed up.

If this general interpretation is sound, it affords confirmation of Cattell's view that introversion and its opposite, extraversion, are not unitary characteristics. Further, it supports his argument that surgency-desurgency is one of the factors involved. But instead of accounting for the remainder by one further factor, it offers three. What Cattell calls adaptation is itself a compound involving persistence or stability, sociability, and a form of social toughness or tenderness which in some as yet unexplained way is correlated with " p." (Authors' abstr.)

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Experimentally Induced Visual Paramnesias.

1. Illustrations are given of restricted paramnesias set up in response to material for which post-hypnotic amnesia had been induced. These responses are strikingly similar to paramnesia in daily life.

2. Three moments can usually be distinguished in the paramnesic response :

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(*a*) An initial judgment of reference to the past; (*b*) a phase of perplexity marking an effort of recall; (*c*) an act of rationalization often wholly constructive in character.

3. Rationalization took various forms. One of the most common was a projection of the paramnesia on to material previously seen in the waking state. A special form of this the writers have called inter-serial displacement. Fabulation was prominent in the responses of one subject.

4. The psychology of experimental paramnesia is briefly discussed. It is pointed out that the results might depend, in part at least, on the character of the prohibition given in hypnosis.

5. The results provide some evidence in support of MacCurdy's theory of paramnesia, but throw little light on the origin of *déjà vu*. (Authors' abstr.)

The Effect of Alcohol on the Central Nervous System.

It has been shown that the degree of disturbance of central nervous system function, as indicated by performance on typewriter, dotting machine, and distraction machine, is affected not only by the absolute concentration of alcohol, but also by the rate and direction of its change. This statement is based on the following sets of observations:

1. At any given concentration of blood alcohol, the nervous disturbance is greater if this concentration is increasing than if it is decreasing.

2. The degree of nervous disturbance at any given blood-alcohol concentration increases with the rate at which this concentration is increasing.

3. The rapid recovery of the nervous system accompanying a decrease in blood-alcohol concentration is impeded if the rate of decrease is reduced.

The application of a single test at a given time after a dose of alcohol is, therefore, not likely to yield accurate information as to the magnitude of its effect in that subject. It is suggested that a test repeated every 10 min. during the hour following the dose of alcohol, or until recovery is complete, is advisable in all cases where the result is of practical importance. (Author's abstr.)

The Nature of Dark Adaptation.

The progressive delay of dark adaptation with increasing bright adapting illuminations has been found to cease at approximately 12,000 e.f.c. This result agrees with photochemical theories which postulate that the rate of dark adaptation is determined by photoproduct concentration, since the latter will be almost constant at high adapting illuminations.

Dark adaptation curves have also been taken with a test field subtending 10.. This almost eliminated summation among rods, since few were stimulated. Under these conditions rod vision is only about eight times more sensitive than cone vision, instead of about 100 times as with larger fields. The ratio of the thresholds with large and small fields also increases with time, suggesting an increase of summation during dark adaptation. (Authors' abstr.)

ARQ. DO SERV. DI ASSIST. A PSICOPAT. DO ESTADO DI SÃO PAULO.

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*Cisternal and Lumbar Cerebrospinal Fluid in Relation to Normal Values. *Lima, T., Tancredi, F., and dos Reis, J. B.* 391
Notes on the Normal Radiogram of the Infant Skull. *da Silva, C. P.* . . 427

A Contribution to the Study of Chronic Huntington's Chorea.

A clinical and anatomical study of a case of degenerative chronic Huntington's chorea, in which the heredity data are missing. The motor symptoms had been in existence for 25 years, and the mental ones for only two years. An old standing atrophic sclerosis of the corpora striata corresponded to the motor symptoms, whilst more recent cellular degeneration in the frontal and parietal cortex was related to the mental symptoms.

Sydenham's Chorea.

The aetiology of chorea is studied in relation to heredity and disposition in the light of the researches of Kehrer, Ossipoura, Gonzalos, di Sanctis, and Hornberger.

Various treatments are considered together with the results obtained by their employment. Goodman had used auto-haemotherapy with success, and the author, following the modification of this treatment suggested by Esmeraldo, used subarachnoid injections of autogenous serum in three cases, all of which recovered. The author visited the clinic of Balena, who has treated chorea with subarachnoid injections of electrargol since 1919. He verified a recovery rate of 95 per cent. and a solitary relapse which yielded to a new course of injections.

The results obtained by the author in 50 cases were equally satisfactory.

Cisternal and Lumbar Cerebrospinal Fluid in Relation to Normal Values.

The attention of the authors was arrested by a case of hyperalbuminosis in the lumbar fluid with a complete absence of clinical signs, and they undertook a systematic study of the cisternal and lumbar cerebrospinal fluid with reference to its cytology and protein content.

A bibliographic survey of previous investigations revealed great divergence of opinion as to the normal values. Simultaneous lumbar and cisternal punctures were made on 81 persons who showed no neurological symptoms. Of these cases 71 were considered to form a normal class; 10 cases were excluded from further study as they showed marked abnormalities. The following conclusions are reached:

The lumbar fluid contains 0·12 to 0·43 gm. per cent. protein, and the cisternal 0·10 to 0·26 gm. per cent.

The lumbar cisternal protein ratio is normally between 1 and 2, and a larger ratio than 3 indicates a pathological fluid.

The cerebrospinal fluid contains 0·3 cells per c.c. As a rule more cells are found in the lumbar puncture fluid.

BRAIN.

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The Significance of Lesions in the Dentate Nuclei Apparently Consecutive to Disease of the Frontal Lobes.

A histological examination of the dentate nuclei has been made in four cases where there was disease of one frontal lobe (three tumours, one tuberculoma), and in one case of glioblastoma of the parietotemporal region. In those cases in which the frontal lobe was affected pathological cell changes were present in the contralateral dentate nucleus, but in the case of glioma of the parietotemporal region the cells of the dentate nuclei were entirely normal.

No cellular lesions were observed in the cerebellar cortex or pontine nuclei, and it is therefore assumed that the lesions in the dentate nuclei constituted a retrograde transneural degeneration. The relationship between cerebellum and cerebrum which these observations suggests is fully in accord with the recent anatomical evidence that the great majority of the fibres in the superior cerebellar peduncle establish connections via the thalamus with Areas 4 and 6 of the cerebral cortex. It also lends support to the hypothesis that cerebellar function is exerted at the cortical level and not, as has so often been supposed, through extrapyramidal pathways.

The simulation of cerebellar disease which is occasionally encountered in the course of lesions of the frontal lobe, the frequently incomplete nature of the cerebellar syndrome when thus produced and, finally, the inconstancy and variability in the intensity of the symptoms and their general tendency to regress are all more readily comprehensible on the basis of this hypothesis. (Author's abstr.)

SEPTEMBER.

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Experimental Cerebral Concussion.

(1) Experimental concussion in the cat, dog and monkey show features rendering the phenomenon directly comparable with cerebral concussion as observed clinically in man.

(2) It can be defined as a direct traumatic paralysis of nervous function without vascular lesion, and persists for a varying period according to the type and severity of the injury.

(3) Pure concussion can readily be produced by subjecting an animal's head to a sufficiently high rate of change of velocity (acceleration concussion). Concussion produced by a crushing injury, striking the head while it is supported on a hard surface (compression concussion) requires a much greater force to produce the same effect, and the mechanism by which concussion results is somewhat different.

(4) Acceleration concussion results in the monkey and cat when the head is struck by a heavy mass with velocity of approximately 28 ft. per second. In the cat the velocity of 23 ft. per second was sometimes sufficient, but this is exceptional.

(5) Experimental concussion causes transient reflex paralysis of the respiratory and vasomotor mechanism, corneal and pinna reflexes, reflex deglutition and of the reflex motor mechanisms of the pons and medulla. The vasomotor and respiratory centres, while not available to reflexes during this concussive reflex paralysis, are stimulated by the injury, unless the trauma is extremely severe, when a phase of complete paralysis results.

(6) Acceleration concussion is obtained in the decerebrate animal, both with and without section of the 8th nerves. It can also be obtained with the animal under artificial respiration. The effect on the brain-stem is therefore not dependent on the fore-brain or on the vestibular influences; nor is it dependent on respiratory failure.

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(7) Acceleration concussion is not accompanied by significant change in the intracranial pressure, while in compression concussion a great increase of pressure applied with high velocity is required.

(8) Subthreshold blows often stimulate the vago-glossopharyngeal system, and in this way result in depression of cardiac, vasomotor and respiratory function for ten to thirty seconds, occasionally longer. This is a possible explanation for the " knock-out " blow in boxing.

(9) Effects derived from stimulation of the glossopharyngeal system also complicate concussion, but emerge only as the stage of paralysis passes.

(10) Stimulation of the vago-glossopharyngeal system is extremely variable in degree, and is greatly lessened by anaesthesia. The variability of this factor accounts for variation in the general effect of concussion, whereas the traumatic paralysis at certain velocities is constant.

(11) When failure of blood-pressure results from severe head injury, the mechanism appears to be identical with that of primary surgical shock, such as may be produced by tension on the mesentery or renal pedicle. Both are associated with peripheral vasoconstriction and paralysis of the venous side of the circulation. It is greatly facilitated by haemorrhage, or by repeated concussion.

(12) Death from acceleration concussion is due to failure of blood-pressure. Though this may arise from failure of the vasomotor centre during the paralytic phase of severe injury, the essential lack of recovery arises from the effect on the vago-glossopharyngeal mechanism in inducing " primary shock." Death may thus occur as a delayed effect when the stage of recovery from paralysis has begun. The reflex compensatory mechanism then makes inadequate response to the fall in blood-pressure.

(13) Both gradual and sudden compression of the brain will cause respiratory and reflex failure and failure of blood pressure, but the rise of pressure caused must be very high (about ten times the normal intracranial pressure)—many times greater than any rise of pressure which occurs during " acceleration concussion."

(14) Arterial occlusion sufficient to cause anaemia of the brain also leads to delayed failure of the respiratory, vascular and reflex mechanisms, but only after a long preliminary period of stimulation. It thus differs fundamentally from the mechanism of concussion.

(15) The paralysis of concussion is immediate. Further, it is associated experimentally with an increased blood flow through the brain and brain-stem. There is no evidence of vascular spasm of the brain during, or resulting from acceleration concussion.

(16) The paralytic phenomena of concussion we have studied are due to a direct generalized physical injury to the neurones. This injury causes immediate loss of function, but is reversible.

(17) The mechanism by which the neurones are damaged in acceleration concussion must be of great complexity. The demonstration of a threshold value for the necessary acceleration indicates that a fixed uniform physical change must play an essential part in the causation of the traumatic disorder. Haemorrhagic lesions, both extra- and intracerebral, which occur in very severe injuries, indicate distortion or stress, but not necessarily identical with that which causes concussion. The necessity for movement in the production of contre-coup lesions and concussion indicates the part played by the inertia and momentum of brain, as compared with skull, in both.

(18) Petechial haemorrhages are most commonly found in the grey matter and under the pia mater of the upper segments of the cervical spinal cord. They are occasionally caused by very severe acceleration injuries, but they are also present in association with compression concussion. The rapidity of their production indicates that they are produced by direct squashing or stretching and not by prestasis and stasis from intimal injury. They may give rise to subpial, or even subarachnoid haemorrhage.

(19) The effect of these contusions of the medulla and cervical cord can be

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dissociated from the primary effects due to concussion, for they cause a delayed embarrassment or failure of respiration according to their extent, this delayed effect being observed to reach a maximum one to two minutes after the blow. Very small haemorrhages in this situation do not interfere with recovery from concussion, and clinical evidence strongly suggests that they can occur without concussion.

(20) Contusions in the cerebral hemispheres have no effect on the bulbar centres unless a great increase of intracranial pressure is developed as a result of haemorrhage in the bruised area. This effect is also delayed in onset, and reaches a maximum in from one to four minutes after the injury.

(21) When the intensity of head injury is increased over and above the threshold which produces concussion, the effect is to prolong the paralysis of concussion though still no lesion is caused. The rate of recovery, therefore, of the neuronal damage is proportional to the severity of the injury. We have no data relating to the impairment of function of the cerebral cortex following experimental concussion, but it seems very probable that it behaves as do the reflex mechanisms studied. (Authors' abstr.)

Spinal Cord Degeneration Produced by Dietary Means.

Young pigs were reared on a diet, which, though adequate for optimal growth, resulted in the production of demyelinization, particularly of the posterior columns of the spinal cord.

Growth was maintained at a normal rate as long as the amount of yeast was 1 gm. per kgm. body-weight (3 per cent. of diet); when it was reduced to 0·5 gm. (1·5 per cent. of diet) growth almost ceased.

The time of onset of the ataxia appears to be related to the total amount of yeast in the diet, whether autoclaved or not.

It is suggested that the ataxia and posterior column demyelinization is due to a lack of some essential inorganic micro-constituent of the diet, of which copper seems to be the most likely, rather than to a want of any known vitamin.

Two pigs which received normal amounts of yeasts but were gradually deprived of vitamin A showed no signs of ataxia. One of these, which died of pneumonia, showed definite peripheral loss of myelin in the spinal cord. The other recovered when vitamin A was restored to its diet and showed no abnormality of the cord when killed. (Author's abstr.)

Familial Cortical Cerebellar Atrophy.

A family of many individuals has been studied running into three or four generations. A number of these has developed, often at the same age, very similar clinical phenomena, which generally included marked ataxia of the lower limbs and speech difficulties, which progress slowly to relative helplessness, and which seem to be accompanied by no special sensory disturbances whatever. They show relatively late muscular wasting which is compatible with extreme old age. One such case has come to post-mortem examination, and the findings seem to indicate a remarkably pure form of chronic cortical parenchymatous atrophy of the Purkinjë neurones of the cerebellar cortex with secondary involvement of the olivary neurones, the whole picture with its familial and hereditary qualifications resembling Holmes's familial cerebellar atrophy. (Authors' abstr.)

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Dark Adaptation during Stimulation with Coloured Light. *Semeonoff, B.* . 136
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Nature of Shyness.

Shyness is a state of hyper-inhibition through fear, shame and mistrust, directed partly against the environment, partly against the subject's own impulses, mainly aggression and sexuality.

Shyness is a psycho-pathological state which shows connection with psychoneuroses and with psychoses, especially of the schizophrenic group.

(Author's abstr.)

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VOL. VI.

*The Unsolved Problems of Apraxia and Some Solutions. *Nielsen, J. M.* . 1

The Unsolved Problems of Apraxia and Some Solutions.

After reviewing two original cases and six from literature, the author classifies apraxias as follows: (1) Cortical motor pattern apraxia, or loss of limited but co-ordinated movements, as in loss of finger movement with preservation of function of upper limb as a whole; (2) ideokinetic apraxia, or loss of complex, purposeful acts with retention of motility in the parts normally used; (3) ideational apraxia, or loss of capacity to execute a series of related acts, such as lighting a cigarette, although each component may be performed on request.

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

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BULL. SOC. OPHTHAL., PARIS.

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*Electric Examination of the Occipital Region in Lesions of the Optic Paths (Change in the Berger Rhythm) 176

Electric Examination of the Occipital Region in Lesions of the Optic Paths (Changes in the Berger Rhythm).

Blindness does not cause Berger's rhythm to disappear ; it was preserved in two cases of bilateral lesions of the optic paths without complete blindness in a case of central bilateral scotoma, in one case of complete blindness, and in two cases of unilateral lesions of the optic paths.

D. J. SHAAD (Psychol. Abstr.).

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*Studies in the Use and Validity of the Thematic Apperception Test with Mentally Disordered Patients. II. A Quantitative Validity Test. *Harrison, R.* 122
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Validity of Imagery Testing in Schizophrenia.

The test consists of 25 phrases found to be the most differential of 130 items previously studied. On the basis of norms established, the test was rechecked on new subjects and found to be non-differentiating between normals and schizophrenics or between schizophrenic sub-types. The scores are unrelated to intelligence or length of hospitalization, but do correlate to a fair degree (·51) with those on the Kent-Rosanoff test. It is concluded that the test is not a valid diagnostic test of imagery in schizophrenia, since it rather measures degree of confusion of the associative processes and of ability to concentrate—two processes which may be normal in schizophrenics. M. O. WILSON (Psychol. Abstr.).

Studies in the Use and Validity of the Thematic Apperception Test with Mentally Disordered Patients. II. A Quantitative Validity Test.

Stories of 40 functional patients (schizophrenic and manic-depressive) written in response to a series of pictures presented under clinical conditions were used. Bibliographical and personality information was deduced with a high degree of validity. Common patterning of the institutional types was indicated. Theories of the unity and congruence of personality were confirmed.

M. O. WILSON (Psychol. Abstr.)

Studies in the Use and Validity of the Thematic Apperception Test with Mentally Disordered Patients. III. Validation by the Method of "Blind Analysis."

By blind analysis is meant that the analysis is made by someone other than the one administering the test. The method of the thematic apperception test consists in having subjects write stories in response to a series of pictures. Patients with functional psychoses were used as subjects. Blind analysis gives results similar to previous methods of validation (see XV : 299, 2206). Biographical and personality information was deduced with a fair degree of accuracy, although with less accuracy than when behaviour clues were available. Psychiatric diagnoses and intelligence were inferred with fair to reasonably high accuracy.

M. O. WILSON (Psychol. Abstr.).

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Incidence of Abnormal Electro-encephalograms in Epileptic Persons over Forty Years of Age.

An analysis of the electro-encephalograms recorded from 203 epileptic patients was made with reference to the age incidence. A normal resting record was obtained from 104 patients, of whom 20 per cent. were over 50 and 28 per cent. over 40 years of age. An abnormal resting record was obtained from 99 patients, of whom 13 per cent. were over 50 and 16 per cent. over 40 years old. "There was a lesser incidence of electro-encephalographic abnormality among epileptic patients over the age of forty and fifty years than in those under these ages. There were no differences in the type of epilepsy (whether idiopathic or symptomatic), or in the age of onset, or in the treatment between the younger and older age groups."

C. E. HENRY (Psychol. Abstr.).

Treatment of Mental Disorders with Electrically-induced Convulsions.

A short review is given of early types of convulsant therapy for mental disorders, in which the objectionable features of the several techniques are emphasized. A rather thorough description of the technique of electro-shock follows, and includes data on the preparation of the patient, electrodes and amount of current, and a description of the resulting convulsion. While smaller amounts of current elicit spells comparable to *petit mal* attacks, the standard treatment is to induce what closely resembles a *grand mal* convulsion, this resulting from 350 to 800 milliamperes. The convulsions always last between 35 and 45 seconds, two of these being induced weekly. No pain is experienced, and consciousness usually returns after 5–10 minutes. The patient has complete retrograde and anterograde amnesia for the treatment period; the fear reaction characteristic of metrazol shock never develops. In general, the number of complete and partial remissions compares favourably with other types of convulsant therapy, and here also best results occur in an inverse relationship to chronicity. The importance of an attendant form of psychotherapy is emphasized.

C. E. HENRY (Psychol. Abstr.).

DEUTSCH. MED. WOCH.

NO. 48. 1940.

**The Treatment of Post-encephalitic Parkinsonism with Ascorbic Acid.* *Wirth, J.* . . . . . .

It is known that the virus of epidemic encephalitis invariably affects the vegetative centres of the brain. Diehl and Neumann showed that the regions surrounding the aqueduct, the floor of the third ventricle and the substantia nigra are particularly rich in ascorbic acid, and that the first two areas are primarily affected in acute encephalitis, whilst later on the locus nigra is affected. Luksch and Spatz showed that the substantia nigra is markedly affected in this disease, and this area is very rich in ascorbic acid. In encephalitis the cerebrospinal fluid shows a marked increase in its content of ascorbic acid, not only in the acute stage, but during the chronic, even when the symptoms are slight. In meningitis, on the other hand, the ascorbic acid of the fluid is diminished. The author injected ascorbic acid intravenously in Parkinsonism, giving 300 mgm. daily till patient had had 4·2 gr., and he considers that he has obtained good results.

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On the Psychology of So-called Processes of Abstraction.

In an experiment with Holmgren wool samples, patients with cerebral lesions were able to match only the identical skeins. With cardboard figures, the instruction to sort was first understood by the patients in the sense of to build, to make patterns ; only through appropriate coercive conditions did the quality of colour, form or size become effective. Although the patients achieved some kind of

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arrangement of the figures, they could not volitionally give up the kind of arrangement which they had just achieved in favour of another arrangement. All theories of abstraction have this basic point of view in common; the reaction to "partial conformities of several objects of perception" must be preceded by a stage in which these "percepts" are experientially present as definite objects with a definite number of well-defined given properties. The actual feat of abstraction consists in either voluntarily or involuntarily singling out from all the given contents.

C. H. JOHNSON (Psychol. Abstr.).

Memory Loss in Senescence.

The original intellectual level was controlled by matching the 174 senescents for vocabulary level with 174 individuals in the twenties. Results show completely reliable differences between the two groups, giving evidence of an actual decrease in memory at senescence. Older persons show relatively little decline in ability to receive new impressions, but suffer greatly in their ability to form the new associations necessary to the learning of entirely new material. Their learning process seems to suffer from their decreased flexibility and adaptability. It is suggested that older persons who wish to compensate for their normal memory decline may practice remembering things. C. H. JOHNSON (Psychol. Abstr.).

J.A.M.A.

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*Classification of Primary Encephalitides of Man According to Virus Aetiology. *Webster, L. T.* 2840

Adrenal Cortex Extract in the Treatment of Bromide Eruption and Bromide Intoxication.

1. Adrenal cortex extract when given in combination with sodium chloride is apparently of value in the excretion of bromide and bromide effects.

2. Trauma has an influence in bromide eruptions.

3. Sodium bicarbonate is of apparent value in controlling the oedema seen in extensive chloride therapy.

4. Adrenal cortex extract restores the normal physiologic level of chloride.

(Authors' abstr.)

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Psychiatric Geriatrics.

1. Pathologic changes of a destructive or deteriorative type were solely responsible for the symptoms in only 14, or 28 per cent. of this series of 50 patients over 60 years of age with abnormal mental reactions. Thirty-six patients, or 72 per cent., had types of mental illness that respond to modern therapy.

2. Of the 36 patients with a good prognosis, 33, or 91·6 per cent., recovered sufficiently to go home in an average length of time under treatment of six weeks.

3. Of the 33 patients who recovered, 24 had been discharged six months or more and only 2 had had a relapse; 1 died. Seventeen, or 85 per cent. of the 20 with whom contact was maintained remained well at the end of six months.

4. Senile dementia and arterioclerotic psychosis, the usual diagnosis for abnormal mental states in persons over 60, are not the common mental disorders of older people. The common disorders, such as toxic delirious reactions and affective reactions, usually an agitative depressive psychosis, may be corrected readily.

(Author's abstr.)

Treatment of Paralysis Agitans with Vitamin B_6 (Pyridoxine Hydrochloride).

Fifteen patients suffering from paralysis agitans were treated intravenously with pyridoxine hydrochloride, supplemented in most cases by the oral administration of brewer's yeast. The patients received 50 to 100 mgm. of the intravenous medication at daily intervals for from two to four weeks. Nine patients had idiopathic or arteriosclerotic Parkinsonism, and of these four were improved. One of these patients had senile chorea rather than true Parkinsonism, and this patient showed a most striking improvement, suggesting the possibility that therapy with pyridoxine hydrochloride may be of benefit in other types of extrapyramidal involvement. Of the remaining six patients, two showed improvement. In the latter group three had post-encephalitic paralysis agitans and one the syphilitic form. In the remaining two patients the aetiologic factors producing paralysis agitans were undetermined.

Four patients suffering from arteriosclerosis or idiopathic paralysis were treated orally with 50 mgm. of pyridoxine hydrochloride daily for three weeks, supplemented by 54 gr. of brewers' yeast. Two of these patients insisted that improvement had occurred, but in only one was there any objective benefit in the form of an observable decrease in the tremor and rigidity. (Author's abstr.)

Classification of Primary Encephalitides of Man According to Virus Aetiology.

From the large and diverse group of so-called primary encephalitides, nine types have thus far been shown to be due to viruses with a special predilection for the central nervous system. At least six of them appear to be of animal origin, and at least three are probably transmitted by insects. Clinical diagnoses can be established readily and practically in all, except rabies and poliomyelitis, and by the demonstration of neutralizing and, probably, complement-fixing antibodies in the serums of patients. The post-mortem diagnosis is best established through isolation and identification of virus, which in most instances, with the exception of poliomyelitis, are entirely practical procedures. (Author's abstr.)

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*Discussion on Neuro-surgical Treatment of Certain Abnormal Mental States.
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Discussion on Neuro-Surgical Treatment of Certain Abnormal Mental States.

The best results with prefrontal leucotomy have been obtained in cases of involutional depression and the compulsive states.

It is possible that the loss of interest of the patient in himself is due to the operation cutting across a band of fibres connecting the thalamus with the frontal lobe. As a result the nucleus medialis dorsalis of the thalamus degenerates. After the operation the cerebral cortex is histologically intact, but there is some atrophy of the frontal pole. Personality tests after the operation show that there is a widening of the horizon of the individual, lack of preoccupation with self, a diminution in neurotic tendency and a replacement of introversion by extraversion.

From a social point of view these patients show the maximum change. As a rule they are rather cheerful, a little outspoken, and sometimes rather tactless. Patients who have been confirmed hypochondriacs are no longer interested in the functioning of their organs.

The post-operative defect that may be present is in motivation rather than equipment.

In some cases the operation has been done only on one side, with very good results, but usually such operation is not extensive enough.

In many cases the improvement is noticeable immediately after the operation. In other cases the patient may be confused for some days or weeks with considerable impairment of memory and disorientation. During the confused period the patient is usually more or less incontinent and lies listlessly in bed, sometimes being rather restless. A certain number of patients show a large gain in weight up to as much as 130 lb. It is quite possible that these excessive gains in weight are due to some disturbance in the cerebral centres. No paralyses or aphasias or other signs of organic brain damage appear to have been found.

The maximum age of the patients operated on was 78 years.

Where the operation is performed on schizophrenic patients the general experience appears to be that the patients after operation still look and talk like schizophrenics, but do not feel like schizophrenics. They are no longer interested in themselves, their hallucinations or delusions. In many cases they are transformed from agitated people difficult to handle into much quieter people, almost vegetative individuals. They are cleaner and much easier to nurse.

The general opinion appears to be that at least one year should elapse after the operation before the degree of improvement should be finally assessed.

The mental complacency, self-satisfaction and the release of energy which is expended in more extraverted activity all appear to indicate a more simple and primitive method of adjustment.

The large gain in weight in some cases resembles that of pituitary dystrophy. It is possible that there is interference from the operation in certain hypophyseal connections, directly or indirectly through the thalamus. It is suggested by one author that the fact that some patients who have their frontal lobes operated on cannot be distinguished from normal persons by the usual psychometric tests might give rise to the assumption that there are many so-called normal persons who do not employ their frontal lobes in everyday life. In other words the frontal lobes are " a biological luxury " and have been spoken of as " parasitic growths " !

The results of intelligence test after the operation vary, and it is too early yet to speak conclusively on this. The Rorschach test has shown considerable variation.

It would appear from these results that there are some functions in which the prefrontal lobes are concerned and which have to do with the development of anxiety.

One has to weigh up the balance between leaving a patient with the worry of anxiety or post-operative defects whatever they may be. Rizzatti has reported

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five or seven cases of chronic encephalitic behaviour disturbances, in four of which relief was obtained.

The operation would appear to rule out the depression of suicide, whereas Dr. Freeman reports that in a series of 100 or 120 cases discharged from hospital after shock therapy over a period of six months to three years he has had six cases of suicide.

The results reported in this discussion are as follows:

	Operated on.	Employed or socially adapted.	Still in hospital.	Deaths.
Freeman	80	42	5	3
Lyerly	39	18	5?	..
Tarumianz	10	7	1	2
Erickson	30	?	?	?
	159	67+	11+	5?

G. W. T. H. FLEMING.

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Retro-active Inhibition as a Function of Degree of Generalization between Tasks.

When syllable responses have been learned to a list of stimulus forms, variations of these forms generalize with the original forms, since the variations are responded to in a test series as if they were the originals. As the degree of generalization between the corresponding stimulus members of a first and second list is increased, when the responses in the two lists are different, there is a tendency for the second list to be harder to learn. Degree of retro-active inhibition of a first list varies directly with the strength of the tendency for the stimulus members of an interpolated list to generalize with those of an original list. Errors of overt localization occur during interpolated learning and relearning of the primary list. There is a tendency for the frequency of such errors to vary with the degree of generalization between the two lists. Errors of intra-list generalization occur during the learning of both the primary and interpolated lists, but such errors decrease from primary to interpolated learning.

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

The Conditioning of the Blocking of the Alpha Rhythm of the Human Electro-encephalogram.

Previous work on the conditioning of the blocking of the alpha rhythm of the E.E.G. did not establish sufficient controls to permit differentiation between sensitization of the previously adapted response to the conditioned stimulus and the response believed to be the CR. To make such differentiation feasible the authors separated the conditioned and unconditioned stimuli by an interval of four seconds in order that full recovery of the alpha rhythm could occur after its response to the unconditioned stimulus and before the conditioned stimulus was presented. A conditioned anticipatory response which was unstable and appeared subject to inhibition of reinforcement appears to have been established. Sensitization of the response to the conditioned stimulus appears to have occurred, and this serves

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to explain the unorthodox type of conditioning data reported by previous workers. The implications of the conclusion that conditioning of the alpha rhythm can be accepted are discussed. H. W. KARN (Psychol. Abstr.).

Factors Determining the Direction of the Visual After-image Drift.

Experimental evidence is presented to show that there are at least two factors involved in the determination of the direction of the visual after-image drift. One, the retinal factor, is the point of fixation relative to the object used to produce the retinal effects necessary for the production of the after-image. The other factor is the pattern of muscular stresses during retinal stimulation which leave their after-effects persistent during the experiencing of the after-image; this is called the muscular factor. H. W. KARN (Psychol. Abstr.).

Experiments on the Neural Basis of Movement Vision.

Threshold velocities of movement vision and the frequency of optokinetic head nystagmus as a function of the velocity of movement of a striated visual pattern were determined in guinea pigs by means of the rotating drum method. Removal of the occipital areas of the brain, hemidecortication combined with the removal of the occipital area of the other cortex and complete bilateral decortication produce no change in the upper velocity thresholds at which movement vision seems to occur. Removal of one hemisphere results in an increase in the frequency and magnitude of the nystagmic responses when the stimulus pattern moves toward the side opposite the lesion. Under the same conditions the nystagmus index, a measure of the number of stripes passing per response, is lower. It is concluded, in general, that movement vision in its various aspects is under multiple control of cortical and subcortical centres. The principal function of the cortical centres is to mediate movement vision for isolated patterns in the visual field, while the subcortical centres may mediate responses based on the movement of complex striated patterns. Since the guinea-pig does not normally respond to the movement of isolated objects, its capacity for movement vision remains practically unchanged following removal of the cortex. H. W. KARN (Psychol. Abstr.).

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The Sign of Babinski.

This sign is the expression of a change in the normal ratio of responsiveness to stimulation of flexor and extensor muscle. Under certain conditions the extensors become more easily excitable than the flexors, and on stimulation of the sole dorsal flexion of the big toe takes place. Besides pyramidal tract lesions the phenomenon is also found in some cases of poliomyelitis, muscular atrophy, peripheral neuritis, etc.

The change in the normal ratio of responsiveness to stimulation of flexor and extensor muscles, if associated with a lesion of the pyramidal system, is an expression of reduced function of the motor system. It is an expression of the fact that owing to impairment of the brain cortex flight reactions have come to prominence in abnormal strength.

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The Babinski phenomenon is not a reversal of the normal plantar reflex. It is an entirely different reaction, a pathological reaction which has no relation to the normal reaction, representing the plantar reflex. S. M. COLEMAN.

Lead Encephalopathy.

Four cases, two children and two adults, are reported. Regarding children, it is found that the clinical picture is analogous to those conditions where the intracranial pressure is increased. The prognosis is grave and residues are frequent if the child survives the acute stages. In adults the picture is analogous to that found in any severe intoxication involving the brain.

The fundamental structural changes found in the C.N.S. are due to oedema resulting from exudation. The exudate is probably serum of the blood. Other changes found consist of an endothelial hyperplasia in the smaller blood-vessels and hyperplastic changes in the leptomeninges. The former may produce ischaemic changes in the parenchyma and the latter, in children, may result in an hydrocephalus. It is stressed that the types of structural changes vary with the duration of intoxication before death occurs. S. M. COLEMAN.

Alcoholic Neuropathy.

A case is presented in which the onset and progress of the illness were determined by a toxic agent (alcohol), while the results of the histopathological studies favour the diagnosis of a form of multiple sclerosis. The identity and relationship of these two conditions is discussed, and the case is fitted into Ferraro's schema of classification of the primary demyelinating processes of the central nervous system. S. M. COLEMAN.

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Electrokinetic Changes in the Endolymph as a Hypothetical Cause of Falling and Past Pointing Due to Stimulation by Galvanic Current. *Pollock, L. J., Finkelman, I., and Sherman, I. C.* 473

Factors in Suicidal Attempts.

From this study of 25 consecutive suicidal attempts, it is concluded that the " alleged cause " is at most only a precipitating event. The basis for the attempt is laid in the early formative years of the personality when the structures of ego and super-ego are being formed. The average suicidal person is found to be fundamentally selfish. An arrest in psycho-sexual development is often a basic mechanism, this being frequently due to the unavailability of one or both parents as love-objects. The unavailability may be due to death, separation, divorce or social deterioration. Spite as a motive is, at least in some cases, a rationalization of a deeper lying defect in psycho-sexual development rather than a d rect incitement. S. M. COLEMAN.

Involutional Melancholia.

The literature on insulin shock therapy of involutional melancholia is reviewed and three cases presented that were treated with considerable success. Compared with convulsive therapy, the relatively greater safety of hypoglycaemic therapy,

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because of the ease of control, is stressed. The induction of deep coma and convulsions is not considered essential in non-schizophrenic disorders.

Good results with insulin shock in the treatment of manic-depressive psychoses and severe psychoneuroses are also indicated. S. M. COLEMAN.

A Modified Babinski Reflex.

When a patient in whom a lesion of the pyramidal tract is suspected attempts to raise his leg against resistance, an extension position of the toe obtains either on the ipsolateral or contralateral side. It was found possible to elicit the reflex in almost all cases before any other sign of a pyramidal tract involvement could be demonstrated. S. M. COLEMAN.

MAY, 1941.

The Fulfilment of White's Purpose. *Fenning, F. A.* 561
*Agenesis of the Corpus Callosum. *Goldensohn, L. N., Clardy, E. R., and Levine, K.* 567
*Psychogenic Body Image Disturbances Associated with Psychogenic Aphasia and Agnosia. *Teitelbaum, H. A.* 581
*Hutchinson Teeth without Congenital Syphilis. *Kerschbaumer, L.* . . . 613
*A Comparative Study of Recovered and Deteriorated Schizophrenic Patients. *Kant, O.* 616

Agenesis of the Corpus Callosum.

A girl, aged 11 years 10 months, was admitted as a " psychogenic " case of long-standing conduct, personality and sexual disorders. Physical examination revealed several stigmata of " degeneration " and dysendocrinism. The neurological findings indicated organic involvement of the C.N.S. Psychiatric and psychological studies suggested the presence of an irreversible pathological condition of the brain. Electro-encephalography was interpreted as signifying diffuse cortical dysfunction with physiological asymmetry of the two sides of the brain. Pneumoencephalograms revealed an absence of the posterior portions of the corpus callosum. S. M. COLEMAN.

Psychogenic Body Image Disturbances.

Two cases of hysterical body image disturbance, along with other manifestations of agnosia and aphasia, are described. Similar disturbances in the body image mechanism were produced by means of the post-hypnotic suggestion that the patient forget all about his or the human body, or that he forget the names of the parts of his or the human body. S. M. COLEMAN.

Hutchinson Teeth without Congenital Syphilis.

Changes similar to Hutchinson in the middle upper incisors are described in four non-syphilitic mental patients. The Hutchinson-like changes in the teeth of non-luetic mental patients are probably caused by the influence of the pathologically changed metabolism. S. M. COLEMAN.

Study of Schizophrenic Patients.

The general characteristics and the clinical picture in two groups of 39 recovered and 39 deteriorated schizophrenic patients are compared. Those features which are prominent in the recovered group (acute onset, psychogenic precipitation, presence of clouding, extraversion, pyknic physique) prove to be much less numerous in the deteriorated group. The mean proportion is 6 : 1. These signs deserve consideration as prognostic indicators.

Those recovered patients who had had more than one psychotic episode were apparently completely recovered between the attacks. In the deteriorated group there were only two questionable patients, who had not exhibited definite defective signs after the first attack.

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Gradual onset, predominant in the deteriorated group, is limited to those psychoses in the recovered group which resemble atypical depressive states.

S. M. COLEMAN.

JUNE, 1941.

*Bilateral Fracture of the Femoral Necks Caused by Metrazol-induced Convulsions. *Androp, S.* 701
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*Allergy and Nervous Diseases. *Winkelman, N. W., and Moore, M. T.* . 736
*Permeability Changes in the Brain Induced by Metrazol and Insulin Convulsions. *Spiegel, E. A., and Spiegel-Adolf, M.* 750

Bilateral Fracture of the Femur.

A case is presented of bilateral fracture of the femoral necks caused by metrazol-induced convulsions. The mechanism, contra-indications, and the prevention of such accidents are discussed. S. M. COLEMAN.

Oesophageal Spasm.

Anxiety, fear, dissatisfaction and insecurity cause oesophageal spasm with nausea and difficulty in swallowing; peace of mind, achievement and elation produce oesophageal relaxation. These alternating changes from spasm to relaxation and vice versa can be noted on oesophagoscopic examination even in patients where the barium X-ray studies showed no abnormality. In addition to oesophagoscopic treatment the patient's environment and mental outlook should be improved and emotional re-education instituted. S. M. COLEMAN.

Paramyoclonus Multiplex.

Paramyoclonus multiplex of Friedreich is described in a white married male, aged 28. The aetiology in this case is unknown. The factors of overwork, worry, excess intercourse and excess smoking are suggested as having possible aetiological significance in this case. Symptomatic recovery occurred three days following onset. There has been no recurrence of symptoms for six months after discharge from hospital. S. M. COLEMAN.

Allergy and Nervous Diseases.

Eight cases of migraine, epilepsy and focal lesions of the brain where the clinical picture is best explained on an allergic basis are presented. Attention is called to the allergic nature of cases which at first suggest brain tumour, vascular lesions or other gross organic conditions. A careful history of the family and patient may be the clue to the diagnosis. Skin tests, elimination diets and a favourable therapeutic response may complete the evidence in favour of an allergic aetiology.

S. M. COLEMAN.

Permeability Changes in the Brain.

The polarization index of the cerebral hemispheres was measured in guinea-pigs after convulsions induced by metrazol and insulin respectively. It was found that these convulsions lower the polarizability of the brain tissue; this indicates an increase of the permeability of the cellular surface films after these convulsions.

S. M. COLEMAN.

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J. NEUROL. PSYCHIAT.

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The Effect of Choline-like Substances on the Cerebral Electrical Discharges in Epilepsy.

Acetylcholine and allied substances were administered to patients with *petit mal* epilepsy. Electro-encephalographic records were made of clinical and sub-clinical attacks, both spontaneous and induced by overbreathing. Intravenous injection of acetylcholine was followed by an increase in the recorded epileptic activity. This action of acetylcholine was inhibited by atropine, and other substances having somewhat similar pharmacological effects did not alter the incidence or duration of the attacks. No similar results could be obtained in normal subjects.

(Author's abstr.)

APRIL.

*Alzheimer's Disease with Predominating Crossed Cerebro-Cerebellar Hemiatrophy. *Hemphill, R. E., and Stengel, E.* 97
*The Electro-encephalogram in Acute Head Injuries. *Williams, D.* . . 107
*The Electro-encephalogram in Chronic Post-Traumatic States. *Williams, D.* 131

Alzheimer's Disease with Predominating Crossed Cerebro-cerebellar Hemiatrophy.

A case of Alzheimer's disease with various uncommon features is described. The first symptoms appeared after a late pregnancy eighteen years before death. There was an extreme degree of atrophy, the weight of the brain being 870 gm. The atrophy was diffuse but asymmetrical, affecting the right cerebral and the left cerebellar hemispheres much more than the corresponding contralateral halves. There was an extreme degree of the pathological changes characteristic of Alzheimer's disease, the argentophile nervous tissue being most severely affected. The great majority of the pyramidal cells of the cerebral cortex showed Alzheimer's neurofibrillary change. The axis cylinders in the cortex had numerous excrescences. The predominance of the affection of the argentophile nervous elements in an unusually advanced case of Alzheimer's disease seems to argue in favour of the theory that the development of the argentophile plaque is due to a process affecting primarily the argentophile tissue.

The crossed cerebro-cerebellar hemiatrophy is to be regarded as partly the expression of the anatomical and functional correlation of those parts of the brain. The aetiology of the asymmetrical character of the affection is discussed.

(Authors' abstr.)

The Electro-encephalogram (E.E.G.) in Acute Head Injuries.

Seventy-four patients who had received a head injury were investigated by electro-encephalography within 20 days of the injury. Ten were examined on the first day and 58 within 14 days of the injury. The electro-encephalographic changes were correlated with the clinical state of the patients, judged by physical examination and psychological testing. Open and closed wounds of all degrees of severity were investigated. Widespread abnormally slow waves of cerebral electrical change, suppression of the normal frequencies, and clear-cut outbursts of high voltage sine waves with a frequency of 2 to 3 per second indistinguishable from subclinical epileptic attacks occurred in the acute stage.

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The degree of abnormality seen in the E.E.G. correlated closely with the clinical state of the patient, cases of mild head injury without residual symptoms showing a normal E.E.G. within a few hours of the accident, and severe injuries causing the abnormalities to persist for many weeks.

The rate of clinical and electro-encephalographic recovery in this series of acute head injuries corresponded closely, but there were wide individual variations in the speed of return to normal. In the later stages of recovery the E.E.G. sometimes remained abnormal after the patient had made a complete clinical recovery.

Although the acute changes were invariably generalized, focal areas of maximal abnormality became evident as the general disturbance subsided. When localizing clinical signs were present these corresponded with the area of abnormality seen in the E.E.G., but this local abnormality was also seen in silent areas of the cerebral cortex.

The epileptic type of disturbance occurred in the immediate post-traumatic period, and did not have any prognostic significance in regard to post-traumatic epilepsy.

It is concluded that the E.E.G. accurately reflects the abnormal cerebral state caused by a recent head injury, that the progressive changes are a direct indication of improvement or deterioration in this state, and that in the milder states of cerebral dysfunction it may demonstrate residual damage after all abnormal clinical signs have subsided. The E.E.G. has no value in predicting the onset of traumatic epilepsy in the acute post-traumatic period. (Author's abstr.)

The Electro-encephalogram (E.E.G.) in Chronic Post-Traumatic States.

E.E.Gs. were recorded on 600 personnel with head injuries. The interval after the injury varied from a few hours to 12 years, all types of injury being included. The records were divided into normal and abnormal groups on the basis of 160 controls, and the results correlated with detailed clinical data in the first 325 cases.

Fifty per cent. of the patients with head injury had abnormal E.E.Gs. This high percentage abnormality persisted for many years after the injury.

There was a positive correlation between it and the severity of the injury, the persistence of symptoms, and the presence of dural penetration.

Simple fracture of the skull, an abnormal family history, an abnormal personal history and a previous head injury without residua did not increase the percentage abnormality.

Of 87 patients who were invalided from the services, 67 per cent. had an abnormal E.E.G., but of 192 who returned to duty only 25·5 per cent. were abnormal while in hospital.

The cause of the symptoms was assessed. In 207 patients it was thought to be primarily due to organic damage, and in 55 per cent. of these the E.E.G. was abnormal. In 50 who were constitutionally inferior it was abnormal in 37 per cent., and in 58 whose symptoms were due to an exogenous neurosis 20 per cent. were abnormal.

It was concluded that—

(1) After a head injury an abnormal E.E.G. usually indicates organic cerebral abnormality resulting directly from the injury. This abnormality is present in half the cases of the chronic post-traumatic syndrome.

(2) Clinical recovery and improvement in the E.E.G. are usually closely related, and so long as the relationship holds the prognosis is good.

(3) Abnormality may persist in the E.E.G. in any one patient after clinical recovery appears complete. This indicates residual cerebral dysfunction, which is not demonstrable by the usual methods of psychological investigation. It is usually followed by complete recovery, but the abnormality may explain the relapse of some patients after they have returned to their employment.

(4) A normal E.E.G. after a head injury almost invariably indicates absence of abnormal cerebral tissue, which may be due either to full resolution or to complete destruction of damaged cerebral substance. When a normal E.E.G. is associated

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with full clinical recovery prognosis is consequently good, but when accompanied by persistent symptoms the ultimate prognosis may be bad.

(5) There does not appear to be any difference between the E.E.G. of traumatic and idiopathic epileptics, and prediction of traumatic epilepsy does not seem possible by electro-encephalography during the period of recovery from a head injury.

(6) The E.E.G. appears to reflect the degree of cerebral dysfunction resulting from trauma with considerable accuracy, and it has a useful place in the management of cases of head injury when used in conjunction with other methods of clinical examination. (Author's abstr.)

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*Development of Swimming and Righting Reflexes in Frog (*Rana guentheri*): Effects thereon of Transection of Central Nervous System before Hatching. *Wang, G., and Lu, T.* 137
*Thermocoagulation of Motor Cortex Exclusive of its Sixth Layer. *Murphy, J. P., and Dusser de Barenne, J. G.* 147
*Transmission of Impulses through the Burdach Nucleus. *Therman, P. O.* . 153
*Influence of Discharge of Motoneurons upon Excitation of Neighboring Motoneurons. *Renshaw, B.* 167
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Effect of Lesions to Corpus Striatum upon Spontaneous Activity in Male Rat. *Beach, F. A.* 191
*Functional Anatomy of Brachium Pontis. *Turner, R. S., and German, W. J.* 196

Development of Swimming and Righting Reflexes in Frog (Rana guentheri).

1. The development of aquatic locomotion in *Rana guentheri* passes through the following stages: (i) The non-motile stage, (ii) the flexure stage, (iii) the stage of the "S" reaction, (iv) the stage of translatory movements of the body, (v) the stage of the control in the direction of swimming, and (vi) the stage of the maintenance of normal orientation to the earth's gravitation field during motion and rest.

2. The last two stages are easily affected by transverse lesions made in the embryo on the central nervous system. The severance of the spinal cord arrests the development of swimming at the stage (iv); and after the transection of the brain at the caudal border of the mesencephalon, the development of the aquatic locomotion does not reach beyond stage (v). The removal of the forebrain and the interbrain or of the telencephalon alone has no effect whatsoever on the ontogeny of swimming.

3. The righting reflexes appear in the stage (vi) of the development of swimming; and the transection of the central nervous system at any level caudad to the rostral border of the hindbrain prevents the operated larvae from acquiring these postural reflexes. With tadpoles of 6 mm. body length which have not yet developed the righting reflexes, the removal of both labyrinths produced the usual effect on locomotion in making them lose the control of the direction of swimming.

4. The transection of the spinal cord induces in the larvae an exaggeration of the flexor reflexes of the tail, and consequently causes it to be permanently ventroflexed; while decerebration produces an accentuation of the extensor reflexes of the tail, and consequently makes it permanently extended. Such effects are absent after the transection of the central nervous system rostrad to the rostral border of the midbrain.

5. The normal and mesencephalic larvae can recover from the effects of double labyrinthectomy if there is no concomitant injury to the hindbrain. On the transection of the brain at the caudal boundary of the mesencephalon immediately return the symptoms of the extirpation of both labyrinths. The decerebrated tadpoles do not recover from the effects of double labyrinthectomy.

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6. The spinal, decerebrated and mesencephalic tadpoles are as spontaneously active as the diencephalic and normal ones. This is entirely contrary to the findings on the adult frogs. (Authors' abstr.)

Thermocoagulation of Motor Cortex Exclusive of its Sixth Layer.

Significant diminution of the electrocorticogram and pronounced, long-lasting motor deficit are produced by laminar thermocoagulation of the pre-central "motor" cortex, when the coagulation is extensive enough to include the large and giant pyramidal cells, but not layer VI, in area A.4 and the homologous fifth layer in the other pre-central arm areas (A.4's and A.6). (Authors' abstr.)

Transmission of Impulses through the Burdach Nucleus.

Following a single shock applied to the nerve of the forelimb there passes through the dorsal column to the nucleus of Burdach a volley of primary impulses succeeded after about 3 msec. by the dorsal column relay of Hursh. These impulses produce in the nucleus (surface lead) a post-primary negative potential lasting about 5 msec. During the course of this potential impulses are discharged into the lemniscus.

Conditional transmission through the nucleus has the following properties: The refractory period at the synapse is not longer than that of the primary axons. Transmission after the second of two volleys at intervals less than 5 msec. is limited to a short burst of spikes (lasting *ca.* 1·0 msec.) following the second primary volley by a synapse time of 0·6 msec. Addition of the later, more inhibitable, portion of the transmitted impulses starts at intervals of 5 msec. and restoration is complete at 15 to 50 msec. Thus the transmission of a tetanus through the nucleus is essentially one-to-one conduction between primary neurons and neurons of the lemniscus fibres.

A positive wave lasting about 100 msec., recorded at the surface of the nucleus, is correlated with activity in the underlying reticular substance.

(Author's abstr.)

Influence of Discharge of Motoneurons upon Excitation of Neighbouring Motoneurons.

An antidromic volley in a group of motoneurons produces a small centrifugal discharge from the spinal cord into some of the motor axons which carry the antidromic impulses. No centrifugal impulses appear in the axons of other motoneurons. The centrifugal impulses appear to be repetitive discharges set up at some central portion of the motoneurons, rather than reflex discharges synaptically excited through recurrent collaterals.

Antidromic volleys do, however, condition synaptically excited discharges of other motor cells. Inhibition typically occurs if the tested and conditioning motor nerves are branches to the same muscle or muscle group. The response deficit then reaches its maximum when the conditioning antidromic volley arrives at the cord 2 to 4 msec. before the tested motor discharges are set up. The amount of inhibition then gradually declines. It disappears when the antidromic volley precedes the tested discharge by *ca.* 50 msec.

A particularly significant feature of the inhibition is its early onset. A response deficit is present if the antidromic volley reaches the ventral horn simultaneously with the testing impulses which fire the tested motoneurons after a single synaptic delay. This finding cannot be explained on the assumption that the only effect which an active neuron exerts upon other neurons is the detonator excitation produced by the arrival of impulses at synapses.

Conditioning also occurs when the antidromic volleys and tested motor impulses occupy the nerves to different muscles or muscle groups. Both facilitation and inhibition have been observed. Facilitation usually follows a brief period of inhibition. Maximal facilitation is attained when the conditioning antidromic volley precedes the tested discharge by *ca.* 25–30 msec. It then declines and disappears only when the interval between conditioning and tested volleys exceeds 100 msec. (Author's abstr.)

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A Direct Central Inhibitory Action of Dromically Conducted Impulses.

A direct inhibitory action of primary afferent fibres, exerted upon the activation of motoneurons by primary afferent collaterals or ventrolateral column collaterals, has been demonstrated.

The inhibition occurs without measurable latency.

The inhibitory effect is exerted within the confines of the motor nucleus.

It is probable, although not proven, that some internuncial impulses exert a comparable inhibitory action. (Author's abstr.)

Functional Anatomy of Brachium Pontis.

The effects of section of the brachium pontis were studied in three monkeys (two mangebeys, one Java monkey) over periods of 5 to 20 months. The observations included psychobiological tests (problem boxes) to which the animals were previously trained, determinations of cerebellar functions, posture, gait, equilibrium, muscle tone, and personality characteristics. The operative lesions and their resultant degenerations were verified histologically. The results may be summarized as follows :

1. Neither the retention nor the execution of learned behaviour problems was significantly affected by unilateral or bilateral section of the brachium pontis.

2. Unilateral section of the brachium pontis was followed by curvature of the head and spine, spiralling and circus movements toward the side of the lesion ; awkwardness of the lower extremities in locomotion, with inco-ordination between the hind limbs and the fore limbs ; slight hypotonia of both lower extremities. These symptoms disappeared within three to four weeks. A decrement in activity sometimes endured for a somewhat longer time. Transient dysmetria and nystagmus were present for a few days after operation. No tremors in either voluntary or associated movements were noted at any time.

3. Bilateral section of brachium pontis resulted in the same symptoms as the unilateral operation, but enduring awkwardness of gait and diminished general activity were present. The hand-eye co-ordination was reduced 20 to 30 per cent. below pre-operative normal.

4. The bilateral operation was followed by a progressive symptom complex consisting of inco-ordination between the lower and the upper extremities in locomotion, disequilibrium, and sluggishness of general behavior.

The following implications may be drawn from the result of this study :

1. The cortico-ponto-cerebellar system is not necessary for the performance of precise manual functions of learned behavior.

2. The complete compensation which occurs following unilateral lesions indicates that the cortico-ponto-cerebellar system is capable of bilateral function.

3. Functionally the cortico-ponto-cerebellar system seems to be necessary for the co-ordinated activity of large movement complexes, such as the relationship between the lower and upper extremities in locomotion. (Authors' abstr.)

MAY.

*Multiple Motor Innervation of the Frog's Sartorius Muscle. *Katz, B., and Kuffler, S. W.* 209
*Fast Central Fibres in Fish. Properties of Mauthner and Müller Fibres of Medullo-spinal System. *Graham, H. T., and O'Leary, J. L.* . . . 224
*Availability of Lactic Acid for Brain Oxidations. *Wortis, J., et al.* . . 243
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*Influence of Frequency of Stimulus upon Response to Hypothalamic Stimulation. *Hare, K., and Geohegan, W. A.* 266
*Experimental Study of Gastric Activity Released from Cortical Control. *Hesser, F. H., Langworthy, O. R., and Kolb, L. C.* 274

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Multiple Motor Innervation of the Frog's Sartorius Muscle.

Experimental evidence is described for the existence of multiple motor nerve-endings in most fibres of the frog's sartorius muscle.

The electric response of the muscle to a maximum nerve stimulus is recorded. In both pelvic and tibial regions a large synchronous spike of about 50 mV and short latency (1–2 msec.) is usually obtained. This seems incompatible with the facts that the motor nerve endings are distributed over a length of about 2·5 cm., and that most of the sartorius fibres run through the whole length of the muscle (cf. section 5).

The apparent discrepancy is due to the presence of multiple (2 or 3) motor nerve endings on most fibres. Muscle impulses are set up simultaneously at these junctional regions of each fibre; only the impulses which arise nearest to the amplifier leads are recorded, since those more distal are blocked by collision.

This can be demonstrated by various means, e.g. by cutting one of the two main nerve branches, by partial curarization, by submaximal nerve stimulation, and by combined application, at suitable time intervals, of two stimuli, (i) to the motor nerve and (ii) to the nerve-free pelvic end of the muscle. By all these procedures some myoneural junctions are put out of action and, therefore, some of the "distal" impulses (arising far away) can travel unhindered to the recording leads. In this way a part or the whole of the normal, synchronous and early, spike potential is abolished and replaced by a discrete potential wave of long latency.

From the variations in size, shape and latency of the spike along the muscle it is often possible to locate two or three discrete narrow, "neural" zones, which contain the majority of the myoneural junctions. (Authors' abstr.)

Fast Central Fibres in Fish.

1. The spike potentials which appear in the spinal cord following electrical stimulation of the *Ameiuris* medulla resemble amphibian A fibre responses in conduction rate, recovery cycle, and temperature co-efficient of conduction rate.

2. Since the fastest of these potentials travel at the rate of 50–60 m.sec. at 10–15° C., the fibres producing them must be larger than frog A fibres, if the usual theory relating fibre size and velocity applies.

3. Fibres of sufficient size to account for the cord spike potentials pass into the ventromedial bundle of the spinal cord from the median longitudinal fasciculus of the medulla, which contains the axons of the Mauthner and Müller cells.

4. The outside diameters of the Mauthner fibres vary between 43 and 22 in the cord and the medulla, while the axon diameters vary between 24 and 13. The heavy myelin sheath accounts for about half of the total fibre diameter in the medulla; it becomes progressively thinner down the cord, without however becoming as thin in relation to fibre size as the sheaths of the other large fibres. The matrix of the Mauthner fibre sheath colors red in Azan Mallory, and is latticed by concentrically disposed, blue-staining fibrils.

5. The average outside diameters of the ten next largest fibres (Müller fibres) vary between 22·5 and 11·1 at different levels and in different preparations. The average axon diameter is about 0·7 of this. There is no constant difference in relative sheath thickness at different levels and the sheaths appear homogeneous.

6. In correlation with the diameter measurements of the Mauthner and large Müller fibres, the properties of the fast cord spike potentials indicate that they arise in these fibres. The effects on the response of changing the location of the stimulus in the medulla and the absence of other elements in the cord likely to produce such a response point to the same conclusion.

7. Stimulation of the saccular otolith causes responses in the cord which apparently occur in the same fibres as the responses to medullary stimulation; the responses to saccular stimulation have been shown to pass through the median longitudinal fasciculus.

8. Responses of single fibres, of various conduction rates from 60 to 15 m.sec.,

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may be recorded from microelectrodes in the cord, particularly if the stimulus is placed rostrally in the medulla. The single fibre responses all appear to have the same spike form. (Authors' abstr.)

Availability of Lactic Acid for Brain Oxidations.

Twenty grammes of r-sodium lactate were injected into patients during therapeutic hypoglycaemic insulin coma. The injected lactate did not support brain oxidations sufficiently to rouse the patients, and the oxygen uptake of the brain showed only a moderate increase.

Seven dogs were hepatectomized under ether anaesthesia, and were studied after they recovered from the anaesthesia. Lactic acid, whether formed by the animals or administered intravenously, did not serve to prevent hypoglycaemic convulsions or to alleviate them once they were initiated. This failure contrasts strikingly with the effects of glucose, and indicates that the rate of oxidation of lactic acid in the brain is not sufficient adequately to support cerebral functions. (Authors' abstr.)

Cortical Extinction in Convulsions.

1. A major convulsion is followed by a period of cortical extinction which is demonstrable (*a*) by the unresponsiveness of the cortex to liminal and supraliminal stimuli, and (*b*) by the essentially isoelectric character of the cortical electrogram. The evidence from this source tends to support the contention that the phenomena which underlie convulsive seizures are qualitatively identical with those of other more typically physiological processes of excitation.

2. The restoration of cortical excitability is indicated by a slow and irregular subsidence of the isoelectric character of the electrographic tracings and by the return of cortical potentials which resemble those of the control period. Supraliminal stimuli applied to the firing point may now elicit responses resembling an aborted spontaneous seizure.

3. For a brief period following the offset of the period of extinction the cortex in the neighbourhood of the epileptogenous focus may be in an exalted state of excitability, and at this time a liminal stimulus may evoke a seizure of greater violence than that which characterized the first seizure.

4. The evidence suggests a physiological account for certain phenomena observable in the clinical syndrome known as *status epilepticus* as well as in the more sporadic single convulsions. (Author's abstr.)

Influence of Frequency of Stimulus upon Response to Hypothalamic Stimulation.

1. In most cases the magnitude of the pressor and respiratory responses increased with frequencies up to several hundred per second. Beyond this optimum further increases in frequency caused a progressive diminution of the response. This optimum varied from one part of the hypothalamus to another and from cat to cat.

2. Neither facilitation nor fatigue was responsible for the changes in response. An entire series of responses to stimulation of one area could be repeated immediately or after half an hour and each frequency would elicit its characteristic response. The sequence in which the stimuli were applied in a different series did not affect the response.

3. Differences in spread of current at different frequencies do not account for the change of response.

4. In some instances changes of frequency altered the character of the response.

5. Alterations in the frequency of stimulation caused changes in the visceral responses in cats in which the skeletal muscle had been paralysed by curare. (Authors' abstr.)

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Experimental Study of Gastric Activity Released from Cortical Control.

Utilizing a balloon-tambour air-water system, graphic studies of stomach activity in the cat were made before and after successive removal of the cerebral motor cortices. Definite alterations in gastric activity followed ablation of the motor cortices, and were demonstrable as greater persistency throughout distension. This was interpreted as evidence of release from a regulating influence by the motor cortex. A marked stretch reflex with delayed relaxation of the stomach wall after sudden distension was also apparent. In the oesophagus similar changes occurred after operation as increased wave amplitude, regularity and persistency and as an elevation of tone. An attempt was made to correlate the result of the present study with those made earlier on micturition released from cerebral control. It was suggested that the smooth muscle of the stomach and oesophagus is controlled by reflex pathways in the nervous system similar to those which control tone and contraction in the vesical muscle. (Authors' abstr.)

JUNE.

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Functional Organization of Sensory and Adjacent Cortex. *Dusser de Barenne, J. G., Garol, H. W., and McCulloch, W. S.* 324

The " Motor " Cortex of the Chimpanzee.

Appropriate electrical stimulation of the cerebral cortex of the chimpanzee under moderate dial narcosis exhibits facilitation and extinction of motor response. Although their relation within a single response is more complex than in the macaque their dependence upon the parameters of stimulation is the same.

Stimulation with parameters selected to avoid facilitation and extinction, or to obtain facilitation when necessary to elicit responses from regions otherwise unresponsive, reveal the following :

With the exception of two narrow bands practically all parts of the cortex which, by the criterion here used, can be considered sensory, yield contraction of skeletal muscles.

These two bands, III and VII, within (and two others, I and XI, just without) the sensory cortex yield (i) suppression of motor response to cortical stimulation, (ii) suppression of motor after-discharge following cortical stimulation, and (iii) relaxation of skeletal muscles.

With the exception of the parietal area, which requires facilitation and existing muscular tension to exhibit motor response to cortical stimulation, the bands of the cortex revealed by electrical stimulation and motor response are identical with the bands revealed by strychninization and recording of electrical activity.

(Authors' abstr.)

Functional Interdependence of Sensory Cortex and Thalamus.

When fall of blood pressure or other impairment of circulation is avoided, decapitation, decerebration, section of the corpus callosum, and subpial resection of the entire cortex of the convexity of the hemisphere, save that area to which electrodes are applied, one and all leave the electrical activity unaltered. So also does destruction of sensory thalamic nuclei other than that corresponding to the subdivision of the sensory cortex whose activity is being recorded. Lesions of the basal ganglia have little or no effect on the activity of the sensory cortex or of the corresponding thalamic nuclei, except for a transient increase following injury to the nucleus caudatus.

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On the other hand, a lesion of the sensory thalamic nucleus corresponding to a cortical area under investigation, and a lesion of the cortical area corresponding to a sensory thalamic nucleus under investigation, each results in a permanent abnormality and diminution of spontaneous electrical activity on the other. The same obtains when their mutual connections are interrupted.

Laminar thermocoagulation of the superficial layers has previously shown that the layers of the cortex external to that of the large and giant pyramidal cells are not necessary to the maintenance of the normal E.E.G.

It is therefore concluded that, for the maintenance of the normal spontaneous electrical activity of the sensory cortex and of the corresponding sensory thalamic nuclei, the essential structures are the deeper layers of the cortex, the corresponding thalamic nuclei and their mutual connections, and hence, that for this activity the sensory cortex and the ventro-lateral thalamic nuclei are functionally interdependent. (Authors' abstr.)

Suppression of Motor Response Obtained from Area 4 by Stimulation of Area 4s.

Motor response to electrical stimulation of area 4 is suppressed (typically after a latency of several minutes for a duration of five or more minutes) by electrical or other stimulation of area 4s. It cannot be initiated again for many minutes.

This suppression is brought about by stimulation of cells in area 4s and does not require stimulation of underlying fibre tracts.

It has been shown to be distinct from extinction of motor response by temporal and spatial consideration.

It depends for its occurrence upon fibre tracts descending from 4s to deeper structures and not upon cortico-cortical connections.

It is, despite its generality, restricted in its distribution within the central nervous system, as is proved by its failure to affect the knee-jerk.

The following structures have been shown to be severally unnecessary for its occurrence: nucleus caudatus, putamen, globus pallidus, thalamus, substantia nigra and cerebellum.

It is at present best conceived as brought about by increased activity in some portion or portions of the extrapyramidal system whose activity is antagonistically related to that of the cortico-spinal system.

Finally it can be obtained from areas 8s, 4s, 2s and 19s, i.e. from all of those cortical areas from which suppression of electrical activity of the cortex can be obtained, although its occurrence is not dependent upon the suppression of that activity. (Authors' abstr.)

JULY.

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Cerebral Blood Flow and pH in Excessive Cortical Discharge Induced by Metrazol and Electrical Stimulation.

1. An increase in local cerebral blood flow brought about through the action

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of adrenalin, metrazol, or by metabolites of increased neuronal activity tends to increase the local pH of the cortex.

2. The vascular dilatation resulting from increased local acidity due to neuronal discharge tends to maintain a constant pH of the cortex under physiological conditions; a delicate homoeostatic adjustment mechanism for normal brain function similar to that found in other body tissues.

3. Excessive neuronal activity may exhaust the circulatory adjustment to such an extent as to cause a marked decrease in cortical pH.

4. The onset of metrazol discharge is characterized first by excessive neuronal activity, then relative acidity, followed by relative alkalinity if the blood flow is increased. Only acidity results if blood flow is not increased. Increased blood flow with metrazol discharge is regularly observed when the animal is in good condition, failure of increase or decrease being a sign of deficient reactivity of the cardiovascular system.

5. Apparent small initial "alkaline waves" concomitant with the onset of facilitation in cortical activity may be due to DC voltage components of the cortical electrogram during the violent metrazol discharge. Larger alkaline waves with metrazol discharge were related to over compensated increase in blood flow.

6. The onset, intensity, duration and form of the metrazol discharge were not appreciably affected by variations in cortical pH between 7·0 and 7·5 induced by hyperventilation, CO_2 breathing, and by the injection of acid or alkaline solutions into the blood stream.

7. Changes in pH accompanying spontaneous cycles of prolonged epileptiform discharges alternating with periods of depressed cortical activity, following the single injection of metrazol, could all be explained upon the basis of the action of "acid" producing neuronal activity and its counteraction by increased blood flow. There was no apparent relationship between the level of pH and the occurrence of prolonged epileptiform discharge of this cyclic type following a moderate initial dose of metrazol.

8. Epileptiform after-discharge of one sigmoid gyrus resulting from nerve impulses conducted form the contralateral cortex subject to electrical stimulation was associated with changes in local cortical pH and blood flow of the discharging area similar in every way to those accompanying epileptiform discharge due to metrazol.

It is concluded that the facilitating action of metrazol, strychnine and nerve impulses conducted from a distant area of cortex subjected to electrical stimulation is not primarily due to an increase in the local pH of the interstitial fluids of the cortex, because such an increase in pH occurring concomitantly with increased activity of cortical neurones is preceded by an increase in local blood flow. Increased pH seems to be the result of a vascular reaction to increased neuronal activity, and does not seem to play an important role in the facilitation processes here studied. (Authors' abstr.)

Relation between Electrical Changes during Nerve Activity and Concentration of Choline Esterase.

1. If in the electric organs of *Raia*, *Torpedo marmorata* and *Gymnotus electricus* voltage and number of plates per cm. are compared with the concentration of choline esterase, a close parallelism appears between E.M.F. and activity of the enzyme.

2. The enzyme concentration in the electric organ of the giant *Torpedo occidentalis* Storer is as high as in the electric organ of *T. marmorata*. This coincides with the observation that in the larger organs of the former species the E.M.F. is several times greater than in the small organs of the latter species.

3. No significant difference was found between enzyme concentration in electric lobes and nerves supplying the electric organs and that in other parts of the central nervous system in *T. occidentalis*.

4. Determination of choline esterase carried out separately with sheath and axoplasm of the giant fibre of Squids (*Loligo paelii*) show that practically all the

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enzyme is localized in the sheath ; the esterase activity of the axoplasm is negligible. This is considered as direct evidence for the previous assumption that the enzyme is concentrated everywhere at or near the surface of the nerve cell, and that the rise of concentration at synapses is connected with the increase of surface.

5. In the head ganglion of the Squid a concentration of choline esterase has been found which is higher than in any other tissue examined thus far.

6. It is suggested that the potential differences observed during nerve activity may be closely connected with the metabolism of acetylcholine everywhere at or near the surface of the nerve cell, the metabolism being only quantitatively more important at synapses. (Authors' abstr.)

Nature of the "Endplate Potential" in Curarized Muscle.

In curarized frog's and cat's muscle a non-propagated negative potential change —the " endplate potential "—is set up by a motor nerve volley at the region of the myoneural junctions.

By various tests, the end-plate potential (e.p.p.) is shown to be a local depolarization of the muscle fibres which acts like a local catelectrotonic potential produced by a subthreshold electric stimulus.

The e.p.p. spreads a short distance along the muscle fibres, with a decrement of about 50–75 per cent. per mm., and a progressive slowing of its time course.

If recorded from the centre of an end-plate zone, in a state of just complete curarization, the e.p.p. reaches 5 to 8 per cent. of the normal propagated muscle spike.

It waxes and wanes along an approximately double-exponential curve, the duration of the rising phase being 2·3 msec. in the frog's sartorius at 20° C. and 0·8 msec. in the cat's soleus, while the time constant of its descending phase is 11 msec. and 5 msec. respectively.

The temperature coefficient for the time factor of decay is low ($Q_{10} = 1{\cdot}3$), that for the duration of the rising phase is high ($Q_{10} = 2{\cdot}65$). The significance of this difference is discussed.

There is interaction between an e.p.p. and a propagated muscle-spike set up by direct stimulation. The e.p.p. sums with the " foot " of the muscle spike and slightly speeds up its propagation. During the " active phase " of the spike the e.p.p. is reduced or abolished.

In the frog a second nerve volley, at a brief interval after the first, sets up an e.p.p. which is up to 80–100 per cent. larger than the first. This " super-normal " effect gradually disappears within about 0·1 sec. at 20° C. In the cat the second e.p.p. is about 20 per cent. smaller than the first and recovers its normal size only after several seconds.

If the e.p.p. exceeds a certain critical level, muscle spikes are initiated. Neuromuscular facilitation occurs when the required level is reached by summation of successive e.p.p's. (Authors' abstr.)

Isolation of Intrinsic and Motor Mechanism of the Monkey's Spinal Cord.

This brief study demonstrates the feasibility of isolating regions of mature spinal cord from all in-going nerve impulses and utilizing them for examination of various questions in neuro-anatomy and neuro-physiology. It has given a picture of the intrinsic and motor mechanism of the spinal cord cleared of the posterior root and descending fibres, showing the magnitude, variety and arrangement of the intrinsic system in the monkey. Finally it has confirmed the conclusion, reached after very much longer study of isolated segments in dogs, that the mammalian cord mechanism operates only under the stimulus of arriving nerve impulses. Deprived of such excitation the cord produces no activity which reaches effectiveness in the skeletal musculature. (Authors' abstr.)

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Fibrillation in Skeletal Muscle in Relation to Denervation and to Inactivation without Denervation.

To investigate the possibility that surgical isolation of the spinal cord from all in-going nerve impulses might constitute a functional denervation of the dependent skeletal muscle such that this enters into fibrillation, the lumbo-sacral region of the cord was so isolated in two monkeys, and in addition, one sciatic nerve was cut in each. Two weeks thereafter leg muscles were exposed on two sides and examined for fibrillation. Muscle still in possession of its innervation was found to be at rest, not fibrillating; but muscle denervated either by sciatic section, or, in one animal, in consequence of complete degeneration of the isolated cord segment, was found to be fibrillating and of a deeper red color than the muscle at rest. It is concluded, therefore, that atrophy developing under conditions of inactivation without denervation may properly be considered inactivation atrophy, or atrophy of disuse. (Authors' abstr.)

Initiation of Muscle Impulses at Neuro-muscular Junction.

A detailed study has been made of the rising phase of the muscle action potential which a nerve volley sets up at a focus of end-plates. In some preparations these potentials are of the " simple-spike " type; in others an initial step precedes the spike (the " double-step " type).

Three procedures have been used in identifying that component of the rising phase due to " endplate potential " (e.p.p.): Progressive curarization; small shifts of recording leads away from the focus; responses added by a second volley at various intervals.

It is thus shown that the initial step of the double-step potentials is due to e.p.p., the spike only arising when this has attained a considerable size—up to 16 per cent. of the peak-potential. With the simple-spike potentials there is usually also an initial e.p.p. phase, but it is small—usually 1–2 per cent. of the peak-potential. All transitions are observed.

There is no significant difference between the e.p.p's. of the two types; in both the initial steepness of e.p.p. rise indicates an extrapolated maximum of about 30–40 per cent. peak-potential; in both curare and the muscle's refractory period depress the e.p.p. similarly. The difference solely concerns the earliness of the spike origin relative to the e.p.p.

Large initial e.p.p's. (12–18 per cent. peak-potential) are probably the sole mechanism initiating muscle impulses both normally and during sub-paralytic curarization or refractoriness of the muscle. The normal safety margin is about 3.

In the other experiments the excitatory action of the e.p.p. seems normally to be forestalled by an additional excitatory mechanism, which is depressed by curare or refractoriness, the e.p.p. then taking an increasing share in excitation. The nerve action currents may be directly responsible for this additional excitatory effect. (Authors' abstr.)

The Human Electro-corticogram.

A compact, portable apparatus has been described and a simple technique has been outlined which permit reliable records of electrical potentials to be taken directly from the exposed brain at operation.

The regional distribution of normal spontaneous cortical potentials has been outlined. Alpha activity was obtained directly from the exposed optic nerve.

Tumours were demonstrated to be electrically inactive. This was found to be true for meningiomas, gliomas of various types, cranio-pharyngiomas, and metastatic tumours.

The slow potentials commonly associated with tumours were found to arise from the damaged tissue adjacent to them, rather than from the tumours themselves. The area in which these abnormal potentials occur is small with the benign encapsulated tumours and much greater with the infiltrating type.

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Changes in electrical potentials in association with hydrocephalus, cortical cicatrices, cerebral atrophy secondary to arteriosclerosis, and diffuse encephalopathy have been reported.

Abnormally large, slow potentials were obtained from widely distributed points of the cortex in patients who, clinically, exhibited sharply focal convulsions. This dysfunction appeared greatest at points which corresponded roughly with an epileptogenic focus, as determined on anatomical and clinical grounds. The electrocortical dysfunction seemed definitely greater in the pre-central area of the brain than it did in the post-central regions. " Spike " formations were not observed. (Authors' abstr.)

SEPTEMBER.

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*The Endplate Potential During and After the Muscle Spike Potential. *Eccles, J. C., and Kuffler, S. W.* 486

Steady Potential Fields and Neurone Activity.

The continued travel, after neural connections are blocked or severed, of potential waves along the hemisphere of the isolated frog brain depends upon the existence of intercellular currents. These are assumed to result from the existence, and discharge, of a potential, the somatic potential, from axonic to dendritic pole of the similarly oriented neurones. Such a polarized sheet of cells should behave formally like a polarized nerve membrane ; and a number of predictions from the hypothesis have been tested and confirmed.

Steady potentials, relatively constant in time, have been observed between various surface points, and especially, between the uninjured pial and ventricular surfaces of the hemisphere wall. The PV potential is normally 2 to 3 mV, with P negative to V, but may slowly change magnitude and even direction, especially under the influence of caffeine.

The travelling wave induced by caffeine is simpler and of greater amplitude as recorded from PV electrodes than from surface ones. Its characteristics are described ; essentially, a large surface positive wave is followed by a feebler and longer surface negative phase.

Polarization through the thickness of the pallium, by as little as 0·01 mA for a few seconds, changes the PV potential in either desired direction. The new potential returns to the initial value during 10 to 30 minutes after the applied current is ended, but shows an asymmetry with the direction of polarization. The caffeinized brain is less " polarized."

As the PV potential is altered, spontaneously or by an applied current, the caffeine wave alters with it ; and the two commonly reverse sign together. Some but not all exceptions are explained in the text.

" Depolarizing " the PV potential at some position on the hemisphere can initiate caffeine waves in a previously quiescent brain or can shift the source of waves already present, so that they originate at this locus.

These findings support the hypothesis advanced. Some limitations and extensions of an interpretation of neurone interaction in terms of electric currents are considered. (Authors' abstr.)

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Fatigue and Refractoriness in Nerve.

Recovery of excitability of frog sciatic nerve was studied after one and two conditioning shocks, after prolonged tetanization and in experiments combining prolonged activity and refractoriness. Generally excitability was measured by the method of Graham and Lorente de Nó (1938), the theoretical foundation of which is discussed.

To compare the effect of similar fatiguing tetanizations on submaximal single responses and on conditioned responses the testing stimuli were adjusted before fatigue, so that conditioned and unconditioned responses would involve the same number of fibres. It was found that excitability was reduced much more in the unconditioned (resting) than in the conditioned (refractory) nerve. In both cases the rate of recovery of excitability depends directly on the duration of the fatigue stimulation.

Fatigability does not vary in different α fibres of a given nerve.

The appearance of supernormality and of subnormality was delayed by fatiguing stimulation, the degree of delay depending upon the degree of previous activity. Recovery curves of different nerves taken from various papers were plotted together on a semi-logarithmic scale. Thus in a survey the different spacings in time of supernormality and subnormality are revealed. In a variety of preparations, although the total duration of the recovery curve varies greatly, the sequences are similar.

Recovery of excitability after a single conditioning impulse was compared with recovery during the so-called " second " refractory state (after two conditioning impulses). Recovery was always found to be slowed down in the latter case ; as the interval between the conditioning impulses was increased, recovery in the " second " refractory period was found to become faster. This delay of recovery during the " second " refractory period may be the first detectable sign of fatigue.

The fact that the separate refractory states after two impulses sum, just as subnormality does, and the fact that responsiveness increases no further during the second part of the refractory period (Graham and Lorente de Nó, 1938), are considered to favour the assumption that subnormality is a late continuation of the relative refractory state.

The difference between the rates of recovery of responsiveness and of excitability is accentuated in fatigued nerve. (Authors' abstr.)

Localization of Cerebral Centre Activating Heat-loss Mechanisms in Monkeys.

Local heating of the brain of the monkey by a low-voltage, high-frequency current passed between electrodes oriented in the brain with the Horsley-Clarke technique has demonstrated a reactive field which responds by bringing into play the heat-loss mechanisms of sweating and polypnoea. The probably associated vasodilation was not demonstrated because of technical difficulties.

The area in question is located in the preoptic region of the telencephalon between the anterior commissure and the optic chiasma, with a rostrocaudal extent of about 2 mm. and a lateral reach of about 3 mm. to either side of the midline.

The disposition of the heat-sensitive area in the monkey is in close accordance with the location of the similar centre previously outlined for the cat. Because the monkey is more closely related phylogenetically to man and because, like man, it sweats but does not pant, the results presented in this paper make it highly probable that the heat-sensitive area has the same location in man. This is in agreement with what evidence is available from clinical studies.

The results are interpreted as identification of a reactive region which contains elements normally activated by the rising temperature of the blood when the animal is overheated, and in turn activating the mechanisms of heat-loss.

(Authors' abstr.)

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The Endplate Potential During and After the Muscle Spike Potential.

Two experimental procedures have been used in determining the size and time course of the endplate potential, e.p.p., during and after the muscle spike potential set up by a single nerve volley :

(i) The potential added by a nerve volley on top of the antidromic spike potential set up by direct stimulation.

(ii) The effect of subparalytic curarization.

It is thus shown that in the cat the e.p.p. attains a maximum of about 10 per cent. of the peak-potential and has a time course similar to the e.p.p. added by an early second nerve volley. Two opposing factors modify this time course, the first being normally the stronger : (*a*) The depolarizing action of the neuro-muscular transmitter continues normally for about 6 msec. ; (*b*) during the muscle's refractory period (up to 6 msec.) the e.p.p. decays more rapidly.

In the frog much less e.p.p. outlasts the spike, suggesting that factor *a* is briefer than in the cat.

In the cat the e.p.p. coexisting with the muscle spike has been shown to have two actions :

(i) It prolongs the muscle's refractory period, lengthening by about 0·81 msec. the least spike-interval for a testing nerve volley.

(ii) It raises the threshold level of e.p.p. for initiating a spike.

In action (i) the e.p.p. resembles the effect of a cathodal polarization directly applied during a nerve's refractory period (Blair and Erlanger). Actions (i) and (ii) are both larger if the e.p.p. is increased by an early second nerve volley or by eserinization, and smaller if it is diminished by curarization.

The size of the e.p.p. set up by a testing nerve volley is diminished during the refractory period of the muscle. (Authors' abstr.)

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An Analysis of the Relation between Handedness and Stuttering with Special Reference to the Orton-Travis Theory of Cerebral Dominance.

1,548 college students were given handedness tests and speech tests to determine the relation between handedness and stuttering. Of 34 members of the group who were left-handed one was a stutterer. Of 138 members, classified as ambidextrous, 4, or 2·9%, were stutterers. Of 77 members who reported a shift in handedness, one was a stutterer. The speech test revealed 20 stutterers in the entire group. The author concludes that the data " lends little or no support to many relationships commonly reported as existing between handedness and stuttering." Before further research is undertaken, handedness itself must be more clearly understood and better tests of handedness worked out. Bibliography of 52 titles.

C. V. HUDGINS (Psychol. Abstr.).

Contradictory Evidence in Handedness and Stuttering.

The author reviews recent literature on the relationship of handedness and stuttering and discusses it in the light of the data presented by Daniels. He concludes :

(1) There was no hazard involved when 77 individuals were taught to use their right, instead of their left, hands. The one case of stuttering (Daniels) " could not be attributed to the fact of change."

(2) Since the frequency of stuttering is twice as great (Daniels) among the ambidextrous as among those who were shifted, " it might have been advisable as a preventative measure, to have taught all ambidextrous (individuals) . . . to write with their right hands."

(3) Since the frequency of stuttering among the left-handed is over twice as great as among the group which shifted, " it may have been good hygiene had they been taught to write with their right hands."

These conclusions are admittedly speculative, and only repeat-yearly studies will " justify a revision of techniques and therapy now in vogue, which are based on the cerebral dominance theory." C. V. HUDGINS (Psychol. Abstr.).

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A Study of the Duration of Temporal Intervals between Successive Moments of Stuttering.

Twenty stutterers read a 1,000 word test passage while under the observation of two unseen observers. The observers recorded both the frequency and the duration of the stuttering spasms. The purpose of the investigation was to determine the degree of variability between successive moments of stuttering, and to point out any cyclic pattern recurrent in the stuttering spasms. The results show a marked variability in temporal intervals, both for the individual subjects and for the group as a whole. No cyclic patterns appeared. It is concluded that stuttering is either functional in origin or that it arises out of some organic condition, which does not produce recurring phenomena. C. V. HUDGINS (Psychol. Abstr.).

A Clinical and Laboratory Study of a "Stuttering" Family.

Two branches of the family were studied to determine the distribution of stuttering similarities of differences among stutterers, former stutterers, and non-stutterers, and to determine the nature of the evaluations or assumptions expressed by the family regarding stuttering. One branch of the family had moved to a neighbouring State three generations previous to the study. There had been little or no intercourse between the two branches after the separation. The incidence of stuttering among two generations of one branch is 40 per cent., while only one stutterer among 17 members of the other branch was noted. Doubt is expressed as to the validity of the heredity hypothesis as an explanation of these differences. Environmental causes, expressed as attitudes, evaluations, and neurolinguistic patterns, appear to be more plausible explanations. One branch of the family may be considered as stuttering-conscious as a result of these causes while the other is not. C. V. HUDGINS (Psychol. Abstr.).

MED. J. AUSTR.

VOL. XXVIII (i). FEBRUARY 8, 1941.

The Anatomy of the Cerebellum. *Abbie, A. A.* 159
Some Notes on the Pathology of the Cerebellar System. *Latham, O.* . . 164
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The Surgery of Intracerebellar Disease. *Phillips, G.* 176
Extracerebellar Tumours. *Miller, I. D.* 179

APRIL 5 AND APRIL 12.

The Beattie-Smith Lectures: Insulin and "Cardiazol" in the Treatment of the Psychoses. *Webb, R. R.* . . . . . 405 and 435

VOL. XXVIII (ii). JULY 5.

*Acute Haemorrhagic Leucoencephalitis. *Weston Hurst, E.* 1

Acute Haemorrhagic Leucoencephalitis.

This name is given to an acute nervous disease characterized by severe damage to the walls of blood vessels, perivascular necroses, perivascular and focal demyelination, intense polymorphonuclear exudation and microglial reaction. Where lesions are most severe oedema and haemorrhages are conspicuous. In the cerebrum the lesions are confined almost exclusively to the white matter. Clinically the chief feature is a rapid abrogation of the higher cerebral function in a previously healthy individual; this is associated with headache, vomiting, slight pyrexia or leucocytosis. The lesions in two cases are compared with those in brain purpura and in Baker's haemorrhagic encephalitis. It is suggested that acute haemorrhagic leucoencephalitis may represent a link between the demyelinating diseases on the one hand and some forms of "haemorrhagic encephalitis" on the other. (Author's abstr.)

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AUGUST 30.

Some Observations on the Effect of Sedative Drugs on the "Cardiazol" Convulsion. *Youngman, N. V.* 224

MENT. HLTH., LOND.

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Other Minds (V). *Wisdom, J.* 313
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NEOPSICHIATRIA.

VOL. VI. 1940.

The Formation of a Conditioned Reflex in Man. *Pasqualini, R.* . . 1

NERVENARZT.

VOL. XIII. NO. 2. 1940.

*Disturbances of Metabolism in Schizophrenia. *Geller, W.* . . .

Disturbances of Metabolism in Schizophrenia.

The author distinguishes three types of schizophrenia, in each of which he proposes to inquire into the metabolism: The autistic asthenic type, the expansive hyperthymic, and the impulsive hebephrenic.

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The first type is formed by leptosomatics with a maximum arterial pressure of 110–115 and pulse of 80–88. Alkalosis often occurs, the blood cholesterol varies from 150–180 mgm. per cent., and the residual nitrogen from 20–25 per cent. The blood glucose is about 70 mgm. per cent., and after injection of 1 mgm. adrenalin the sugar rises 15 mgm. per cent., with a rise of blood pressure of about 10 per cent. Later the sugar falls to 10 mgm. per cent., recovering to its original value in six hours.

These cases, when young, are unemotional; when at school they show marked originality but are on the whole poor scholars. Later they become irritable, obstinate, discontented, and unreliable. They lose all productive activity at the commencement of the psychosis, they entertain delusions of relation and injury. They believe that they are wasting away or poisoned, they are immersed in themselves, and gradually lose all touch with reality, occasionally spending years lying in bed. From time to time short impulsive states interrupt the uneventful course of the illness, which finally is terminated by tuberculosis or some acute infection. Their near relations often show great metabolic similarity to the patients. These cases react well to cardiazol therapy.

The contrasting type is that of the expansive hyperthymics. Their blood pressure is 20–30 above normal. The blood acid-base equilibrium tends to acidity, the lactic acid content is increased, the blood-sugar content is high and shows an exaggerated response to adrenalin. Depression of the blood-sugar content by insulin requires abnormally high doses, and the insulin coma can be readily interrupted by adrenaline. These patients leave their occupations to devote themselves to extravagant schemes. If they be expostulated with they are resentful and aggressive. As a rule they are admitted to the clinic in an agitated state, with delusions of grandeur. They are easily bored, and disappear, to present themselves again after some years. They react well to insulin treatment. Their relatives tend to exhibit manic-depressive psychoses.

The third type, the impulsive hebephrenics, have often a remote resemblance to the asthenics. Their metabolism is distinguished by retention periods of slow accumulation of water and chlorides followed by rapid elimination during short periods of agitation. The hydrogen ion equilibrium is unstable. The blood-sugar curve resembles that of the asthenics. Many of them are reported to have been industrious scholars up to adolescence, and then they suddenly fall into an anxiety state, leave their work, and often wander aimlessly. Others become slovenly in their work, develop mannerisms, have a puzzled appearance, and complain that their environment has altered in character. They show perseveration, and occasionally indulge in aimless quarrels. Their relatives are often intemperate, wasters, and antisocial. They do well with cardiazol treatment.

The author emphasizes that there are no specific laboratory reactions for schizophrenia, but that the type of abnormal conduct exhibited by the schizophrenic is closely related to the metabolic and physical type.

Geography of Suicide. *Gruhle, H. W.* 337
Post-operative Reduction of Intracranial Pressure after Brain Operations. *Sprockhoff, H.* 341
Percutaneous Arteriography. *Duus, P., and Behrmann, W.* 350
Differential Diagnosis of Pathological Changes of the Sella Turcica in Roentgenogram. *Greving, H.* 353
Cerebrospinal [illegible] in Multiple Sclerosis. *Senherling, O.* 359

NEUE PSYCHOL. STUD.

VOL. VIII. 1939.

Free Use of Montessori Material by Three to Six-year-old Children. *Capeller, R.* . . . . . No. 3

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NEVRASSE.

VOL. I. NO. 3. 1940.

*Convulsive Therapy in General Paralysis. *Broggi, E.*

Convulsive Therapy in General Paralysis.

An account of five cases of G.P.I. in which specific therapy had had no effect on the mental state and which improved markedly with convulsive therapy.

The author employs either cardiazol or electric shock therapy, and obtains marked mental improvement after a few treatments, whilst the neurological and serological signs remain unaffected. He considers that symptoms due to reversible damage from the syphilitic poison are favourably affected by convulsive therapy, whilst the gross destructive changes leading to dementia are, of course, unaffected.

OCCUP. THER. AND REHABIL.

VOL. XX. APRIL, 1941.

*The Part of Music in Resocialization of Mental Patients. *Altshuler, M.* . 75
What Every Occupational Therapist Should Know about Arthritis. *Traut, E. F.* 87
Some Comments on Recreation. *Shaffer, G. W.* 93
*Modern Dancing as a Recreation for the Mentally Ill. *May, R.* . . 101
*Kindergarten Methods: A Rehabilitation Project for Deteriorated Psychotics. *Stone, E. H.* 107
The Value of Well Trained Occupational Therapists in General Hospitals. *Ball, M.* 117
The Effect of Color on the Output of Work of Psychotic Patients in Occupational Therapy. *Lukins, N. M., and Sherman, I. C.* 121

Music and Resocialization.

In addition to educational, cultural and aesthetic attributes, the following are some of the chief values of music for mental patients: (*a*) Capacity to produce changes in metabolism, respiration, blood-pressure, pulse, endocrines and muscular energy; (*b*) ability to command attention and increase its span; (*c*) power of diversion and substitution; (*d*) capacity to modify the mood; (*e*) capacity to stimulate pictorially and intellectually. S. M. COLEMAN.

Modern Dancing as Mental Therapy.

The suggested uses of modern dancing as a therapy for mentally ill patients are based on the psychoanalytic theory that the mental conflicts in neurotic and psychotic patients are the result of mismanaged aggressive and erotic drives. The methods described are planned to meet the specific unconscious emotional needs of the personality, in an attempt to help the patient to find more desirable and successful outlets for these drives. S. M. COLEMAN.

Kindergarten Methods.

Classes of from 12 to 35 deteriorated female patients have been treated by kindergarten methods. It is found that patients, who never evinced interest in anything, who had been noisy, destructive and unclean, now draw, paint, copy poems, do lettering, create and make birthday cards and Christmas cards, crochet, cut out designs and pictures, create original designs and assist each other. There is an associated improvement in general behaviour. S. M. COLEMAN.

JUNE.

Occupational Therapy with Orthopaedic and Surgical Conditions. *Hurt, S.* . 149
A Suggested Programme of Vocational Activity for the Sanatorium. *Elton, F. G.* 159

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*Occupational Therapy as a Component of a Unified Treatment Programme in Psychiatry. *Wade, D.* 167
Colour Therapy. Bibliography 177
Industrial Training of the Blind. *Allen, W. E.* 179
The Value of a Well Trained Therapist in a Tuberculosis Hospital. *Moore, A. L. H.* 185
Correlation of Occupational Therapy with Community Health Education. *McGuire, A.* 189

Unified Treatment Programme in Psychiatry.

In this paper the essential aims of occupational therapy in association with the general treatment are discussed. These aims are considered to be : (1) To promote recovery ; (2) mobilization of total assets of patients ; (3) prevention of deterioration ; (4) creation of new beneficial habits ; and (5) rehabilitation.

In the selection of the proper craft and in the approach to the patient it is important for the therapist to consider the following points : (1) The psychological needs and emotional conflicts of the patient ; (2) his past work and history ; (3) his likes, dislikes and abilities. S. M. COLEMAN.

AUGUST.

One Hand for the Ship. *Kindwall, J. A., and McLean, J. M.* . . . 223
The Development of an Occupational Therapy Department for Aged and Chronic Patients. *Phillips, H. C.* 231
The Therapist of To-morrow. *Gallagher, E., and Watwood, V.* 237
The Occupational Therapy Department in Welfare Hospitals for Chronic Diseases. *Heess, F. E.* 241
Crocus Bags. *Clark, B.* 245
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Occupational Therapy Overseas in the World War. *Wilson, S. C.* . . . 255

ANN. MÉD. PSYCHOL.

VOL. XCVIII (1). MAY, 1940.

*Epileptic Cataplexy. *Marchand, L., and Ajuriaguerra, J.* . . . 393
Subfebrile Psychoses. *Hyvert, M.* 423

Epileptic Cataplexy.

An atypical epileptic equivalent is described as a result of a study of 19 cases. It is characterized by loss of muscular tone without loss of consciousness, the patient being unable to move or speak. It may alternate with or be followed by a true seizure. It is described both in idiopathic and symptomatic epilepsy. A physiopathological hypothesis is put forward to explain the syndrome.
S. M. COLEMAN.

VOL. XCVIII (2). JUNE–JULY, 1940.

*Hetero-familial Disposal of the Mentally Afflicted. *Vié, J.* 1
Atypical Protuberal Syndrome with Anosmia. *Euzière, E. F., and Lafou, R.* 50

OCTOBER.

Hippus in Mental Disorders. *Barbé, A.* 97
*Hetero-familial Disposal of the Mentally Afflicted. *Vié, J.* 110

NOVEMBER–DECEMBER.

*Clinical and Experimental Study on the Mechanism of Sakel's Treatment. *Cossa, P., and Bougeant, H.* 193

https://doi.org/10.1192/bjp.88.370.147 Published online by Cambridge University Press

*The Treatment of Acute Delirium by Intrathecal Injections of Vitamin B_1. *Dupouy, R., and Micucci, M.* 201
Disorders of the Cerebral and General Circulation in the Psychoses. *Baruk, H., and Racine, M.* 206

Mechanism of Sakel's Treatment.

As a result of clinical experience and experimental work on rabbits it is concluded that insulin coma is associated with oedema of the brain. The oedema is at first perivascular, then pericellular and lastly interstitial. It is pointed out that this drainage of the parenchyma is the normal method by which the nervous system defends itself against toxic agents. S. M. COLEMAN.

Intrathecal Injections of Vitamin B_1.

A report on five cases which were favourably influenced by a course of intrathecal injections of 20 mgm. of aneurine. S. M. COLEMAN.

VOL. XCIX (1). JANUARY, 1941.

*Hetero-familial Disposal of the Mentally Afflicted. *Vié, J* 1
*Electric Shock Treatment in Psychiatry. *Forel, O.-L.* 32

Electric Shock Treatment in Psychiatry.

The writer concludes that electric shock therapy has the following advantages over insulin, cardiazol and other convulsants: It is rapid and simple; it can be repeated two or three times in the day if necessary, though the patient is unlikely to benefit if there has been no improvement after 20 shocks; the patient need not be young, and the method can be applied to patients for whom insulin and cardiazol are contra-indicated on account of the physical state; there is not the inconvenience of attempting to inject sclerosed veins; the method is not associated with acute anxiety and there is a great economy of time. S. M. COLEMAN.

FEBRUARY–MARCH.

The Struggle Against Opium and Other Narcotic Drugs. *Porot, A.* . . . 97
*Hetero-familial Disposal of the Mentally Afflicted. *Vié, J.* 121
*The Role of the Pineal in Certain Psychoses. *Cahana, M., and Cahana, T.* 152

The Role of the Pineal.

From an anatomo-clinical study of a case of mania with macro-penis and masturbation it is concluded that in certain cases of mania there may be hypofunction of the pineal. Previous work by these authors had suggested that in schizophrenia there is excess of pineal hormone. S. M. COLEMAN.

APRIL–MAY.

The Founders of the French Teaching on Aphasia. *Quercy, Bayle* . . . 209
*Hetero-familial Disposal of the Mentally Afflicted. *Vié, J.* 224
*Treatment by Electric Shock. *Lamarche, A., de Beaujeu, J., and Estienne, G.* 251

Hetero-familial Disposal.

This is an exhaustive study of the subject in all its aspects. Hetero-familial disposal is defined as a method of assistance by confining mental patients to the care of families other than their own. The treatment is of great antiquity, notably in the case of the colony at Gheel in Belgium. Miraculous cures of insanity occurred at certain sacred shrines and wells. Pilgrims flocked there, many of them remaining, to live with the indigenous population, so forming the first colonies.

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The procedure of disposal varies from country to country. In France and Belgium there is a central administration with an infirmary round which the colony is closely grouped. In Italy and Switzerland a varying number of patients from the mental hospital are boarded out in the neighbourhood under the direct supervision of the medical staff. In Scotland patients are dispersed widely in small groups over the country.

The rest of the monograph deals with the indications and contra-indications for this form of therapy; the type of patient and the mental states that are likely to benefit; the medico-legal implications; social and economic problems; occupation and employment of patients; and finally, the therapeutic value of the method.

S. M. COLEMAN.

Treatment by Electric Shock.

Of 25 mental patients treated, 12 recovered, 7 improved and 4 slightly improved. Most of the cases treated were of recent onset. The majority were acute or subacute schizophrenics, but a few maniacal and depressive cases were also treated. It is noted that the first shock often aggravates symptoms; the treatment should be persisted with and not given up until 10 shocks have been given. One recovery in a chronic case is reported, a hebephreno-catatonic of nine years' duration, who, after 8 shocks, has been free of symptoms for over a month.

S. M. COLEMAN.

PSICOTENICA.

VOL. I. 1940.

National Institute of Psychotechnics, Progress 1939–40. *Ibarrola, R.* . 161
The Use of Capillaroscopy in the Study of Personality. *Dantín, J.* . . 168
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PSYCHIAT. NEUROL. BL., AMST.

VOL. XLIII. 1939.

A Comparative Intelligence Investigation of a Group of Children, Deaf-mute by Heredity, and Hearing Children with the Porteous Intelligence Test. *Zeckel, A., and Kolk, J. J. v. d.* 141
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PSYCHIAT. MONOGR.

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The Aetiology of Child Behavior Difficulties, Juvenile Delinquency and Adult Criminology, with Special Reference to their Occurrence in Twins. *Rosanoff, A. J., Handy, L. M., and Plesset, I. R.* . . . . . No. 1

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PSYCHIAT. QUART.
VOL. XV. APRIL, 1941.

Metrazol as an Adjunct to the Treatment of Mental Disorders. *Cheney, C. O., Hamilton, D. M., and Hearer, W. L.* 205
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*Sequelae in Post-traumatic Psychoses. *Vyner, H. L., and Swire, H.* . 343
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*The Treatment of Agitated and Depressed Mental States with Benzedrine Sulphate and Sodium Amytal. *Chittick, R. A., and Myerson, A.* . . . 362
*The Sedative Action of "Delvinal" Sodium in Disturbed Psychiatric Patients. *Davidoff, E.* 370
A Note on the Occurrence of Ruptured Duodenal Ulcer in Two Patients, Previously Treated with Metrazol. *Moore, C. D., and Friedman, S.* . 380

Psychoses Associated with Essential Hypertension.

1. The psychotic manifestations of hypertensives are variable.
2. A slow heavy gait, a markedly restrained-looking facies, exhibitionism, and a grossly defective sexual life are present in these cases.
3. Strongly suppressed anxiety, hostility, passivity, and feelings of guilt are evident.
4. These cases fall into two groups :

Group 1 : Where the hypertension subsides after several months as a result of a period of excitement wherein some anxiety and hostility are given off, and the patient later develops defensive measures to separate himself from extraneous influences which induce anxiety or hostility.

Group 2 : Where the hypertension does not subside. In these patients there are no distinct periods of excitement, and the hostility or anxiety continues to be markedly suppressed.

5. The conflicts in the hypertensive psychotic have a narcissistic basis.
6. These patients seem to have a diminished faculty for thought or ideational elaboration and, failing to find sufficient outlet in this way, probably seek somatic expression through the cardiovascular system. (Author's abstr.)

Sequelae in Post-traumatic Psychoses.

As a result of this study the following conclusions were reached :

1. The percentage of traumatic psychoses is significantly small in the population of the average mental hospital.
2. Excessive alcoholism, cerebral arteriosclerosis, and abnormal prepsychotic personalities are important predisposing factors in the development of the post-traumatic psychoses.
3. Those patients having skull fractures associated with their injuries are more prone to develop convulsions.

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4. The cerebral atrophy following brain injury does not appear to be progressive, but apparently reaches its height within one or two years following the injury.

5. The presence of, or duration of, unconsciousness following the head injury is not related to the severity of the mental reaction. (Authors' abstr.)

Curarization with Quinine Methochloride to Prevent Traumatic Complications of Metrazol Shock Therapy.

A synthetic compound of quinine with a curare-like action, known as quinine methochloride, has proved to be a satisfactory substitute for aqueous extract of curare in the prevention of traumatic complications in convulsive shock therapy.

The dosage of this drug is slightly more accurate and easier to gauge in the patient. It has the drawback of being relatively insoluble, requiring a larger volume for intravenous injection. It produces a higher degree of respiratory complications, but these can be readily overcome with the antidote of prostigmin and the use of artificial respiration. The question of possible cardiac embarrassment from the drug is not entirely settled.

From present experience the writers believe that the drug is safe if carefully administered, especially if one has had previous experience with curare in this therapy and thoroughly understands its action. A combined metrazol quinine methochloride single injection technique has been developed.

Further experimentation with oral administration of the drug is necessary before it can be recommended in that form for relief of spastic rigidity states or for use in convulsive shock therapy. This drug offers great possibilities in the treatment of neuropsychiatric disease. (Authors' abstr.)

The Treatment of Agitated and Depressed Mental States with Benzedrine Sulphate and Sodium Amytal.

1. Twenty-one psychotic patients who presented various degrees of agitation and depression were treated with a combination of benzedrine (amphetamine) and sodium amytal.

2. Five patients were markedly benefited.

3. Nine patients were made more comfortable and accepted a more active hospital programme which continued after the therapy was discontinued.

4. Three patients whose psychosis showed schizophrenic features were not benefited. (Authors' abstr.)

The Sedative Action of "Delvinal" Sodium in Disturbed Psychiatric Patients.

1. "Delvinal" sodium is a new sedative which, except in the most disturbed cases, is effective in relatively small doses and possesses a wide margin of safety.

2. Its action compares favourably with that of sodium amytal.

3. It is of value in disturbed psychotic patients because of the mild and relatively infrequent toxic effects which occur following its administration; because of the rapidity with which it induces a satisfactory length and degree of sedation and narcosis, even after continued administration; and because a comparatively slight degree of tolerance is developed.

4. The best therapeutic results are obtained in patients with psychoneuroses, manic-depressive manic or mixed psychoses, toxic or infectious psychoses, and, to a lesser extent, in patients with involutional melancholia.

(Author's abstr.)

JULY.

*Electro-encephalography: Its Application in Neurology and Psychiatry. *Pacella, B. L., and Barrera, S. E.* 407
Psycho-analysis of a Case of Deafness. *Foxe, A. N.* 438

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*Electric Shock Therapy in State Hospital Practice. *Kalinowsky, L., Bigelow, N., and Brikates, P.* 450
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*Prognosis in Schizophrenia : A Study of 271 Cases. *Silverman, D.* . . . 477
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Notes on the Unusual Course in Certain Cases of Migraine. *Mayer, W.* . 571
Psychoses in Adult Mental Defectives. *Herskovitz, H. H., and Plesset, M. R.* 574

Electro-encephalography : Its Application in Neurology and Psychiatry.

It should be fully emphasized that the electro-encephalogram is not an indicator of individual clinical entities—with the possible exception of *petit mal* epilepsy—but that it is primarily related to the electrophysiological state of the cortex. This state might be altered in a similar degree by different conditions, whether they be essentially histopathological or purely physiological alterations in the cortical tissues. If the E.E.G. abnormality is found to remain localized particularly to any one region over the underlying cortex, then there is probably more likelihood that the disturbance is the result of an actual structural change in the cortical tissues in the vicinity rather than the result of purely neurophysiological changes without structural organic disease. However, many exceptions to this statement exist.

In its correlations with different normal and abnormal states the interpretation of the electro-encephalogram must remain essentially empirical, until the exact basis for the production of the different types of brain rhythm and patterns has been established. This does not preclude the development of important, practical and useful co-relations, but it should act as a red signal to hasty and premature conclusions which might be drawn on the basis of the occurrence of certain types of E.E.G. patterns in various clinical conditions. In widely different clinical states, certain close relationships are thought to exist by some individuals because of the occurrence of very similar E.E.G. patterns. The writers are somewhat averse to this attempted grouping of different clinical syndromes purely from electro-encephalographic analysis and interpretation ; this might be analogous to an attempt to consider as fundamentally similar all conditions which produce a rapid pulse. The rapid pulse is only an indication of a rapidly beating heart. Although the interpretation of an electro-encephalogram cannot be highly specific in its clinical correlations at the present time, it should preferably be made only in the light of a careful clinical history and examination of the patient.

The writers remain firmly convinced that electro-encephalography should be utilized as a routine procedure in the practice of neurology and psychiatry and particularly in the routine examination of State Hospital patients, if only in virtue of three important considerations : (1) its value in localizing pathological lesions of the cortex, particularly neoplasms ; (2) its immense aid in the diagnosis of convulsive disorders ; and (3) the occasional discovery of structural pathology of the brain in the patients presenting psychotic and neurotic syndromes, where no cerebral histopathology had previously been suspected because of the absence of neurological signs, or the presence of only slight neurological abnormalities which had passed unnoticed by the examiner. (Authors' abstr.)

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Electric Shock Therapy in State Hospital Practice.

Electric shock treatment presents new possibilities for combining insulin and these convulsive treatments. Of the two possible modes of combination, it seems preferable to give hypoglycaemic coma and electric shock on alternate days. So far, the writers have shifted only those patients uninfluenced by electric shock to insulin therapy, and vice versa. In both ways they have been successful in isolated cases. This further strengthens their belief that electric shock is an enrichment of therapeutic equipment, and that the various methods will complement each other.

Electric shock—like other forms of shock therapy—may not be the ultimate solution of the therapeutic problem in the functional psychoses. All shock methods are, however, definite advances over those used hitherto in mental disorders, including psychological methods. The writers' final conclusion can only be that the early shock treatment of all new admissions to State Hospitals is one of the most important measures for reducing the population of mental institutions.

(Authors' abstr.)

Prognosis in Schizophrenia : A Study of 271 Cases.

The records of 271 schizophrenic patients admitted to the Menninger Sanatorium between the years 1925 and 1938 were studied, and the course of most of these patients was followed up to June, 1940, chiefly through correspondence. The following conclusions seem warranted from a statistical analysis of the recorded data :

1. Recoveries including those with mild symptomatology were obtained in 40 per cent. of all patients ; in 32 per cent. of 1925–1930 patients, 44 per cent. of 1931–1935 patients, and 42 per cent. of 1936–1938 patients. Results were better in 1936–1938 than indicated in the preceding figures, due to the greater number of chronic cases treated.

2. Full remissions occurred at a constant rate—about 10 per cent.

3. At the end of observation recoveries were 48 per cent.—the best results were found in the 1936–1938 patients (57 per cent.) The peak of recoveries was one to two years after the initial hospitalization ; and thereafter a slow drop in the percentage of recovered cases occurred. Patients in the 1936–1938 period showed the highest peak (63 per cent.), and had the best prognosis. Recoveries before 1931 were relatively stable compared to those after 1931.

4. The length of hospitalization bore some relationship to the immediate outcome, but little to the ultimate prognosis.

5. Catatonics showed the best immediate prognosis, and were second to the mixed type in ultimate prognosis.

6. Schizophrenia occurred most frequently in the third decade of life ; those in the second decade had the best immediate, but the poorest long-time outcome.

7. Acuteness of onset was found to be one of the most important factors in the disease ; illness under six months' duration offered the best prognosis. Results with chronic cases in 1936–1938 were over three times better than in 1925–1930.

8. The immediate therapeutic response of women was better than men, but the prognostic outlook was the same.

9. There were too few cases to arrive at any statistical conclusions concerning the value of intensive psychotherapy.

10. Metrazol and insulin treatment resulted in 18 recoveries out of 19 acute cases and six recoveries out of nine subacute cases. No significant statistical differences could be discerned between shock and other therapies for the chronic cases.

(Author's abstr.)

A Study of the Use of Curare in Metrazol Convulsant Therapy with Some Electroencephalographic Observations.

1. A group of 11 mental cases were treated with curare and metrazol convulsant therapy.

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2. A total of 100 combined treatments was given; and no fractures or dislocations occurred in any of the cases. All spines were checked by X-ray before and after treatment.

3. The small number of treatments required to produce some degree of clinical improvement would seem to indicate that curare probably does not interfere with the therapeutic effect of convulsant therapy.

4. The effects of the special curare preparation on respiration and blood pressure are reported.

5. The administration of curare alone in doses sufficient to produce adequate paralysis of the skeletal musculature produced no notable changes in the electro-encephalograms.

6. The electro-encephalographic changes following metrazol convulsant therapy modified by curare were similar to the changes produced by unmodified convulsant therapy. (Authors' abstr.)

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Is the Hypothalamus a Centre of Emotion?

As a result of certain misinterpretations of experimental and clinical data a tendency has recently arisen to stress unduly the role of the hypothalamus in the conative and emotional aspects of behavior. Examination of the evidence, however, reveals the following:

1. Experiments on animals have indicated that the hypothalamus may integrate and possibly reinforce the effector neural impulses controlling some of the sympathetic and motor manifestations of fear and rage; however, there is little or no basis for the thesis that the hypothalamus governs or even mediates the emotional experiences themselves.

2. Further work in the writer's laboratory has furnished evidence that a direct somato-psychic relationship between hypothalamic function and affective experience probably does not exist, inasmuch as (*a*) the reactions induced by stimulation of the hypothalamus do not, within limits, greatly modify spontaneous emotional behavior; (*b*) animals with extensive hypothalamic lesions react to emotional stresses and can apparently experience genuine affective states; (*c*) animals subjected to prolonged conditioning procedures in which sensory signals precede direct hypothalamic stimuli do not learn to respond to either the sensory or hypothalamic stimuli in ways analogous to their spontaneous or experimental adaptations to situations of adequate emotional significance.

3. The clinical and pathological data as to the role of the human hypothalamus in emotional experience are not conclusive.

4. It would, therefore, seem safest in the present state of our knowledge to assign to the hypothalamus its experimentally demonstrable role in reinforcing and co-ordinating the neural and hormonal mechanisms of emotional expression, and reserve for more adequate proof the hypothesis that it is either the dynamic source or the seat of experience of affective states. On the other hand, much experimental, psychological and clinical evidence clearly indicates that an emotion is a highly integrated conative, cognitive and affective-somatic reaction in which not only the central nervous system, but the entire organism functions as a psychobiologic whole in its sensitive adaptations to the continually changing organismal milieu. (Author's abstr.)

Electro-encephalographic Studies of Frontal Lobotomy.

Electro-encephalograms (E.E.Gs.) were recorded on three mental patients at McLean Hospital before and after bilateral frontal lobotomy. The operation was performed in each case for the relief of agitated depression. The E.E.Gs. of the patients before operation showed relatively little differentiation in the activity of different cortical areas. There was no asymmetry between left and right sides and no evidence of any unusual degree of cortical over-activity. The patients' behaviour immediately following their operation was not fundamentally changed.

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A few weeks later their agitation had disappeared almost completely, enabling them to leave the hospital. Except for an increase in instability, there was no significant change in their E.E.Gs. even in the frontal area which had been undercut.

The E.E.G. of the second patient showed a mild generalized over-activity which in 1938 was greatly exaggerated, distorted and more continuous. In 1938 there were also specific episodes of " locked " delta activity of very high voltage appearing only on the left side of the head and predominantly in the left occipital and parietal areas. At this time he was suffering from excessive uncontrollable motor activity and a continuous jargon of speech. A pneumo-encephalogram revealed a left cerebral hemiatrophy, largely in the occipital and the posterior part of the parietal lobes. The abnormalities of behaviour were almost completely relieved by the operation. Likewise the superimposed abnormalities in the E.E.G. were greatly reduced and the record was entirely free of high-voltage episode activity. The improvement in the E.E.G. corresponds perfectly to the improvement in his behavior, and a follow-up record taken eleven months post-operatively showed no further change in the pattern.

After operation in both cases the fundamental characteristic alpha frequencies, voltages, wave shapes (and response of the alpha rhythm to opening and closing the eyes) were practically the same as observed in their earliest records.

(Author's abstr.)

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The Frontal Lobes and Consciousness of the Self.

Pre-frontal lobotomy bleaches the affective component connected with the consciousness of the self. Patients who are afflicted with a distressing consciousness of the self (either as a unit of society or as a collection of organs) and whose preoccupation is fixed and unyielding, will secure from the prefrontal lobotomy definite relief even though certain of their ideas and actions may persist for a long time. Reduction of the affective component allows the personality to appear in purer form, divested of certain restraining features, but essentially unchanged in regard to energy and intelligence, the principal change being an alteration of interests from within, outward. Prefrontal lobotomy is radical treatment, not only figuratively, but literally, in that it reaches down to the roots of the personality. If the neurosis or psychosis has its roots in an overwhelming consciousness of self, and if this consciousness is intractable and disabling, then prefrontal lobotomy may bring peace to the warring mind and a new lease on life.

(Authors' abstr.)

The Use of Psychological Tests in the Evaluation of Intellectual Function following Head Injury.

The patient's performances on various tests may be briefly discussed with reference to the underlying intellectual defects which they brought to light.

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First, an impairment in abstract thinking, in the ability to abstract, generalize and form concepts, which Goldstein has emphasized as the fundamental defect in frontal lobe injuries, is clearly shown by performance on several tests (Weigl, object-sorting; Shipley, similarities). The loss of capacity to think in abstract terms has long been recognized as one of the salient features of cerebral defect. It is interesting to note that the tests employed brought out this defect clearly while the patient's general behaviour was not informative about this point.

Secondly, an inability to handle spatial-objective problems, an incapacity to differentiate and manipulate a complex visual stimulus, is shown by a performance on the Kohs test and the Rorschach. It would seem that confronted by a complex visual stimulus, the patient receives only an undifferentiated " amorphous total impression " as in the case reported by Bouman and Grunbaum. This type of weakness in the differentiation and manipulation of spatial material has been frequently observed in cases of cerebral lesions.

Thirdly, a rigidity or fixity of set in combination with a poverty of associational activity is shown (Weigl, objective-sorting; Rorschach, Shipley).

Re-examination after a short interval with certain of the tests (Rorschach, Kohs) indicated that no improvement in condition had occurred during this interval.

The practical values of employing tests such as these in the evaluation of impairment of intellectual function are three-fold. First, basic weaknesses in intellectual functioning which may not be obvious from the general behaviour or from the observations made in the usual clinical examination may be revealed by the use of these tests. Secondly, a fairly accurate measure of the degree of impairment of function may be obtained. Finally, by repeating the tests the progress of a patient can be accurately checked. (Authors' abstr.)

Cortical Energy Production in the Psychoses.

1. Electrical cortical energy production, as determined by the strength of the alpha rhythm, is low in schizophrenic and toxic-organic psychoses. It is increased above the average for control subjects, in the affective reactions, including manic-depressive psychoses, and many paranoid states.

2. A theory is advanced on the basis of these and other findings suggesting that schizophrenia is due to a low energy cortex secondary to a primary diencephalic inadequacy. Manic-depressive reactions are considered to be the result of a high energy cortex secondary to a primary overactive diencephalon. The low energy cortex of the " organic " reactions is probably primary in itself.

3. Treatment efforts should probably be directed toward increasing the cortical energy output in schizophrenia and decreasing it in manic-depressive reactions.

4. Pathologic delta wave output parallels fairly closely the temporary disturbance of the sensorium of the functional cases or the permanent deterioration of the chronic and organic cases. (Author's abstr.)

Vaso-dilatation in Normal and Schizophrenic Subjects during Cyclopropane Anaesthesia.

In view of the possibility of dysfunction of the autonomic nervous system in schizophrenia, a study was made of the effects of vasoparesis by anaesthesia on the skin temperature in ten normal and ten chronically ill schizophrenic subjects. The surface temperature of both feet was measured before and during the induction of deep anaesthesia by cyclopropane. It was found that with the induction of anaesthesia the temperature of the feet rose sharply, but not at an equal rate of speed. The schizophrenic patients behaved similarly to the normal subjects both in the rate and rapidity of the rise of temperature and the diversity in behaviour of the two lower extremities. It is concluded that the neurogenic mechanisms in schizophrenia are capable of a normal response to vasodilatation induced by anaesthesia. (Author's abstr.)

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The Effects of Alcohol upon the Electro-encephalogram.

E.E.Gs. were recorded for six men, aged 22–25, following ingestion of alcohol (2 c.c. per kgm. body weight). Spectrum analysis of two of the E.E.Gs. by means of the Grass analyser showed a reduction in energy on the fast side of the frequency spectrum at relatively low concentrations of blood alcohol. Performances on psychometric tests, particularly addition of consecutive digits, the reversed clock problems, and strength of grip, were impaired definitely while concentration of blood alcohol was at its height (125–140 mg. per 100 c.c.) and for an hour thereafter, but returned to normal in four or five hours. E.E.Gs. were also recorded for 15 chronic alcoholics in a mental hospital; these E.E.Gs. were found to lie midway between those of normal subjects and psychotic patients.

W. L. WILKINS (Psychol. Abstr.).

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The Hypothalamus and Pilomotor Regulation.

This is a critical review of the literature leading to the following among other conclusions:

(1) Pilo-erection may be obtained by stimulation of the hypothalamus; (2) pilomotor activity has cortical representation, but in an unknown site; and (3) the "hypothalamus serves to integrate pilomotor activity with other manifestations of fear, rage, thermal regulation and probably sexual excitement."

W. S. HUNTER (Psychol. Abstr.).

The Hypothalamus and Sexual Behaviour.

This is a critical review of the topic, including some unpublished work. Although the full pattern of mating behaviour can be elicited in some species after decortication, the presence of the cerebral cortex in any mammal "greatly increases the number of circumstances which are able to modify the occurrence of sexual behavior." "The effects of brain stem lesions, which involve this division of the diencephalon, indicate that it may exert an influence on the capacity of female cats to display sexual excitement." W. S. HUNTER (Psychol. Abstr.).

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The Hypothalamus and Sleep.

The author draws the following conclusions from a critical review of the subject: " 1. Hypersomnia is likely to result from depression of hypothalamic function, whether by tumours, electrolytic lesions or chemical agents. 2. Excitement or increased activity, whether due to mechanical, electrical or chemical stimulation. 3. Normal sleep seems to be closely associated with a decreased activity of the hypothalamus. 4. Evidence does not support the view that sleep is an active inhibition of one part of the brain by another."

W. S. HUNTER (Psychol. Abst.).

Personality and Emotional Disorders Associated with Hypothalamic Lesions.

The author reviews only experimental and clinical material which is accompanied by autopsy material. The conclusions drawn are: " The data serve only to point to the fact that the hypothalamus is one of a series of stations concerned with the emotions principally and intellect and personality incidentally. Its functions are co-related with the cortex, thalamus, and probably lower areas as well. How dominant is its role cannot yet be ascertained. It seems safe to say, however, that when released from cortical control, or from conscious or subconscious inhibitions, it is capable of giving rise to primitive emotional reactions in animals and to similar reactions in man, as well as to coarseness and a lack of appreciation of social niceties. In this sense then the hypothalamus may be regarded as an area concerned with the expression of emotional reactions which are ordinarily sifted and weighed by the cerebral cortex, which exercises an inhibitory influence over such reactions as a rule." There is appended a brief discussion by D. McK. Rioch, L. S. Kubie and H. S. Rubinstein. W. S. HUNTER (Psychol. Abstr.).

REV. MEX. NEUROL. PSIQUIAT.

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REV. NEUROL.

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*Central Levels of Autonomic Function, with Particular Reference to the Endocrine Organs. *Fulton, J. F.* . . . . . .

Central Levels of Autonomic Function, with Particular Reference to the Endocrine Organs.

Autonomic reflexes are integrated by the central nervous system according to the principle of functional levels. Large, varied representations of autonomic functions, heretofore considered present only in the lower centres, exist in the cerebral cortex. Lesions in the frontal cortex may cause disturbances in hypothalamic activity and affect visceral activity, metabolism, etc. This control by the cortex of the hypothalamic centres would be as important in the regulation of endocrine activity as the hypothalamus. J. E. BADER (Psychol. Abstr.).

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REV. NEUROL., BUENOS-AIRES.

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Significance of Drawings in the History of a Schizophrenic.

The pictures express pathological experiences, reflecting the changes in perception; psychopathological experiences, reflecting vague, distorted, or bizarre interpretation of ideas; and a constant desire, like the drawing of primitive people. The various factors have a strict relationship to the symptoms of the patient and reveal unconscious processes. The drawings are intuitive imaginations or immediate data of the conscious and are not originated by juxtaposition of associations.

J. E. BADER (Psychol. Abstr.).

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REV. PSIHOL.

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RIV. SPER. FRENIAT.

NO. 1. 1940.

*The Syndrome of Cotard, or Impossibility of Conceptual Thinking. *Tobino, M.* . . . . . .

The Syndrome of Cotard, or Impossibility of Conceptual Thinking.

A clinical history of a case presenting Cotard's syndrome is prefaced by a general account of the symptomatology.

The syndrome is found in anxiety melancholia with a tendency to chronicity. The most common symptoms of this syndrome are ideas of negativism, immortality, immensity, inspiration, etc., and appear when mental automatism invades the whole mental field. The subjects most predisposed to this syndrome are those who have had a life of considerable mental activity and variety, persons with some considerable degree of general culture and rich in concepts, in whom the malaise of simple melancholia is replaced by a true mental distress occasioned by the loss of the power of mental synthesis and the general restriction of ideas. So soon as this state of mental automatism becomes established, a systematized negativism appears. The patients who show Cotard's syndrome are unemotional, in distinction to those suffering from simple melancholia, whose negativism is of an emotional type.

RORSCHACH RES. EXCH.

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*Rorschach Reactions in Early Childhood. *Klopfer, B., and Margulies, H.* 1
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*The Stability of the Rorschach Method as Demonstrated in Electric Convulsive Therapy Cases. *Kelley, D. McG., Margulies, H., and Barrera, S.* 44

Rorschach Reactions in Early Childhood.

This report is based on 205 records of 155 children 2–7 years old, collected by various workers in different institutions. Groups at each year-level were small, the largest being the 4-year group, with 67 subjects. No attempt was made to equate for intelligence or socio-economic status. Patterns of reaction consisted of magic repetition, rejection, and perseveration in the first phase, and a variety of responses after age 3 years. Each succeeding age group shows a rise in number of responses and a drop in the number of rejections. The percentage of children using only the W response decreases with age. The percentage of children using the major determinants increases consistently with age for M, FM and CF. The picture is less clear for m, C, and FC. Occasional use of any of the six shading responses was found at all age levels. R. HOROWITZ (Psychol. Abstr.).

Rorschachs of School Beginners.

Rorschach protocols were taken from 82 children, 47 girls and 35 boys, ranging in age from 5 years 11 months to 7 years 5 months. The revised Stanford-Binet, Form M, the Goodenough Drawing, and achievement tests were also given. The IQ distribution of this sample followed the normal curve. Typical answers to each of the cards are presented. The findings include the following: a majority showing extraversial, girls showing more colour response, boys showing more movement response, boys giving more whole answers than girls. Factors most closely associated with the Binet test results were quality of wholes, number of M, FM, and FC, number of human responses, number of P responses, the F% and the F+%.

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The author concludes that the response at this age is qualitatively so different from that of the 10-year-old that the usual criteria for differentiating between the pathological and normal cannot be taken too literally.

R. HOROWITZ (Psychol. Abstr.).

The Stability of the Rorschach Method as Demonstrated in Electric Convulsive Therapy Cases.

Protocols were obtained from 12 individuals showing varying clinical syndromes, but all under electric shock therapy and all showing amnesia without confusion after shock. Protocols were obtained just before and just after one shock treatment. The subjects showed no clinical psychiatric changes (after one treatment) and no changes in the fundamental Rorschach pattern. Some changes did occur in the number of responses in cards VIII, IX, and X, and P responses. The authors conclude that these areas and determinants are " less important from a quantitative point of view than the other determinants." Long range studies on completely treated cases are suggested. R. HOROWITZ (Psychol. Abstr.).

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The Occurrence of Dystrophic, Neural and Spinal Forms of Progressive Muscular Atrophy in One Family. *Stern, I.* 447

The Problem of Constitution and Process in Schizophrenia on the Basis of the Rorschach Test.

The authors analyse a case in which the Rorschach test was made before the manifestation of the disease, and again at the beginning of an insulin remission following a catatonic excitement. Comparison of the two tests shows that during schizophrenia the schizothymic introversion perception type can change into an extratensive, i.e. the schizothymic constitutional reaction changes both quantitatively and qualitatively. The authors divide the psychological process evidenced by the answers into a motor and sensory component. They relate the disappearance of motor interpretations (ontogenetically later than form or colour) to the regression, suggesting that abolition of the connections between kinaesthetic engrams and visual perceptions may be due to functional disturbances in the parieto-occipital region, thus being homologous with paralogic thinking. The increase in colour answers is probably due to the schizophrenic regressive process and the lifting of repression. Affectivity is turned inward and blocked against the outside world, but by no means extinguished. M. E. MORSE (Psychol. Abstr.).

Thought Processes of Aphasics in Connection with Word Teaching.

Lotmar gives an exhaustive review of his controversy with Binswanger. His own position is that naming difficulties are due, not to noetic disturbances (Binswanger), but entirely to decreased control of speech forms, especially for the

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abstract. The intermediate unsuccessful trials are links in a unitary thought-act, purposive, circumscribed, painful efforts towards a goal, their effectiveness limited only by impeded access to the speech medium. Difficulty in word-finding has an inhibitory effect on thinking, particularly abstract thinking. The aphasic's disabilities are only a special application of the domination of the Aufgabe in normal psychology. Understanding without ability to name adequately occurs in normal persons, especially in the case of proper names and technical terms, and hunting for the words takes place through associations radiating from accessible verbal terms. In fact, the psychology of normal concentrated thought is the best basis for study of the nature and development of word-finding disturbances in aphasics.

M. E. MORSE (Psychol. Abstr.).

The Artistic Work of Psychotics and its Relation to the Course of the Disease.

Mohr gives observations on the spontaneous creations, chiefly paintings, of his schizophrenic patients. Only a small proportion have any creative urge. They often work sporadically, without obvious stimulation. Some are most productive when hallucinated or excited; others work unwillingly but obsessively. Their work, when compared over a number of years, develops a certain mechanization, but does not degenerate parallel with the progress of the disease. The productions are not up to the patient's prepsychotic standard. Although patients seldom depict their hallucinations directly, uninitiated observers always recognize these drawings as weird. The symbolism is to be interpreted analytically. Affectivity is indicated most clearly by the use of colour. Increasing brightness and purity run parallel with clinical improvement. Self-expression is the patient's effort to free himself from a burden, and also a strained attempt to get into emotional relationship with the environment, often his only rapport. It is thus an attempt at self-cure.

M. E. MORSE (Psychol. Abstr.).

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Intramuscular Pressure in Stutterers and Non-Stutterers.

The intramuscular pressure of 24 male stutterers and 24 male controls was measured by a technique of determining the pressure required to inject a minute amount of saline solution into the body of the biceps muscle with a hypodermic needle. Measurements were made with subjects in a relaxed non-speech situation. No reliable differences between stutterers and non-stutterers were found, nor was there any substantial correlation between intramuscular pressure and age or blood pressure. The implications of the data for stuttering therapy based on relaxation exercises are discussed. W. H. WILKE (Psychol. Abstr.).

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1. Pathology, Physiology and Biochemistry.

Potassium in the Cerebrospinal Fluid of Mental Patients. Giudice, Carlos R. [*Rev. asoc. bioquim. argentina*, **5**, *No.* 15, 3–5 (1940).]

K was detected in cerebro-spinal fluid by the method of Marenzi and Gerschmann (*C.A.*, **27**, 3232). An equal volume of neutralized 6 per cent. ClC_2HCO_2H was added to the sample of the fluid, stirred and allowed to stand for 20 minutes and then filtered. Four ml. of the filtered solution was used for the K determination. A total of 140 cases were studied. Of these only in tuberculous meningitis was there any increase in the spinal K, from an average of about 13 mgm. per cent. to 15–16 mgm. per cent. M. SCHUBERT (Chem. Abstr.).

Cerebro-spinal Fluid Reaction with Collargol and Hydrochloric Acid. Nagel, W. [*Schweiz. med. Wochschr.*, **70**, 661–6 (1940).]

To varying dilutions of cerebro-spinal fluid in 0·002 N HCl was added 1 c.c. of 0·01 per cent. collargol. The reactions paralleled other colloid tests of cerebro-spinal fluid but the test is more sensitive.

MAURICE M. RATH (Chem. Abstr.).

The Urea Content of the Cerebro-spinal Fluid. Booy, Joh. [*Nederland. Tijdschr. Geneeskunde*, **84**, 2997–8 (1940).]

The urea content of the cerebro-spinal fluid depends largely on that of the blood, having the tendency to adopt the same percentage as that of the blood. Among 67 patients, 37 had a lower urea content in this fluid than in the blood, 27 a higher one, 3 an identical value. The lowest urea values were 180 mgm. per cent. in the blood and 120 mgm. in the cerebro-spinal fluid. A higher urea content in the fluid points to some pathological process which leads to the formation of urea from the substance of the brain. R. BEUTNER (Chem. Abstr.).

Source of the Cerebro-spinal Fluid. The Distribution of Bromide and Iodide throughout the Central Nervous System. Wallace, G. B., and Brodie, B. B. [*J. Pharmacol.*, **70**, 418–27 (1940); *cf. C.A.*, **34**, 1737[5].]

NaBr and NaI, injected intravenously into dogs, distribute evenly in the extracellular fluid throughout all parts of the central nervous system. Anions enter the cerebro-spinal fluid as readily from the brain capillaries as from the ventricular choroidea. The source of the fluid is largely extraventricular.

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

A Comparison of the Chloride Concentrations in Whole Blood and Spinal Fluid. Hubbard, Roger S., and Beck, Gilbert M. [*J. Lab. Clin. Med.*, **26**, 535–41 (1940).]

Statistical analysis of a series of simultaneous determinations of whole blood chloride and spinal fluid chloride shows a high degree of correlation between the two sets of values, although the agreement was not as close as that of plasma chloride and spinal fluid chloride. It could be shown that the ratio of spinal fluid and whole blood chloride is influenced by the protein content of the spinal fluid, the concentration of cells in the blood, and the failure of the blood and spinal fluid to reach equilibrium when the fluid and salt contents of the body were rapidly changing. HOWARD W. ROBINSON (Chem. Abstr.).

Influence of Sodium Chloride Crystallization by Cerebro-spinal Fluid. Burack, Samuel, and Szanto, Paul B. [*J. Lab. Clin. Med.*, **26**, 483–9 (1940).]

The method of Tomesco as used by Finkelman (*C.A.*, **33**, 4664[7]), was employed on the spinal fluid from 263 patients with various pathological conditions to prove

* 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.

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the clinical diagnostic value of this reaction. Spinal fluid of general paresis influences the crystal habit of NaCl in a typical manner and was more sensitive than the colloidal-Au curve. H. W. ROBINSON (Chem. Abstr.).

Notes on Cholesterol Metabolism and the Possible Relation of Cholesterol to Vascular Sclerosis. Redfield, Robert L. [*J. Am. Inst. Homeopathy*, **33**, 584–7 (1940).]

In four cases of early coronary heart disease the blood cholesterol was 280 or more mgm. per 100 c.c., but was reduced to a normal value by use of a cholesterol-free diet, thyroid and vitamin B with relief in symptoms, decreased diastolic pressure and increased pulse pressure. The same treatment reduced the blood cholesterol in spastic hypertensive heart disease from 380 to 160 mgm. per 100 c.c. within a month. A late coronary case showed severe aggravation under this regimen. J. S. H. (Chem. Abstr.).

Enzymes in Brain of Normal Persons (Cholinesterase, Mono- and Diamine Oxidases, Choline Oxidase). Birkhäuser, Hans. [*Helv. Chim. Acta*, **23**, 1071–86 (1940).]

The brains from accident cases and from old individuals were examined. Cholinesterase is present in measurable quantity and is quite stable. This is also true for monoamine oxidase. Significant variations in concentration can be found through the lifespan. Diamine oxidase cannot always be detected, and choline oxidase is absent. W. H. S. (Chem. Abstr.).

Choline Metabolism. II. Müller, Hans. [*Z. physiol. Chem.*, **266**, 205–16 (1940); *cf. C.A.*, **34**, 4152[6].]

Dogs when fed $Me_3N.HCl$ in large quantities (10–25 mgm. N per kg./day) excrete about half unchanged or as Me_3NO in the urine. The remainder is mostly excreted as NH_3, but there is a small increase in Me_2NH excretion. On feeding Me_3NO about 0·67 is excreted, 0·2 as Me_3N and 0·8 unchanged; the remaining 0·33 is in the urinary NH_3. On feeding betaine, about 0·5 is excreted unchanged, the remainder as urea. Solubilities of the reineckate of Me_3NO and method of estimation of the Cr in the salt are given. MILTON LEVY (Chem. Abstr.).

Localization of Choline Esterase in Nerve Fibres. Boell, E. J., and Nachmansohn, D. [*Science*, **92**, 513–14 (1940).]

The total enzyme activity is found in the sheath, whereas the amount of enzyme present in the axoplasm is negligible. Since 80–90 per cent. of the sheath is connective tissue, the actual activity may be much higher than the activity per unit weight indicates. The experiments indicate a high concentration of the enzyme at or near the surface of the nerve cell and that the phenomenon is only quantitatively more important at synapses. FELIX SAUNDERS (Chem. Abstr.).

The Acetylcholine Content of Sensory Nerves. Lissák, K., and Pásztor, J. [*Arch. ges. Physiol. (Pflügers)*, **244**, 120–4 (1940).]

Demonstrable amounts of acetylcholine are present in the optic nerve, optic tract and saphenous nerve of the dog, but the amounts present are much less than are found in motor nerves. ARTHUR GROLLMAN (Chem. Abstr.).

Studies on the Causation of Experimental Gastroprival Pellagra. Petri, Svend, Norgaard, Flemming, and Bandier, Erik. [*Acta Med. Scand.*, **103**, 584–606 (1940).]

The experiments were made on gastrectomized pigs. The pellagra which develops in these pigs, although they were on a diet similar to the one fed to non-operated pigs, must result from an endogenous B avitaminosis, and thus bears a resemblance to the endogenous pellagra in man. Nicotinic acid, which has a

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striking effect upon the pellagrous condition, is ineffective in the absence of the stomach. The same holds true if the nicotinic acid is given parenterally. It must, therefore, be concluded that after gastrectomy the animal is unable to synthesize codehydrogenase from nicotinic acid. Furthermore, protracted treatment with free nicotinic acid, by itself or in gastroprivic pellagra, may actually cause injury to the central nervous system. S. MORGULIS (Chem. Abstr.).

Studies on the Causation of Experimental Gastroprival Pellagra. Petri, Svend, Norgaard, Flemming, and Bandier, Erik. [*Acta Med. Scand.*, **104**, 245–60 (1940).]

Pellagra was produced in young swine by gastrectomy. Parenteral administration of vitamin B_1 did not affect the development and course of the pellagra, nor did it influence the degeneration in the nerve cells. Similar results were obtained with riboflavin, which actually accentuated the nerve cell degeneration, or with vitamin A. But the simultaneous administration of vitamins B_1 and A appears to have a slightly favourable effect on the skin and hair of the experimental animals. S. MORGULIS (Chem. Abstr.).

Irreversible Functional Disturbances in Chronic Pellagra. Mainzer, F., and Krause, M. [*Acta Med. Scand.*, **104**, 321–36 (1940).]

Pellagrins, like Addison patients, are hypersensitive to insulin, responding with prolonged marked hypoglucaemia to otherwise clinically ineffective doses (5 units). This hypersensitiveness persists even when the chronic pellagra condition has improved or has been cured, while in acute cases of pellagra the clinical cure is apparently accompanied by a return to normal of the blood-sugar response to insulin. Qualitatively insufficient nutrition can, therefore, occasion an irreversible injury to function. S. MORGULIS (Chem. Abstr.).

Vitamin E (Synthetic α-Tocopherol) Therapy in Certain Neurologic Disorders (with Negative Results). Shelden, C. H., Butt, H. R., and Woltman, H. W. [*Proc. Staff Meetings Mayo Clinic*, **15**, 577–80 (1940).]

J. PINCHACK (Chem. Abstr.).

The Genesis of Pellagra. Harris, Seale. [*Southern Med. J.*, **33**, 1044–56 (1940).]

Review of the literature with 45 references and suggestions for further research.

J. PINCHACK (Chem. Abstr.).

Some of the Uses of Vitamin B_1 in Neurology and Psychiatry. Willie, James A. [*Southern Med. J.*, **33**, 1056–60 (1940).]

J. PINCHACK (Chem. Abstr.).

Relation of Nicotinic Acid to Pellagra. Elvehjem, C. A. [*Physiol. Rev.*, **20**, 249–71 (1940).]

A review summarizing nutrition and enzyme work which led to recognition of nicotinic acid. Significance of the discovery is discussed; also activity, amounts necessary, toxicity, activity of closely related substances, and distribution in nature. The reaction of cozymase and nicotinic acid and the relation of nicotinic acid to pigment excretion are discussed. 137 references.

H. R. GETZ (Chem. Abstr.).

Whole Blood and Plasma Ascorbic Acid Concentrations in Patients with Pellagra and Associated Deficiency Diseases. Minnich, Virginia, Wright, Sydney T., Moore, Carl V., and Spies, Tom D. [*Proc. Soc. Exptl. Biol. Med.*, **45**, 441–6 (1940).]

In most of the patients examined blood ascorbic acid was below normal.

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

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Clinical Observation in Pellagra. Isikawa, Mitio. [*Milt. Med. Akad. Kioto*, **26**, 266–7 (in Japanese, 111–34) (1939).]

Description of a case. A midbrain defect (probably a post-encephalitic change) presumably bore a definite, important relation to this disease. Such a defect probably resulted in a metabolic disturbance, as a reduction in the capacity to utilize vitamin B, especially the P–P factors, and protein cleavage products. The deficiency in amino acids in the disease was striking. Upon treatment with vitamin B the sores disappeared, first from the tongue, then gradually also from the neck, back of the hands and dorsum of the feet, although a brownish pigmentation remained on the latter. Pellagra should probably be divided into two forms: (*a*) the ordinary form of pellagra, caused by faulty nutrition and designated as " faulty nutrition pellagra," and (*b*) other forms of this disease, caused by midbrain or pituitary anomalies and called " centrally caused pellagra."

RUTH BERGGREN (Chem. Abstr.).

Glossitis and Vitamin B_2 Complex in Pellagra, Sprue and Allied States. Manson-Bahr, P. [*Lancet*, ii, 317–20, 356–9 (1940).]

Glossitis and deficiency in vitamin B_2 appear to be common to pellagra, sprue, pernicious anaemia, idiopathic steatorrhoea and the nutritional anaemias. Through these and other factors the diseases are so closely related that borderline cases often embody features of two or more of the group. The group therefore has as many affinities in common as there are factors involved, and the clinical picture of any one of them varies with the presence or absence of one or more of the factors.

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

Pellagra among War Refugees in Shanghai, its Associated Deficiencies and Nicotinic Acid Treatment. Morris, H. H., Hwang, M. S., and Kuo, P. T. [*Chinese Med. J.*, **57**, 427–41 (1940).]

Forty cases of pellagra were encountered among Shanghai refugees in 1939; all were associated with the polyneuritic type of beri-beri. It is suggested that a more gradual process of nutritional depletion is responsible for the pellagra. Sternal biopsies and determinations of gastric acidity, serum albumin and globulin are reported.

W. H. ADOLPH (Chem. Abstr.).

Effect of Aneurin and Pyrophosphate on Vitamin B Deficiency. Carlström, Birger, Sjögren, Bertil, and Svanteson, Gunnar. [*Acta Med. Scand.*, **105**, 84–7 (1940).]

In a number of pathological states involving the nervous system, musculature or liver, pyruvic acid and bisulfite-binding substances in the blood are increased. The return of these substances to a normal level as well as general improvement in clinical conditions follows the administration of aneurin. However, there are pathological cases where neither the clinical condition nor the blood picture is affected even by large doses of aneurin. To find out if this was due to failure to phosphorylate the aneurin, a number of resistant cases showing disturbance in carbohydrate metabolism (puerperal hypocalcaemia, hyperemesis gravidarum) were treated with synthetic cocarboxylase, but with no effect. Since other enzymes besides cocarboxylase contain pyrophosphate, experiments were tried, with aneurin and pyrophosphate, or pyrophosphate alone, with most astonishing results. This suggested that the resistant cases lacked not only aneurin, but also phosphate suitable for reaction.

S. MORGULIS (Chem. Abstr.).

The Relation of Diet to the Occurrence of Ataxia and Degeneration in the Nervous System of Pigs. Wintrobe, Maxwell M., Miller, Joseph L., jun., and Lisco, Herman. [*Bull. Johns Hopkins Hosp.*, **67**, 377–406 (1940).]

A nerve protecting factor is contained in liver and to a lesser extent in yeast. Young pigs, fed on a simplified diet, adequate in minerals, cod-liver oil and ascorbic

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acid, developed a condition characterized by disturbed gait and extensive lesions in the nervous system when the yeast in the diet was reduced to a low level or omitted entirely. The lesions consisted of degenerative changes in the peripheral nerves, the spinal ganglia, the posterior roots, and the dorsal funiculi of the spinal cord. In extensive lesions, changes were also observed in the anterior horn cells. Deficiencies of vitamin K and vitamin A were not present. Substitution of thiamine, riboflavin or nicotinic acid (for yeast) separately or in various combinations did not prevent the manifestations. Wheat-germ oil alone failed to protect three pigs on the deficient diet, but when supplemented with yeast or liver, it protected five animals. Less extensive pathology was observed in animals receiving the deficient diet supplemented with a filtrate factor from yeast. Only five of twelve pigs fed yeast in large amounts remained entirely free from lesions. Whole desiccated liver provided full protection. ZELMA BAKER (Chem. Abstr.).

Histopathological Studies on the Changes in the Central Nervous System in Experimental Carbon Disulphide Poisoning through Internal Use. Otuzi, Tatui. [*Acta Med. Nagasakiensia*, **1**, *Ref.* 204–5 (1939).]

In dogs with CS_2 poisoning, produced by the administration of an aqueous solution of CS_2 through a stomach tube, the vascular changes are significant. An intense stasis irritates the vessels and causes proliferation of the cells of the vessel walls. Proliferation and hypertrophy of the glia cells then ensue. The changes in the ganglion cells are similar to those in intoxication in general, or in acute infectious diseases. RUTH BERGGREN (Chem. Abstr.).

Action of Cytotoxic, Antireticular Serum on the So-called Haemato-encephalic Barrier. Kavetskiĭ, R. E., and Pasternak, M. N. [*J. Med., Ukraine*, **9**, 1193–7 (1940).]

Large doses of antireticular serum (three injections of 1 c.c. each) increase the permeability and change the regulatory function of the haemato-encephalic barrier in dogs. Smaller doses (0·1–0·05 c.c.) are not very active, and large injections of normal, heterogeneous serum cause all the activity to disappear. The haemato-encephalic barrier as well as other " histohaematic " barriers belongs to the physiological system of conjunctive tissue. J. PINCHACK (Chem. Abstr.).

A Case of Paroxysmal Paralysis. Osazima, Siro. [*Acta Med. Nagasakiensia*, **1**, *Ref.* 92–3 (1939).]

A mild attack of paroxysmal paralysis occurred in a 19-year-old man after the consumption of large amounts of sucrose. An abortive attack followed an injection of adrenaline. No appreciable change was noted after administration of a thyroid preparation. The patient's reaction was moderately strong to pilocarpine, weaker, though positive, to atropine and adrenaline. In the interval and during the attack the assimilation of carbohydrates, by use of the Sakaguchi test meal (*C.A.*, **16**, 1605), was normal. During a natural attack there was a decrease in alkali reserve and serum K, an increase in blood lactic acid and blood pressure, neutrophile leucocytosis and lowering of the electrical excitability of the muscles and nerves ; serum Ca and the rest N and its fractions in the blood were normal ; the excretion of creatinine in the urine was not changed. Albuminuria and glycosuria were absent.

Conclusion : The paralytic attacks in individuals who suffer from disturbances in the equilibrium of the vegetative-endocrine system are caused by auto-intoxication with intermediate products, as lactic acid, produced by the disturbance in the carbohydrate metabolism. RUTH BERGGREN (Chem. Abstr.).

Studies on the Central Nervous Regulation of the Liver Functions. Mituda, N., et al. [*Japan J. Med. Sci., VIII. Internal. Med., Pediat. Psychiat.*, **5**, *Proc.* 44–5 (1938).]

In rabbits narcotized with urethan, shallow puncture of a point a few mm. below and outside the calamus scriptorius of the medulla oblongata (possibly

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coinciding with the nucleus dorsalis of the vagus nerve) caused increased excretion of phenolsulphonaphthalein (I) through the bile-duct. The impulse to the liver probably passes over the vagus nerve. The detoxicating power of the liver for salicylate was distinctly increased 24 hours (but not 2 hours) after the puncture. Excretion of injected galactose by the liver is stimulated by puncture of a different point, slightly above the calamus scriptorius. The excitation of the excretion of I, caused by puncture of the thalamo-encephalon, is innervated by both the splanchnic and the vagus nerves. W. C. TOBIE (Chem. Abstr.).

Relation between Lesions in Central Nervous System, Especially in Diencephalon, and Gastric Secretion. II. The Effect of Various Vegetative Nerve Poisons on Gastric Secretion before and after the Operation. Yuba, Masayosi. [*J. Oriental Med.*, **32**, 979–1050 (1940).]

The effect of atropine, pilocarpine and adrenaline on total volume, acidity and total Cl of the secretion by Pavlov's stomach pouch in dogs with and without test meal before and after diencephalic lesions, shows that the lesions produced in diencephalon by laminaria accelerate the cholinergic effect.

S. TASHIRO (Chem. Abstr.).

Brain Pathology of Kaschin-Beck Disease. I. Human Brains. Hsiang, Nai Shi. [*J. Oriental Med.*, **33**, 119–30 (1940).]

Unique features of the brains of Kaschin-Beck case (K) are an increase of Fe and signs of retarded development. The Fe distribution, however, follows the order of physiological reaction (*cf.* Spatz, *C.A.*, **17**, 3361). II. Brains of non-Kaschin-Beck cases. *Ibid.*, 131–6: A similar examination of five brains of non-K cases who lived long in the endemic area shows normal Fe reaction, and no sign of retarded brain development. III. Brains of domestic animals of the endemic area. *Ibid.*, 137–43: The brain of dogs, hogs, ducks and fowls showed no abnormal Fe reaction. The Manchurian dogs showed, in the majority of cases, brain lesions typical of distemper. IV. The brains of dogs to which various amounts of iron were administered. *Ibid.*, 145–8: Of the brain of four dogs given various amounts of Fe, two showed the typical distemper lesion, and three showed striking Fe reaction, but distribution of which was entirely different from that of K.V. Discussion and conclusion: *Ibid.*, 149–62 (German abstr., 17–18).

S. TASHIRO (Chem. Abstr.).

Diabetes Mellitus amd the Hypophysis-Midbrain System. Köhne, Gisbert. [*Endokrinologie*, **22**, 241–54 (1939).]

Studies made on the hypophysis and midbrain indicate that the primary cause of classical diabetes is not associated with these centres. However, changes in the hypophysis-midbrain region can definitely affect diabetes and divert the clinical course into atypical forms. S. MORGULIS (Chem. Abstr.).

Experimental Catatonia in a Chimpanzee. Jong, H. de. [*Acta Brevia Neerland. Physiol., Pharmacol., Microbiol.*, **10**, 86–8 (1940).]

Two chimpanzees were injected intramuscularly with 10–50 mgm. bulbocapnine phosphate per kgm. One of the animals showed symptoms of experimental catatonia identical with those known to follow the administration of an average dose of this drug in other animals. The other, decorticated on one side one month previously, showed no symptoms other than a slight decrease of motor activity for about 5 min. E. CURZON (Chem. Abstr.).

Observations of the Carbohydrate Metabolism of Brain Tissue with Special Reference to the Potassium Effect. Kimura, Yukiti. [*Sci. Papers Inst. Phys. Chem. Research (Tokyo)*, **37**, 488–518 (1940).]

Rabbit brain slices were incubated in Ringer-Krebs solution containing glucose

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in atmosphere of 95 per cent. O_2–5 per cent. CO_2; glucose consumption and lactic acid formation were detected; respiration was expressed in terms of "residual glucose" (glucose consumed minus lactic acid formed). In the presence of KCl, the increased aerobic glycolysis remained relatively constant for two hours, while the increased respiration fell off rapidly. Addition of lactic acid to the medium did not prevent the increase in glycolysis caused by KCl. Concentrations of KCN from 10^{-3} *M* to 2×10^{-4} *M* inhibited respiration and aerobic glycolysis in the presence of KCl; at lower concentrations of KCN, respiration was only slightly affected while aerobic glycolysis was stimulated. Under normal conditions (absence of KCl) ethylurethan (1 per cent.) and malonic acid (10^{-2} *M*) had no significant effect on metabolism; methylene blue (5×10^{-4} *M*) stimulated respiration and aerobic glycolysis. In the presence of KCl ethylurethan depressed both respiration and glycolysis; malonate inhibited respiration and increased glycolysis; methylene blue inhibited respiration and glycolysis at a concentration of 5×10^{-4} *M*, but inhibited glycolysis alone at a concentration of 5×10^{-5} *M*; neutral red had no effect. The results are discussed in terms of the Pasteur reaction and the C_4 dicarboxylic acid system of St. Györgyi. Z. BAKER (Chem. Abstr.).

Availability of Sodium Pyruvate for Human Brain Oxidation. Goldfarb, Walter, and Wortis, Joseph. [*Proc. Soc. Exptl. Biol. Med.*, **46**, 121–3 (1941). *cf. C.A.*, **34**, 3370[7], 6347[4].]

The intravenous injection of Na pyruvate did not arouse patients in hypoglucaemic insulin coma, which indicates that the oxidation of pyruvate is not sufficient to support cerebral functions. L. E. GILSON (Chem. Abstr.).

Creatine-Creatinine Excretion in Neuromuscular Diseases Treated with α-Tocopherol and with Testosterone. Fleischmann, Walter. [*Proc. Soc. Exptl. Biol. Med.*, **46**, 94–7 (1941).]

In moderate doses neither hormone had any effect on creatine-creatinine excretion in cases of amyotonia congenita and progressive muscular dystrophy. This suggests a fundamental difference between nutritional muscular dystrophy in rabbits and progressive muscular dystrophy, amyotonia congenita and similar neuromuscular disturbances in human beings. L. E. GILSON (Chem. Abstr.).

Dehydrogenation of Pyruvic Acid in Nerve Tissue. Huszák, István. [*Biochem. Z.*, **306**, 91–5 (1940).]

The C_4-dicarboxylic acids have no effect (or at most only a very slight effect) on the anaerobic dehydrogenation of pyruvic acid by enzymes prepared from normal or avitaminotic brains. The effect of these dicarboxylic acids under aerobic conditions is thought to represent a very complex phenomenon.
S. MORGULIS (Chem. Abstr.).

Oxidation of Glycogen by Brain Suspensions. Elliott, K. A. C., and Libet, B. [*J. Biol. Chem.*, **136**, 797–8 (1940).]

At least two mechanisms of carbohydrate oxidation occur in brain, one applying to glycogen and one to glucose. The effect of glycogen and glucose added together to a homogenized suspension of rat brain on the rate of O_2 uptake is almost exactly equal to their effects when added separately. Increases in the concentration of either alone had no effect. The possibility that other tissues behave similarly to brain will be tested shortly. A. P. LOTHROP (Chem. Abstr.).

Neurohumoral Factors and the Sympathetic Nervous System. Kogan-Yasnyĭ, V. M. [*Acta Med. U.R.S.S.*, **1**, 567–77 (*in French*) (*in Russian*, 578) (1938); *cf. C.A.*, **34**, 5135[6].]

A neurohumoral substance, which has a specific action on the sympathetic nervous system (s.n.s.), is present in the human organism. In bronchial asthma,

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paroxysmal tachycardia and spastic colitis these humoral factors, which appear in various disturbances of the s.n.s., are found only during the attacks, while in hypertension they are present continuously. Their action can be compared to that of the adrenaline substance found during excitation of the s.n.s. (stable action extending over the entire organism) and to the effect of a substance with parasympathetic characteristics (local action evident in various organs). A detailed biological and biochemical study of these humoral agents, which are still unknown, can be made in the blood of patients with different disorders of the s.n.s., during acute paroxysms or excitation of the s.n.s. Disturbances accompanied by any abundant discharge into the blood of a substance which stimulates the s.n.s. must be classed among the tenacious, incurable and alarming affections, while those accompanied by the secretion of a humoral substance which act on the parasympathetic system are characterized by attacks and assume a more chronic course.

RUTH BERGGREN (Chem. Abstr.).

Arsenic as a Possible Cause of Subacute Encephalomyelitis : Correlation of Chemical, Clinical and Histologic Observations. Ecker, Arthur D., and Kernohan, James W. [*Arch. Neurol. Psychiat.*, **45**, 24–43 (1941).]

Because of the prevalence of As in food, etc., many persons may be slowly poisoned because of the cumulative effect. The symptoms of fatigue, headache, vertigo, drowsiness and impairment of mental activity in As poisoning are precisely the same as in " progressive diffuse cerebral failure." The actual concentration of As in the brains of some diseased patients was abnormally large, equalling that found in acute As poisoning. The observations, clinical, pathologic and chemical, in twelve cases of subacute encephalomyelitis were consistent with the hypothesis that they represented chronic As poisoning. G. H. W. LUCAS (Chem. Abstr.).

Chronaxia in the Infant. Hattori, Teinosuke. [*Oriental J. Diseases Infants*, **27**, 27–9 (1940).]

The monthly changes in the chronaxia and rheobase of the anterior tibial and gastrocnemius muscles of 91 healthy, breast-fed infants are described. The chronaxias of these muscles, which were usually altered in infants with beri-beri, generally returned rapidly to normal after the administration of vitamin B_1, although in many cases the changes in chronaxia persisted after complete disappearance of the clinical symptoms. The rheobase in infant beri-beri was generally decreased, though sometimes increased, and often remained low after disappearance of the clinical symptoms. The ratio of the chronaxias of the flexor to the extensor muscles was always higher than 1·00 in the infant with beri-beri. In infant pigeons with avitaminosis B due to a polished rice diet the anterior tibial muscle was more severely affected than the gastrocnemius muscle. The chronaxias decreased somewhat before the appearance of the symptoms, then increased, and exceeded the normal value at the time of appearance of the symptoms. At the height of the paralysis both the chronaxias and the rheobase increased markedly ; the chronaxias of the extensor and flexor muscles approached each other and did not show the marked differences seen in infants with beri-beri. In some of the pigeons during the spasmodic and alarming periods the chronaxia and rheobase were greatly decreased. RUTH BERGGREN (Chem. Abstr.).

An Amino-Acid Constituent of Ox-brain Cephalin. Folch, Jordi, and Schneider, Howard A. [*J. Biol. Chem.*, **137**, 51–62 (1941).]

Cephalin prepared from ox brain contains from 40 to 70 per cent. of its N as an α-amino acid. It has the reaction of a hydroxyamino acid and, although it has not been isolated, it has been tentatively identified as serine. The acid is apparently attached to the cephalin molecule by an ester linkage with the OH, since both the

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NH_2 and the CO_2H group are free in the intact cephalin. This finding is at variance with the accepted belief that all the N is in the form of ethanolamine.

A. P. LOTHROP (Chem. Abstr.).

Experimental Demyelination of the Central Nervous System. I. The Encephalopathy Produced by Potassium Cyanide. Hurst, E. Weston. [*Australian J. Exptl. Biol. Med. Sci.*, **18**, 201–23 (1940).]

In addition to damage to myelin and nerve cells and even total necrosis of the grey matter, areas of partial or complete demyelination and of actual necrosis may occur in the white matter in the brains of monkeys poisoned with KCN.

EDWARD EAGLE (Chem. Abstr.).

Carbohydrate Metabolism of Patients with Defective Functions of the Anterior Lobe of the Hypophysis. Blagovestova, N. P. [*Problemy Endokrinol.* (*U.S.S.R.*) **5**, *No.* 2, 89–99 (1940).]

The author investigated 144 persons with diseases of the anterior lobe of the hypophysis: 75 acromegalic cases, 18 with Cushing's disease, 50 hypophysial dwarfs and 1 with Simmond's disease. In hypophysial diabetes the sensitivity of the patients to carbohydrates is low. This is shown by the slow rise of the glucaemic curve and by the absence of the increase of sugar in urine after feeding sugar. In most cases hypophase is present after feeding sugar. The sensitivity to insulin is low, as shown by the slow decrease of blood sugar in feeding sugar with insulin and by the absence of a decrease of urine sugar from insulin treatments. Blood sugar in nanism is between 80 and 90 mgm. per cent. In some cases it is below 80 mgm. per cent. (50, 58 and 39 mgm. per cent.). Blood sugar in subnanism also tends to be low, but does not reach the low values of nanism. In nanism there are a strong reaction to carbohydrates, a sharp rise of the curve and a normal hypophase. The glucaemic curves in subnanism are normal. In general, in hypophysial dwarfs the blood sugar on an empty stomach in most cases is at the lower limit of normal and in some cases below normal. In Simmond's disease the blood sugar on an empty stomach is normal (99, 78 and 87 mgm. per cent.). The glucaemic curve exhibits a slow rise and no hypophase is present. A sugar feeding with insulin (5 units) produced no rise of the curve and a weakly defined drop. In Cushing's disease 3 out of 18 patients had a slight and variable glucosuria and one had a more defined glucosuria (2·2 per cent.). The blood sugar (except in one case) was normal, but had a tendency to higher values. The hypophase was normal. The changes of carbohydrate metabolism in Cushing's disease can be of the character of hypophysial diabetes (analogous to acromegalic diabetes), pancreatic diabetes and adrenal diabetes.

W. R. HENN (Chem. Abstr.).

The Role of Free Amino-Acids in the Electrolyte Balance of Nerve. Silber, Robert H., and Schmitt, Francis O. [*J. Cellular Comp. Physiol.*, **16**, 247–54 (1940).]

Estimation of amino and carboxyl groups in extracts of lobster nerves shows the presence of about 0·30 milliequiv. of free amino acid per gm. nerve water. As a dicarboxylic acid this amount would account for the greater part of the anion deficit (0·36 milliequiv. per gm.) in these extracts. The presence of a higher concentration of carboxyl than amino groups, as well as the fact that the substance forms an insoluble Ba salt in alcoholic solution, supports the view that the amino acid is dicarboxylic, but reasons are given which indicate that the anion is not glutamic or aspartic acid. Medullated nerves (cow spinal cord or frog sciatic) contain free amino acid in a concentration of approximately 0·03 milliequiv. per gm. tissue water. Even as dicarboxylic acid this amount would not account for more than a fraction of the anion deficit. It is suggested that the lipides (chiefly cephalin) of the myelin sheath bind considerable base in medullated nerve and may make up the remaining anion deficit. The concentration of amino and carboxyl groups in frog sciatic

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nerve is not detectably altered by artificial summering of winter nerves, by asphyxiation or by aerobic stimulation. Organic anions may contribute to the production of the resting potential, especially in marine invertebrate nerves, where their concentration may be 60 times that in blood. FELIX SAUNDERS (Chem. Abstr.).

The Deposition of Lipides in Various Parts of the Central Nervous System of the Developing Rat. Fries, B. A., Entenman, C., Changus, G. W., and Chaikoff, I. L. [*J. Biol. Chem.*, **137**, 303–10 (1941); *cf. C.A.*, **34**, 1722[1].]

In each part of the central nervous system (spinal cord, medulla, cerebellum and forebrain), the maximum deposition of cholesterol, phospholipide and total fat acids occurs during the time between birth and the time the rat attains a weight of 50 gm. Throughout the entire period of observation the cord contained the highest amounts of these lipides and the medulla was next in order. The lipide composition of the cerebellum and forebrain was almost identical at all periods studied, and their lipide content was always lower then in either the cord or medulla. The pattern with respect to the amounts of lipides contained in each division of the central nervous system from birth to full growth is maintained relatively constant. The data were obtained from over 375 rats, and animals of the following weights were chosen for study: 5, 15, 25, 30, 50, 100, 200 and 300 gm.

A. P. L. (Chem. Abstr.).

The Relationship of Diencephalon to Body Temperature and Blood Pressure. Huziki, S., and Kusima, T. [*Japan. J. Med. Sci., VIII, Internat. Med., Pediat., Psychiat.*, **5**, *Proc.* 92–3 (1938) (*in English*).]

Various chemical and physical agents were tried. The effects on water content of the anterior lobe of the diencephalon (I), or of the posterior lobe (II) and on the body temperature (III) were: Adrenaline or tetrahydro-2-naphthylamine increased I and III. Picrotoxin, antipyrine or camphor decreased III; colloidals increased III; in all four cases II increased. Atropine or CO increased I and II. Quinine-HCl had no effect on I and II. The effects of diathermy and changes of blood pressure on I, II and III were studied. In cases where I and II increased, the amount of lactic acid in the brain also increased. The method of applying the drugs is not stated and no quantitative data are given.

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

Action of the Autonomic Nervous System on the Secretion of Lymph. Yaroslav, S. Yu, Glagolev, V. P., Semenko, B. M., and Kreimer, B. Ya. [*J. méd., Ukraine*, **9**, 1377–88 (*in Russian*, 1388–9; *in French*, 1389–90) (1940).]

Arecoline (I), nicotine (II), pilocarpine (III), physostigmine, choline-HCl (IV), $BaCl_2$, pituitrin (V), prolanol (VI) and histamine (VII) re-enforce the secretion of lymph in dogs, I and II being the most active. The effect is due to reaction on the parasympathetic system and to a change in the osmotic pressure in the tissues. Increased filtration is also lymphagogic, e.g. large quantities of NaCl solution or a concentrated solution of Na_2SO_4. An accelerated respiration enhances lymph formation even after death. An animal killed by III or adrenaline (VIII) also shows a rise in lymph formation. Electric stimulation of the vagus also has a lymphagogic effect. Atropine (IX) can increase or decrease lymph secretion, ergotamine (X) decreases it, but neither can stop it. Yohimbine and nitroglycerine diminish lymph formation. The lymphagogic effect of VIII cannot be explained simply on the basis of hypertension. Removal of the spleen does not diminish the lymphagogic action of VIII. VIII is active even after preliminary injection of IX or X. A lymphagogue can raise lymphatic pressure in the thoracic duct up to 11–12 mm.Hg. The lymphagogic action of VI, insulin (XI) and thyroidine is only slightly understood. The red corpuscles found in the excreted lymph are there largely by virtue of anastomosis between the veins and the lymphatic vessels. The above preparations also alter the permeability of the capillary walls, e.g. after

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injection of indigocarmine this dye appears in the lymph. The characteristics of lymph are changed after the injection of VII, IX, XI or leech muscle extract. Profound narcosis decreases lymph formation. The sudden variations in blood pressure after section of the spinal cord temporarily increase lymph flow.

J. PINCHACK (Chem. Abstr.).

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2. Pharmacology and Treatment.

Effects of Body Temperature and of Pentobarbital on Brain Damage Produced by Insulin Shock. Tyler, David B. [*Proc. Soc. Exptl. Biol. Med.*, **45**, 117–19 (1940).]

If the body temperature of cats was allowed to fall to 6–11° below normal during insulin shock much less brain damage was produced. Pentobarbital with insulin produced a prolonged post-hypoglucaemic coma.

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

Ketonaemia during Insulin Shock. Antognetti, L., and Novelli, E. [*Minerva med.*, **2**, 357–8, 359–60 (1940).]

Insulin shock caused a diminution of blood ketone values which were independent of blood sugar and alkali reserve. Adrenaline, injected at the beginning of hypoglucaemic coma, arrested the diminution of (but did not increase) the blood-sugar values and always increased ketonaemia. The literature and underlying principles are discussed. HELEN LEE GRUEHL (Chem. Abstr.).

Vago-Insulin and Sympathetico-Adrenal Systems: Their Mutual Relationship. II. Reaction to Cocaine and Bulbocapnine. Feldman, J., Cortell, R., and Gellhorn, E. [*Proc. Soc. Exptl. Biol. Med.*, **46**, 157–60 (1941).]

Cocaine and bulbocapnine, although acting quite differently on the somatic nervous system, have a similar action on the autonomic system. They stimulate both the vago-insulin and the sympathetico-adrenal system. The effect on the latter predominates in the normal animal. L. E. GILSON (Chem. Abst.).

The Effect of Electrically Induced Convulsions on Vago-Insulin and Sympathetico-Adrenal Systems. Kessler, M., and Gellhorn, E. [*Proc. Soc. Exptl. Biol. Med.*, **46**, 64–6 (1941).]

The convulsions produce a hyperglucaemia in the normal, a hypoglucaemia in the adrenalectomized, and no change in blood sugar in the adrenalectomized-vagotomized rat. The convulsions excite both the vago-insulin and sympathetico-adrenal systems. The effect on the latter is greater.

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

Production of Neuronal Injury and Necrosis with the Virus of Poliomyelitis in Rabbits during Insulin Hypoglycaemia. Sandler, Benjamin P. [*Am. J. Path.*, **17**, 69–79 (1941).]

Disturbances in carbohydrate metabolism, especially hypoglycaemia, may be an important factor in determining susceptibility to the virus of poliomyelitis in man and the monkey. The blood sugar of the rhesus monkey during tolerance tests has been observed to fall as low as 60 mgm. per 100 c.c. The blood sugar of the fasting rabbit is maintained at or above 100 mgm. per 100 c.c. By depressing the blood sugar to 60 mgm. or less, it has been possible to produce neuronal injury in the anterior horns with the virus of poliomyelitis, both by intracerebral and by intranasal inoculation. F. B. SEIBERT (Chem. Abstr.).

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Relative Changes of Blood- and Cerebro-spinal Fluid-Sugar in Schizophrenic Patients Treated with Insulin. *Suh, T. H., Chang, Y. C., and Chang, I.* [*Chinese Med. J.*, **56**, 232–40 (1939).]

Coma-producing doses of insulin cause a fall in the cerebro-spinal fluid sugar which is smaller than, and lags behind, that of blood sugar. This fall in the cerebro-spinal fluid sugar tends to continue for 1–3 hours after administration of glucose, despite a prompt rise in the blood sugar. B. C. P. A. (Chem. Abstr.).

Action of Various Substances on Insulin Hypoglycaemia in Hypophysectomized Dogs. *Fongi, E. G.* [*Rev. soc. argentina biol.*, **15**, 393 (1939).]

Hypophysectomized dogs, 24 hours after the last meal, were injected with insulin (0·25–2 units per kgm.) intravenously. When convulsions appeared a 5–10 per cent. solution in saline of the substance studied was injected intravenously (gm. per kgm.). Blood sugar was determined before giving the insulin and every 15–30 min. following. Glucose produced a rapid recovery. Maltose, fructose, mannose and galactose also produced a rapid recovery, but in some cases fructose was not efficacious and galactose and mannose produced incomplete and transitory recoveries. Lactic and pyruvic acids had no effect on the hypoglycaemia and symptoms. Pyruvic acid was toxic. B. C. P. A. (Chem. Abstr.).

Physico-chemical Basis of a New Theory of Narcosis. *Seelich, F.* [*Arch. ges. Physiol.* (*Pflügers*), **243**, 283–302 (1940).]

$CHCl_3$ and the C_1 to C_5 alcohols reversibly increase the surface tension of a H_2O-oil interphase, in the presence of a surface-active substance such as lecithin or ergosterol. A rise in temperature by shifting the absorption equilibrium induces a similar effect. The phenomenon is offered as a basis for explaining narcosis and the narcotic effect of hyperthermia. ARTHUR GROLLMAN (Chem. Abstr.).

The Effect of Some Narcotics upon the Glucose Uptake of a Dog Brain. *Chang, I., and Yu, Jack-Min.* [*Chinese J. Physiol.*, **15**, 269–74 (1940).]

The theory that narcosis may be due to an inhibition in the glucose oxidation of the brain tissue was examined in the intact animal by determining the difference between the glucose contents of arterial and cerebral venous blood. It was found that while ether produced a marked diminution in this difference, barbital, urethan, chloral hydrate and amytal produced no such change.
WALTER H. SEEGERS (Chem. Abstr.).

Electrocardiographic Changes following Metrazol-induced Convulsions. *Kline, Edward M., Fetterman, Joseph L., and Williams, Guy H.* [*J. Am. Heart J.*, **20**, 702–14 (1940).]

In 43 metrazole-induced convulsions and after nine injections of the drug in amounts insufficient to produce a convulsion, there was a rise in both systolic and diastolic blood pressure and a change in the heart rate. The striking disturbances were the arrhythmias which frequently occurred. The authors attribute these changes to increased vagal tone and factors such as asphyxia. After the convulsions the T waves of the electrocardiogram became tall and pointed, and the value of the Bazett systolic index was greatly reduced. No permanent alterations of the cardiac mechanism occurred. ZELMA BAKER (Chem. Abstr.).

Reactions of Alcohol-Tolerant Rabbits to Pentobarbital, Evipal, Ether, Amidopyrine and Metrazole. *Ahlquist, Raymond P., and Dille, James M.* [*J. Pharmacol.*, **70**, 301–8 (1940).]

Alcohol-tolerant rabbits are much more resistant than normal rabbits to the depressant effects of pentobarbital, evipal and Et O. The response to amidopyrine and metrazole is not measurably changed. L. E. G. (Chem. Abstr.).

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The Action of Adrenaline in Anxiety. Richter, Derek. [*Proc. Roy. Soc. Med.*, **33**, 615–18 (1940).]

Two biochemical mechanisms which may influence the action of adrenaline in anxiety are suggested: (1) About 70 per cent. of adrenaline, administered orally, was found in the urine as an ethereal sulphate, in which adrenaline was conjugated with sulphate on one of its phenolic hydroxy groups. It is suggested that the inactivating enzyme is the "sulfosynthase" (the system responsible for the synthesis of sulphate esters). Animal experiments showed that the liver is especially active in the inactivation of adrenaline; the effects of adrenaline are prolonged and intensified by hepatectomy. After injection of other polyphenols, animals appeared hypersensitive to adrenaline or to the effects of stimulating the sympathetic nerves, presumably because the polyphenols compete with the adrenaline-detoxifying enzyme. A deficiency in the system inactivating adrenaline may play a part in certain types of anxiety. (2) Adrenaline accelerates the rate of phosphorylation of glycogen; the immediate hyperglycaemia causes a secondary liberation of insulin which may result in a marked hypoglycaemia. It is suggested that this effect of adrenaline on the glycogen reserves and blood sugar may be a factor in the type of anxiety, which responds favourably to glucose administration. The emotional response to adrenaline is also discussed in terms of a "coenaesthetic cycle," in which there is a mutual interaction between a cortical pattern and a visceral organ so that each may increase the degree of excitation of the other.

ZELMA BAKER (Chem. Abstr.).

Sulphathiazole Therapy in Epidemic Cerebro-spinal Meningitis. Pulver, W. [*Schweiz. med. Wochschr.*, **70**, 887–90 (1940).]

Administered intramuscularly and in exceptional cases intravenously with dextrose, sulphathiazole in total dosage of 12–20 gm. within 4–7 days effected the recovery of 24 out of 26 patients. Within two days the leucocyte count of the blood decreased from 24,800 and 30,200 to 5,800 and 6,700 in individual cases respectively. There was a rapid return to normal levels in the blood sugar, albumin and chloride contents. No secondary reactions from the drug were observed in most cases.

M. M. R. (Chem. Abstr.).

Stimulant Effects of Ethyl Alcohol in Cortico-Hypothalamic Functions. Masserman, Jules H. [*J. Pharmacol.*, **70**, 454–9 (1940); *cf. C.A.*, **34**, 6688[5].]

In cats lightly anaesthetized with Et_2O the direct or intraperitoneal injection of dilute EtOH may produce stimulant effects on the hypothalamus, but not on the sigmoid cortex. EtOH in small easily metabolized quantities may therefore facilitate the reactivity of the central nervous system, especially in the lower diencephalic centres.

L. E. GILSON (Chem. Abstr.)

Influence of Unilateral and Bilateral Removal of the Cerebral Cortex on the Action of Some Mydriatic Drugs. Girndt, O., and Evers, A. [*Arch. exptl. Path. Pharmakol.*, **195**, 280–94 (1940).]

In cats removal of the cerebral cortex greatly intensified the mydriatic action of atropine, but had no effect on the mydriatic action of morphine or l-pseudo-ephedrine.

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

The Treatment of Amyotrophic Lateral Sclerosis with Vitamin E (Tocopherol). Wechsler, I. S. [*Am. J. Med. Sci.*, **200**, 765–78 (1940).]

Treatment with α-tocopherol acetate per os, tocopherol in oil administered intramuscularly, an E-rich diet, bile and vitamin B complex improved 11 out of 20 cases. Considerable discussion is given of relation of improvement to age, sex and severity of disease, gastro-intestinal and hepatic disease, of natural versus

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synthetic vitamin and effect of other vitamins. Some of the evidence points to interference with the absorption of vitamin E.

FERRIN B. MORELAND (Chem. Abstr.).

The Antineuritic Action of Homologues and Analogues of Vitamin B_1. Schultz, Fritz. [*Z. physiol. Chem.*, **265**, 113–28 (1940).]

Thirty-nine compounds were tested for vitamin B_1 activity in curing polyneuritis of pigeons. Many of these are active. The specificity of vitamin B_1 action is less than previously supposed. The following compounds are arranged in order of decreasing activity (approx.), only differences from vitamin B_1, 2′-methyl-5′-(4-methyl-5-β-hydroxyethythiazolium chloride) methyl-4′-aminopyrimidine, being indicated. 2′-Ethyl-, m.236°; vitamin-B_1; 4-ethyl-, m.217°; 2′-ethyl-4 ethyl-, m.220°; 2-propyl-, m.245°; 2′-isopropyl-, m.243°; 2′-H; 4-propyl-m.223°; 2′-ethyl-4 propyl, m.216°; 4-H, m.223°; 5′-ethyl, m.238°; 5-δ-hydroxybutyl-m.233°; 4′-methyl-amino, m.253°; 5-β-chloroethyl-, m.223°; 5-β-ethoxy-ethyl-, m.238°; 6′-methyl-, m. 242°; 2′-H-6′-methyl-, m. 242°. The activities vary from 2.1 γ per unit to 11,800 γ per unit (vitamin B_1 2·5 γ per unit). The following compounds are inactive in the doses tested: 2′-phenyl-, m. 228°; 5-hydroxymethyl-, m. 227°; 5-ω-hydroxyhexyl-, m. 225°; 5-β-mercaptylethyl-, m. 180°; 5-β-bromo-ethyl-, m. 213°; 5-β-aminoethyl-, m. 253°; 5-vinyl-, m. 235°; 5-methyl-, m. 268°; 5-butyl-, m. 251°; 5-acetyl-, m. 204°; 4-ethyl-5-methyl-, m. 256°; 4-hydroxy-methyl-5-H, m. 226°; 4-H-5-H, m. 248°; 2¹-methyl-4-H-5-methyl, m. 306°; 2′-ethyl-4-H-5-H, m. 251°; Se substituted for thiazole S, m. 203°. The esters of aneurin (acetate, cocarboxylase, benzoate, monophosphate and chaulmoograte) show a more protracted action than the parent aneurin, B_1 phenylurethan is active but does not produce 100 per cent. cures. MILTON LEVY (Chem. Abstr.).

Distribution of Vitamin D in the Brain after Repeated Administration of Massive Doses: Histological Investigation of D-Hypervitaminosis. Vollmer, Hermann. [*Arch. Pediatrics*, **58**, 9–20 (1941).]

Two children (aged 3 years and 19 months respectively) with fatal diseases received intramuscularly a total dose of 200,000 units of vitamin D_3 per kgm. of body weight in divided doses over a period of 6–19 days. On post-mortem examination, macroscopic and microscopic, no evidence of D-hypervitaminosis was found. Bio-assays were made of certain organs for vitamin D. In one case the last dose was given seven days before death; vitamin D was not found in the thalamus, hypothalamus, hippocampus, corpus striatum, frontal lobe, medulla, hypophysis, thymus, liver and blood; the skin contained approximately 15 units per gm., the thyroid and parathyroids <15 units per gm. In the other case the last dose was given three days before death; vitamin D was not found in the skin and the middle convolution of the brain. J. S. H. (Chem. Abstr.).

Alteration of the Peripheral Nerves and Nerve Endings in Experimental Avitaminosis A. Sekizima, Kiyosi. [*Mitt. med. Akad. Kioto*, **26**, 813–15 (*in Japanese*, 673–91) (1939).]

Avitaminosis A represents not only a local disease of the eyes, as xerophthalmia, but also results in a general disturbance in nutrition or metabolism, for which the changes in the nerve tissues together with eye difficulties are important symptoms.

RUTH BERGGREN (Chem. Abstr.).

The Effect of Some Narcotics on the Excitability of the Vasoconstrictor Fibres of the Sciatic Nerve of a Frog. Thor, W. [*Arch. ges. Physiol.* (*Pflügers*), **242**, 577–86 (1939).]

The differences in behaviour of the vasoconstrictor and the somato-motor fibres of the sciatic nerve to local anaesthesia were studied in an artificially perfused vascular preparation of the posterior extremities of a frog (Läwen-Trendelenburg

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preparation). The " spontaneous rhythm " in the amount of perfusion fluid in many cases was not due to periodic changes in the peripheral vessels, but to rhythmic contractions in the cloaca which had not been completely removed. This caused a rhythmic inhibition of the flow from the iliac veins. In local anaesthesia of the sciatic nerve a distinct increase in excitability was evident at the beginning of the narcosis, after which a decrease in excitability of the vasoconstrictor fibres was revealed by selective stimulation with a sinusoidal a. c. Upon washing out the narcotic a transitory increase in excitability again appeared. In general, the increase in excitability of the vegetative fibres was greater than that of the somato-motor fibres. If a weak urethane solution was used, the vegetative fibres were more difficult to anaesthetize than the motor fibres. At higher concentrations the anaesthesia appeared so quickly that no difference was evident. Urethane caused the greatest increase in excitability. When a cocaine solution was used, the narcosis of the vegetative fibres usually appeared earlier than that of the motor fibres. If the excitability had been suppressed through treatment with cocaine, it could not be restored by repeated washing. RUTH BERGGREN (Chem. Abstr.).

Cobalt Colour Reaction of Barbiturates. Riley, Richard F., Krause, R. F., Steadman, Luville T., Hunter, F. E., and Hodge, Harold C. [*Proc. Soc. Exptl. Biol. Med.*, **45**, 424–7 (1940).]

Numerous substances give a colour reaction with Co acetate and isopropyl-amine similar to that given by barbiturates. Some of these substances have been found in $CHCl_3$ extracts of urine containing no barbiturates.

L. E. GILSON (Chem. Abstr.)

Barbiturates. XXIII. The Effect of Analeptics on Depression by Pentobarbital Used in Experimental Cocaine Poisoning. Krop, Stephen, Hazleton, Lloyd W., and Koppanyi, Theodore. [*Anaesthesia and Analgesia*, **20**, 15–18 (1941).]

In cocaine-poisoned rabbits picrotoxin or metrazole appeared to be able to produce convulsions without interrupting the narcosis or shortening the recovery period. Cocaine seemed to enhance pentobarbital narcosis.

G. H. W. LUCAS (Chem. Abstr.).

Comparative Depressant Action of Pentothal and Thioethamyl. Boyd, Eldon M. [*Proc. Soc. Exptl. Biol. Med.*, **46**, 98–9 (1941).]

Pentothal (Na ethylmethylbutylthiobarbiturate) and thioethamyl (Na isoamyl-ethylthiobarbiturate) showed approximately the same activity by all the physiological methods of testing used. L. E. GILSON (Chem. Abstr.).

Pharmacological Studies in Experimental Alcoholism. I. Effect of Sympathomimetic Substances on the Blood Alcohol Level in Man. Rinkel, Max, and Myerson, Abraham. [*J. Pharmacol.*, **71**, 75–86 (1941).]

Benzedrine sulphate, paredrine, adrenaline-HCl and atropine sulphate lowered the blood EtOH concentration level reached after ingestion of a given quantity of dilute EtOH, probably by inhibiting absorption from the alimentary tract and by delaying the emptying of the stomach. Their effectiveness decreased in the order of naming. L. E. GILSON (Chem. Abstr.).

Further Study of Central Stimulation from Sympathomimetic Amines. Schulte, J. W., Reif, E. C., Bacher, J. A., jun., Lawrence, W. S., and Tainter, M. L. [*J. Pharmacol.*, **71**, 62–74 (1941); *cf. C.A.*, **33**, 8798².]

The movement of rats in suspended activity cages were counted after treatment with 75 different amines. The optimum central stimulation resided in the *d*-phenyl-isopropylamine structure, and all deviations from this configuration were accompanied by large reduction in potency. *d*-Benzedrine was the most effective of all

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compounds, then, of the closely related compounds, the potency decreased in the order, dl-benzedrine, l-benzedrine, l-adrenaline, l-ephedrine, d-pseudoephedrine, l-pseudoephedrine, dl-ephedrine and d-ephedrine. The weakening effect of various substituent groups is discussed. L. E. GILSON (Chem. Abstr.).

Response of the Central Nervous System to the Application of Carcinogenic Hydrocarbons. II. Methylcholanthrene. Peers, James H. [*Am. J. Path.*, **16**, 799–816 (1940); *cf. C.A.*, **33**, 8784[6].]

Cholesterol pellets containing 10 per cent. methylcholanthrene were implanted into the brains of 99 albino mice. The first tumour appeared on the 101st day and the experiment was terminated after 193 days. Among 87 animals, surviving into the tumour-bearing period, 28 animals developed 32 tumours. Seventeen of the tumours were sarcomas of mesodermal origin, and 15 were gliomas.
F. B. SEIBERT (Chem. Abstr.).

The Influence of Nicotine upon Reflex Activity. Novikova, A. A. [*Bull. biol. med. exptl. U.R.S.S.*, **9**, 38–42 (1940) (*in English*).]

The injection of 0·1–2·0 mgm. of nicotine (I) into the electrically stimulated hind legs of a frog with isolated spinal cord led to an immediate strong (4-fold) increase in excitability which lasted 8–10 min., after which the reflexes gradually diminished, total inhibition being reached in about 60 min. The injection of 0·02 mgm./kgm. body weight of I into dogs with food-conditioned reflexes caused a loss in distinction between strong and weak stimuli. Moderate doses (0·06 mgm./kgm. body weight) produced panting and spontaneous salivation between conditioned stimulations, while doses of 0·2 mgm./kgm. (5·0 mgm. per dog) caused deep inhibition of conditioned food reflexes to all stimuli. Large doses of I produced an inhibition of the function of the cerebral cortex and not merely a paralysis of the centre of salivation. Doses of 0·1–0·15 mgm./kgm., which caused deep inhibition of conditioned reflexes, produced an increase in the secretory response to unconditioned food stimuli. S. A. KARJALA (Chem. Abstr.).

The Action of Strychnine and Other Poisons on the Isolated Spinal Cord of Cold-blooded Animals. Trurnit, H. J. [*Arch. ges. Physiol.* (*Pflügers*), **243**, 562–602 (1940).]

The effects of strychnine, caffeine, metrazole and CO_2 on the heat production by the isolated spinal cord of the frog were studied as a means of determining the mode of action of these various central nervous system stimulants. The mechanism appears to be different in the case of each compound investigated.
ARTHUR GROLLMAN (Chem. Abstr.).

The Effect of the Vegetative Nervous System on the Function of the Thyroid Gland. The Effect of Atropine on the Contents of Iodine in the Blood and the Thyroid Gland and on the Proteolysis of the Liver in Rabbits and Dogs. Petrova, A. N. [*Problemy Endokrinol.* (*U.S.S.R.*), **5**, *No.* 1, 3–19 (1940).]

Repeated administration of atropine to rabbits in doses of 1·5 mgm. per kgm. caused no change in the content of I in blood and in the thyroid gland, or in the morphology of the latter; proteolysis of the liver increased. Repeated administration of atropine to rabbits in doses of 3 mgm. per kgm. caused a slight decrease of I in the thyroid gland and a growth of connective tissue; proteolysis of the liver increased and the content of I in blood remained unchanged. Continued administration of atropine in still greater amounts (5 and 7 mgm. per kgm.) caused a sharp decrease of the content of I in the thyroid gland and a greater growth of the connective tissue than in previous experiments; proteolysis of the liver increased and the I level in blood remained unchanged. Under the influence of repeated administration of atropine to dogs (1 mgm. twice daily) the contents of I in blood, the content of I in the thyroid gland and the morphological picture of the thyroid

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gland remained unchanged ; proteolysis of the liver increased. A single administration of atropine to dogs (2 mgm.) caused an increased content of I in blood, a decrease of the I content in the thyroid gland and an increase of the proteolysis of liver. Proteolysis of liver increases under the influence of atropine regardless of the state of activity of the thyroid gland. W. R. HENN (Chem. Abstr.).

Interaction of Sympathomimetic Substances on Adrenergic Transmission. Jang, Chang-Shaw. [*J. Pharmacol.*, **70**, 347–61 (1940) ; *cf. C.A.*, **34**, 2923.]

Tyramine, synephrine, epinine, adrenaline, adrenalone, noradrenaline, benzedrine, ephedrine, paredrine, corbasil, cocaine, procaine, and stovaine were examined on the rabbit's ear, frog heart and spinal cat for their interaction on adrenergic transmission. In low concentrations most of the amines increase the effect of adrenaline and of nervous stimulation. In high concentrations all the compounds have a desensitizing or an antagonistic action on the above effects. The mechanism of their action is discussed. L. E. GILSON (Chem. Abstr.).

Guanidine Hydrochloride. I. The Action of Guanidine on the Motor Nervous System and the Skeletal Muscle of the Rabbit in situ and the Influence of Some Pharmaceutical Agents on this Action. Kato, Hidekazu. [*Mitt. med. Akad. Kioto*, **25**, 35–81 (*in Japanese*, 210–11) (1939).]

Experiments on indirect stimulation of the sciatic nerve and direct stimulation of the gastrocnemius muscle after the intravenous injection of guanidine (I) revealed an increase in the excitability of the motor nerve endings of the rabbit ; 0·27 gm. I/kgm. produced a more striking increase than 0·25 gm. I/kgm. The excitability of the nerve and muscle remained unchanged after eight intravenous injections of 3 c.c. M/8 $CaCl_2$ administered at 20-min. intervals. The increase in excitability of the motor-nerve ending produced by injecting I was inhibited by the injection of $CaCl_2$. In similar experiments using 9 c.c. instead of 3 c.c. M/8 $CaCl_2$ a transitory decrease occurred on indirect stimulation. Subcutaneous injection of 10 units parathormone did not affect the excitability of the nerve and muscle, but diminished the increase in excitability of the motor-nerve ending produced by I. Curare and I, and also $MgSO_4$ and I, exhibited an antagonistic action on the motor-nerve endings. Both before and after the injection of I into the rabbit with completely degenerated sciatic nerve electrical stimulation of the nerve was entirely without effect, while that of the gastrocnemius muscle was effective. I caused a smaller increase in excitability of the motor-nerve ending in bilaterally splanchnicotomized rabbits than in normal rabbits. $BaCl_2$ increased the excitability of the motor nerve and acted synergistically with I. During stimulation of the motor cortical area or of the sciatic nerve the stimulus threshold decreased after the intravenous injection of I alone, but increased after the combined injection of I and $CaCl_2$ or $MgSO_4$; therefore, no conclusion could be drawn as to the central action of I. The excitability of the motor centre increased on direct application on dilute solutions of I, but decreased after concentrated solutions. The excitability of the motor cortical area decreased during direct application of M/8 $CaCl_2$ or $MgSO_4$.

II. The Influence of Guanidine Hydrochloride and Some Pharmaceutical Agents on the Chronaxie of the Rabbit. [*Ibid.*, 402–3 (*in Japanese*), 265–92.]

After the intravenous injection of 0·27 gm. guanidine-HCl (I) per kgm. into rabbits the rheobase decreased and the chronaxie increased in both the gastrocnemius and the anterior tibial muscles and the chronaxie of the flexor : chronaxie of the extensor ratio deviated from the normal. The rheobase increased after five intravenous injections of 9 c.c. M/8 $CaCl_2$ at 20-min. intervals. The chronaxie was not changed in half the experimental animals but was prolonged in the others. The ratio decreased (e.g. from 1 : 2 to 1 : 3). The rheobase and chronaxie were unchanged after eight intravenous injections of 3 c.c. M/8 $CaCl_2$ at 20-min. intervals. The changes in rheobase and chronaxie produced by I were suppressed by the

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injection of this small amount of $CaCl_2$. In rabbits in deep narcosis after the subcutaneous injection of 2·0 gm. $MgSO_4$k/gm. the rheobase increased considerably and the chronaxie was also markedly prolonged, especially in the flexors. The ratio increased (e.g. from 1 : 2 to 1 : 1·2) or was inverted (e.g., from 1 : 2 to 2 : 1). The changes in the rheobase, chronaxie and ratio produced by $MgSO_4$ were inhibited by the intravenous injection of I and all three values returned nearly to normal. $MgSO_4$ is antagonistic to I. In the rabbit the subcutaneous injection of $BaCl_2$ caused a decrease in the rheobase, a prolongation of the chronaxie and a change in the ratio. $BaCl_2$ is synergistic with I. RUTH BERGGREN (Chem. Abstr.).

Treatment of Chorea by Injection of an Ether Extract of Brain Lipoids. Hollander, Edward. [*Med. Record*, **152**, 300–1 (1940).]

Replacement of damaged nerve lipoids in 5 cases of chorea by intramuscular injection of ether extracts of brain lipoids gave good results without any reactions. The extract was prepared by shaking 1 gm. of comminuted ox brain three times with 11 alc., removing excess alc., squeezing the tissue through linen and shaking vigorously for 30 min. with 11 ether. The tissue was again shaken after standing 48 hrs. in a refrigerator. After filtering through cotton and filter-paper, the filtrate was evaporated to dryness over a water bath, leaving a sterile, yellow residue consisting chiefly of cephalin with small amounts of lecithins and myelins. The residue was stirred with 500 c.c. sterile physiological saline and the suspension placed in 20 c.c. ampoules and stored in a refrigerator.

J. PINCHACK (Chem. Abstr.).

Studies on the Sleep Centre. Sinokawa, T., Inada, N., Yosihara, H., Aburaya, T., Togasi, N., Mivazi, M., Ogasawara, Y., and Oda, S. [*Japan. J. Med. Sci., VIII Internal Med. Pediat. Psychiat.*, **5**, *Proc.* 90–2 (1938) (*in German*).]

Cats were used. Quantitative data are given for the amounts of the hypnotics required to produce sleep when injected into various parts of the brain and other portions of the body. The amounts required when injections were made into the tuber cinereum (sleep centre) were very small (about $\frac{1}{20}$ to $\frac{1}{40}$ of that required intramuscularly), and were (in mgm. per kgm. of body weight) : Na barbital 0·6–2·0 ; Na phenobarbital, 0·2–1·0 ; somnifen, 1·2–4·0 ; ergotamine 10. Large amounts of chloral hydrate (3–6·4) injected into the tuber cinereum did not produce sleep.

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

Nervous Complications from Gold Therapy. Käfer, José Pereyra. [*Semana méd.* (*Buenos Aires*), **11**, 420–31 (1940) ; *cf. C.A.*, **34**, 7413[1].]

Au therapy affects the nervous system leading to polyneuritis with a variety of manifestations and occasionally to psychosis. Most of the patients recover completely ; however, the mental disturbances tend to persist. The slow elimination of Au, the state of kidneys and liver must be considered in medication with Au. The treatment of the toxic symptoms consists in daily intravenous injections of $Na_2S_2O_3$ solution, liver extract, glucose and Ca. Insulin and vitamin B are also recommended. A. E. MEYER (Chem. Abstr.).

Biological and Biochemical Studies of Curare : Preliminary Report. Pusitz, M. E., Lattimore, J. L., Gold, Allen, and Ebendorf, Harry. [*J. Kansas Med. Soc.*, **41**, 374–9 (1940).]

A solution of 5 gm. desiccated curare powder in 11 triple-distilled water does not kill rabbits even in 30 c.c. doses. When this is concentrated to 3·36 gm. per 100 c.c. solution, 0·5 c.c./kgm. is fatal within 1 min. Further concentration decreases the lethal dose to 0·1 c.c./kgm. The drug is poorly absorbed through the alimentary canal, but is rapidly absorbed parenterally, the intravenous route being most effective. The activity or toxicity of curare varies with the dilution,

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but for any particular dilution the action is fairly constant. It seems possible to separate the colour principle from the active principle, and the toxic principle from the active principle, by means of phosphate ion. Curare has no destructive action; it results in physiological nerve block at the neuromuscular junction. It has selective action, so that its least effect is on normal tonic muscles. There is an increasing effect on hypertonic muscles, athetoid movements, tremors and fatigability. A rather small latitude from an effective dose to a dangerous dose is demonstrated in experimental rabbits. The drug must therefore be well standardized before routinely used in human beings. Curare must be looked upon as merely a "physiological block." It can have no curative value in itself, but appears to be a useful adjunct in cerebral palsy. The exact excretion time in man has not been worked out. J. PINCHACK (Chem. Abstr.).

NOTICES BY THE REGISTRAR.

Examinations, 1942.

The Preliminary and Final Examinations for the Certificate of Proficiency in Mental Nursing and the Certificate of Proficiency in Nursing Mental Defectives will be held on May 4, 1942. All Schedules must be posted not later than March 31, 1942.

All communications should be addressed to the Registrar, Littleton Hall, Brentwood, Essex.

Bronze Medal and Prize.

Dissertations for the Association's Bronze Medal and Prize should be forwarded to reach the Registrar not later than April 30 for each year.

Divisional Prizes.

Papers certified as eligible for this competition must be forwarded to reach the Registrar not later than April 30 for each year.

Gaskell Medal and Prize.

The examination for the Gaskell Medal and Prize is held annually in May. An entrance fee of £3 3*s*. is charged, returnable to bona-fide candidates.

Applications for entry should reach the Registrar not later than April 30 for each year.

Certificate in Psychological Medicine.

The examination for the Certificate in Psychological Medicine is held annually in May.

The entrance fee of £3 3*s*. should be forwarded to reach the Registrar not later than April 30 for each year.

Prices of Medals and Badges.

Owing to the increased cost of manufacture and the Purchase Tax the prices of nursing medals and badges have been raised to :

Nursing badges 7*s*. 6*d*. each, bronze medals 6*s*. each, silver medals 20*s*. each.

It may be necessary to raise these prices again at some future date.

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